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Information Technology

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A NATIONAL LEVEL STUDENT RESEARCH PAPER COMPETITION

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“RECENT TRENDS IN MANAGEMENT AND IT”

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## AUGMENTED REALITY BASE VIdeas

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### ABSTRACT

As Augmented Reality (AR) ties closely to the physical world, its users looking at overlapped scenes are likely to be in the vicinity of each other, which naturally enables the collaboration and interaction among them. In this paper, we propose AR VIdeas, an interactive way of learning, providing a fast, precise, hands-on modelling experience. As a designer creates a new model using Unity editor, features, graphics, Vuforia, and Vuforia SDK. Currently constructed the model which is being scanned by a camera lenses through the mobile. AR VIdeas lets users integrate real-world constraints into a study rapidly, allowing them to find out well-proportioned feasible, interesting, and or to extend existing projects. We conclude by presenting the strengths and limitations of our current design. As the final year students in our college face many problems while selecting Project topic and/or domain. We try to solve their problem by simply scanning the target( or Logo).

The use of *Augmented Reality* and *Virtual Reality* is expected to grow as more organisations across retail, real estate, auto and media use to engage their core audience. **Indian** service providers are expected to generate huge opportunity building *AR/VR* solutions to their customers AR in India is spreading its leg on a large scale. In India, Augmented Reality technology has been widely used in many sectors and also it is being loved by the users. This technology not only provides the complete information about the product but also the users would be able to see the product on any angle. It is most entertaining and easy to use technology. The Indian market is the largest market in the world and it is believed that AR in India will gain the success faster than any other country. As per a research, it is expected that the growth rate of AR in India is 90% every year. Many companies are spending million dollars for AR Technology in India. Along with the big brands, many start-ups are also tending towards AR. The above specified book(VIdeas) is just a prototype to showing our idea at the implementation phase, what we try to research/study is to make the “*Existing things Exciting*” by using the amazing technology called “*Augmented Reality(AR)*”.

**KEYWORDS :** *Augmented Reality, Interactive way of learning, Mobile Application, VIdeas, Growth in Inida, Startups, Unity, Vuforia SDK.*

# REINCARNATION OF MOORE'S LAW THROUGH GRAPHENE

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## ABSTRACT

Moore's Law was founded by Gordon Moore, one of the founders of Intel in 1965. The law stated that the density of an integrated circuit will double every year. And as the size of the transistors that make up a microprocessor continues to shrink, the size of the microprocessors will shrink as well and all the while increasing the performance of the microprocessor. This law as seen in recent times has however slowed down every year and has reached a point where it can be stated dead. Other technical advancements have been made to compensate for the slowing down of the chips. Graphene-based microprocessors have long been dreamt about, but never actually made it out of the development stage. Many Technological advancements are underway to improve the viability of Graphene-based Microprocessors. The breakthrough in Graphene technology hopes to reincarnate Moore's law.

## INTRODUCTION

### Moore's law:

Moore's law was a prediction made by the American engineer Gordon Moore in the year 1965. The law stated that the number of transistors in a processor will double roughly every 2 years and with it, the performance of the microprocessors. This was made possible by the shrinking of the transistors that make up a microprocessor. For as far as 50 years, the microprocessor development seemed to follow Moore's law when it eventually started to trail behind. Many Magazines used to refer to Moore's law as inexorable but it changed when the 2000s came. Moore's law started to slow down. The growth in the performance of microprocessors started to wind down. In modern times, Moore's law is considered nonviable if not dead.

### Silicon:

Silicon is a semiconductor seated at the 14th position below carbon on the periodic table. It is widely used for the production of electronics due to its unique chemical and

physical properties. It is the most viable element for producing microprocessors due to its low cost, immense availability and easy to work nature. It is the second most abundant element on earth. The first silicon-based processor was the Intel 4004 microprocessor.

### **Graphene:**

Graphene was discovered very recently in 2004 by two professors of The University of Manchester named Prof Andre Geim and Prof Kostya Novoselov. Graphene is a compound and an allotrope of carbon, the fourth most abundant element on earth. Graphene consists of a sheet of graphite which is only one atom thick and in which, the atoms are arranged in a honeycomb pattern. It is the best conductor of electricity known to man and it is also the strongest and thinnest compound.

### **The Death of Moore's law**

Transistor technology has reached a point where shrinking down the transistor size to improve its performance is not viable anymore. Moore's law which principled the projected growth of the performance of a microprocessor by simply fitting more and more transistors into a chip has slowed down significantly over the years and has come to a point where it can be considered insignificant or simply, dead.

A transistor works by either allowing or disallowing electricity to flow through it. A component of the transistor known as the gate performs the task of allowing and disallowing the flow of electrons. This is controlled by the 1s and 0s given to it as input. With transistor sizes shrinking, the size of the gate shrinks as well. As the Transistor size approaches the theoretical threshold of 5nm, it will become harder and harder for a transistor to overcome electron drainage. As 5 nanometres is just 19 silicon atoms thick, going any further in the sense of shrinking the transistor, the electrons will simply jump across the gate. This is known as electron drainage or quantum tunnelling. This renders the transistor useless as it is unable to do its fundamental task that is to allow or disallow electrons to pass through the gate. With the ever-increasing need for increasing the performance of processors, some alternative method has to be devised. With shrinking the transistor now out of the question, we need to find another way to keep improving performance. This can be achieved by using graphene instead of silicon to make transistors and with it, microprocessors.

### **The end of the era of Silicon**

Silicon has been unchallenged for making electronics for as long as 70 years. Its inexpensiveness, ubiquity and easy to work nature has always kept it as the best candidate for making electronics such as Microprocessors. However, in modern times, research in silicon has continued to provide diminishing returns. The Processor clock speed has capped at

around 5GHz. Companies have started to take alternative measures to improve performance such as increasing the core counts of processors. But that too has started to show its limits. With

silicon, it has become very difficult to cram more transistors into a single die than ever before. The price to performance ratio has also steadily decreased its rate of growth.

Silicon is not the best material when it comes to electron mobility. Silicon mobility is the ease with which the electrons are able to move in a circuit or material. Another problem with silicon is that its performance starts to Decline as temperatures increase. This is again, due to its low electron mobility. As its resistance is high, much of the power given to the chip is wasted in the form of heat. It is a very inefficient material considering the power consumption to make electronics. With Moore's law now dead, we would require 2 times the power to get two times the performance. The need to find an alternative to silicon is higher than ever.

### **Why graphene?**

Almost every other material known to man has a three-dimensional atomic structure while Graphene possesses a two-dimensional hexagonal lattice of carbon atoms. This allows it to have incredible electron mobility all the while making it the strongest membrane ever. This dramatically increases its efficiency as well as responsiveness. Electron mobility refers to the speed at which electrons can travel through a material.

The electron mobility of silicon is seventy times more than that of silicon. It is much lighter, bendable and most importantly, extremely thinner compared to silicon. It is also a much better conductor of heat, with its heat conductance being ten times than that of copper. Graphene has a near endless supply just like silicon as it is made using carbon, which is the fourth most abundant element in the universe. When processors are made using graphene, the heat generated is transferred away from the processor much quickly compared to silicon as it is the best conductor of heat.

Graphene is very difficult to work with as it is just one atom thick. However, with recent advancements in technology, working with graphene has continued to become more and more feasible. Graphene has been tested for a lot of other applications in the electronics field. It has been proven to be useful to produce a plethora of different devices. This increases its viability for making Microprocessors as its compatibility with other devices will increase.

### **Entering the age of terahertz**

With Moore's law now dead, and silicon starting to show its limits, we are more desperate than ever to find an alternative. The best candidate for the same is Graphene. Graphene-based processors have long been dreamt about. They have never been plausible due to the cost of Graphene. However, over the years, with developments in technology, the price of Graphene has decreased dramatically. This alone has brought Graphene-based processors one step closer to the market. Graphene-based processors will bring to the table the performance jump we have hoping for years. The amazing conductivity and efficiency of Graphene allow Processors made from it to reach staggering speeds of up to 1000GHz and

above. With the breakthrough in graphene, the researchers are paving the way for ultrafast graphene-based Nano electronics which will be of sizes comparable to a single atom.

Scientists from the Moscow Institute of Physics and Technology have developed a Graphene-based transistor which is capable of switching at voltages as low as 0.5V. Graphene will allow the construction of transistors that will be capable of switching at voltages as low as 0.5V. Scientists involved in the development of the processors have stated that ultrafast hybrid components made of graphene and traditional semiconductors are not far away from being a reality.

In 2014, IBM built a Graphene based processor which are much faster than the current processors using standard CMOS transistors. The processor reached frequencies of 500GHz and beyond. The engineers and scientists have obtained valuable data and will keep on improving the techniques and with it, the viability of Graphene based processors.

### **What it means for Moore's law**

With all the research that has been done to make Graphene Processors a reality, it is only a matter of time before they hit the market. The performance jump that these processors will deliver will be incredible. Just like silicon, these new processors will follow Moore's law once again. They will continue to increase in complexity and transistor count per die as the Graphene technology advances. Graphene processors will, however, take at least ten years to be considered fully developed.

Thinking even more into the future, when Moore's law will again start to slow down, processors will have to be built using light rays or diamonds. And once again, the journey of Moore's law will begin.

## **CONCLUSION**

Moore's law has come to its end with silicon. Silicon has served us well for a very long time. It has many benefits but it also has disadvantages. If we want to keep advancing the performance of microprocessors, we need to abandon silicon and move on to better materials like graphene. These new materials will once again make Moore's law applicable and the cycle will begin again. Researches are underway and it is just a matter of time before we will all be using graphene based computers and Moore's law will be reincarnated.

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# **DATA SCIENCE – Beginning of Security or End?**

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## **ABSTRACT**

Information is right now one of the most significant resources for organizations in each field. The consistent development in the significance and volume of information has made another issue: It can't be taken care of by customary examination methods. This issue was, thusly, tackled through the making of another worldview: Big Data. Be that as it may, Big Data started new issues related not exclusively to the volume or the assortment of the information, yet additionally to information security and protection. In request to get a full viewpoint of the issue, we chose to complete an examination with the target of featuring the primary issues in regards to Big Data security, and furthermore, the arrangements proposed by established researchers to understand them. In this paper, we clarify the outcomes got subsequent to applying an orderly mapping examination to security in the Huge Data biological system. It is practically difficult to do nitty gritty examination into the whole theme of security, and the result of this exploration is, consequently, a major picture of the primary issues identified with security in a Big Data framework, alongside the foremost answers for them proposed by the investigate network.

## **INTRODUCTION**

In the course of the most recent couple of years, information has gotten one of the most significant resources for organizations in pretty much every field. Not just are they significant for organizations identified with the software engineering industry, yet in addition for associations, such as nations' administrations, medicinal services, training, or the designing area. Information are basic as for completing their day by day exercises, and furthermore helping the organizations' administration to accomplish their objectives and make the best choices based on the data extricated from them. It is assessed that of the considerable number of information in recorded mankind's history, 90 percent has been made in the most recent couple of years. In 2003, five Exabyte's of information were made by people, and this measure of data is, at present, made inside two days. This propensity towards expanding the volume and detail of the information that is gathered by organizations won't change sooner rather than later, as the ascent of informal communities, sight and sound, and the Internet of Things(IoT) is delivering a staggering progression of data. We are living in the time of Big Data. Besides, this information is for the most part unstructured, implying that customary frameworks are not fit for investigating it.

Associations are happy to extricate progressively advantageous data from this high volume and assortment of information. Another investigation worldview with which to break down and better comprehend this information, in this way, developed so as to get private, however additionally, open advantages, and this were Big Data. Each new troublesome innovation carries new issues with it. On account of Big Data, these issues are connected not exclusively to the volume or the assortment of information, yet additionally to information quality, information protection, and information security. This paper will concentrate on the subjects of Big Data protection and security. Large Data not just expands the size of the provokes identified with security furthermore, security as they are tended to in conventional security the executives yet additionally makes new ones that should be drawn nearer in another manner. As more information is put away and dissected by associations or governments, more guidelines are expected to address these worries. Accomplishing security in Big Data has, accordingly, become one of the most significant hindrances that could back off the spread of innovation; with it sufficient security ensures, Big Data won't accomplish the necessary degree of trust. Large Data brings huge obligation. As indicated by the Big Data Working Group at the Cloud Security Alliance association there are, mainly, four various parts of Big Data security: a framework security, information protection, information the executives, and uprightness and responsive security. This division of Big Data security into four head points have additionally been utilized by the Global Organization for Standardization so as to make a security standard for security in Big Data.

### **FRAMEWORK SECURITY**

While talking about foundation security, it is important to feature the principle advancements and systems found as respects verifying the engineering of a Big Data framework, and especially those dependent on the Hadoop innovation, since it is that most every now and again utilized. In this area we will likewise talk about certain different points, such as correspondence security in Big Data, or how to accomplish high-accessibility. A. Security for Hadoop The realistic shows that the primary subject managed by those looking into foundation security will be security for Hadoop. As clarified in past areas, Hadoop can be considered as a true standard for executing a Big Information condition in an organization. The security issues identified with this i innovation have, in this manner, been generally talked about by scientists, who have likewise proposed different techniques with which to improve the security of the Hadoop framework. This classification is likely the most transverse since, so as to secure it, the arrangements utilize unique security systems, for example, realness or cryptography. For instance, there is a proposition for a security model for G-Hadoop (an augmentation of the Map Reduce system to run on different bunches) that rearranges clients' validation and some security systems so as to shield the framework from customary attacks. A couple papers centre around ensuring the information that is put away in the HDFS by proposing another diagram, a protected access framework, or on the other hand even the formation of an encryption plot. B. Accessibility Specialists have likewise managed the subject of accessibility in Big Data frameworks. One of the fundamental qualities of Big Data conditions, and by expansion of a Hadoop usage, is the accessibility accomplished by the utilization of many PCs where the information is most certainly not just put away, but at the same time are duplicated along the bunch. Finding a design that will guarantee the full accessibility of the framework is, in this

manner, a need. For instance, in the creators propose an answer with which to accomplish high accessibility by having numerous dynamic Name Nodes simultaneously. Different arrangements are based on making another framework of the capacity framework so as to improve accessibility and adaptation to internal failure. C. Engineering Security Another distinctive methodology is that of portraying a new Big Data engineering, or adjusting the normal one, so as to improve the security of the earth. The creators of propose another engineering dependent on the Hadoop record framework which, when joined with arrange coding and multi-hub perusing, makes it conceivable to improve the security of the framework. Another arrangement centres around secure gathering correspondences in enormous scale systems oversight by Big Data frameworks, and this is accomplished by making certain conventions and changing the framework of the hubs. D. Verification The estimation of the information got subsequent to executing a Big Information procedure can, as it were, be controlled by its genuineness. A couple of papers manage this issue by proposing arrangements identified with validation. In, the creators propose tackling the issue of validation by making a character based signcryption conspires for Big Information. E. Communication Security The security as respects interchanges between various pieces of the Big Data biological system is a subject that frequently is disregarded, and just few papers in this manner manage this issue. One paper draws near the theme by clarifying the customary information life cycle in a Big Information framework, following the diverse system conventions and applications that the information go through. The creators moreover identify the fundamental information move security methods.

### **DATA PRIVACY**

Information security is likely the subject about which common individuals are generally concerned, yet it ought to likewise be perhaps the best worry for the associations that utilization Huge Data strategies. A Big Data framework ordinarily contains an gigantic measure of individual data that associations use so as to get a profit by that information. In any case, we ought to ask ourselves where the breaking point with respect to utilization of that data is associations ought not have absolute opportunity to utilize that data without our insight, in spite of the fact that they moreover need to increase some profit by the utilization of that information. A few systems and components with which to secure the security of the information, and furthermore enable organizations to in any case make a benefit from it have in this manner been created, and endeavor to take care of this issue in different various manners The creators that approach this issue regularly propose new procedures, for example - registering on covered information (CMD), which improves information classification and honesty by enabling direct calculations to be made on veiled information, or on the other hand new plans, for example, Trusted Scheme for Hadoop Bunch (TSHC) which makes another engineering system for Hadoop so as to improve the classification and security of the information.

### **CONCLUSION**

The foundation security, the principle issue managed with by specialists would have all the

earmarks of being security for Hadoop frameworks. This isn't astounding since, as expressed beforehand, Hadoop can be considered as a true standard in industry. The rest of the issues tended to in this point are generally illuminated by adjusting the standard thing plan of a Big Data framework through the expansion of new security layers. The most much of the time managed by specialists would have all the earmarks of being security.

There are a variety of points of view as respects guaranteeing security. Creators as a rule propose various methods for encryption, in view of conventional strategies yet with a couple of changes so as to adjust these systems to the acquire attributes of a Large Data condition. Inferable from the huge measure of papers found on this theme in contrast with the others, we accept that it is prudent to separate this classification into, on the one hand, information protection itself, and on the other, cryptography and access control methods. This segment incorporates nearly the whole lifecycle of the information utilized in a Big Data framework, from its assortment to it's sharing, and furthermore incorporates how to appropriately oversee the security of that information. With respect to assortment and to its sharing, creators propose the formation of new diagrams, systems, and conventions with which to verify information. Different creators likewise propose toughening up the enactment concerning the security of the information utilized by organizations. Besides, we have discovered an absence of papers managing the need to make a system that spreads security information administration in a Big Data framework in its whole lifecycle. In this area, the primary point talked about by specialists would have all the earmarks of being the uprightness of information. So as to verify that trustworthiness, they propose different sorts of confirmation to guarantee that the information has not been changed. This segment likewise covers the plausibility of recognizing the assaults that a Large Data framework may experience. This is most likely a outcome of the high accessibility that a Big Data framework generally accomplishes, How Ever this point ought not be neglected. This paper gives a clarification of the examination done so as to find the principle issues and provokes identified with security in Big Data, and how scientists are managing these issues. This objective was accomplished by following the deliberate mapping study strategy, which enabled us to discover the papers identified with our fundamental objective. Having done as such, we found that the head issues are identified with the inalienable qualities of a Huge Data framework, and furthermore, to the way that security issues were not pondered when Big Data was at first imagined. Numerous creators, along these lines, center their examination on making intends to ensure information, especially with regard to protection, yet security isn't the main security issue that can be found in a Big Data framework; the customary engineering itself and how to secure a Hadoop framework is likewise an immense worry for the scientists. We have, in any case, likewise distinguished an absence of examinations in the field of information the executives, particularly as for government. We are of the considered assessment this is not satisfactory, since having an administration security system will permit the quick spread of Big Data innovation. All in all, the Big Data innovation is by all accounts arriving at a develop arrange, and that is the motivation behind why there have been various investigations made the most recent year. Be that as it may, that doesn't imply that it is never again fundamental to think about this worldview, indeed, the investigations made from presently should concentrate on progressively explicit issues. Moreover, Huge Data can be helpful as a base for the improvement of the future advances that will change the world from our perspective, like the Internet of Things (IoT), or on-

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request benefits.

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# SMARTPHONE GAMING: ADDICTION AND MONITORING BY ADOLESCENT MALES AND FEMALES (13–16 YEARS)

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## ABSTRACT

Background and objectives: Playing of smartphone games can be fun and entertaining which may lead to problematic gaming, as stated in the literature. Since games are particularly appealing to children and adolescents, these individuals are more at risk than other groups of developing gaming addiction. The objective of the research was (1) to identify the self-monitoring ways of adolescents regarding the time, frequency and duration of smartphone gaming; and (2) to assess and compare the adolescent males and females (13-16 years) on Gaming Addiction Scale (2009). Methods: The data comprised of 100 school going and first born adolescents (adolescent males and females) from 13-16 years residing in Mumbai. Results: ADD Conclusions: On Gaming Addiction Scale, adolescent males were on the higher scale of gaming addiction compared to adolescent female. There are multiple ways of self-monitoring of smartphone gaming practiced by adolescents. These findings suggest that parental monitoring and self-monitoring done by adolescents, might play a vital role in preventing smartphone gaming disorder in adolescents. Keywords: Smartphone gaming addiction, Gaming addiction scale, Adolescents, Gaming genres, Self-monitoring.

## INTRODUCTION

In this chapter, we discuss the current state of the literature on smartphone gaming and adolescents' self-monitoring of their smartphone gaming. As the world becomes increasingly interconnected, both economically and socially, technology adoption remains one of the defining factors in human progress. During the last decade, Chidambaram R, Srikumar S, Kumar N (2017), online social networking has caused profound changes in the way of games became most popular among adolescents, while studies on online gaming addiction was emerged, highlighting the negative consequences of online games, its occurrence, and its associated risk factors. Relationships with family members and friends may suffer if the child is spending more time in gaming rather than them talking to or going out with loved ones. Smartphone Gaming: Addiction and Monitoring 600 participants from secondary and high school students (age 12-18) in South

Korea were interviewed; where in high school students were found to be more addicted than secondary school students while boys are more addicted than girls. In the study which the role of parents, friends and teachers were considered as variants; the relationships between adolescent and parents were determined to be more significant patterns from the point of addiction. The adolescents with positive relations with parents were observed to have negative addiction patterns (Jeoung and Kim, 2011). Poor parental relationships (Niemz et al. 2005) have been found to be related to problematic playing behavior.

### **GAMING ADDICTION AND MONITORING**

Gaming Addiction Long hours playing smartphone games can negatively affect the child's performance in school if they are preoccupied with smartphone games. The child can fail to work at their optimum level because they are exhausted from a late night of smartphone game playing. If the child devotes more than one or two hours a day to television or smartphone games, they may have trouble falling asleep, have problems paying attention and have lower test scores than other children who don't spend as much time in front of a television or smartphone game. Dr. Kumar (2019) stated that gaming addiction has changed and increased over the years. Earlier, it wasn't uncommon to hear about children stealing money to play video games at Internet cafes, now that everyone has a mobile phone, the number of cases have risen and the problems are varied. Addiction can affect the mental advancement of children. It can also affect children's physical growth as many prefer spending time in the confines of their rooms, caring little for outdoor games and maintaining a healthy lifestyle. Monitoring Parental monitoring is associated with recognition of adolescents' self-regulation ability i.e. when parents perceive that adolescents cannot control their online activities, they tend to practice more monitoring (Padilla-Walker and Coyne, 2011). There can be a few possible explanation for this discrepancy, parents tend to respond to smartphone gaming disorder by immediately increasing harsh monitoring, but after half a year, when they feel that such harsh monitoring cannot successfully control their adolescents' smartphone gaming activities, they might ease up on their monitoring (Su et al., 2015). Studies on adolescents' externalizing problems have also found that the failure in perceived parental control attempts might lead to a reduction in subsequent parental control attempts (Pinquart, 2017). Another possible explanation is that adolescents with high levels of smartphone gaming disorder might learn how to adapt to parental monitoring. Problematic gamers experiencing exaggerated gaming motivation might devise creative ways to engage in their activity of interest (Pinquart, 2017). There are not many researches which talk about the aspect of self-monitoring of adolescents' who play smartphone games, hence the researcher felt the need to research about the same. Within India, its seen that usually parents have concerns and questions based on the games played by their children, of them about the type of the games and the duration their child plays a game. There are very few researches in India, based on adolescents exposed to smartphone gaming and how they self-monitor their smartphone gaming. Recent research shows that gaming which is more popular than social networking is one of the top activities that is enjoyed by 9-16 year olds online. Smartphone Gaming: Addiction and Monitoring The objective of the research was (1) to identify the self-monitoring ways of adolescents regarding the time, frequency and duration of smartphone gaming; and (2) to assess

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and compare the adolescent males and females (13-16 years) on Gaming Addiction Scale (2009).

## METHODS

The study population included adolescents in Mumbai, India. The same size includes 100 school going adolescent [50 male adolescent participants (13-16 years), 50 female adolescent participants (13-16 years)] selected by purposive and snowball sampling method. These adolescents were first born adolescents and were playing smartphone games. Data's were collected using an interview method which consisted questions regarding the genres of games played, and self-monitoring of smartphone gaming and gaming addiction scale. The questions on self-monitoring were self-constructed, and while computing the results, theme extraction was used (descriptive statistics). The Gaming Addiction Scale constructed by Lemmes, Valkenburg and Peter (2009) measures the degree of gaming addiction tendency. The gaming addiction scale has 21 items associated with salience, tolerance, mood modification, relapse, withdrawal, conflict, problems (for each item, a graded response is selected from 1= "Never" to 5 = "Very Often"). The minimum obtained score was 1 and the maximum obtainable score was 105. The total score was in the range of 105, and a higher score implies the tendency towards gaming addiction. The Cronbach's Alpha of the scale in the study was .927. The questionnaire was be constructed in English therefore adolescents who are acquainted to the language and can comprehend it will be able to share their awareness effortlessly. The researcher kept it open to all community, caste, socio-economic status and religion as awareness of adolescents regarding smartphone gaming and gaming addiction from varied backgrounds, helped the researcher have a holistic view.

## RESULTS AND DISCUSSION

### **Self-monitoring adolescent's time spend on smartphone gaming**

Little more than one third of the adolescent males (40%) and adolescent females (40%) indicated that they self-monitor their smartphone gaming by playing games in the evening time. Few adolescent males (18%) and very few adolescent females (12%) indicated having no restrictions in smartphone gaming however, very few adolescent males (4%) and little less than quarter adolescent females (20%) indicated playing games before/ after class/ on the way of going to class as the ways of self-monitoring the time spent on smartphone gaming. [Refer to Table 1]

### **Self-monitoring the duration of smartphone gaming**

In self-monitoring the duration of smartphone gaming, little more than half of the adolescent males (44%) and majority of the adolescent females (60%) indicated self-monitoring their smartphone gaming for 10 mins–1 hour. However, little less than quarter adolescent males (20%) and few adolescent females (15%) indicated having no restrictions for self-monitoring of the

duration of self-monitoring of smartphone gaming. [Refer to Table 1] Smartphone Gaming: Addiction and Monitoring

### **Self-monitoring the frequency of smartphone gaming**

Little more than one third of the adolescent males (38%) and adolescent females (34%) indicated not having any restrictions in the frequency of self-monitoring of their smartphone gaming. However, few adolescents indicated that they self-monitor as (a) playing games for 2–3 times in a day [adolescent males (16%) and adolescent females (16%)] and (b) parent/s taking their phone when their time limit has exceeded [adolescent male (8%) and adolescent female (8%)]. [Refer to Table 1]

<b>Self-monitoring adolescent's <u>time, duration</u> <u>and frequency</u> of smartphone gaming</b>	<b>Adolescent Males (n=50)</b>	<b>Adolescent Females (n=50)</b>	<b>Total Adolescents (n=100)</b>
	<b>f(%)</b>	<b>f(%)</b>	<b>f(%)</b>
<b>Time</b>			
Using of alarm/ timer	4 (8%)	6 (12%)	10 (10%)
Playing smartphone games in evening	20 (40%)	20 (40%)	40 (40%)
Playing smartphone games in afternoon	3 (6%)	4 (8%)	7 (7%)
Playing smartphone games at night	2 (4%)	-	2 (2%)
Someone has to monitor adolescent's smartphone gaming	2 (4%)	-	2 (2%)
No specific time	4 (8%)	-	4 (4%)
<b>Daily Routine/ Activity</b>			
Playing games class before/ after class/ while going to class	2 (4%)	10 (20%)	12 (12%)
Playing games after homework/ studying is finished/ during study breaks	4 (8%)	5 (10%)	9 (9%)
Not playing games during meal time	3 (6%)	5 (10%)	8 (8%)
Not playing games before going to bed/ night	2 (4%)	5 (10%)	7 (7%)
Not playing games before going to school	2 (4%)	5 (10%)	7 (7%)
Not playing games in family functions/ outings/ events	2 (4%)	1 (2%)	3 (3%)
Playing games when friends are free to play	2 (4%)	1 (2%)	3 (3%)
Not playing games during exam time	1 (2%)	-	1 (1%)
No restrictions from parents	9 (18%)	6 (12%)	15 (15%)
<b>Duration</b>			
Using timer	3 (6%)	6 (12%)	9 (9%)
Different timings for playing games on weekday and weekends	3 (6%)	2 (4%)	5 (5%)
Playing for 10 mins–1 hour	22 (44%)	30 (60%)	50 (50%)
Playing for more than 1 hour	2 (4%)	1 (2%)	3 (3%)
<b>Extent</b>			
Stop playing games after 1–2 games	5 (10%)	2 (4%)	7 (7%)
Stop playing games after 2–3 games	1 (2%)	1 (2%)	2 (2%)
Stop playing games after passing certain levels	-	2 (4%)	2 (2%)
No restrictions from parents	10 (20%)	8 (16%)	18 (18%)
<b>Frequency</b>			
Following timer	2 (4%)	4 (8%)	6 (6%)

Parent/s taking the phone when time limit exceeds	4 (8%)	4 (8%)	8 (8%)
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<b>Extent</b>			
Playing for a stretch of time together	4 (8%)	-	4 (4%)
Playing till certain level of games	4 (8%)	-	4 (4%)
Playing for 1–2 times in a day	5 (10%)	3 (6%)	8 (8%)
Playing for 2–3 times in a day	8 (16%)	8 (16%)	16 (16%)
Playing for 3–4 times in a day	2 (4%)	2 (4%)	4 (4%)
Playing for 4–5 times in a day	4 (8%)	1 (2%)	5 (5%)
Playing for more than 5 times in a day	2 (4%)	-	2 (2%)
No restrictions from parents	19 (38%)	27 (34%)	46 (46%)

*Table 1: Self-monitoring the time, duration and frequency of smartphone gaming, according to adolescent males (n=50) and adolescent females (n=50) who play smartphone games*

### **Gaming Addiction Scale (2009)**

The minimum obtained score was 1 and the maximum obtainable score was 105. The actual statistical range of the scale was (1-105) with a mean age = 14.5 years (SD =1.5). The total score was in the range of 105, and a higher score implies the tendency towards gaming addiction. The Cronbach's Alpha of the scale in the study was .927.

The number of items representing each domain was different and thus theoretical range if the domains differed. The data was calculated and analysed separately for each of the seven domains of the Gaming Addiction Scale. Out of the seven domains of gaming addiction scale, domain of conflict being low and domain of mood modification being high.

[Refer to Table 2]

	<b>Gender of the participant</b>	<b>M</b>	<b>SD</b>	<b>z</b>	<b>df</b>	<b>P</b>
Domain_Salience	Male Adolescent	7.735	3.174	.430	96.963	.668
	Female Adolescent	7.460	3.177			
Domain_Tolerance	Male Adolescent	8.480	2.597	2.344	95.110	.021
	Female Adolescent	7.140	3.097			
Domain_Mood_Modification	Male Adolescent	8.640	2.497	.891	97.599	.375
	Female Adolescent	8.180	2.663			
	Male Adolescent	8.400	2.587			

Domain_Relapse	Female Adolescent	7.500	2.936	1.626	96.470	.107
Domain_Withdrawal	Male Adolescent	7.080	3.193	.122	97.703	.903
	Female Adolescent	7.000	3.375			
Domain_Conflict	Male Adolescent	6.680	3.639	.949	95.430	.345
	Female Adolescent	6.040	3.084			
Domain_Problems	Male Adolescent	6.760	3.462	-.537	97.818	.593
	Female Adolescent	7.140	3.614			

Table 2: Gaming Addiction Scale (2009) used on adolescent male and female (13-16 years)

Adolescents are highly vulnerable to getting addiction to smartphone gaming and this is an issue of serious concern. I have recently read a newspaper article stating that, according to a report by KPMG, 60% of urban mobile gamers are below the age of 24 years. It also suggests that 47% of the online users initiate online gaming due to peer influence and 47% of them do it for recreation or time utilisation. There have been reports about Indian adolescents as young as 13 years are being treated for gaming addiction to digital technology. Statistics from a few recent cross-sectional studies that have compared people having smartphone gaming disorders to those without the disorder reported that those with the disorders played games for longer periods, skipped school more often, they have had lower grades in school, they have reported more sleep problems and more often endorsed feeling ‘addicted to gaming’ than their counterparts (Greitemeyer & Mügge, 2014; Hale & Guan, 2015; Higuchi, Motohashi, Liu, & Maeda, 2005; Mak et al., 2014; Mei, Yau, Chai, Guo, & Potenza, 2016). The higher screen time that comes along with this smartphone game addiction disrupts normal sleep pattern, resulting in a pattern with less sleep overall, longer time to fall asleep, and more interruptions during sleep (Hale & Guan, 2015; Higuchi et al., 2005; Hysing et al., 2015).

## CONCLUSION

In conclusion, it is clear that gaming industry has caused significant changes in the way adolescent communicate and interact. To avoid or reduce gaming addiction, teachers and parents should create awareness and parents/ guardians at home should monitor the use of smartphone gaming, time spend on gaming and to think of the appropriate methods to usefulness of gaming. Gaming might be a displacement activity for individuals in an unhappy situation, rather than an

addiction. [4] Within India, it is seen that the number of households with smartphones and smartphone gaming has drastically increased since 5 years ago. Furthermore, the internet, smartphones and smartphone gaming usage is the most among children of age 13-14. It is seen that

80% of these adolescents are playing games without any supervision, which is a cause for concern as they may indulge in unhealthy monitoring of games. Since they spend so much time, one would think that they are completely aware of all its risks but the fact of the matter is that the adolescents do not realize the implications of their activities. It was seen that 79% of them post personal information and 33% interact with people that they haven't met in real life. (Saluja, Bansal and Saluja, 2012). Due to the continuous rise in gaming addiction adolescents are becoming increasingly vulnerable. They are not sensitized about the various risk factors of gaming addiction and hence end up becoming the victims of smartphone gaming addiction. It is also seen that adolescents are adopting to computer and now also introduced to personal smartphone much earlier, putting them at risk at a young age and hence they don't understand that some of the activities they indulge in are unsafe. There isn't sufficient awareness of smartphone gaming in school, and the parents aren't aware of how to handle their adolescent. Smartphone Gaming: Addiction and Monitoring

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# SUSPICIOUS ACTIVITY DETECTION USING CCTV

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## ABSTRACT

Suspicious Activities are activities like Fighting, gun point and activities which aren't normal like walking, talking, etc. The National Crime Victimization Survey (NCVS) has found that 23% of the, crimes happen in open spaces such as parking lots, colonies. Suspicious Activity Detection through CCTV is useful for the detection of suspicious activities at different places. Suspicious Activity Detection through CCTV is an advanced format of CCTV which allows us to detect the situations which are doubtful. This software will detect the activities on the premises and will let the organization know if there is any suspicious activity around the building or parks. This software will ease the work of the security guard who has to keep a watch on the screen regularly, which has multiple CCTVs, this could lead him to miss something suspicious. This system will lead to creating automated detection through Python and TensorFlow, which lead to exposure. This system will create a better surveillance system that will be beneficial to society. Currently, the surveillance system is complex and has few drawbacks.

**KEYWORDS:** *Machine Learning, Artificial Intelligence Object Detection, Image Processing, Neural Networks.*

## INTRODUCTION

The job of focusing on multiple security monitors can become tedious, and security guards can make errors and miss the important intervals due to imperative monitoring. To avoid this, we are building a system which can help to detect the suspicious activity and provide an alert to

the stakeholders. The project is developed to detect the suspicious activities through CCTVs. This will be implemented in the monitoring room and it will reduce the cost of the company to add additional security guards. This could be used by many organizations to detect the suspicious activities. For its implementation we are using the object detection algorithm.

**Digital image processing** is the practice of a digital computer to *process* digital images through an *algorithm*. Digital image processing is a very tedious job. It needs a high processing unit such as a computer to process the digital images. It permits a much wider variety of algorithms to be applied to the input data and can circumvent difficulties or problems such as the build-up of noise and distortion during processing. As a subdivision or field of digital signal processing, digital image processing has many advantages over analog image processing. Since images are defined over two dimensions (perhaps more) digital image processing may be exhibited in the form of multidimensional systems. The growth and development of digital image processing are largely affected by these three features: first, the development of computers; second, the development of mathematics (especially the creation and enhancement of discrete mathematics theory); third, the request for an extensive range of applications in environment, agriculture, military, industry and medical science has increased.

**Object detection** is a skill related to computer vision and digital image processing that deals with detecting objects or instances of semantic objects of a certain class (such as humans, buildings, or cars) in digital images and videos. Researched domains of object detection include pedestrian detection and face detection. Following are the applications of object detection. Some of them are in areas of computer vision, including video surveillance and image retrieval.

### OBJECTIVE

- To reduce monotonous job of identifying the suspicious activities by automated system.
- To reduce cost of human resource.
- To provide fast and better results response.

### PURPOSE

The purpose of this project is to create a surveillance system that detects suspicious activities in the organization or an open space. This will be used to deliver high quality security system to the organization. These days there have been many instances of shooting, or an attack. This system will help them to detect and contact the appropriate authorities regarding the suspicious activities. The detection will ease the work of the security guard as they can't monitor the system constantly. This software will provide accurate security solution through CCTVs. This will help to detect activities which are suspicious or normal.

The National Crime Victimization Survey (NCVS) has found that 23% of the, crimes happen in open spaces such as parking lots, colonies. Seeing the current situation in Mumbai and all over the world. CCTVs are being installed at every location to keep an eye on the roads and traffic. So, to ease the work for the policemen the system will help to make the process automated and reduce human efforts. Eventually the crime rate will also decrease and the common pattern of

suspicious activities can be detected easily.

## SURVEY OF THE TECHNOLOGY

### **Convolutional Neural Networks (CNN)**

Convolutional Neural Networks (CNN) is one of the variants of neural networks used heavily in the field of Computer Vision. It derives its name from the type of hidden layers it consists of. It was not used as it did not give the expected results. Assumption to the successive inputs was a necessary measure needed to be taken

### **Region Based Convolutional Neural Network (R-CNN)**

It basically divides the images into 2000 sub parts which are applied to CNN for each respective regions. Training time is much more than normally required as it is a regressive type of CNN as it uses multiple CNN on parts of the same image. The size of the regions is determined and the correct region is inserted into the artificial neural network.

### **Fast R-CNN**

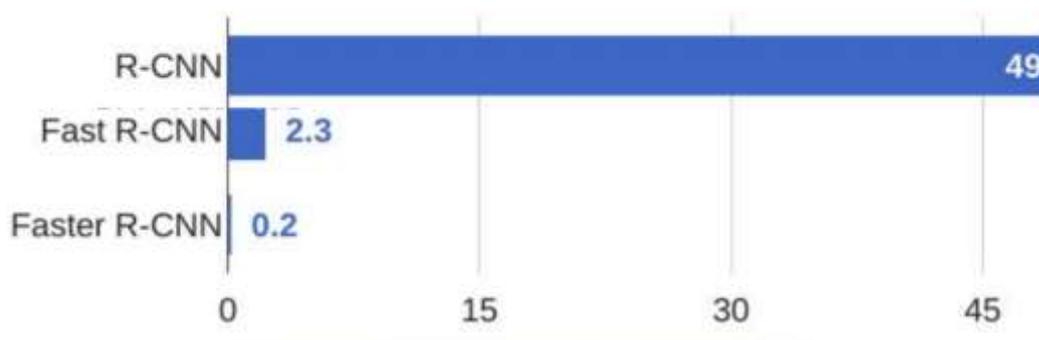
The difference of this method from R-CNN is that it does not first split into official zone recommendations, but first applies CNN and then allocates it to zone recommendations on the covn5 property map. It takes much less time to train than R-CNN. The regions in the R-CNN are detected by selective search algorithm followed by resizing so that the regions are of equal size before they are fed to a CNN for classification and bounding box regression.

### **YOLO – You Only Look Once**

YOLO is orders of magnitude faster(45 frames per second) than other object detection algorithms. The limitation of YOLO algorithm is that it struggles with small objects within the image, for example it might have difficulties in detecting a flock of birds. This is due to the spatial constraints of the algorithm. As YOLO did not meet the requirements, we had to look for other model. Evidently the model was not as efficient as per our detection needs.

### **Faster on R-CNN**

In this method, we first apply CNN to the image as in Fast R-CNN and create a feature map. From this point on, the change begins according to Fast R-CNN. We do not take part in the zone suggestions by creating a separate zone suggestion network, but with selective search. The remainder is almost similar to Fast R-CNN. Here, with the time we earn from the regional proposal, we reduce the forecast time to approximately 0.3 seconds.



### PROPOSED SYSTEM

#### CCTV:

Using the existing CCTV system, we are using the real time video and recognizing the activities.

#### Frame Extraction:

The live stream is captured by the CCTV and then broken into frames for easy processing of the video.

#### Background Subtraction:

The frame extraction, background subtraction eliminates the extra noise in the frame.

#### Algorithm:

We are using Machine Learning with Neural Network to detect the activities. The algorithm we are using is Faster RCNN with Inception V2. We are also using TensorFlow API for the Algorithm. We have used datasets from Kaggle for different type of activities for detection. We have then trained our model on these datasets. The dataset contains videos of various activities.

#### Detection:

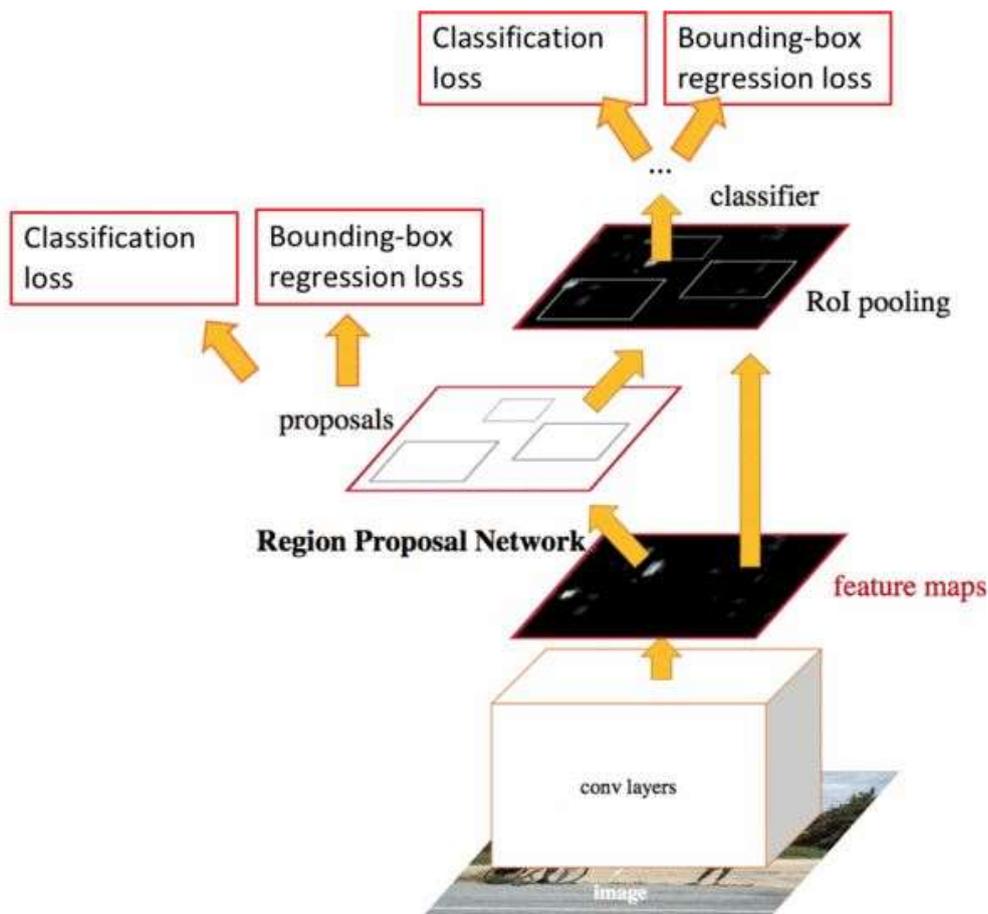
**Normal Activities:** Normal activities/actions are not going to be detected. As these activities are normal and do not indicate any abnormal behaviour. For example: Walking, animals, Cars, hugging, handshake, children playing.

**Suspicious Activities:** Suspicious activities/actions are recognized by the software. These activities are harmful and the dataset contains these activities. For example. Fighting, gun pointing, kicking, etc.



Alert:

The stakeholders will be notified if there are any activities that is suspicious. Stakeholders might take action accordingly.



Faster R-CNN has main networks as follows: region proposal network (RPN) for generating region proposals and a network using these proposals to detect objects. The main difference between Faster R-CNN and Fast R-CNN is that the Faster R-CNN uses selective search to generate region proposals.

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## CONCLUSION

This software will detect the activities in the premises and will let the organization know if there is any suspicious activity around the building or parks. This will ease the work of the security guard who has to keep a watch on the screen regularly which has multiple cctvs, this could lead him to miss something suspicious. This software will lead to assist the situation, if there is any activity detected suspicious or abnormal will be notified to the authorized person. This system will lead to create an automated detection through Python and TensorFlow which lead to detection. This will create a better surveillances system which will be beneficial to the society. Currently the surveillances system and is complex and has many drawbacks. This system will assist to make the place secure and better. This software will lead to assist the situation if there is any activity detected irregular or abnormal will notified to the authorized person. Further we can add facial recognition to even more tighten the security of the CCTV cameras and it can aid the police with even better solutions. This system will lead to creating automated detection through Python and TensorFlow, which lead to exposure. This system will create a better surveillance system that will be beneficial to society. Currently, the surveillance system is complex and has few drawbacks.

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# MALWARE ANALYSIS & SECURITY

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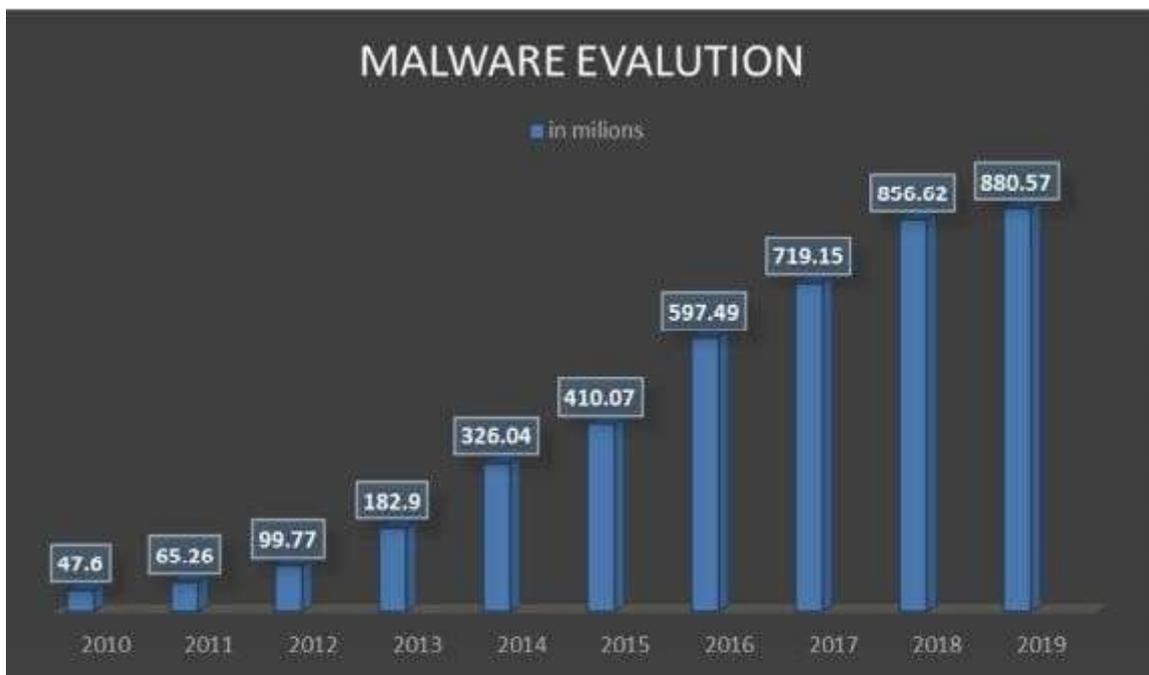
## ABSTRACT

Malware stands group of malicious software product with its main role to damages your system, network. Malware also harms and costs your organization as well personal assets. Malware has various types like virus, worms, Trojans ransom ware adware, spywares, and keyloggers. Malwares are entering in your systems through system vulnerabilities like network loopholes, software misconfigurations open Wi-Fi network, unauthorized application downloading. Malware performs various kinds of functions like stealing user's data, performing activities like deleting altering modifying user's sensitive data. Virus is most common type of malware which are occurred most of time. Malware can be an executable code, script, active content and unauthorized network. Study of functionality, behavior and origin of malwares is named as malware analysis. Malware analysis techniques exist are static, dynamic, and threat analysis. Keywords: Trojans, virus, malwares, spywares, worms, keyloggers

## INTRODUCTION

Malware is malicious code which propagates over connected systems in network. This scenario is increasing day by day with progressive computing technology and communication network. Malware can be considered as entity in which new features can be easily added to enhance its dark side effects in the form of various attacks. These malwares can be dangerous with all their side effects on infected machines like disabling malware detectors or AV Scanners which installed for the security purposes. According to statistics, 70-80% of the malwares and viruses comes from popular sites.

Number of malwares has grown rapidly. The rate of malware attacks and security solutions is not yet levelling. In fact, according to O'Farrell (2011) and Symantec Global Internet Security Threat Report Trends for 2010 (Symantec, 2010), attacks against Web browsers and malicious code variants installed by means of these attacks have increased. These paper will give you brief introduction abouts malwares and malware detection techniques. According to av-test it security institute the following stats represents last 10 year data related to increase number of malware count.



**Malwares and its types:**-Malware stands for malicious software, designed to injure a computer system without the user’s informed consent, following data represents the summary of malwares release between 2000 to 2010

Sr. no	Year	Malware type	Description
1	2000	ILOVEYOU	Spreading by way of an email sent with the seemingly benign subject line, "ILOVEYOU," the worm infected an estimated 50 million computers. Damages caused major corporations and government bodies, including portions of the Pentagon and British Parliament, to shut down their email servers. The worm spread globally and cost more than \$5.5 billion in damages.
2	2001	Anna Kournikova Virus	Emails spread this nasty virus that purported to contain pictures of the very attractive female tennis player, but in fact hid the malicious malware.
3	2003	SQL Slammer Worm	One of the fastest spreading worms of all time, SQL Slammer infected nearly 75,000 computers in ten minutes. The worm had a major global effect, slowing Internet traffic worldwide via denial of service.
4	2004	Cabir Virus	Although this virus caused little if any damage, it is noteworthy because it is widely acknowledged as the first mobile phone virus.
5	2005	Koobface Virus	One of the first instances of malware to infect PCs and then propagate to social networking sites. If you rearrange the letters in "Koobface" you get "Facebook." The virus also targeted other social networks like MySpace and Twitter.
6	2008	Conficker Worm	A combination of the words "configure" and "ficker", this sophisticated worm caused some of the worst damage seen since Slammer appeared in 2003.

**Viruses** –A virus is a malicious program which replicates itself into other applications, files or

even the boot sector. A virus then can do anything it is programmed to like stealing information, log keystrokes or even render a computer useless. The defining characteristic of a virus lies in the self- replication and insertion of malicious code into other programs without user consent. Just like most other malware a virus is designed for seeking profit

**Worms** - Worms are aptly named for their ability to "crawl" through networks. Worms replicate themselves however don't implant themselves in alternative programs as a virulent disease tends to try to. Worms move on a network affiliation seeking vulnerable machines to infect. For example, in 1988, the "Morris Worm" became thus widespread that it managed to slow the whole web.

**Trojans** - Trojan horses square measure usually unfold by some variety of social engineering, for instance, where a user is duped into executing an e-mail attachment disguised to be unsuspecting, (e.g., a routine type to be crammed in), or by drive-by transfer. Although their payload are some things, several fashionable forms act as a backdoor, contacting a controller which can then have unauthorized access to the affected computer. While Trojan horses and backdoors don't seem to be simply detectable by themselves, computers could seem to run slower thanks to significant processor or network usage. Unlike pc viruses and worms, Trojan horses usually don't decide to inject themselves into alternative files or otherwise propagate themselves.

**Spyware** - Spyware's aims to monitor what you are doing on your computer, on or off the internet, and send that information to a third party without your knowledge. In some cases data harvesting is used solely for marketing purposes to get more profit . In other cases, the intent is more sinister. A larceny would possibly occur once associate cheat, posing as a client, directs a CPA to send a payment to an illegitimate recipient.

**Screen-locking ransom ware** - Lock-screens, or screen lockers is a type of "cyber police" ransom ware that blocks screens on Windows or Android devices with a false accusation in harvesting illegal content, attempting to scare the victims into paying up a fee. Jisut and SLocker impact Android devices more than other lockscreens, with Jisut making up nearly 60 percent of all Android ransom ware detections.

**Rootkits** - Once malicious software is installed on a system, it is essential that it stays concealed, to avoid detection. Software packages called rootkits enable this concealment, by modifying the host's operating system so that the malware is hidden from the user. Rootkits will stop a harmful method from being visible within the system's list of processes, or keep its files from being browse. Some types of harmful software contain routines to evade identification and/or removal tries, not simply to cover themselves.

**Backdoors** – A backdoor is a method of bypassing normal authentication procedures, usually over a connection to a network such as the Internet. Once a system has been compromised, one

or additional backdoors is also put in so as to permit access within the future, invisibly to the user. The idea has typically been advised that pc makers preinstall backdoors on their systems to supply technical support for patrons, but this has never been reliably verified. Backdoors is also put in by Trojan horses, worms, implants, or alternative ways.

How to secure system from malware attack:-following are guidelines for securing your computer from malware attack :

- Upgrade your operating system and software' to latest version
- Be careful with unauthorized links and files email attachments
- Run antivirus software and scan regularly
- Backup your computers data
- Use strong and encrypted password
- Minimize downloads
- Use pop up add blocker
- Secure your network
- Think before clicking on any unauthorized link while surfing on browser
- Don't use open Wi-Fi network because it also contains malwares

### **MALWARE DETECTION TECHNIQUES**

Static analysis detection technique - it's the procedure of analyzing software system while not execution it. During static analysis [Bergeron, J. et al] the application is break down by using reverse engineering tools and techniques, so as to re-build the source code and algorithm that the application has created. Static analysis are often done through program instrument, computer program and disassemble. Various static analysis techniques are as follows:

Signature based detection technique - This technique is also known as pattern matching or string or mask or fingerprinting technique. A signature could be a little bit of sequence injected within the computer programmed by malware writers, that unambiguously identifies a specific malware. To discover a malware within the code, the malware detector hunt for a antecedent such as signature within the code.

Heuristic detection technique - This technique is also known as proactive technique This technique is similar to signature based technique, with a difference that instead of searching for a particular signature within the code, the malware detector currently searches for the commands or directions that aren't gift within the computer programmed. The result's that, here it becomes simple to discover new variants of malware that had not nonetheless been discovered.

### **MALWARE ANALYSIS TOOLS**

- Malware-Analyzer – Malware Analysis Tool
- Reverse-Engineering Malware Analysis Tool
- FireEye Malware Analysis Tool
- nyxbone android malware analysis tools

- REMnux Malware Analysis Tool
- Dependency Walker Malware Analysis Tool
- Sandbox Automated Malware Analysis
- netcat dynamic malware analysis tool

### **CONCLUSION**

From above paper We have learnt Malware basics, malware analysis and techniques of analyzing malware. We have learnt limitations of static malware analysis. After the discussion between static and Dynamic malware analysis, Dynamic malware analysis is the best way to analyze malware samples. In this we have gone through some tools for malware analysis. We also see current trends in malwares and malware activities and de-obfuscating malware.

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# REVIEW STUDY ON BUSINESS INTELLIGENCE

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## ABSTRACT

Business Intelligence delivers an upscale set of advantages that drive significant and tangible return on investment. It enables users to make informed business decisions quickly and confidently by providing the query and reporting tools they need to find, share, manage, publish and analyze information. The goal of Business Intelligence is to enable management to form more intelligent decisions on the idea of data extracted from data. Does this mean that having data is usually good, that having more data and extracting more Knowledge from it's better, which knowledge are often derived only from data? Hence, during this context the approach to be used while building and implementing the BI involves two major stages that are of interactive nature, i.e. BI creation and BI "consumption". A large a part of the article is dedicated to presenting Objectives and tasks that are realized while building and implementing BI.

## HISTORY

A variety of tools often also stated by the term business intelligence often which deliver fast, easy-to-digest access to insights about an organization's current state, supported available data. Reporting may be a central facet of business intelligence and therefore the dashboard is probably the archetypical BI tool. Dashboards are hosted software applications that automatically gather available data into charts and graphs that provides a sense of the immediate state of the corporate. Although business intelligence doesn't tell business users what to undertake to to or what's getting to happen if they take a specific course, neither is BI solely about generating reports. Rather, BI offers how for people to seem at data to understand trends and derive insights by streamlining the difficulty needed to seem for, merge and query the data necessary to make sound business decisions.

## BUSINESS INTELLIGENCE STRATEGY

In the past, IT professionals had been the first users of BI applications. However, BI tools have

evolved to be more intuitive and user-friendly, enabling an outsized number of users across a spread of organizational domains to tap the tools. Gartner's Howson differentiates two types of BI. The first is traditional or classic BI, where IT professionals use in-house transactional data to get reports. The second is modern BI, where business users interact with agile, intuitive systems to research data more quickly. Classic BI surely sorts of reporting, like regulatory or financial reports generally chosen by organizations, where accuracy is paramount and therefore the questions and data sets used are standard and predictable is explained by Howson. Business users need insight into quickly changing dynamics, like marketing events, during which being fast is valued over getting the info 100 percent right typically used by organizations.

### **SOFTWARE AND SYSTEMS**

A variety of various sorts of tools fall into the business intelligence umbrella. The software selection service Select Hub breaks down some of the most important categories and features:

- Dashboards
- Visualizations
- Reporting
- Data mining
- ETL —tools that import data from one data store into another
- OLAP (online analytical processing)

Of these tools, Select Hub says the dashboards and visualization are by far the most popular; they offer the quick and easy-to-digest data summaries that are at the heart of BI's value proposition.

### **ETHICS AND BUSINESS INTELLIGENCE**

The adoption of business intelligence methodologies, data mining methods and decision support systems raises some ethical problems that should not be overlooked. Indeed, the progress toward the knowledge and knowledge society exposes countless opportunities, but can also generate distortions and risks which should be prevented and avoided by using adequate control rules and mechanisms. Usage of knowledge by public and personal organizations that's improper and doesn't respect the individuals' right to privacy shouldn't be tolerated. More generally, we must guard against the excessive growth of the political and economic power of enterprises allowing the transformation processes outlined above to exclusively and unilaterally benefit such enterprises themselves, at the expense of consumers, workers and inhabitants of the world ecosystem. However, even failing specific regulations that would prevent the abuse of data gathering and invasive investigations, the ethical principle of respect for the personal rights of the individuals abide the business intelligence analysts and decision makers. The risk of overstepping the boundary between correct and intrusive use of data is especially high within the relational marketing and web mining fields.

For example, albeit disguised under apparently inoffensive names like 'data enrichment',

private information on individuals and households does circulate, but that doesn't mean that it's ethical for decision makers and enterprises to use it. Respect for the proper to privacy isn't the sole ethical issue concerning the utilization of business intelligence systems. There has been much discussion in recent years of the social responsibilities of enterprises, resulting in the introduction of the new concept of stakeholders. This term refers to anyone with any interest within the activities of a given enterprise, like investors, employees, labor unions and civil society as an entire . There is a diversity of opinion on whether a company should pursue the short-term maximization of profits, acting exclusively in the interest of shareholders, or should instead adopt an approach that takes under consideration the social consequences of its decisions.

**Effectiveness:** Effectiveness measurements express the extent of conformity of a given system to the objectives that it had been designed. The associated performance indicators are therefore linked to the system output flows, like production volumes, weekly sales and yield per share.

**Efficiency:** Efficiency measurements highlight the connection between input flows employed by the system and therefore the corresponding output flows. Efficiency measurements are therefore related to the standard of the transformation process. For example, they could express the quantity of resources needed to realize a given sales volume. Generally speaking, effectiveness metrics indicate whether the right action is being administered or not, while efficiency metrics show whether the action is being administered within the simplest possible way or not.

**Flexibility:** Some clustering methods can be applied to numerical attributes only, for which it is possible to use the Euclidean metrics to calculate the distances between observations. However, a flexible clustering algorithm should also be able to analyse datasets containing categorical attributes. Algorithms supported the Euclidean metrics tend to get spherical clusters and have difficulty in identifying more complex geometrical forms.

**Robustness:** The robustness of an algorithm manifests itself through the stability of the clusters generated with respect to small changes in the values of the attributes of each observation. This property ensures that the given clustering method is basically unaffected by the noise possibly existing in the data. Moreover, the clusters generated must be stable with reference to the order of appearance of the observations within the dataset.

## **BUSINESS INTELLIGENCE ANALYST**

Any company that's serious about BI will got to have business intelligence analysts on staff. If your company relies on self-service BI tools on a day-to-day basis, business intelligence analysts have a crucial role to play, as they're necessary for managing and maintaining those tools and their vendors. They also found out and standardize the reports that managers are getting to be generating to form sure that results are consistent and meaningful across your organization. Business intelligence analysts got to confirm the info going into the system is

correct and consistent, which frequently involves getting it out of other data stores and cleaning it up. Business analyst jobs often require only a baccalaureate , a minimum of at the entry level, though to advance up the ranks an MBA could also be helpful or maybe required.

### **CONCLUSION**

Business Intelligence software connects people with data when and where they have it, and provides capabilities far beyond spreadsheets to deliver a real picture of the business. For small and mid-size firms, finding a Business Intelligence strategy that matches their resources, expertise and budgets are often particularly challenging. Organizations regularly start small with Business Intelligence implementations by creating periodic reports or being reactive to enterprise events. That reporting is often based on historical data. However, moving past that's a true possibility. Over time, organizations can move to using data to form predictive decisions. Big Data, mobile computing, internal data stores, and therefore the cloud combine to make an environment during which “the sky is that the limit” when it involves using data to understand customers' perceptions also because the general state of the business. Creating useful BI may be a moving target that has got to adapt as available data and organizational needs change.

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# CYBER-PRIVACY & SECURITY

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## ABSTRACT

As additional business activities are being machine-driven associated, an increasing variety of computers are getting used to store sensitive data, the requirement for secure laptop systems becomes additional apparent. This want is even additional apparent as systems associated degrees applications are being distributed and accessed via an insecure network, like the web. The web itself has become important for governments, companies, money establishments, and legion everyday users. Networks of computers support a large number of activities whose loss would just about cripple these organizations. As a consequence, cyber security problems became national security problems. Protective the web may be a tough task. Cyber security are often obtained solely through systematic development; it cannot be achieved through haphazard seat-of-the-pants strategies. Applying package engineering techniques to the matter may be a step within the right direction. However, package engineers ought to bear in mind of the risks and security problems related to the planning, development, and readying of network-based package. This paper introduces some renowned threats to cyber security, categorizes the threats, and analyzes protection mechanisms and techniques for countering the threats. Approaches to forestall, detect, and answer cyber-attacks also are mentioned.

**KEYWORDS:** *Cyber, cybercrime, cyber security, crime, security, network, hacking, steal knowledge, information security, network security, operational security, communicatory security, application security.*

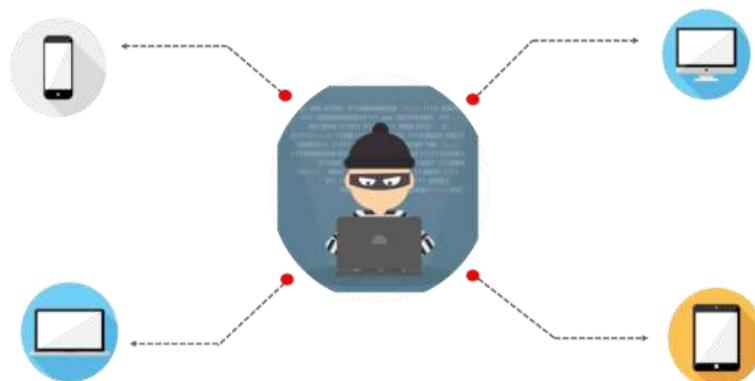
## INTRODUCTION

Cybercrime could be an international downside that's been dominating the news cycle. It poses a threat to individual security and an excellent larger threat to massive international corporations, banks, and governments. Today's organized cybercrimes so much out shadow lone hackers of the past currently massive gang dom rings perform like start-ups and infrequently use highly-trained developers UN agency square measure perpetually innovating on-line attacks. With most information to take advantage of out there, Cyber security has become essential. Hence, I made a decision to put in writing up this diary on "What is Cyber security?" Before we start, let American state simply list out the topics I'll be covering through the course

of this diary:

- Why we want cyber-security?
- Types of cyber-attacks.
- What is cyber-security?
- The independent agency Triad.
- How is cyber security implemented?

Cyber-privacy is that the thanks to defend the private pc (P.C) from thievery or from scam that causes the dangerous impact on our personal info like we tend to do on-line searching from any web site that isn't noted or famed and in person they message USA that ninetieth off on all product click on this link this kind of messages we must always avoid it if you visit it that link they're going to get an all info concerning yourself like wherever does one keep what square measure you doing Etc.



It is truly aforesaid that today's generation lives on the net, and that we general users are nearly ignorant on however those random bits of 1's and 0's reach firmly to our pc. For a hacker, it's a golden age. With such a lot of access points, public IP's and constant traffic and plenty of knowledge to take advantage of, black hat hackers are having one hell of a time exploiting vulnerabilities and making malicious code for constant. Above that, cyber-attacks are evolving by the day. Hackers are getting smarter and additional inventive with their malware and the way they bypass virus scans and firewalls still baffles many of us. Therefore there needs to be some style of protocol that protects United States of America against of these cyber-attacks and certify our knowledge doesn't comprise the incorrect hands. This can be specifically why we want cyber security. Let's see a number of the foremost common cyber-attacks that have infested United States of America as a community since the start of the net.

## TYPES OF CYBER ATTACKS



## WHAT IS CYBER SECURITY?

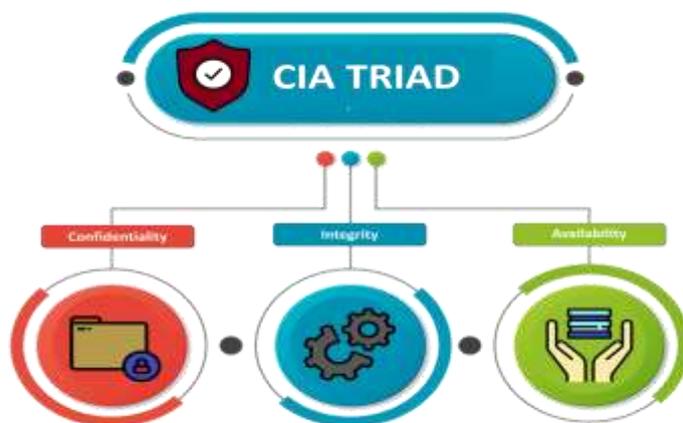
Cyber security refers to a group of techniques used to shield the integrity of networks, programs and knowledge from attack, injury or unauthorized access. From a computing perspective, security contains cyber security and physical security — each area unit utilized by enterprises to shield against unauthorized access to knowledge centers and alternative processed systems. Data security, that is meant to keep up the confidentiality, integrity, and handiness of knowledge, may be a set of cyber security. The utilization of cyber security will facilitate stop cyber-attacks, knowledge breaches, and fraud and may aid in risk management. So once talking concerning cyber security, one would possibly surprise “What area unit we tend to make an attempt to shield ourselves against?” Well, there are a unit 3 main aspects we tend to be attempting to manage, name:

- Unauthorized Modification
- Unauthorized Access
- Unauthorized Deletion

These 3 terms are synonymous with the terribly normally glorious United States intelligence agency triad that stands for Confidentiality, Integrity, and availableness. The United States intelligence agency triad is additionally normally said because the 3 pillars of security and most of the safety policies of a company are designed on these 3 principles.

### THE CIA TRIAD:-

The CIA triad that stands for Confidentiality, Integrity, and availableness could be a style model to guide corporations and organizations to make their security policies. It’s additionally referred to as the AIC triad to avoid confusion with Central Intelligence Agency (CIA). The elements of the triad square measure thought of to be the foremost necessary and basic elements of security. Therefore let Maine temporary you all regarding the 3 elements.



**Confidentiality**

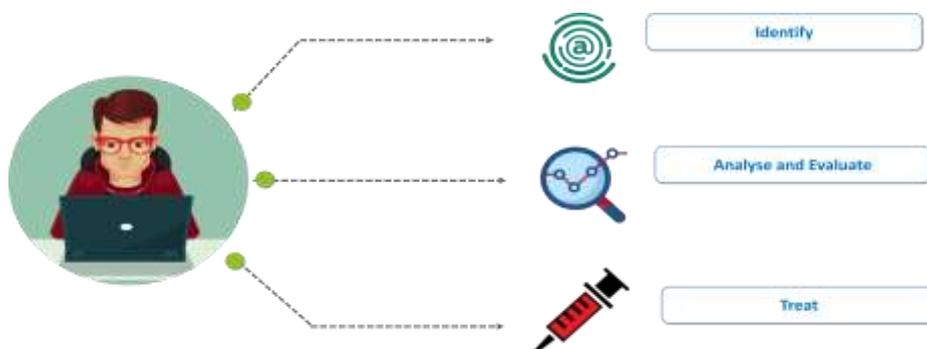
Confidentiality is that the protection of non-public info. Confidentiality means that keeping a shopper’s info between you and also the client, and not telling others together with co-workers, friends, family, etc.

**Integrity**

Integrity, refers to ways of creating certain that information is real, correct and safeguarded from unauthorized user modification.

**HOW IS CYBER SECURITY IMPLEMENTED?**

There are various procedures for truly implementing cyber security, however there 3 main steps once truly fixing a security-related issue. The first step is to acknowledge the matter that's inflicting the safety issue, as an example, we've got to acknowledge whether or not there's a denial of service attack or a person within the middle attack. Succeeding step is to judge and analyze the matter. We’ve got to form positive we have a tendency to isolate all the info and knowledge which will are compromised within the attack. Finally, when evaluating and analyzing the matter, the last step is to develop a patch that truly solves the matter and brings back the organization to a running state.



When distinctive, analyzing and treating a cyber-attack, there are 3 principals that are unbroken in mind for numerous calculations. They are:-

- Vulnerability
- Threat
- Risk



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## CONCLUSION

In a company, to accomplish a good Cyber Security approach, the peoples, processes, computers, networks and technology of a company either huge or tiny ought to be equally accountable. If all element can complement one another then, it's a great deal doable to face against the robust cyber threat and attacks. The objective of the analysis was to spot the constituents of the cyber security mandate for the Indian Power Sector. The framework analysis of the in-depth interview with specialists within the power sector known the key challenges within the Indian Power Sector and helped establish the variables that are relevant to the Indian context. The valid variables were the inputs to the five purpose Likert sort scale for information gathering that was administered to the respondents. The qualitative analysis of the info, mistreatment exploratory correlational analysis narrowed down the six factors that might enhance cyber security within the Indian Power Sector If you're curious to find out a lot of, then check up on this complete cyber security course.

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# REVIEW AND STUDY OF GI-FI TECHNOLOGY

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## ABSTRACT

Today advancement is highly subordinate upon Electronic and Communication system. In this electronic world, different techniques are used for data transportation and communications many decay ago cables are used for data transmission. But there are lots of complications in the installation of cables Networks and no of difficulties, so we need to find an alternative to the cable network. Nowaday's wireless technology is the most advanced technology used for data transmission and communications overcome the drawbacks related old techniques, but still man the continues search for the better. For rapid transformation, Wi-Fi is used and next to that Gi-Fi technology is generated in wireless technology that enhance our own surrounding, either work or private, by means of networking or a variety of own and wearable devices within the space and with the outside world. For transferring large files audio as well as video with high speed within seconds. Gi-Fi played the main role with small size, less cost, and high security.

**KEYWORDS:** *Gi-fi, Wi-Fi., Technology.*

## INTRODUCTION

In Wi-Fi and Wi-max technology recently no improvement in faster bit rate. Newly introduced technique Gi-Fi offers some other advantages over a Wi-Fi or similar wireless technology as less power consumption, low cost for short range transmission etc.

Gi-Fi is nothing but gigabit wireless. This technology is ten times faster than the other technology. This is the world's first transceiver integrated single chip with using a small antenna designed on the Complementary Metal Oxide Semiconductor (CMOS) which operates on at 60GHz. For the PAN (personal area networking) Gi-Fi has the best solution.

The HD data also transfers within seconds. Chip of Gi-Fi in Melbourne University, Scientists

suggest that in wireless technology high-speed short-range data transfers with a speed of up to 5Gbps within a radius of 10 meters named as Gi-Fi and works on the 60GHz frequency band, which is currently unused. This chip is established by Australian researcher's measures 5mm square and using existing complementary metal-oxide-semiconductor (CMOS) technology.

This technology works within ranges from the 57-64GHz unlicensed frequency band, which is the millimeter-wave range of the spectrum makes possible nothing but high component on-chip integration but allowing for the integration of very small high gain arrays by NICTA researcher. Professor skafids said, within a range of the 10 meters available 7GHz of spectrum results in high data rates, up to 5 gigabits per second to users with a low cost. This new gigabit wireless system provides Multi-gigabit wireless technology. Using this new wireless technology will convert the home entertainments industry like videos or household gadgets talk to each other.



### **Evaluation of Gi-Fi**

#### Wired technology

In this conversation wire is used for data transfer. For example telephone networks, internet access or fiber-optic communication.

#### Wireless technology

In wireless technology, we do not use the cable for transfer of data instead of that we use distinct signals such as Bluetooth, Wi-Fi etc.

### **Working principle of Gi-Fi**

For both transmission and receiver side, Time division duplex is used. By using two mixers data files are up converted from IF range to RF 60GHz, and these waves feed to the power amplifier, to the millimeter wave antenna. After that to get the normal data ranges, the incoming RF signal is first down converted to an IF signal centered at 5GHz.

To avoid leakage due to direct conversion and due to the availability of 7GHz spectrum the total data will be transferred within seconds and for that heterodyne construction is used. To separate outward and return signals time-division multiplexing uses Time Division Duplex (TDD) application. It holds on full duplex communication over a half-duplex communication link. As uplink traffic grows, more channel capacity can dynamically be assigned to that, and as it decreases it can be taken away.

Time division duplex (TDD) nothing but the duplex communication links where the uplink and downlink both are separated by the portion of different time slots in the similar frequency band. It is a transmission plan that allows unbalanced flow for uplink as well as downlink data transfer. For uplink and downlink transmission, Users are allocated time slots.

This method is extremely advantageous in case there is an asymmetry of uplink and downlink data rates. TDD divides a data stream into frames and allocates different time slots to forward and reverse transmissions, thereby allowing both types of transmissions to share the similar transmission medium. Why 60 GHz The new unlicensed band 57-64 GHz defined by FCC 47 CFR 15.255 in this band; mm-Wave will work at 60 GHz.



#### Video Transformation

In Offices there are many small as well as large files transferring one to other person or everyone. By using GiFi technology this work made very easy and also provides high quality information from the internet.

#### Inter vehicle Communication

In vehicle to vehicle short distance spontaneously created So exchange the data between vehicles is made possible in ad hoc network so without any help of the infrastructure they can organize themselves.

### In Sport Stadium Broadcasting Video Transmission

In sport stadium to distribute about the information or any advisements this is the easy and immediate construction of temporal broadband network.

### Household Applications

Customer could frequently download a high definition movie within a second to music player or smart devices and having got home could play it on a home theatre system or store it on a home server for approaching viewing, again within a few seconds. High speed internet access, cascade content download, real time cascade and unwired data bus for cable replacement.

### Alternative to wired technology

This is the main advantage because in wired technology for the faster bit rate and transmission optical fibers played dominant role but the in installation caused the greater difficulty, so that wireless technology is beneficial but in this also Wi-Fi, Bluetooth gives less speed than the Gi-Fi.

### Privacy and security

About 70 per cent of firms have deployed their WLAN in a secure firewall zone but are still using the old WEP protocol, which does not keep safe the application layer effectively, so better encode is urgently needed. Secure encode technology in Gi-Fi assure privacy and security of content.

### Simplicity

By using the Gi-Fi technology, it discard the wire connection and cables that justifies complexity for connecting, Gi-Fi gives simple connection, explicit the consumer experience. Also it is highly portable and can be constructed everywhere.

Inexpensive, Small size

The Gi-Fi integrated trance-receiver chip which is developed at the national ICT research center, Australia, this chip is very tiny 5 mm per side and 1mm antenna also uses the 60 Ghz \_millimeter wave spectrum'. Gi-Fi technology is cost effective because this technology is based on open, international standard. Mass follow and maintainance of the standard, and the use of low-cost, mass-produced chipsets, will drive minimum costs.

### Portable

The chip of Gi-Fi is very tiny, its cost is less which has embedded in cell phones and other devices. So that this very portable rapid than other technology Data transmission rate of Gi-Fi is 5 gigabit per second which is superior than other technologies. Gi-Fi provides multigigabit unwired technology that is 100 times faster than current short range wireless technology such as Bluetooth, Wi-Fi.

## CONCLUSION

Gi-Fi is the efficient technology than the other wireless technology like Wi-Fi, Wi-max in terms

of speed for transferring the videos within a second, less power consumption, low cost, highly portable, small size and simplicity.

For that within few years we expect that Gi-Fi to be a dominant technology. If there is usage of Wi-Fi and Wi-max, Gi-Fi potentially brings wireless broadband to the enterprise in an entirely new way.

Gi-Fi technology has to a great extent number of application can be used in many places and devices such as wireless PAN network media access control, smart phones and mm-wave video signals transmission system.

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# ARTIFICIAL INTELLIGENCE IN DAILY LIFE

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## ABSTRACT

Artificial intelligence (AI) is a technology to make machines intelligent. Artificial intelligence's primary goal is to improve computer behaviour so that it can be called intelligent. AI is about creating systems which perceive their surroundings, learn from them, and showcase deciding and problem solving skills to accomplish tasks. Just as humans do, AI-based applications sense, reason, act, learn and adapt as shown within the figure below. Many important technical concepts have arisen from A.I. that unify these diverse problem areas which form the inspiration of the science. Generally, A.I. systems function based on a Knowledge Base of facts and rules that characterize the system's domain of proficiency. The elements of a knowledge domain contains independently valid (or a minimum of plausible) chunks of data. The system must automatically organize and utilize this information to unravel the precise problems that it encounters. This organization process are often generally characterized as an enquiry directed toward specific goals. The search is made complex because of the need to determine the relevance of information and because of the frequent occurrence of uncertain and ambiguous data. Heuristics provide the A.I.

**KEYWORDS:** *Artificial intelligence, Perception, Manipulation, Reasoning, Communication, and Learning.*

## INTRODUCTION

Artificial intelligence can dramatically improve the efficiencies of our workplaces and can argument work human do. AI is changing the way of business with technology. They can easily act as assistants and may recommend or direct various actions.

Instead of conducting an issue and answer with a tool on the countertop, we'll be ready to converse naturally with our virtual assistant that's fully embedded in our physical

environment. It will seamlessly and automatically help us budget and but different life events, so we will spend longer enjoying life's moments. Google Duplex, the technology supporting Google Assistant, which places phone calls using a natural-sounding human voice instead of a robotic one, is an early attempt to address such challenges in human communications. But these are just initial whispers in voice Artificial Intelligence's long journey.

Beyond making reservations and conducting simple dialogues, virtual assistants will got to become much more useful and further integrated into the material of our everyday lives. Not only will they have to anticipate what we'd like before we ask, they also got to understand the context of our conversations and react accordingly.

**Let us check out some scenarios where Technology can play an enormous part in our lives:**

Let's start with a device that you use every day, your Smartphone. At this point, it is safe to assume that you and everyone in your inner circle have a Smartphone. And, whether you know it or not, you're interacting with AI a day. From the apps, you download to your phone's own integrated software, each of those tools has some layer of AI weaved into its functionality.

Built-in smart assistants like Google Assistant, Alexa, Siri, or Bixby use AI to know you and to finish your recommended tasks. Some of the applications that you use like Spottily, Netflix, or Apple Music utilize weak AI to perfect your listening experience, even recommending the perfect song. Even when you use your beloved portrait mode to capture the perfect photo on your single-lens iPhone XR for Instagram, you are using AI to create that effect. More exciting features like mixed reality are all also feasible due to AI. You probably punch in a couple of hours of gaming a day. Interestingly, AI isn't only making games more exciting, but it's also allowing the method of making games to be much easier and open for creators. Google and Nvidia are performing on amazing developer tools solely driven by powerful AI.

There are so various amazing ways AI and machine learning are used behind the scenes to impact our everyday lives

This technology can help to keep people safe in hospitals. Patients recovering from operation are limited to what proportion they ought to exert themselves. When someone exceeds the prescribed level of activity, a nurse is alerted, the location of the closest wheelchair is identified so that the nurse can quickly get the patient shifted and keep safe.

This technology is helpful in an environment like a construction site where specialized tools needed by people are spread out, sometimes across multiple floors. Using cameras already in siri, this technology can identify a selected tool also because the closest authorized one that can deliver it saving everyone's time and keeping the workflow moving. With AI the digital and physical worlds have close to form everyone more safe, secure, and productive.

When using Smartphone, we start interacting with Artificial Intelligence from the obvious features such as the built-in smart assistants (Alexa, Siri) to not so obvious ones such as the portrait mode (Google Pixel 2) in the camera.

Whenever we use Google or Apple Maps for navigating or calling an Uber or booking a flight ticket, we are using AI. AI is behind many of Google's products and is a big priority for the company.

### **Impacts of Artificial Intelligence in everyday life**

When we mention AI, it's easy to imagine some dystopian fantasy future where robots have appropriated the planet and enslaved us. But AI is really how to enable people to accomplish more by collaborating with smart software. Artificial intelligence algorithms are powered by data. With better monitoring and diagnostic capabilities, AI can dramatically influence healthcare. AI can reduce operating costs and save money. AI would have a coffee error rate compared to humans, if coded properly. They would have incredible precision, accuracy, and speed. AI technology may be a crucial lynchpin of much of the digital transformation happening today as organizations position themselves to maximize the ever-growing amount of knowledge being generated and collected. Research and development work in AI is split between two branches. One is labelled "applied AI" which uses these principles of simulating human thought to hold out one specific task. The other is understood as "generalized AI" – which seeks to develop machine intelligences which will turn their hands to any task, very similar to an individual.

### **CONCLUSION**

AI powers many programs and services that help us do everyday things like connecting with friends, using an email program, or using a ride-share service. If you've got reservations about the utilization of AI, it's going to be comforting to understand that the majority folks are using AI on a day to day for several years. Artificial intelligence will change civil engineering and every field drastically the designing technique and method that we. Know today will no longer be in used in few decades AI technology will change with each passing day. AI can help in experience user solve engineering problems can also help experience user to improve the work efficiency and in term through AI technology to share the experience of each member. AI in current state is definitely an efficient tool in the software industry new way of thinking coding and provides logic for log of engineering problems. It has shaped understanding of human reasoning and of the nature of intelligence in general.

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# A STUDY ON MOBILE APPLICATION DEVELOPMENT

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## ABSTRACT

Gone are the days when the cell phone needed to ring to catch our consideration or the PC was the main gadget individuals utilized. The portable application field has been increasing at a colossal rate with the intense increment in the quantity of versatile applications in different cell phones and tablets. Portable applications are fundamental as they give functionalities that can server helpful purposes, for example, finding an area or booking film tickets on the web. In the present quick paced world, portable promoting is getting exceptionally serious.

*Keywords*— Mobile Phone, Mobile Application development, Mobile apps.

## INTRODUCTION

Application development is the process of designing, building, and implementing software applications. It can be done by massive organizations with large teams working on projects, or by a single freelance developer. Application development defines the process of how the application is made, and generally follows a standard methodology. There are lots of factors that go into how application development is done. You must consider the size of the project, how specific the requirements are, how much the customer will want to change things, how large the development team is, how experienced the development team is, and the deadline for the project. Some of the most common problems new programmers face to learn how you can gain perspective and fix your own issues:

1 – Not Understanding the User: In software development, user centricity isn't an option — it's a priority. Of course, to make any software user centric, you have to know what users want.

2 – Debugging: After working for days to perfect a program, you go home satisfied that it will work like it's supposed to. When you come in the next day, your colleague from quality assurance (QA) gives you a long list of bugs to work through. The "Cancel" button on the web form isn't clickable, the grammar on the error messages isn't right, and the software has other

errors that are causing hitches in the user experience.

3 – Keeping up with Technology: As technology continues to grow and expand, programmers need to keep up. Frameworks, tools, and libraries become out-dated pretty quickly. For example, front-end frameworks usually last for a year or two before new, updated versions come along.

A widely cited study for the National Institute of Standards & Technology (NIST) reports that inadequate testing methods and tools annually cost the U.S. economy between \$22.2 and \$59.5 billion, with roughly half of these costs borne by software developers in the form of extra testing and half by software users in the form of failure avoidance and mitigation efforts. The same study notes that between 25 and 90 per cent of software development budgets are often spent on testing. This posting, the first in a two-part series, highlights results of an analysis that documents problems that commonly occur during testing. Specifically, this series of posts identifies and describes 77 testing problems organized into 14 categories, lists potential symptoms by which each can be recognized, potential negative consequences, potential causes, and makes recommendations for preventing them or mitigating their effects.(Donald Firesmith-Article)

## OBJECTIVES

The world of mobile applications is vast as it provides faster access to content and interactions with customers smoothly. It helps business to grow by establishing a connection with every interested people. However, you must be clear about your objectives before deciding to build a mobile app for your business. We bring to you a few business objectives by which you can harness the power of mobile apps:

1. A mobile application provides a platform to companies by which they can get engaged with their customers in real-time.
2. By developing a mobile app, you can give your customers simpler and more efficient platform to use your products or services.
3. You can increase your business by promoting it by offering coupons.
4. Through a mobile app, a customer can order any of your product or service.

## METHODOLOGY

Waterfall: The key words for the waterfall method of application development are planning and sequence. The entire project is mapped out in the planning and analysis stages. The customer comes with a very explicit list of features and functionalities for the application. Then, a project manager takes the whole process and maps it out amongst the team.

This application development method is called waterfall because once you go down, you can't go back up; everything flows downward. The development team works together over a set of time, building exactly what is lined out according to the specifications. After the architecture is designed, then only can the construction begin. The entire application is built, and then it is all

tested to make sure that it is working properly. Then, it is shown to the customer and ready to be implemented.

The waterfall method assumes that the project requirements are clear and the customer and project manager have a unified and clear vision about the end result.

The advantage of the waterfall method is that it is very meticulous. It's also a good application development method to use for big projects that need to have one unifying vision. The waterfall method is also a good way to train junior programmers on parts of development without having to turn an entire project to them.

The disadvantages are that changes happen all the time. Even if the development team is able to build exactly what the customer originally wanted (which doesn't always happen), the market, technology, or the organization may have changed so much that it is effectively useless and a waste of time.

Rapid Application Development (RAD): As you might imagine, the waterfall method of application development presented some big problems. The development process often took a long time to see a working product, teams had to be large to accommodate all the requirements, and tensions ran high when a customer is unhappy with the end product and the whole project has to start over from the beginning. So, a new method emerged called rapid application development (RAD). In many ways, RAD was the opposite of the waterfall method. RAD is based mostly on prototypes, meaning that the goal is to produce a working version of the application as quickly as possible, and then to continuously iterate after that. The application development team and the customer work very closely with each other throughout the process. RAD teams are usually small and only involve experienced developers who are skilled in many disciplines. If a project needs to divert from the original plan, RAD should be able to accommodate that easily.

In the RAD model, as each iteration is completed, the product gets more and more refined. The early prototypes are often very rough, but give a picture of what can be. Each iteration then looks more like the finished product. RAD's advantages are a quick and highly flexible team and a very close relationship with the customer. If changes are expected, RAD will be able to accommodate these much faster than waterfall. RAD is also never too attached to a prototype and is always willing to change it to suit the needs of the customer.

However, RAD isn't a perfect application development method. RAD requires highly skilled (and highly paid) programmers to work on a project that may change in complexity by the day. There's also less adherence to deadlines and more of a focus on adding features, which can extend delivery dates. RAD requires a lot of input from customers who may not always be available or know what they need. Additionally, for some applications, having a prototype is not useful without seeing the entire product.

Agile: Agile application development is very similar to RAD, but also includes some changes to make it more suitable to larger projects. Agile is iterative, like RAD, but focuses on building features one at a time. Each feature is built in a methodical way in the team, but the customer is

involved to see the features and sign off on them before the next feature is developed. Agile uses sprints, or set of time when a certain feature should be built, tested, and presented. It tries to incorporate the entire SDLC for a feature into each sprint. This, ideally, helps to stick to a planned schedule, but also allow for frequent reviews.

Agile doesn't focus on prototypes, but only presents completed work after the sprint is over. So while the customer is informed more often than waterfall, the customer only ever sees finished work, unlike RAD.

Agile methodology is also more team or squad based. With RAD, you are working directly with a programmer. With Agile, the application development team will also include testers, UX designers, technical writers, and many others.

## RESULTS

**User Experience (UX):** Over 75% of survey participants confirmed “user experience” as the deciding factor in mobile apps and prototype designing to be a crucial entity. In order to get an excellent user experience, a customer should feel comfortable in gadget interaction and feel smart enough to accomplish any task with intuitive use, without any tutorial or additional help. For highly productive user experience and good mobile app designing, it was recommended to consider characteristics such as Quick Start-up time, responsiveness, and focused application purpose when designing, building, and testing the mobile apps.

**User Interface (UI):** The mobile apps should be designed to match the look-and-feel of the targeted mobile environment. User experience expertise and knowledge of the target mobile environments standards (both UI and code level) were important to provide users with a pleasant and consistent application. It was suggested by the survey participants that the services developed for mobile devices should take into account user's interaction, situation and information required while using the device. In addition, the participants believed that functions such as “Back” and “Exit” option should be mandatory and must be included in the mobile apps. Further, there should be closely guided usage paths that suggest the next step to the user, rather than offer multiple paths.

**Interaction with Information Sources:** Since native mobile app requires interaction with information sources for data transfer, it must communicate with predefined content and data sources to fetch information and return results. According to 60% of the participants, to build a great mobile app, a flexible and extensible set of connectors to quickly integrate native mobile app and backend information sources should be provided by identifying the data sources, taking into consideration how frequently information is updated on the devices, and the extent of data that flows across the network.

**Integration with Other Apps:** About 35% of the participants emphasized that integration with other apps and data on the user's device should be tested (wherever appropriate), and verified before the deployment and market release. 5. **Action Feedback:** Majority of the participants were of the opinion that the mobile customers should get an ‘acknowledgement’ instantly upon performing an action. They believed that the worst response was that the device remains unresponsive and does nothing and leaves the users to speculate whether their action was recorded or not. 6. **Error Notification:** Approximately 10% of participants believed that error

handling in mobile apps have to be effective such that it will have minimum effect on user and may be quickly notified and communicated to users.

## DISCUSSION

The mobile device market has witnessed swift industrial growth over the last decade. The quick expansion of this new computing platform has almost outpaced the software engineering processes customized to mobile application development. However, there is still lack of novel research initiatives around the mobile application development process. There remains a deficiency in development standards and best practices which expose the mobile device to potential attacks. This deficiency needs to be addressed promptly and requires further work. The objective of this research is to better understand the current methodologies adapted and to investigate challenges faced during the mobile application development processes that are different from traditional enterprise application. For this purpose, an online survey was conducted from the mobile research and development community. The survey questions covered the entire mobile application development lifecycle starting with requirements, and ending with bringing to life a complete mobile application. The study contributes towards a greater understanding of mobile application development process, examines real challenges confronted, and investigates the best practices that can be successfully implemented to enhance, evaluate, and improve the performance of the mobile application development process. These findings can also be considered as a possible research topic that indicates the breadth of research requirements and prospects in mobile computing.

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# REVIEW STUDY ON NETWORK TOPOLOGY

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## ABSTRACT

The present paper is in respect of use of network topologies which has the star, bus, mesh, ring topology. Network Topology is the way to communicate from one network with others by connecting them from nodes, links, external devices, etc. Network Topologies defines the arrangement of text and graphics, the path in which the signals or the data pass from one device to the another There are two path to define topologies--the one which is physical and the another is logical. Physical topology means the outer structure of the network, how the nodes, workstations and cables are connected. Logical Topology is the arrangement by which the information circulate between one-another network through which they are connected. Areas in which the network is connected through nodes or cables may get vary according by their physical combinations, signals. Sometimes the topologies connected may become identical. Communicating with different computer at an instant, topology makes its simple and time consuming. It has been further discussed by its advantages and disadvantages.

**KEYWORDS:** *Network Topology (Bus, Star, Ring, Mesh and Tree), Advantage, Disadvantage.*

## INTRODUCTION

Network Topology is the path for connecting two or more devices with each other through nodes, cables and workstations. There are two ways by which we can construct our network: the physical topology and the logical topology. The fundamental types of network topologies are:

1. Bus Topology
2. Star Topology
3. Ring Topology
4. Mesh Topology
5. Tree Topology
6. Physical Network Topologies

### **Bus Topology**

In this type of topology a group of computers are connected by a single cable known as bus

topology which acts as a core. This is one of the simplest ways to link multiple computers. An obstacle comes when two users want to communicate with each other at the instant on the same cable. If the cable which connects the computer gets damages, the entire communication will be down. The device that wants to communicate has to send the request to the cable which is seen by all other devices see, but the receiver receives the request and processes, respond the messages. It is mainly for a LAN(Local Area Network)where all nodes are connected through a single cable.

### **Advantages**

Bus Topology is easy to assemble, handle, and to carry out the given task.

It makes us easy to link or remove the computers.

Bus Topology needs less cable than other topologies.

### **Disadvantages**

If the complete network get damage or shuts down if there is a problem in the main cable by which all computer are connected.

Difficulties occurs to recognize the problem if the whole network get down.

If there are more workstation connected execution of the network will be slower due to data collision.

## **Star Topology**

In this type of network topology, there is a central hub(router, server) by which a client or host is connected. All the communication in the network is done through a central hub. This topology is the easiest topology to design the network.

### **Advantages**

If the single computer get fails in the network it will not affect the whole network.

Star topology makes us easy to connect new nodes or devices in the network.

### **Disadvantages**

It requires more cabling than a linear topology.

If the hub get fails in the network the entire network will not be able to communicate.

In star topology hub is more expensive than other topologies.

## **Ring Topology**

In a ring topology, the nodes are connected in a ring like structure and the communication is done only in one direction. If user wants to communicate with other he used to have 'token' by which it has to send the request. This topology is unidirectional, it ensures that communication by a node along the whole ring and comes back to the node, which network has made the communication. A numbers of repeaters are used to transmit data from one computer to another.

### **Advantages**

The data is transmitted between the workstations at higher speeds.

It is inexpensive to install and expand.

It does not require central hub to control connectivity between workstations.

### **Disadvantages**

There is difficulty of troubleshooting in ring topology.

There may come disturbance in network activity while adding or deleting.

If the one computer fails the whole network get disturbs.

### **Mesh Topology**

In Mesh topology all the nodes are connected to each other which means a point-to-point connection. It has  $n(n-1)/2$  physical channels to link  $n$  devices. It is mostly used for wireless networks.

### **Advantages**

While communicating the data transmission between the multiple devices can be managed easily. If the device get fail while transmitting, the data does not affect the whole network.

Can add multiple devices does not disrupt other devices while communicating or transmission data.

### **Disadvantages**

It is expensive than other topologies.

It consumes time and difficult for maintaining or building the topology.

Mesh topology requires high number of nodes, cables and I/O ports for the transmission or communicating the devices.

### **Tree Topology**

It is combination of Star and Bus Topology. It is a special type of structure in which many elements are arranged like the branches of tree. It has root node by which all other are connected to form hierarchical structure. It consist of at least three levels to the hierarchy. Tree Topology mostly used for WAN(Wide Area Network).

### **Advantages**

It is easily managed and maintained.

In this topology errors are easily detected.

It provides high scalability, as leaf nodes can add more nodes within the hierarchical chain.

### **Disadvantages**

It requires more cabling as compared to star and bus topology.

On the failure of the main switch, the entire networks fails.

It is very difficult to configure than other network topology.

Analysis

Now we have already finished discussing the five-topologies. Let's summarize that things into a table

Parameter	BUS	STAR	RING	MESH
Installation	Easy	Easy	Difficult	Difficult
Cost	Inexpensive	Expensive	Moderate	Expensive
Flexible	Yes	Yes	No	No
Reliability	Moderate	High	High	High
Extension	Easy	Easy	Easy	Difficult

In recent days to manage and process and to communicate information, becomes very important and popular issues. Topology provides better, faster and more efficient at a low cost. Autonomous computer which are connected by means of a communication network in a computing environment which is arranged in a particular shape called as network topology. In the present paper a detailed study and analysis on network topology is presented. Definitions of Physical and Logical Topologies are also given.

### CONCLUSIONS

In this paper, we have done analytical study of different basic topologies which gives us a information about each topologies and their features. Each one has some advantages and disadvantages as we discussed above, so the solution is that we can combine two or more topologies to form a resultant topology known as Hybrid topology. It is scalable, reliable, flexible and effective. It's design is more complex and it is expensive as we combine two or more different topologies. This Background or framework allows the user t work or communicate on data base, see all its elements and relations between them.

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# Future of Database

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## ABSTRACT

Database assumes a very important job in our present world. This exploration action discloses to us the concise thought regarding the various sorts of DBMS and their applications with their points of interest and detriments. In this exploration action we audit the advancement of database the executive frameworks and afterward center around the latest database improvements talk research and actualizes difficulties done by present day database applications.

**KEYWORDS** : *Distributed Database, Object Oriented Database.*

## INTRODUCTION

The Database is a fundamental piece of our life. As we experience a few exercises that include our connection with database, for instance in the bank, in the railroad station, in school, in a supermarket, and so forth. These are where we have to a lot of information/data at one spot and bringing of this information/data ought to be simple.

In Database, information is sorted out into tables which comprise of lines and sections and it is recorded so information gets refreshed, extended and erased easily. Computer databases normally contain document records information/data like exchanges cash in one financial balance to another bank account, sales and customer details, fee details of student and product details. There are various types of databases, running from the most prevalent methodology, the relational database, to an distributed database, cloud database or NoSQL database.

## Types of Database

### Relational Database

A Relational database is comprised of a lot of tables with information that fits into a predefined category

### Distributed Database

An appropriated database is a database wherein segments of the database are put away in

numerous physical areas, and in which preparing is scattered or recreated among various focuses in a system

### **Cloud Database**

A cloud database is a database that normally runs on a cloud computing platform. Database administration gives access to the database. Database administrations make the basic programming stack straightforward to the client.

A database is an collection of information which is composed, which is likewise called as organized information. It tends to be gotten to or put away at the PC framework. It very well may be overseen through Database Management System (DBMS), which is a product which is utilized to handle information. Database alludes to related information which is in an organized structure. The future of databases is a design dependent on new algorithmic structures that don't have the confinements we at present involvement in RDBMS and Hadoop. A portion of the more basic algorithmic inadequacies:

- Divide interim ordering for example geospatial polygons
- Continuous limitation databases (for example "stream databases")
- Divide Temporal Ordering
- Social join parallelism

I could think of a couple of all the more yet the above calculation issues are the underlying driver of most database issues we don't have a clue how to parallelize. At times, we realize no arrangement can exist on stages like Hadoop as they at present exist because of hypothetical breaking points of their plan.

### **FUTURE OF DATABASE MANAGEMENT SYSTEM (DBMS)**

The Database Management System (DBMS) is a software which enables the client to associate with the database. Basically, a database is the collection of information in type of tables, inquiries, reports and comparative articles. A large portion of the databases that are in the market today are relational databases. Oracles MySQL, IBM's DB2, Microsoft's Access are largely relational databases. A relational database is an advanced database wherein information is sorted out in tables with each line of the table having a particular key. It is much better than the prior hierarchal databases of the past which were very slow and less sorted out.

However, times are evolving quickly. Today you can be fulfilled in utilizing a Relational Databases which are solely founded on the structured query language (SQL). Yet, what's to come is as of now upon us with NoSQL and NewSQL making strides. With the need to store, ponder and oversee a lot of information these adaptable and ground- breaking benchmarks are prepared to beat to the traditional database language.

While the present databases give well-characterized structure and openness, they have less abilities to deal with Big Data. This set the circumstance up impeccably for the ascent of these

Cutting-Edge databases which don't require an exceptionally requested database plan.

## **DISTRIBUTED DATABASE**

A distributed database is a database that comprises of at least two records situated in various destinations either on a similar system or on completely various systems. Segments of the database are put away in numerous physical locations and handling is distributed among various database hubs.

### **Types Of Distributed Databases**

#### **Homogeneous Database:**

In a homogeneous database, every single distinctive site store database indistinguishably. The operating system, database management system and the information structures utilized – all are same at all sites. that's why, they're easily managed.

#### **Heterogeneous Database:**

In a heterogeneous distributed database, various sites can utilize distinctive pattern and programming that can prompt issues in question handling and exchanges. Additionally, a specific site may be totally uninformed of different destinations. Various PCs may utilize an alternate working framework, diverse database application. They may even utilize various information models for the database. Subsequently, interpretations are required for various destinations to convey.

### **Functions of Distributed database framework:**

#### **Keeping track of data:**

The essential capacity of DDBMS is to track to the information/data distribution, fragmentation and replication by growing the DDBMS list.

#### **Distributed Query Processing:**

The essential capacity of DDBMS is fundamentally its capacity to get to remote locales and to transmits questions and information among the different destinations by means of a correspondence arrange.

#### **Replicated Data Management:**

The essential capacity of DDBMS is fundamentally to choose which duplicate of a reproduced information thing to get to and to keep up the consistency of duplicates of recreated information things.

#### **Distributed Database Recovery:**

The capacity to recoup from the individual site crashes and from new sorts of disappointments, for example, disappointment of correspondence joins.

**Security:** The essential capacity of DDBMS is to execute Distributed Transaction with legitimate administration of the security of the information and the approval/get to benefit of clients.

**Distributed Directory Management:**

An index essentially contains data about information in the database. The registry might be worldwide for the whole DDB, or neighborhood for each site. The arrangement and dispersion of the index may have plan and strategy issues.

**Distributed Transaction Management**

The essential capacity of DDBMS is its capacity to devise execution techniques for questions and exchange that entrance information from more than one site and to synchronize the entrance to circulated information and fundamentally to keep up the respectability of the total database.

**OBJECT ORIENTED DATABASE**

An object-oriented database is a database that subscribes in to a model with data spoke to by objects. Object-oriented databases are a specialty offering in the relational database management system (RDBMS) field and are not as effective or understood as standard database engines. Object oriented is a computer science concept that has been generally actualized, explicitly in programming dialects and applications/programming. The Object- Oriented technique is not the same as ordinary programming, which centers around capacities/practices, while object-oriented deals with the associations of at least one objects.

An Object-Oriented based framework is demonstrated and made using objects, where each item's class occurrence has specific attributes and behavior's, and the relative techniques or practices are called to control or use such a system. The embodiment of object-oriented is that every one of the made objects can be reused in the equivalent and different programs and applications.

**CONCLUSION**

A database, in the Broadest sense, is an organized collection of data. All the more explicitly, a database is an electronic framework that enables data to be effectively gotten to, controlled and updated. Any business or association that necessities to monitor huge quantities of clients or items can profit by a database, however huge associations remain to pick up the most. The earliest database frameworks were navigational in nature. This implies applications handled and read information by utilizing pointers installed in the information itself. The relational model was an extreme takeoff from the reigning various leveled model in that it concentrated on the capacity to look through a database by content as opposed to by following a connected route framework. There are a few very important non-relational databases (particularly with the coming of large information and Web 2.0), however the relational model is still used for the overwhelming majority of commercial database offerings.

### ACKNOWLEDGMENT

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# PRESSURE BASED AIR FILTERING STREETLAMP MODULE

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## ABSTRACT

Environmental crisis have risen to a level where we cannot ignore its indication or effects anymore. Air purifiers are primarily used for domestic and indoor purposes. There has to be an effort to curb the pollution in the outer space also. Using the sole principles of a basic air purifier and placing it in a module which is at the core of the pollution was the inspiration for this ideology. Street lamps are situated at the core of pollution where vehicles emit gases which are harmful for human beings. By using simple IoT device, a network of such air purifiers are created to have a broader view and to detect various environmental parameters depending upon the geographical location and installation. HEPA filters are used for the sole purpose of filtering and removing as low as 2.5PM from the environment. Street lamps or garden lamps placed in public parks are two main examples used for the demonstration and use case scenarios. Water clogging areas can have water sensors to detect floods and the lamp itself can embed a pressure sensor which detects the deviation of the same when the filter is clogged. The network created can be monitored and managed by government bodies for data collection of PM values, temperature etc. Use of microcontroller is done with keeping future enhancements in vision for various purposes.

**KEYWORDS:** *HEPA filter, Particulate Matter (PM) value, Arduino UNO microcontroller.*

## INTRODUCTION

Air pollution causes 9 million human deaths annually and incalculable damage to environment. One of the main sources of air pollution is vehicles. Polluted air rises and spread across to create a blanket of toxic atmosphere. Also, there is no public solution to these problems since there are proprietary products for personal use only. Further, energy crisis is also an issue which may arise while trying to counter balance the environmental issues. The main intension of this procedure is to observe the environmental changes occurring and try to curb the pollution of toxic air from its origin itself using simple IoT components.

**Increase in Air Pollution**

Disentangling the specific air pollutants and clearly attributing them to a specific health or environmental outcome can be complex since some pollutants act as pre-cursors to others. For example, SO<sub>2</sub> and NO<sub>2</sub> can react in the Earth's atmosphere to form particulate matter (PM) compounds. The sources of each pollutant vary, however, most are generally linked to fuel combustion and industrial activities; pollutants are released as by-products of these processes. The EPA is measuring air pollution and implementing regulatory procedures for vehicle emissions. Dropping pollen counts is a major focus for EPA and CDC activities. Hence the decision of using HEPA filters which are standard and recommended by EPA and CDC.

**Increase in energy crisis**

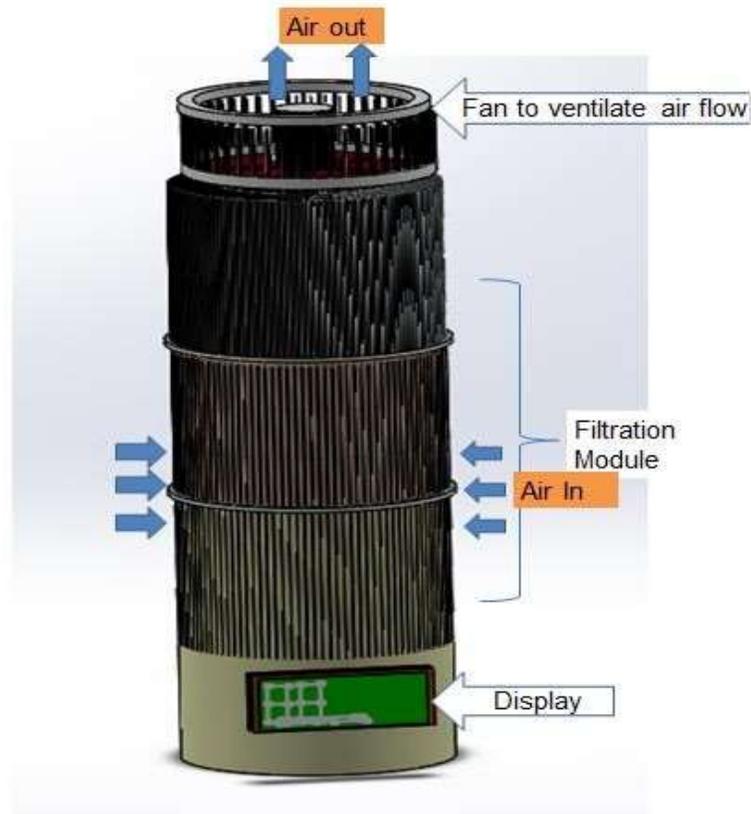
Electrical energy crisis can be defined as a shortfall in or interruption to the provision of energy supplies. It is similar to a bottleneck in the supply of energy resources to an economy. Since inclusion of such components may increase the overall consumption of electricity of the street lamp, proper utilization of this energy is essential.

**Destruction caused by heavy rainfall and floods**

Heavy rainfall can lead to numerous hazards, for example: flooding, including risk to human life, damage to buildings and infrastructure, and loss of crops and livestock landslides, which can threaten human life, disrupt transport and communications, and cause damage to buildings and infrastructure.

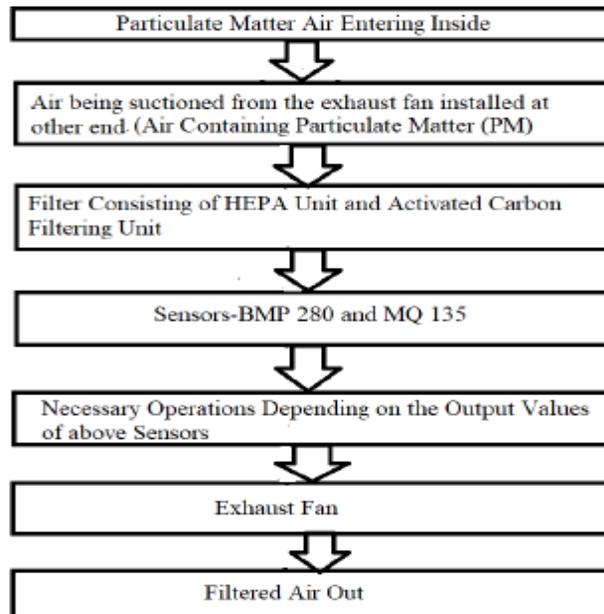
**OBJECTIVE STUDY**

The paper attempts to provide a solution to bring down the level of particulate material in our environment which are harmful for living beings. These particulate materials are released by cars on roads which enter into the atmosphere and are not attempted to remove them from the atmosphere. The ideology of this project is to use IoT components to detect the current environmental conditions and attempt to reduce the amount of particulate material from the air using HEPA filter. HEPA filters have the highest efficiency in terms of filtration process and sustains for a longer amount of time which depending on the usage can be between 4 – 6 months of span. The main focus here is to make it easy for the provider to detect the filters that are full or are not working. For which, the proposed module uses an IoT component called as BMP280 which senses the pressure inside the chamber to give an idea about the air flowing into the filter and moving out. Hence a predefined pressure is maintained when the filter is new or non-clogged. When the filter gets clogged or damaged, there is will be a noticeable fluctuation in the pressure inside the filter chamber which will send a notification or an indication stating that the filter needs to be changed. Another component in use is the MQ135 which sense the air quality around the street lamp which will show the current status of the air present in the environment to give an idea about daily readings. Water sensor is used to detect rising water level in monsoon season which will provide an insight of the possible floods in particular area.



## LITERATURE ON COMPONENTS AND METHODOLOGY

The proposed system will attempt to sense the air quality in the environment and display the information on an LCD display. The main core function of the system is to filter out particulate material to curb the toxic air from the environment. We can use a HEPA filter which can be used for removing the particulate matter (PM) present in the air. High Efficiency Particulate Air membrane is used to remove particles of size up to 0.3µm. The Street Lamp, thus planned should also be capable of indicating the increased water level above a certain threshold. This will be achieved using water level sensor accompanied with Arduino UNO which can be relayed with the central system to notify them.



### Arduino UNO

The Arduino UNO is an open-source microcontroller board based on ATMEGA328p microcontroller and developed by Arduino.cc . The board is equipped with set of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards has 14 digital pins, 6 analog pins and programmable with the Arduino IDE (Integrated Development Environment) via a type B-USB cable. It can be powered by the USB cable or an external 9 volt battery, though it accepts voltages between 7 and 20 volts. <sup>[1]</sup>

### BMP280

The BMP280 Digital Barometer is developed by Bosch Sensortec. Compared with the previous BMP085, BMP180, and BMP183, this BMP280 barometer comes with a higher performance. The BMP280 is an absolute barometric pressure sensor especially designed for mobile applications. The sensor module is housed in an extremely compact 8-pin metal-lid LGA package with a footprint of only 2.0x2.5mm<sup>2</sup> and 0.95mm package height. Its small dimensions and low power consumption of 2.7µa@1Hz allow the implementation in battery- driven devices such as mobile phones, GPS modules or watches. It supports two types of communication: I2C and SPI. <sup>[2]</sup>

This paper suggests the use of BMP280 to detect pressure fluctuation between the air filtering chamber to determine when the pressure is high due to a vacuum generated if the filtered get clogged. Hence, helps us to automatically detect clogging of the filter.

### MQ135

Sensitive material of MQ135 gas sensor is SnO<sub>2</sub>, which with lower conductivity in clean air.

When the target combustible gas exists, the sensors conductivity is higher along with the gas concentration rising. Convert change of conductivity to correspond output signal of gas concentration. MQ135 gas sensor has high sensitivity to Ammonia, Sulphide and Benzene steam, also sensitive to smoke and other harmful gases. It is with low cost and suitable for different application. Used for familiar, surrounding environment noxious gas detection device. Apply to ammonia, aromatics, sulphur, benzene vapour, and other harmful gases/smoke, gas detection, tested concentration range: 10 to 1000 ppm. <sup>[3]</sup>

This project uses MQ125 sensor in integration with Arduino UNO to determine the air quality of the surrounding environment and display the on time actual values of the same.

### **HEPA filter**

How well a filter performs depends on its purification ability and aerodynamic design. The filter combines an aerodynamic 360° cylindrical design with a powerful triple-filter consisting of primary, HEPA and activated carbon layers. The cylindrical shape provides 360° filtration of dust, hair and other larger floating particles. HEPA (High-efficiency Particulate Arrestance) is frequently used in hospitals and labs to filter out micron-sized particles. It uses an ultra-dense Toray PP and PET HEPA filter to trap PM2.5, PM0.3, pollen and other inhalable particles, allowing only clean air to pass through. It measures 7.7m when fully extended and effectively filters out 99% of PM0.3 particles and 99.99% of PM2.5 particles. Activated carbon absorbs harmful gases that HEPA is unable to filter. <sup>[4]</sup>

## **CONCLUSION**

The proposed solution helps in monitoring and detecting the live case scenarios of air quality in current environment. Its main core function is to filter out large particulate material (PM) up to 3P.M. The modular design of the system allows it to include various other components depending upon the adaptability and changes in the design structure. The proposed system takes a step towards using a viable solution for growing concerns on air pollution. It also provides a centralized view for the authorities to monitor the changes and track different environmental parameters. For future implementation purpose, the modular design and various shapes of the lamps in general, gives it a broad spectrum of enhancements depending upon its placing and usage. For example, if implemented on a garden lamp, use of PIQ sensor to detect motion in the garden so that the lamp illuminates only when a person passes by and stays dim after a specified time. Also, inclusion of free Wi-Fi in gardens can also be an enhancement in the system. The alternate for energy consumption can be solar or piezoelectric based depending upon use case scenarios.

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# WITNESS ANALYSIS USING SELF LEARNING ALGORITHM

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## ABSTRACT

In India crime is primarily investigated by local police or law enforcement agencies such as CBI, ED to name a few. But at their core majority of the cases are solved manually, leading to a delayed justice and humane errors to creep in. Of these, numerous cases are highly witness reliant. In such cases even if one witness turns hostile it can totally change the course of the case. Hence we have developed an solution to effectively handle and interpret witness statements without discrepancies. The algorithm used is based on how humans interpret and develop trust with other humans. Not every witnesses opinion has the same gravity as that of another, to overcome this we have an unique scoring system that will aid the law enforcement authorities to deal with a large number of witnesses to get to the actual crux of the case in an fast and efficient manner.

**KEYWORDS** - witness, credibility, supervised learning

## INTRODUCTION

India, a country of 1.6 billion people has an age old law enforcement infrastructure. The police force of the country is exceptionally unequipped to serve a nation of this scale. All this sums up to extended periods of time for a case to be investigated by the police, which may take years. For this particular paper we would focus on cases that are heavily reliant on witness testimony. A single case can have multiple witnesses and each one of the witness must be personally questioned by the investigating officer. Most of the times there is one investigating officer per case. This adds up a lot of time to record each individual statement and then analyzing it a totally different ball game. To

ensure speedy justice, this process of interrogating and screening the witness can be automated. This particular paper highlights a method that has been modelled based on how human assess a persons credibility and trust factor.

## **SURVEY OF LITERATURE**

To develop a solution for investigating a case efficiently, we must understand how a conventional investigation takes place.

### **Investigator's decision making<sup>[1]</sup>**

In any criminal or civil case, gathering information regarding it is of paramount importance. Gaining knowledge about the past event is the first step in starting to solve a case. To solve a crime, there are a number of questions that need to be answered, mostly importantly, who did it? How was the crime committed? What was the perpetrator's intentions at that time? These are the important aspects of a case that need to be answered to convict and prosecute the offender.

### **Information Management**

To effectively understand a past event, answering certain important questions is necessary. Investigators find the answers to their questions from various sources, such as evidences, witnesses, the crime scene etc. But from these most useful and reliable sources of these answers is witnesses. Psychologists have put a lot of time and resources in developing techniques for gathering information from witnesses through interviews and interrogations.

### **Cognition and Investigation**

Cognition and Investigation is the study of how humans encode, store and process information. It is extremely important for investigators to understand this. It's an investigator's job to decode what the witness wants to express, drop the irrelevant details and use that information to lead ahead in the course of the investigation. Research in Cognition and Investigation shows that humans spontaneously try to process complex information which more often than not leads to false positives and dead ends in an investigation.

### **Hypothesis Generation and Testing**

Now that we have gathered the information we need. Assuming all the questions we have had found their answers. It's time for an investigator to now compile everything and start generating scenarios that can explain the occurrences of the past event. The hypothesis must be able to connect all the dots and fit in well with the facts. This will help the investigator to get a clearer idea of what happened. Many of such hypothesis must be generated and tested to best fit the case.

Finally one of these hypotheses is what happened at the time of the crime. But the most important steps that lead to it are gathering information and managing it. In such a case there can be vast inflows of information, it's very important to filter out the irrelevant information and check the

credibility of it's source.

### **Physical Crime Scene Investigation<sup>[2]</sup>**

This is done to collect physical evidence and reconstruct the events that took place at the time of the crime.

#### **Preservation Phase**

Seeks to preserve the crime scene in the state it was found in.

Ask, Karl & Alison, Laurence. (2010). Investigators' decision making. 10.4324/9781315094038-3.

Systematic Digital Forensic Investigation Model- Ankit Agarwal, Megha Gupta, Saurabh Gupta & Prof. (Dr.) S.C. Gupta International Journal of Computer Science and Security (IJCSS), Volume (5) : Issue (1) : 2011

#### **Survey Phase**

This requires an investigator to walk through the physical crime scene and identify pieces of physical evidence.

#### **Documentation Phase**

This involves taking photographs, sketches, and videos of the crime scene and the physical evidence. The goal is to capture as much information as possible so that the layout and important details of the crime scene are preserved and recorded.

#### **Search and Collection Phase**

This entails an in-depth search and collection of the scene is performed so that additional physical evidence is identified and hence paving way for a digital crime investigation to begin.

#### **Reconstruction Phase**

Which involves organizing the results from the analysis done and using them to develop a theory for the incident.

#### **Presentation Phase**

This presents the physical and digital evidence to a court or corporate management.

## **SCALE OF PROBLEM**

Following is a summarized analytics of crimes in India:

Statewise crime rate:

TABLE 1A.1  
IPC Crimes (State/UT-wise) & Crime Rate - 2014-2016

S. No.	State/UT	2014	2015	2016	Percentage Share of State/UT (2016)	Rank Based on Incidence / % share (2016)	Mid-Year Projected Population (In Lakhs) (2016) +	Rate of Cognizable Crimes (IPC) (2016)++	Rank Based on Crime Rate (2016)
1	2	3	4	5	6	7	8	9	10
<b>STATES:</b>									
1	Andhra Pradesh	114604	110693	106774	3.6	13	517.4	206.4	15
2	Arunachal Pradesh	2843	2968	2534	0.1	29	13.2	192.3	17
3	Assam	94337	103616	102250	3.4	14	325.8	313.9	5
4	Bihar	177595	176973	164163	5.5	9	1043.0	157.4	22
5	Chhattisgarh	58200	56692	55029	1.8	17	259.9	211.7	14
6	Goa	4466	3074	2692	0.1	28	19.9	135.6	25
7	Gujarat	131385	126935	147122	4.9	11	630.8	233.2	11
8	Haryana	79947	84466	88527	3.0	15	276.1	320.6	4
9	Himachal Pradesh	14160	14007	13386	0.4	21	71.2	188.1	20
10	Jammu & Kashmir	23848	23583	24501	0.8	20	124.6	196.6	16
11	Jharkhand	45335	45050	40710	1.4	18	338.0	120.4	30
12	Karnataka	137338	138847	148402	5.0	10	625.7	237.2	10
13	Kerala	206789	257074	260097	8.7	4	357.5	727.6	2
14	Madhya Pradesh	272423	268614	264418	8.9	2	782.6	337.9	3
15	Maharashtra	249834	275414	261714	8.8	3	1205.5	217.1	13
16	Manipur	3641	3847	3170	0.1	26	26.0	121.9	28
17	Meghalaya	3679	4079	3366	0.1	25	27.8	120.9	29
18	Mizoram	2140	2228	2425	0.1	30	10.7	227.3	12
19	Nagaland	1157	1302	1376	0.0	31	23.9	57.6	34
20	Odisha	74569	83360	81460	2.7	16	425.9	191.3	18
21	Punjab	37162	37983	40007	1.3	19	292.0	137.0	24
22	Rajasthan	210418	198080	180398	6.1	6	732.8	246.2	8
23	Sikkim	1065	766	809	0.0	32	6.5	124.7	27
24	Tamil Nadu	193200	187558	179896	6.0	7	695.2	258.8	7
25	Telangana	106830	106282	108991	3.7	12	368.5	295.7	6
26	Tripura	5499	4692	3933	0.1	24	38.4	102.4	31
27	Uttar Pradesh	240475	241920	282171	9.5	1	2192.4	128.7	26
28	Uttarakhand	9156	10248	10867	0.4	22	106.8	101.8	32
29	West Bengal	185672	179501	176569	5.9	8	938.3	188.2	19
<b>TOTAL STATE(S)</b>		<b>2687767</b>	<b>2749852</b>	<b>2757757</b>	<b>92.7</b>		<b>12476.2</b>	<b>221.0</b>	
<b>UNION TERRITORIES:</b>									
30	A & N Islands	746	862	802	0.0	33	5.5	144.8	23
31	Chandigarh	3221	3248	2996	0.1	27	18.0	166.4	21
32	D&N Haveli	277	269	244	0.0	35	4.3	57.4	35
33	Daman & Diu	233	302	271	0.0	34	3.3	81.1	33
34	Delhi UT	155654	191377	209519	7.0	5	214.9	974.9	1
35	Lakshadweep	81	50	36	0.0	36	0.8	43.9	36
36	Puducherry	3584	3440	4086	0.1	23	16.8	242.8	9
<b>TOTAL UT(S)</b>		<b>163796</b>	<b>199548</b>	<b>217954</b>	<b>7.3</b>		<b>263.7</b>	<b>826.5</b>	
<b>TOTAL (ALL INDIA)</b>		<b>2851563</b>	<b>2949400</b>	<b>2975711</b>	<b>100.0</b>		<b>12739.9</b>	<b>233.6</b>	

Note: i) '+' Crime Rate is calculated as Crime per one lakh of population.

TABLE 1A.1 Page 1 of 1

ii) '+' Population Source: Registrar General of India estimated population of 2016 based on 2001 Census.

iii) Rank is based on Incidence (Col.7) as well as on the Crime Rate (Col.10). Both should be considered simultaneously.

According to the given data from the National Crime Records Bureau, Government of India we can have some thoughtful insights in the crime situation of our country. Over the years 2014, 2015 and 2016 the number of crimes in the country are on a rise and are expected to do so even in the future. Hence it is important to equip the law enforcement agencies of the country with advanced methods to solve these cases and deliver justice to the victims. Looking deeply into the given table, the top Crime State/Union Territory is Delhi, we need to secure the capital of the country first. There have been various incidents of serious crimes in Delhi and many of the cases remain unsolved to date due to lack of evidence of hostile witnesses. Hence it is very important to heavily scrutinize the statements of these witnesses. This gives us another reason to develop such a method.

**Low Police to Citizens ratio<sup>[3]</sup>**

Data from the United Nations Office on Drugs and Crime (UNODC) shows that in 2013, India's ratio of 138 police personnel per lakh of population was the fifth lowest among the 71 countries for which the agency collated these figures. Experts argue that the Indian police system designed in 1861 was best suited for colonial rule and doesn't meet the requirements of a modern welfare state. The already understaffed system is also hit by many vacancies. The answer to a recent question in the Parliament reveals that as on January 2014, there was shortfall of 5.6 lakh police personnel against the sanctioned strength of 22.8 lakh or about 25 per cent vacancy.

This highlights the fact that the police force finds it very difficult to handle a lot of witnesses. Hence a solution like this is highly needed.

**PROBLEM DEFINITION**

Most of the witness reliant cases face a set of problems:

- Credibility of witnesses
- False Statements
- Hostile Witnesses
- Non-uniform enquiry

These are the major issues that investigators working on witness reliant cases suffer. In order to solve these problems, we have set a number of objectives that our algorithm must fulfill.

Objectives:

- Multiple simultaneous statement entry
- Elimination of false or hoax statements
- Minimize the impact of hostile witnesses
- Produce a legally acceptable document containing the statements.
- Identify cases for which this technique is most effective.
- Enable the model to identify patterns and adjust accordingly (unimplemented)

**METHODOLOGY**

This section is divided into 3 parts:

- Survey on existing methods and need of the hour
- Our solution
- Testing the implementation

The Economic Times: <https://economictimes.indiatimes.com/news/defence/indias-ratio-of-138-police-personnel-per-lakh-of-population-fifth-lowest-among-71->

[countries/articleshow/48264737.cms](http://countries/articleshow/48264737.cms)

National Crime Records Bureau, Government of India: <http://ncrb.gov.in/>

### **SURVEY ON EXISTING METHODS**

In order to better understand the problem, it is necessary for us to do ground research on existing methods of solving it. This survey was done by personally visiting several police stations and banks in the city.

Police Stations Surveyed:

- Shivaji Park Police Station, Dadar(W), Mumbai
- Wadala Police Station, Wadala(W), Mumbai
- Mulund Police Station, Mulund(W), Mumbai

Banks Surveyed:

- HDFC Bank, Mulund(E), Mumbai

The police officers were very helpful in giving us key insights how a case is handled and where and what difficulties they encounter in solving one. According to them most prevalent cases in today's scenario are fraud and forgery cases that are heavily witness reliant. They even highlighted the essentials in solving a case.

- Intensity of offence
- Witnesses
- CCTV Footage

According to the officers to testify whether a witness is lying or not they highly rely on their instinct which is very irregular and may not give accurate results every time. Main problem is witnesses repeatedly changing their statements. By law the police cannot cross question the witnesses extensively, hence automating this task is very helpful to the police. Plus it is not possible to conduct liedetector test for all witnesses, as court orders are required.

### **Our Solution**

We have methodized a solution that helps the police in processing a large number of witness inputs and get the actual insights of the case from it. Hence each case has it's own unique set of questions. Various witnesses are added and each one is given the test to solve.

To give an overview, the core process is divided into three phases:

- Screening Test
- Main Questionnaire
- Statement Analysis

Initially a case is broken down to it's details and questions are formulated. Firstly a witness subject

is asked to answer the Screening Test which consists of basic questions regarding the case( for which we know the answers to). Later on based on this score, he's ranked amongst other witnesses and given a credibility score[1]. This credibility score(Multiplier) is unique to each witness and is then used to evaluate the credibility of his responses in the Main Questionnaire. Secondly the Main Questionnaire consists of questions that arise in the minds of the investigating officers( For which one correct answer cannot be fixed). Now each witness that has gone through the Screening Test is asked to answer this questionnaire. Based on his/her credibility score each response of each question is graded and the highest confidence response is assumed to be the prediction. Lastly all the insights gathered from these phases are presented to the authority which can help them in solving the case further.

### Testing the implementation

To test this implementation a group of 10 volunteers were gathered in a room. They were shown a hypothetical scenario and were asked to play parts of the witnesses in the case. After being made understood about the case they had to solve a questionnaire based on the case. Questions were formulated in the aforementioned way, and certain details that the authorities might need were added in the main questionnaire. The responses of the participants were recorded and a final result was generated. This result was used to compare with the actual answers of the hypothetical case. This helps us understand how well this algorithm predicted the answers. The results are included in the findings.

## PREDICTION ALGORITHM

The suggested method assigns a multiplier score to each witness based on their performance in the Screening Test.

This is the suggested multiplier Scheme:

Sr. no.	Type of Witness	Multiplier
1	High Confidence	X1.0
2	Medium Confidence	X0.5
3	Low Confidence	X0.25

Table 6.1 Multiplier Table

Proceeding towards the Main Questionnaire, each question in this section has 4 options. Each option of each question has a confidence score associated with it.

Formula for calculating Confidence Score per option:

$n$

$Confidence\ Level = \sum multiplier$

1

Where: 1 to n witnesses

Sample of Data:

Hash Code	Question Text
383b92053b8a6453fdb552f30d5e79b	Sample Question 1

Table 6.2 Questions Data Structure

Option no.	Option	Confidence level
A	Sample Option 1	0.0
B	Sample Option 2	0.0
C	Sample Option 3	0.0
D	Sample Option 4	0.0

Table 6.3 Options Data Structure before responses

Option no.	Option	Confidence level
D	Sample Option 4	7.5
C	Sample Option 3	5.25
A	Sample Option 1	4.0
B	Sample Option 2	2.5

Table 6.4 Options Data Structure after responses

Here the predicted Answer is Sample Option 4 since it has the highest confidence level.

This cumulative confidence level is affected majorly only one factor i.e. the multiplier of the witness. This follows a humane approach towards finding facts and trusting people. The more the multiplier of the witness, more does the algorithm trust that person and lets him/her have a greater impact on the final outcome.

Hence it is said to be self-learning as the algorithm learns to trust individual witnesses based on it's previous experience with them i.e. the Screening Test.

## IMPLEMENTATION

Working prototype of this method is developed by us as a mobile application. The language used for this application is Java and it is written in Android Studio. The backend of this application is supported by Google's Firebase API. We've used a Real-time Database to which values are stored in a tree format. Responses of Multiple users can be recorded at a time, questions can be remotely updated.

**Following is an overview of the application:**

- **Application Frontend**
- **Login Screen**

Each witness and police officer is given an unique username and password using which they can record their responses. The Button LOGIN takes the user to the Screening Test and the button MAIN takes the user to the Main Questionnaire.

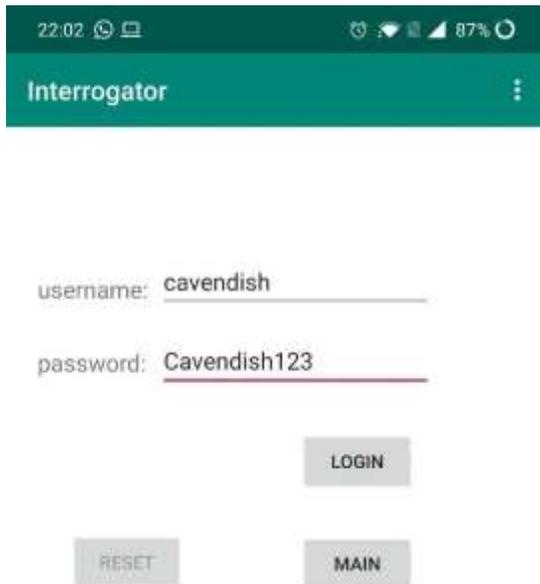


Fig. 7.1 Login Screen

### Screening Test Interface

After a successful login, the user(witness) is first taken to a Screen Test Activity. Here a question is

displayed and it's subsequent options are also shown. Clicking on a option registers the subject's response and takes him/her to the next question.

Fig. 7.2 Screening Test Interface

**Main Questionnaire Interface**

Once the user(witness) has successfully finished the Screening Test, he/she is assigned a multiplier and proceeds to the Main Questionnaire Activity. Here a question is displayed and it's subsequent options are also shown. Clicking on a option registers the subject's response and takes him/her to the next question.

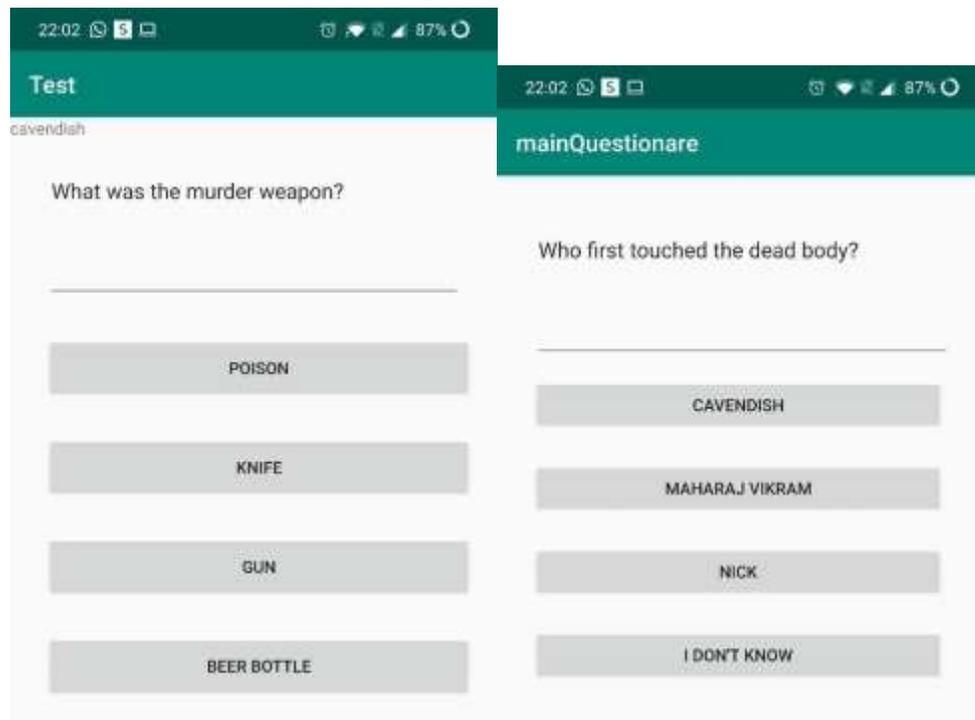


Fig. 7.3 Main Questionnaire Interface - I

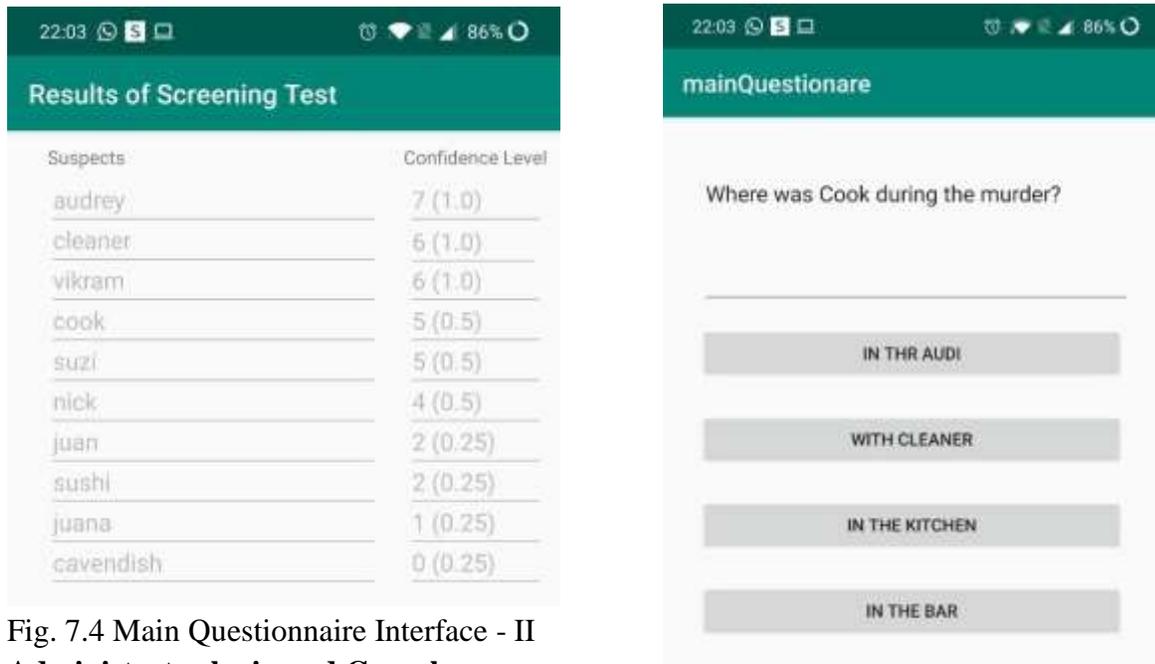


Fig. 7.4 Main Questionnaire Interface - II  
**Administrator login and Console**

The Police officers are given an admin username and password, when they login they are taken to a Console. Here they can see all the witness’s confidence(Trust) factors.

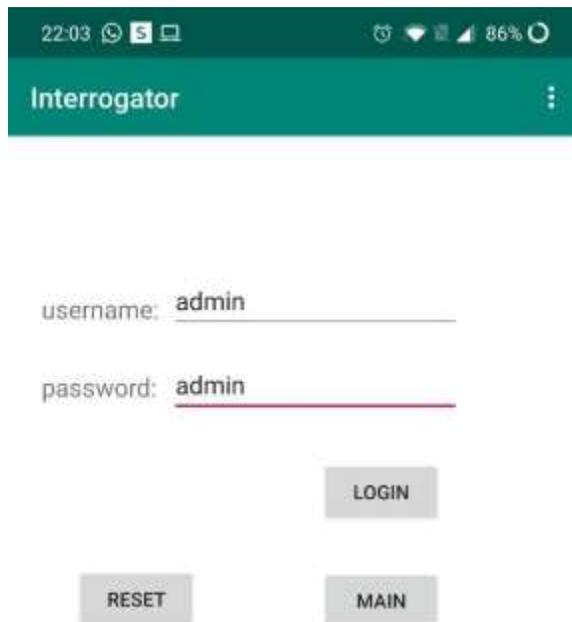


Fig. 7.6 Administrator Console

**Application Backend**

Coming towards the backend of this application. The data is stored in Google’s Firebase using a real time Database. The values are stored in the form of a tree structure given in key-value pairs. To

illustrate the mechanism, following is an overview of the database.

### Witness Data Tree

The data of the witnesses is stored in a form of a sub-tree in the database. Key of each witness is its username.

Following are the parameters for each Witness:

Sr no.	Parameter	Key
1	Name	“Name”
2	Password	“Password”
3	Correct Answers	“correctAnswers”
4	Multiplier	“multiplier”

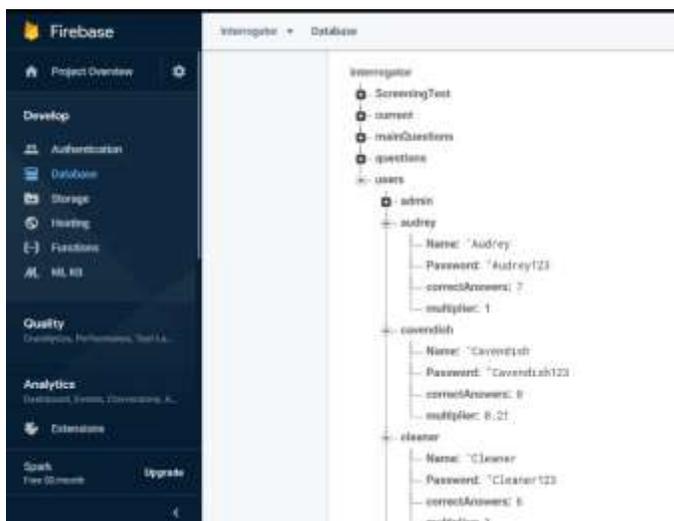


Table 7.1 Parameters for Witness Data

Fig. 7.7 Witness Data Tree

### Screening Test Question Data Tree

Data related to each particular question in the Screening Test is store in this tree. Key of each question is its unique Hash Code.

Following are the parameters for each Question:

Sr no.	Parameter	Key
1	Correct Option	“CorrectOption”
2	Option 1	“Option1”
3	Option 2	“Option2”

4	Option 3	“Option3”
5	Option 4	“Option4”
6	Question Statement	“statement”

Table 7.2 Parameters for Screening Test Questions Data

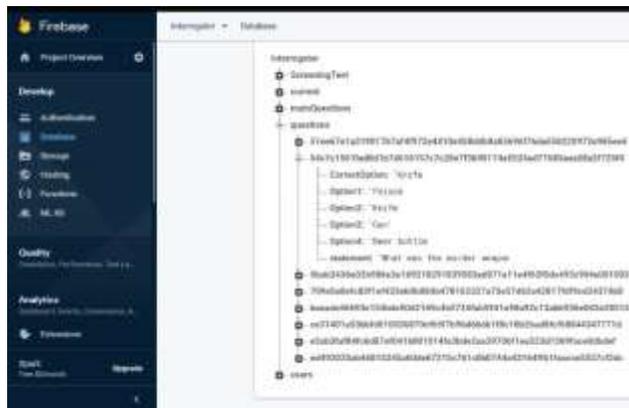


Fig 7.9 Screening Test Questions Data Tree

Main Questionnaire Questions Tree

The Questions for the Main Questionnaire are stored in the database in the form of a tree. Key of each question is it’s unique Hash Code.

Following are the parameters for each Question:

Sr no.	Parameter	Key
1	Question Statement	“statement”
2	Option 1	“Option1”
3	Option 2	“Option2”
4	Option 3	“Option3”
5	Option 4	“Option4”
6	Confidence for Option 1	“ConOp1”
7	Confidence for Option 2	“ConOp2”
8	Confidence for Option 3	“ConOp3”
9	Confidence for Option 4	“ConOp4”

Table 7.3 Parameters for Screening Test Questions Data

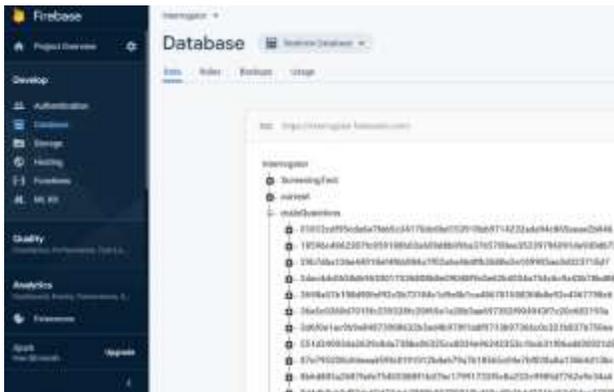


Fig 7.10 Main Questionnaire Questions Data Tree - I

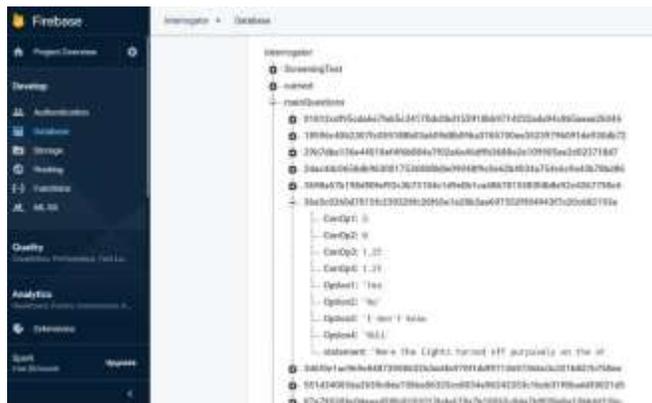


Fig 7.11 Screening Test Questions Data Tree - II

**Summary of Process**

Fig 7.12 Overview

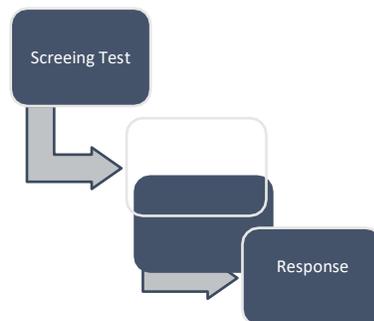
**REASON FOR IMPLEMENTATION**

In order to implement this solution as a proof of concept we have made a mobile app to

- demonstrate the process.
- Reasons for a mobile app:
- Everyone has a mobile phone.
- No need of new hardware.
- Easy to demonstrate.
- Statements of multiple witnesses can be recorded at a single time.
- Investigating officers can get results instantly.

### Usual use pattern

The mobile application is created using Android Studio and written in Java. For storing data of each case we have used Google's Firebase API which allows us to store all our data in a real time database and a whole host of features which can be used for future developments. Initially the app has a loginscreen which is used to login to each witness's question set. Each witness has it's own login id and password. The first test they have to give is the screening test. Once all the witnesses respond to the Screening Test, their scores are calculated they're ranked and assigned a multiplier score based on their rank. Now the witnesses are subjected to the Main Questionnaire. Then these responses of the witnesses are used to calculate the confidence level of each option of each question. Later the investigating officer can use this datato further guide him in the case.



### Adding new questions

This can be done by entering the admin mode. Each question has four options, and each option has it's own confidence level. When all the fields for the question are filled, it is uploaded to the database. Each question has it's own unique Hash Value encrypted using a SHA256 encryption.

### Analyzing Witness Responses

To do this the investigating officer has to login to the FirebaseAPI and access the real time database. Here he can view confidence level of each option and note the ones with the highest confidence down. That will be our predicted answer.

## FUTURE DEVELOPMENTS

“Nothing is complete until it's dead” Similarly even this implementation is not the final product and we have a few plans for future improvements.

Following are the improvements we expect to have:

- A new revamped scoring system.
- Include time of response as a deciding factor in the multiplier calculation

- Include Ability to process Descriptive Inputs instead of multiple choice inputs.
- Integration of advanced NLP( Natural Language Processing) Algorithms.
- Better Administrator Console and Final Results Window to be added.
- Witness specific questions to be included.

### CONCLUSION

We created this app with an idea to serve justice to the victim by catching the right suspect so no matter the crimes being small or big, with the help of this app crime solving or investigation becomes easier and efficient. From now no one will have to wait for a long time for a law to proceed further investigation.

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# MACHINE LEARNING FOR FUTURE ASPECTS

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## ABSTRACT

Nowadays, large amount of data is available everywhere. This can be achieved through data mining and machine learning. Machine learning is an integral part of artificial intelligence, which is used to design algorithms based on the data trends and historical relationships between data.

## INTRODUCTION

learning is a subfield of artificial intelligence (AI). Because of this, machine learning facilitates computers in building models from sample data in order to automate decision-making processes based on data inputs. Any technology user today has benefitted from machine learning.

## LITERATURE REVIEW

Among the latest techniques, machine learning models are some of the most researched, given their capabilities for recognizing complex patterns in various applications.[2] With the high productivity in the machine learning area applied to the prediction of financial market prices, objective methods are required for a consistent analysis of the most relevant bibliography on the subject.

Specifically, these techniques are applied to the literature about machine learning for predicting financial market values.

## MATERIAL AND METHODS

In machine learning, tasks are generally classified into broad categories. These categories are based on how learning is received or how feedback on the learning is given to the system developed. Two of the most widely adopted machine learning methods are supervised learning which trains algorithms based on example input and output data that is labelled by humans, and unsupervised

learning which provides the algorithm with no labeled data in order to allow it to find structure within its input data.

## RESULT & DISCUSSION

### Following result observes:

As the term ML (machine learning) gains attention and popularity, it begins to lose its true definition and risks becoming poorly-used marketing language. ML is so much more than a buzzword, it is something that holds promise and profound beauty for our civilization. Existing computers are merely declarative devices, taking explicit Methods are specific and instructions from different inputs for quick processing. structured with limited expectations. The ML process differs in that it should accept desired outcomes with example inputs to then complete a different task without further instruction.

## CONCLUSION

In cases of machine learning, common methods and popular approaches used in the field, suitable machine learning programming languages, and also covered some things to keep in mind in terms of unconscious biases being replicated in algorithms.

Because machine learning is a field that is continuously being innovated, it is important to keep in mind that algorithms, methods, and approaches will continue to change.

## FUTURE SCOPE

Basically, it's an application of artificial intelligence. Also, it allows software applications to become accurate in predicting outcomes. Moreover, machine learning focuses on the development of computer programs. Google says "Machine Learning is the future", so future of machine learning is going to be very bright.

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# CLLOUD COMPUTING: COMPARISION BETWEEN CLLOUD COMPUTING SERVICEPROVIDERS

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## ABSTRACT

Earlier, a large mainframe computer was formed by grouping different small computers for balancing the processing load across multiple machines and hence dividing the work into small units by multiplying processors. Cloud computing has the most significant architecture and is based on the internet. It is a combination of integrated software and hardware and internet infrastructure. In this paper we have given a brief evaluation of cloud computing by reviewing more than 13 articles on cloud computing.

## INTRODUCTION

The term cloud computing is derived from a familiar portrayal in technology structure diagram of the Internet using a visual of a cloud. Cloud computing first came into picture when there was a need to increase storage capacity or additional functionalities without changing the existing infrastructure or setting up a new infrastructure of an organization. Cloud computing services are provided by a mediator or any third parties which provide cloud computing services. For Example Amazon Web Services (AWS), Microsoft Azure are some examples of cloud computing service providers. The data which is to be computed is accessed, owned and operated by the service provider on a unified basis in data center locations. Cloud computing comprises

any pay-per-use service or subscription-based service. Cloud computing has the prowess to extend any IT infrastructure's existing capabilities in real time over the internet. The demand of software and hardware is minimized at the user's or organization's side. The core generality of cloud computing is degrading the payload of data processing on the user. Advantage of using cloud computing technology in today's IT industry consists of easy scalability, high availability and cost efficiency. To use cloud computing services we just need a web browser like Chrome, Firefox etc. cloud computing is an arising path to collaborative structure in which large network of systems are interconnected together to provide IT services. Commercial data centers will work like the internet by approving computing across an arrayed, accessible framework of resources rather than on local machines or remote server systems when using cloud computing, as a result an organization or a user can use them as much they want. For application as well as platform The term cloud computing is used. As the cloud computing business is as yet catching compact development, the market is yet to completely ripe. In 2020 we may see some effectiveness and new connectivity choices in our linkup with the cloud every single day.

### **History of cloud computing**

The concept of renting computing services by utilizing large assorted computing establishments has existed for a long amount of time. In early 50s mainframes were used from there on, technology has advanced and developed. This operation has resulted in an array of approbatory conditions for the accomplishment of cloud computing. In 1950, Scientist Herb Grosch the writer of the Grosch's Law proposed that the complete world would be operated by dumb terminals which would be powered by about 15 large data centers. In around 1960, John McCarthy an American computer scientist and a cognitive scientist in a speech at MIT said that computing can also be rented as a service like water and electricity.

In 1963, the Defense Advanced Research Projects Agency (DARPA) offered Massachusetts Institute of Technology (MIT) amount of 2 million USD for the project MAC. The funding comprised of a condition that MIT should develop a technology that permits a computer "to be used by two or more people, simultaneously". In this scenario, one of those colossal, outdated computers using rolls of magnetic tape as memory and was the forerunner to what has now become altogether known as cloud computing. It impersonated as a simple cloud with two or more people accessing it. The term "Virtualization" was used to image this situation.

In 1966, Douglas F. Parkhill a Canadian research minister and a Technologist published a book "The Challenge of Computer Utility" via Addison-Wesley Publishing company in which modern day Characteristics of modern day computing is explained.

In 1969, Joseph Carl Robnett Licklider or simply known as J.C.R Licklider Was an American psychologist and a computer scientist, assisted in the development of (ARPANET) Advanced Research Projects Agency Network. ARPANET is a very simple interpretation of Internet.

Licklider prompted a idea called the "Intergalactic Computer Network", in which everybody on the

planet would be concatenated by way of computers and able to access information from anywhere. The significance of Virtualization started moving during the 1970s, and now portrays the formation of a virtual machine, that demonstrations like a genuine PC, with a completely useful working framework. The idea of Virtualization has developed with the Web, as organizations started offering virtual private networks as a rentable assistance. The utilization of virtual PCs got mainstream during the 1990s, prompting the improvement of the cutting edge Distributed computing foundation.

### **In 1990, the age of internet started.**

The expression "cloud computing" was most presumably collected from the charts of clouds used to speak to the Web in course readings. The idea was derived from broadcast communications organizations who made an extreme move from highlight point information circuits to Virtual Private Networks (VPN) benefits during the 1990s.

One of the primary movers in distributed computing was Salesforce.com, which in 1999 presented the idea of conveying enterprise applications through a simple site. Amazon was next on the fleeting trend, propelling Amazon Web services in 2002. At that point came Google Docs in 2006 which truly brought distributed computing to the people's attention. 2006 additionally observed the presentation of Amazon's Versatile Register cloud (EC2) as a business web administration that permitted little organizations and people to lease PCs on which to run their own PC applications. This was before long followed by an industry-wide joint effort in 2007 between Google, IBM and various colleges over the US. Next came Eucalyptus in 2008, the principal open source AWS , Application Program interface cooperative platform for sending private clouds, trailed by OpenNebula, the primary open source software for conveying private and mixed clouds. In 2009, Microsoft released Windows Azure in November as an entrance into cloud computing. Presently, out of nowhere, there were significant players hopping on to distributed computing from right, left and focus.

### Understanding cloud computing-

Cloud computing consists everything from google apps to data center services to virtualization to software. According to National institute of Standards and technology (NIST) cloud computing is a developing prototype.

### Cloud computing architecture-

it relates to the components and sub-components necessary for cloud computing. Cloud computing architecture is divided into following sections -

**Interface** – software applied to access cloud service and data

**Infrastructure** – Server that reserves and manages data and applications mobile-apps and web browser are illustrations of interface used to access the specific cloud services. Servers and back-

end applications are the soul of cloud computing

Cloud computing Service Models –

The prime function of the Service models can be summed up in the expressions ‘Host’, ‘Build’ and ‘Consume’. Each service models offers a distinct level of flexibility and grasp over the product that an organization is purchasing. Every model differs in its connection to an organizations existing IT Infrastructure. It is Important to decide which model is best for your organization Because of the broad dis-unities between the models. there are three kinds of service models in cloud computing -

Infrastructure-as-a-Service (IaaS)-

IaaS is the most flexible among the three service models as it allows an organization or a user to complete, scalable grasp over the management and adjustment of a respective IT infrastructure. In the IaaS service model , the cloud provider hosts elements of an organizations IT structure which normally is present in a data center. The organization, however would maintain control over storage, deployed applications, operating systems and limited grasp over selected networking elements for example Firewalls. Some recognized IaaS cloud computing companies-Amazon(EC2) GoGrid MicrosoftAT&T

Platform-as-a-Service-

In the PaaS service model, a Third-party broker delivers an organization with a platform upon which the organization can run applications and develop the applications. Here the broker is hosting the cloud infrastructure which braces the platform as a result, installation of software or hardware is eliminated. The organization would not control or manage the cloud infrastructure, but would maintain grasp over the applications.

Some prominent PaaS cloud computing companies-Concur technologies

Ariba

Cisco

Google Salesforce

Software-as-a-Service (SaaS) -

the SaaS service model allows an organization to swiftly access web applications which are cloud based without installing a new infrastructure. The applications runs on the vendor’s cloud which is controlled and maintained by the vendor. The applications are accessible for use with a paid subscription or free but only with definite access. SaaS service model does not need any downloads or installations in the existing infrastructure of an organization as a result the requirement to update, maintain and install applications on each machine is eliminated.

SaaS cloud computing companies-

Microsoft Azure

Open Stack

AppScale  
CA Technologies  
Amazon Web Services

Cloud computing deployment models-  
There are four cloud computing deployment models-

**Private Cloud** - The cloud foundation is worked exclusively for an organization. In basic words we can say that such cloud models are committed to an outsider who wish to utilize. It might be managed by the Cloud Computing supplier or some other outsider.

**Public cloud**- The cloud foundation is made accessible to the overall public or an enormous industry group and is possessed by the Cloud suppliers.

**Hybrid Cloud**- Hybrid cloud is an admixture of two or more clouds(Public, Community and Private).

Community Cloud-  
This Cloud Framework is shared with multiple organizations.

About Amazon Web Services, Google AppEngine and Microsoft Azure

#### **Amazon Web Services (AWS) -**

Amazon web services was started in 2002 by Amazon, where the pace of cloud computing was high. Amazon web services (AWS) is a platform allowing the development of alterable applications by offering solutions for elastic infrastructure messaging, scalability and file and data storage. The platform is accessible through web service interfaces and offers a web based console where as user can control and monitor the components required and expenses are computed on a pay-per-use service.

#### **Google AppEngine (GAE) -**

Google AppEngine is a Platform-as-a-Service and it is a distributed and scalable runtime for developing alterable web applications based on python and Java runtime environments. These are enhanced with access to services that simplify the development of applications in a scalable form.

#### **Microsoft Azure -**

Microsoft Window Azure is Cloud operating system built on top of Microsoft data centers infrastructure and provides developers with a collection of services for building application with the Cloud technology. Any application that is build on the Microsoft technology can be scaled by using the Azure platform, which integrates the scalability features into common Microsoft technologies.

Service Provider	Service type	Description
Amazon Web Services	IaaS,Paas, SaaS	Amazon Web Services is a collection of web services offering developers with advanced Services.
Google AppEngine	PaaS	Google AppEngine is a distributed and scalable runtime For Developing alterable web applications.
Microsoft Azure	PaaS	Microsoft Azure offers services for developing alterable applications based on the proprietary Hyper-V virtualization technology and the .NET framework.

Comparison between Amazon Web Services, Google AppEngine and Microsoft Azure on the basis of-

**Infrastructure-**

Service Provider	Description
Amazon Web Services	The Amazon Cloud Infrastructure is one of the most reliable, extensive and secure cloud computing environment. Deployment of an

	application across the globe can be done in single click. With elastic Beanstalk an organization or a user can quickly deploy or manage the applications in the AWS cloud.
Google AppEngine	Google AppEngine hosts web applications and its primary function is to serve users request efficiently. In order to do so, AppEngine's infrastructure takes advantages of the many servers present in the data centers under google
Microsoft Azure	AppFabric is a comprehensive middleware for developing, deploying and managing applications on the cloud. AppFabric is a middleware technologies for windows server released by Microsoft. AppFabric implements an optimized infrastructure supporting scaling out and high availability.

**Compute Services-**

<b>Service Provider</b>	<b>Description</b>
Amazon Web Services	<p><b>Amazon Machine Image (AMI)-</b>                      AMI's are templates from which it is possible to create a virtual machine. They are stored into the Amazon S3 and is identified by a distinct identifier in the form of ami-xxxxxx and a manifest XML file. AMI contains a physical file system layout with a predefined installed operating system.</p> <p><b>AWS CloudFormation-</b>                      AWS cloudformation constitutes an extension of the simple deployment models that characterizes EC2 instances. Cloudformation introduces the concepts of templates which are</p>
	<p>JSON formatted text files describing the resources needed to run the applications or a service in EC2 together with the relations between them.</p> <p>c) AWS Elastic Beanstalk -                      AWS Beanstalk constitutes a simple and easy way to pack applications and deploy them on AWS cloud. This service simplifies the process of provisioning instances and deploying application code, and providing appropriate access to them. Currently this service is available only for web applications developed by java/Tomcat technology.</p>
Google AppEngine	<p><b>Task Queues-</b>                      Task Queues allow applications to submit a task for later execution this service is particularly useful for long computations that cannot complete within the maximum response time of a request handler.</p> <p><b>Cron Jobs-</b>                      occasionally the length of computation might not be the primary reason why an operation is not performed within the scope of the web request.</p>

<p>Microsoft Azure</p>	<p>Web Role- the web role is designed to implement scalable web applications. Web roles represent the units of deployment of web applications within the Azure infrastructure . They are hosted within the IIS 7 Web server which is a component of the infrastructure that supports Azure.</p> <p>Worker Role- Worker roles are designed to host general compute services on azure. They can be either used to quickly provide compute power or to</p>
	<p>host services that do not communicate with the external world through HTTP. A common practice for worker roles is to use them to provide background processing for web applications developed within web roles.</p> <p>c) Virtual Machine Role- The virtual machine Role allows developers to fully control the computing stack of their compute service, by defining a custom image of the windows server 2008 R2 operating system and all the service stack required by their applications. The virtual machine role is based on windows Hyper-V virtualization technology.</p>

**Storage Services-**

Service Provider	Description
<p>Amazon Web Services</p>	<p><b>Amazon Elastic Block Store-</b> Amazon EBS allows AWS users to provide EC2 instances with persistent storage in the form of volumes that can be mounted at instance start-up. They accommodate up to 1 TB of space and are accessed through a block device interface , thus allowing users to formatthem according to the needs of the instance they are connected to.</p> <p><b>Amazon ElastiCache-</b> ElastiCache is an implementation of an elastic</p>

	<p>in-memory cache based on a cluster of EC2 instances. It provides a fast data access from other EC2 instances through a Memcached compatible protocol.</p> <p><b>3) Amazon RDS -</b>                  The Amazon RDS stands for Relational Database service, It is a Structured storage service provided by AWS. It relies on the EC2 infrastructure and is managed by Amazon. Developers do not have to worry about configuring the storage for high availability or keeping the servers up-to-date with patches. The service provides the users with automatic backups, snapshots, point-in-time recoveries and facilities for implementing replications.</p>
Google AppEngine	<p><b>DataStore –</b>                  DataStore is a service allowing developers to store semi-structured data. The service is designed to scale and optimized to swiftly access data. DataStore can be considered as a large object database where to store objects that can be retrieved by a specified key. Both key and the structure of the object can vary.</p> <p><b>Static File Servers-</b>                  Web applications are composed by dynamic and static data. Dynamic data is a result of the logic of the application and the interaction with the user. Static data often is mostly constituted by the components that define the graphical layout of the application or data files. These files can be hosted on static file servers, since they are not frequently modified.</p>
Microsoft Azure	<p><b>a) Blobs-</b>                  Azure allows storing large amount of data in the form of binary large objects (BLOBs) by means of the blobs service. This service is optimal to store large text or binary files, two</p>

	<p>types of blobs are available.i)Block Blobs - Block blobs are composed by blocks and they are used for sequential access hence they are compatible for media streaming.</p> <p>ii)Page Blobs- Page blobs are made of pages that are identified by an offset from the beginning of the blob. A page blob can be split in multiplepages or constituted by a single page.</p> <p><b>Azure Drive-</b> Page Blobs can be used to store an entire file system in the form of a single Virtual Hard Drive (VHD) file. This can then be mounted asa part of the NTFS file system by Azure Compute Resources, thus providing persisting and durable storage</p> <p><b>Queues -</b> Queue storage allows applications to communicate by exchanging messages throughdurable queues, thus preventing messages fromgetting lost or remaining unprocessed. Applications enter messages into a queue andother applications can read them in a FIFO style.</p>
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#### Advantages of Cloud Computing-1)Cost Efficient-

Cloud Computing is assumably the most cost-efficient strategy for maintain, upgrade and use. There are several desktop softwares used at enterprise level and for different user, new license is added hence increasing the cost in finance of an organization. on the other hand cloud is available at cheaper prices where the organization can use any cloud based software.

#### Unlimited Storage –

when using a cloud service a user or an organization does not need to undergo hardware customization as there is unlimited storage when storing data on cloud.

#### Easy to access information-

If a user is registered in the cloud , he/she can access information from anywhere across the globe with an internet connection.

#### Disadvantages of Cloud Computing-1)Security-

the major issue in Cloud computing is the most important aspect that is ‘Security’. While submitting the data to a third party service provider there are chances that the data can be misused hence a user should choose a reliable service provider for data secure Technical problems-

as the cloud can be accessed from anywhere across the globe sometimes there are some technicalproblems from which the user cannot access data temporarily. Even the best service providers face technical problems occasionally.

#### Chances of external attacks-

storing information/data in the cloud makes the users or the organization exposed to external attacks from hackers or threats as DATA is the most valuable asset in the world .

### CONCLUSION

In the above paper, we have described history, Introduction, different types of cloud computing service models and deployment models and the core of the topic Comparison of three most popular cloud computing service providers in the IT industry. There is no doubt that cloud computing is the arising development trend in the near future. There is a possibility that with advanced technologies in future cloud computing will be much more advanced than now. The Amazon Web services, Google AppEngine and Microsoft Azure each have a distinct property hence making themselves different from each other and from other computing service providers. Now-a-days if it is a small or a big organization they are using cloud computing to manage hardware requirements, storage etc. hence it is clear that cloud computing has a huge impact on the IT industry and as well as on the Society.

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# AI BASED STUDENTS CHATBOT

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## ABSTRACT

This paper discloses a conversational method and system which will provide solutions to the questions of the students and display it effectively in an app. We intend to make the appas convenient and user-friendly as possible. In this paper, we would like to present an intelligent conversational system called “VChat”, which acts as a virtual friend who can assist to understand and guide the students to the relevant direction. Our main focus is onproviding relevant and smart answers using artificial intelligence and machine learning techniques.This chatbot will allow a user to simply ask questions in the same way that they would address a human. The technology at the core of the proposed chatbot is natural language processing (“NLP”), Chatterbot and Tensorflow libraries with the help of Android GUI.

**KEYWORDS:** *Chatbot, NLP, Artificial Intelligence, Machine learning, Chatterbot, Tensorflow,android application, transcript and conversation.*

## INTRODUCTION

Chatbots or Virtual Assistants have been made to simplify the interaction between humans and computer systems and they have hit the market. A chat bot is a software that uses artificial intelligence (AI) to converse (or chat) with a user in natural language via virtual chat rooms, websites, mobile apps and messaging applications or through the telephone. Chatbots are often referred to as one of the most promising and advanced form of interaction between

machines and humans. A conversational chatbot is a type of program or a piece of software that is able to chat with the user using machine learning approaches. Modelling and training the conversation is a crucial task in artificial intelligence (AI) and Natural Language Processing. Creating a user friendly and smart chatbot is one of the hardest challenges faced by programmers or developers in the field of AI. Chatbots can be used for different purposes, in general they have to understand the user's expectations and provide smart responses that are relevant to the problem at hand.

AI students chatbot is a conversational chatbot system that analyses the student's queries and messages. This chatbot system has an in-built artificial intelligence to answer the queries of the student through user interface. The answers to the queries are determined using artificial intelligence and machine learning approaches. Irrespective of the type of method and the platform used, human interaction plays a very important role in training, optimising and configuring the chatbot system. There are two different tasks which form the basis of a chatbot : User Request Analysis and Returning the response.

### LITERATURE SURVEY

Sr .No	Title of the paper	Authors, Country	ISSN / ISBN number	Output
1	A survey Paper on Chatbots	Aafiya Shaikh, Dipti More, Ruchika Putto, Sayli Shrivastav, Swati Shinde ( India)	E-ISSN:239 5-0055 P- ISSN:2395- 0072	Helps the adolscent users to talk freely about their mental conditions
2	College enquiry chatbot using ALICE	Balbir Singh Bani, AjaySingh Pratap (India)	ISSN:2454- 4116	Help new students to solve all the problems they face and the questions which arises in their mind during and after admission

3	Chatbot design -Reasoning about design options using i*	Zia Babar Alexei Lapouchnian  (Canada)		A mechanism of associating process architecture models and actor models
4	A tool of conversation : Chatbot	M. Dahiya  (India)	E- ISSN:2347- 2693	Addresses the design and implementation of a Chatbot system

### COMPARISON

Various different chatbot systems are available like Endurance, Alice, Casper and MedWhat. But all these chatbots are designed to work with their respective and relevant fields. They either use Rule-based or Retrieval -based techniques to produce the result. Before the development of AI Chatbot students have to be compelled to head separately to the several faculties to induce the data concerning admission procedures. New students attempt to search for a college member for data, or exercise the courageousness to raise a senior. They may miss out vital dates if they are not updated with the recent college notices and activities. Also students get a great deal of confusion once their graduation concerning the stream they have to decide on their post-graduation. Even though a lot of information are available today on the internet, they still face many confusions regarding the decision to be made. The faculty and staff members are burdened with the additional responsibility of showing new students the ropes and respondent identical bunch of queries. This leads to a lot of effort and time consumed is more.

We have used generative model as a result of the bots created mistreatment models not solely give responses from predefined set of knowledge however conjointly learns and generates responses on its own. This makes the chatbot more intelligent as they take word by word from the query and generate smart and relevant answers.

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may miss out vital dates if they are not updated with the recent college notices and activities. Also students get a great deal of confusion once their graduation concerning the stream they have to decide on their post-graduation. Even though a lot of information are available today on the internet, they still face many confusions regarding the decision to be made. The faculty and staff members are burdened with the additional responsibility of showing new students the ropes and respondent identical bunch of queries. This leads to a lot of effort and time consumed is more. We have used generative model as a result of the bots created mistreatment models not solely give responses from predefined set of knowledge however conjointly learns and generates responses on its own. This makes the chatbot more intelligent as they take word by word from the query and generate smart and relevant answers.

### OVERVIEW

AI Chatbot don't simply have a role to play at the start of the academic year. Faculties and universities can use them to notify students about upcoming examinations, events and activities throughout the semester.

The user can ask any questions about the college related activities such as date and timing of annual day, sports day, and other cultural activities. This system helps the student to be updated about the recent college activities. The working of the chatbot is very convenient and can be easily understood by any person.

The AI chatbot uses Natural Language Processing(NLP) and Artificial Intelligence which helps the user to ask question in any language with a specific keyword. The information can be accessed from anywhere throughout the world without being present physically at the source.

The transcript of the chat is sent as an e-mail attachment to the user. Hence, it is flexible and user friendly.

### METHODOLOGY

Here are few functions that is processed in the chatbot application :-

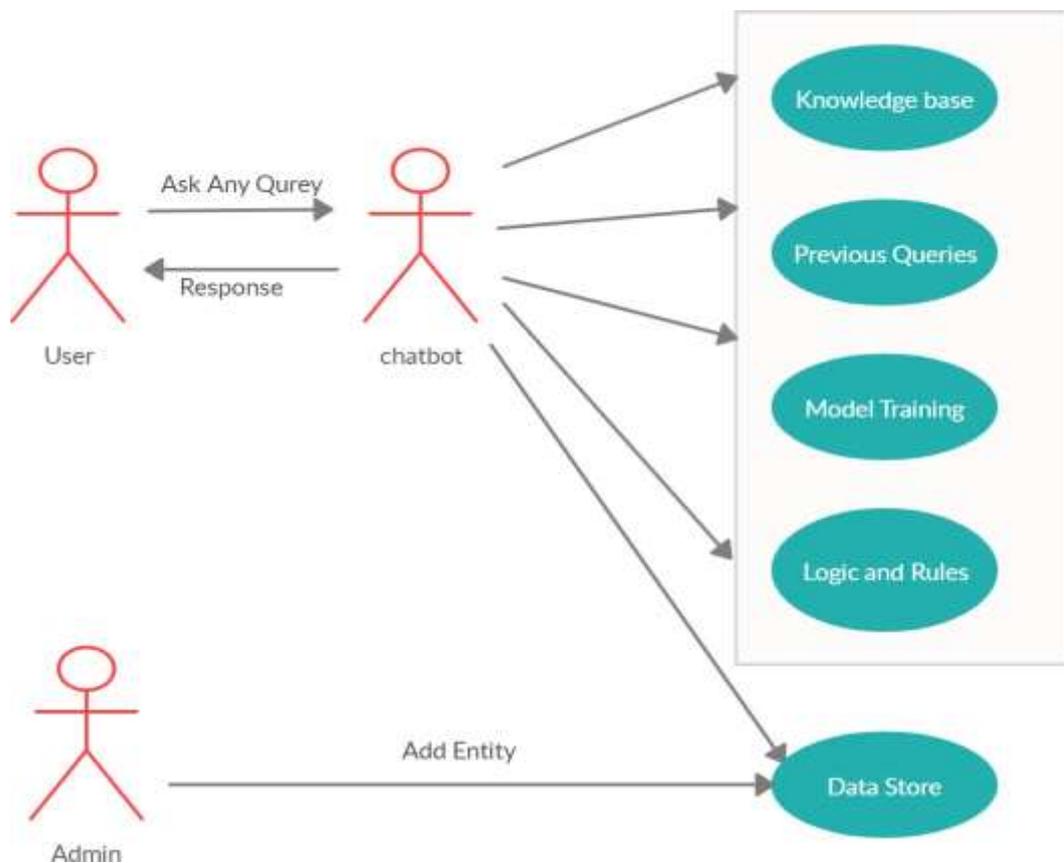
#### Software requirements :-

We propose an android application which is used as a medium to chat with the user. The application has two main components. The first component is the college module and the second component is the career module. The user has to select between these modules to get started. After selecting the module, the user will be redirected to the chat screen of the bot. Here the user can ask any questions related to college activities.

#### In-app functions :-

The bot processes the query by consulting its datastore. The datastore contains a predefined set of trained questions. The bot then decides the appropriate answer and sends it to the user through the same user interface.

Even though the user asks one question in many different ways, the chatbot should be able to provide correct answers using machine learning algorithms. To achieve this, a chatbot and TensorFlow libraries of Python language are used.



### LIBRARIES

The chatterbot library makes it very easy to get automated responses to the user. It also uses various machine learning algorithms to produce differing types of results. This becomes very easy for developers to build chatbots and automate conversations with the user. The language freelance style of chatterbot permits it to be trained to talk in any language. In addition to this, the machine learning nature of chatterbot allows the bot to improve its own knowledge store from the possible responses of the user as it communicates with the user and other forms of information data.

The untrained instance of chatterbot does not have any knowledge of how to interact with the

user. Every time the user inputs a statement, the library saves the input statement that was entered by the user and the text answer the statement was in response to. As chatterbot receives more additional input the amount of responses that it will reply and the accuracy of each response in relation to the input statement increase.

### **Transcript**

After the user has finished with the questions he can ask for a transcript to the bot. The chatbot then sends the transcript of the chat messages to the mail address of the user. In this way the user can even record and save the details of the chat information.

### **FUTURE SCOPE**

Chatbot is a rudimentary form of artificial intelligence systems which can interact and converse like a human being. It can be used in different fields like banking, government sector, educational institutes and even in business. It is seen as a learning tool of the modern world. These bots can also be used as a tool to learn many different languages and they are going to be really dominating in future.

The main difficulty with this project is that the data store of the bot needs to be updated regularly with the recent college activities and also due to the changing technology. So the data can be stored in a server rather than a data store.

Also to communicate with the bot one needs to have an active Internet connection.

### **CONCLUSION**

A chatbot is one of the simplest and convenient way to transport information from a system to the user without having to look up in a search or browse several web pages. The user can easily ask the question in simple language and can get the proper response instantly. It is a great tool for rapid interaction with the user.

This project creates new ways to connect to our modern technologies and makes way to more detailed analysis. It also helps the students to get updated with the recent college activities and schedules.

It also saves the time and efforts of faculties and non-teaching staffs and proves to be very efficient.

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## SURVEY ON BIOCHIP

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### ABSTRACT

The progress of biochips may be a main initiative of the quickly growing biotechnology industry, which in cooperates a really mixed range of research efforts including genomics, proteomics, and pharmaceuticals. Advances in these areas are giving experts new methods for unravelling the complex biochemical processes happening inside cells, with the larger area of understanding and treating human diseases. On the other hand, the semiconductor industry has been gradually perfecting the science of micro-miniaturization. The combination of these two fields in the years has allowed biotechnologists to start packing their traditionally bulky sensing tools into smaller spaces so it is called biochips. These chips reduced laboratories that can perform thousands of simultaneous biochemical reactions.

**KEYWORDS:** *Biochips, genetic, Membrane, Micro arraying*

### INTRODUCTION

A biochip could also be a set of miniaturized test sites arranged on a solid substrate that allows many tests to be performed at the same time so on realize higher throughput and pace. Typically, a biochip's area is not any larger than a fingernail. The sort of System chip which perform many mathematical operations in one second, a biochip can perform thousands of biological reactions, like decoding genes in few seconds.

A genetic biochip is meant to freeze into place the structures of the varied short strands of DNA (deoxyribonucleic acid), the essential chemical instruction that establishes the characteristics of an organism.

Effectively, it's used as a tube for real chemical samples. A specially designed microscope can determine where the sample hybridized with DNA strands within the biochip. The microchip is described as a kind of word search function which will quickly sequence DNA. Today, a spread of biochip technologies are either in development or being commercialized.

### **DESIGN OF BIOCHIP**

A design for a biochip storage device supported known materials and existing principles is presented. A molecular switch to regulate current is described which is predicated on the formation of a charge -transfer complex. A molecular-scale bit is presented which is predicated on oxidation - reduction potentials of metal atoms or clusters. The readable 'bit' which may be made from these components features a volume of  $3 \times 10^7 \text{ \AA}^3$  and will operate at electronic speeds over short distances. After selection of an appropriate biochip substrate, biochip surfaces were chemically modified and assessed to enable optimization of biochip fabrication procedures for various test panels. A segment of a DNA strand, protein, peptide or antibody is inserted into each drop, tailoring it to acknowledge a selected biohazard or biochemical signature. These drops are in known positions so when a sample reacts, the reaction position are often detected, identifying the sample. The biochip system can identify communicable disease strains in but quarter-hour when testing protein arrays and in less than two hours when testing macromolecule arrays.

### **APPLICATIONS OF BIOCHIPS**

1. Diagnostic tool in clinical medicine.
2. Quantifying bio-molecules.
3. Develop polymorphism analysis.
4. Identify Bio warfare agent.
5. Cancer.
6. Rapid diagnostic testing.

### **Biochip technology and its components:-**

The current biochip implant system is really a reasonably simple device. Today's, biochip implant is essentially a small (micro) computer chip, inserted under the skin, for identification purposes. The transponder is that the actual biochip implant. The biochip system may be a

frequency identification (RFID) system, using low-frequency radio signals to communicate between the biochip and reader.

### **Components of Biochip**

The biochip-transponder consists of 4 parts; computer microchip, antenna coil, capacitor and therefore the glass capsule.

- **Computer Microchip**

The microchip stores a singular number from 10 to fifteen digits long. The storage capacity of the present microchips is restricted, capable of storing only one ID number. AVID (American Veterinary Identification Devices), claims their chips, employing an nnn-xxx-xxx format, has the potential of over 70 trillion unique numbers. Once the amount is encoded it's impossible to change.

- **Glass Capsule**

The glass capsule contains the microchip, antenna coil and capacitor. It's a little capsule, the littlest measuring 11 mm long and a couple of mm in diameter, about the dimensions of an uncooked grain of rice as shown in figure 2 and three . The capsule is formed of biocompatible material like soda lime glass. Because the glass is extremely smooth and susceptible to movement, a cloth like a polypropylene polymer sheath is attached to at least one end of the capsule.

Biochip is up to the mark of the monster:-

The biochip technology was originally developed for monitoring fisheries as mentioned, its use now includes, over 300 zoos, over 80 government agencies in a minimum of 20 countries, pets also , checking lab animals, fisheries, endangered wildlife, automobiles, garment tracking, hazardous waste and consistent with the experts. To date, over 7 million animals are chipped. The main biochip companies are A.V.I.D. Trovan Identification Systems, and Destron-Fearing Corporation. And consistent with most modern-day sayings the implanted biochip is that the soon-coming in humans also.

### **Common myths about biochips implants**

- With a biochip are often wont to track you or your pet's location, anywhere within the world the present biochip and reader features a maximum range of 12 inches. Pets are located by shelters, vets and find a lost pet by reading its biochip. The technology doesn't exist to globally locate something as small as a biochip.

- A biochip stores and updates your financial, medical, demographic data, basically everything about you. The common scenario is, an implanted biochip are often scanned to shop for groceries, obtain medical procedures, and conduct financial transactions.
- One major concern with a implanted biochip is theft-consistent with the authorities a chip implant would contain your financial world, medical record , health care it would contain your "electronic life". If cash not existed and if the world's economy was totally chip oriented; — there would be an enormous "black-market" for chips! Since there is no cash and no other bartering system, criminals would stop hands and heads, stealing "rich-folks" chips.

### CONCLUSION

Biochips promises to bring genomics, the study of all the genes in existing organisms, out of the research laboratory and into the everyday practice of drugs. If genomics delivers on its promise, health care will shift from attention on detection and treatment to a process of prediction and prevention. The biochip lies at the joint between technology chip manufacturing, signal processing, software skills and more traditional biology and genomics. The market for biosensors and biochips is interdisciplinary and growing and has applications during a number of core research areas. This paper presents a valuable context addition for those in both academia and manufacturing. As this fast maturing field already boasts sales of products, biochips are likely to possess a big business future. We can expect that advances in microfluidic biochip technology will enable the miniaturization of devices that will allow sensitive analysis of complex biological interactions in real time that to with a coffee cost perception.

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# STUDY OF PATTERN RECOGNITION USING ARTIFICIAL NEURAL NETWORK

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## ABSTRACT

This paper present artificial Neural network (ANN). is an information processing paradigm that is inspired by the way biological nervous system, such as the brain, process information Neural network takes a special approach to problem solving than that of usual computer. conventional computer the follows a set of instruction in order to solve any problem i.e. it uses an algorithmic approach. Neural network is intimately associated with mathematical and statistical model. Artificial neural network is gaining prominence in various application like pattern recognition, weather prediction, handwriting recognition, face recognition, robotics, etc. This also include classification, optimization and clustering

## INTRODUCTION

The study of human brain. Artificial neural network (ANN) is an efficient computing system whose central theme is borrowed from the analogy biological neural networks. ANN also named as “artificial neural systems”, or “parallel distributed system”, or “connectionist system.” Artificial neural network provided many useful techniques for improving the effectiveness and efficiency of problem-solving technique. The first step towards artificial neural networks came in 1943 when warren McCulloch, a neurophysiologist, and a young mathematician, Walter pits wrote a paper on how neuron might work. They created simple neural network with electrical circuits. artificial neural network is basically self-adaptive which is non-linear data driven in nature. Neural networks, with their remarkable ability to derive meaning from complicated or imprecise data, can be used to extract patterns and detect trends that are too complex to be noticed by either humans or other computer techniques. Some advantages of neural network include:

**Adaptive learning:** an ANN is endowed with the ability to learn how to do task based on the data given for training or initial experience

**Self-organization:** An ANN can create its own organization or representation of the

information it receives during learning time

**Real time operation:** ANN computation may be carried out in parallel. Special hardware devices are being design and manufacture to take advantages of capability of ANNs

**Fault tolerance via redundant information coding:** partial destruction of a neural network leads to the corresponding degradation of performance. However, some network capability may be retained even after major network damage.

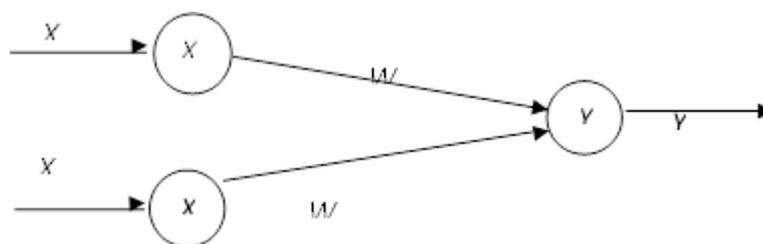
**Storing information on the entire network:** information such as traditional programming stored on the entire network, not on a database. The disappearance of a few pieces of information in one place does not prevent the network from functional.

### Artificial neural network:

Neural networks are information processing system that are constructed and implemented to model the human brain. The main objective of the neural networks research is to develop a computational device for modelling the brain to perform various computational task at a faster rate than the traditional systems. [1]The artificial neural network performs various task such as pattern-matching and classification, optimization function, approximation, vector quantization, and data clustering. These tasks are very difficult for traditional computer, which are faster in algorithmic computational task and precise arithmetic operation [1]

An artificial neural network (ANN) is an efficient information processing system which resembles in characteristics with a biological neural network. ANNs possess large number of highly interconnected processing elements called node or units or neurons, which usually operate in parallel and are configured in regular architectures. ANNs' collective behaviour is characterized by their ability to learn, recall, and generalize training patterns or data similar to [1] the human brain. They have the capability to model network of original neuron as found in the brain. Thus, the ANN processing element are called neuron or artificial neurons.

Architecture of simple artificial neuron net



Here X1 and X2 are input neuron, which transmit signals, and Y is the output neuron, which receives signals.

Input neurons X1 and X2 are connected to the output neuron Y over a weighted interconnection link ( $w_1$  and  $w_2$ ) as shown above fig.

For the above simple neuron net architecture, the net input has to be calculated in the following way:

$$Y_{in} = x_1w_1 + x_2w_2$$

Where  $x_1$  and  $x_2$  are the activations of the input neuron  $x_1$  and  $x_2$  i.e. the output of input signals. The output  $y$  of the output neuron  $Y$  can be obtained by applying activation over the net input i.e. the function of the net input:

$$Y = f(Y_{in})$$

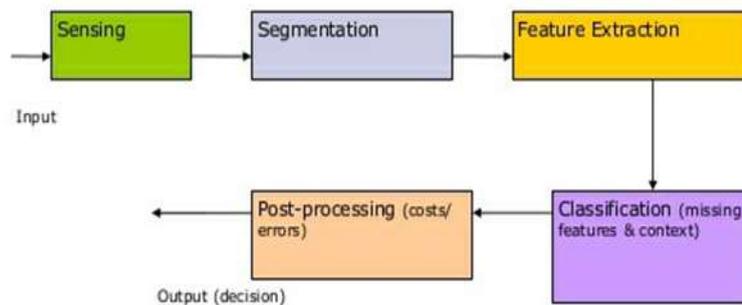
Output = function (net input calculated)

The function to be applied over the net input is called activation function. [1] **Pattern recognition:**

Automation recognition, description, classification, and grouping of patterns are important problems in a variety of engineering and scientific discipline such as biology, psychology, medicine, marketing and remote sensing. A pattern could be fingerprint image, a handwritten cursive word, a human face, or a speech signal. Its classification may consist of the following two tasks: 1) supervised classification in which the input pattern is identified as a member of predefined class. 2) unsupervised classification in which the pattern is assigned to hitherto unknown class. The recognition problem here is being posed as a classification or categorization task, where the classes are either defined by the system designer in supervised classification or are learned based on the similarity of patterns in unsupervised classification. The rapidly growing and available computing power, while enabling faster processing of huge data sets, has also facilitated the use of elaborate and diverse methods for data analysis and classification. The design of a pattern recognition system essentially involves the following three aspects:

data acquisition and pre-processing, data representation, and decision making. The problem domain dictates the choice of sensor, pre-processing technique, representation scheme, and the decision-making model. It is generally agreed that a well-defined and sufficiently constrained recognition problem will lead to a compact pattern representation and a simple decision-making strategy. Learning from a set of examples that are training set is an important and desired attribute of most pattern recognition systems. The four best known approaches for pattern recognition are: 1) template matching, 2) statistical classification, 3) syntactic or structural matching, and 4) neural networks.

# Pattern Recognition System



Biological neural network :

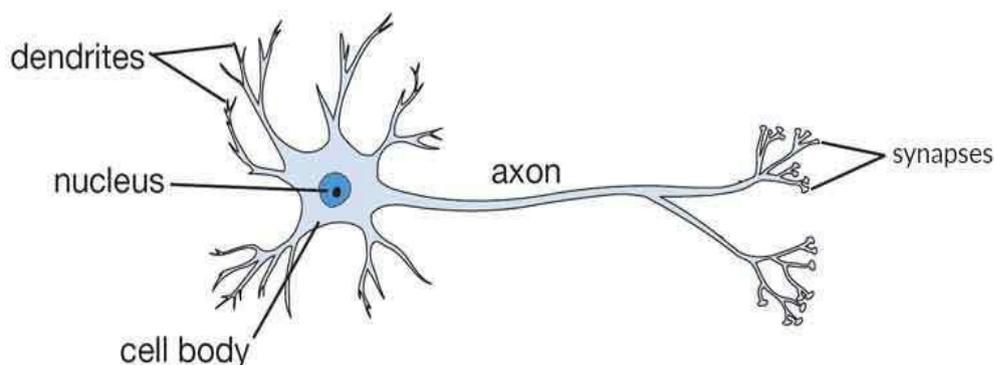
## Neural Network:

The term 'Neural' is derived from the human (animal) nervous system's basic functional unit 'neuron' or nerve cells which are present in the brain and other parts of the human (animal) body. A neural network is a group of algorithms that certify the underlying relationship in a set of data similar to the human brain. The neural network helps to change the input so that the network gives the best result without redesigning the output procedure.

Parts of Neuron and their Functions

The typical nerve cell of the human brain comprises of four parts –

## Biological Neuron



**Function of Dendrite**

It receives signals from other neurons.

**Soma (cell body)**

It sums all the incoming signals to generate input.

**Axon Structure**

When the sum reaches a threshold value, neuron fires and the signal travels down the axon to the other neurons.

**Synapses Working**

The point of interconnection of one neuron with other neurons. The amount of signal transmitted depends upon the strength (synaptic weights) of the connections.

The connections can be inhibitory (decreasing strength) or excitatory (increasing strength) in nature. So, neural network, in general, is a highly interconnected network of billions of neurons with trillion of interconnections between them.

**Working of ANN:**

Artificial Neural Networks can be best viewed as weighted directed graphs, where the nodes are designed by the artificial neurons and the connection between the neuron output and neuron inputs can be represented through the directed edges with weights. The Artificial Neural Network receives the input signal from the outside world in the form of a pattern and image in the form of a vector. These inputs are then mathematically designated by the notations  $x(n)$  for every  $n$  number of inputs.

Each of the input is then multiplied by its corresponding weights (these weights are the details used by the artificial neural networks to solve a certain problem). In general terms, these weights typically represent the strength of the interconnection amongst neurons inside the artificial neural network. All the weighted inputs are summed up inside the computing unit (yet another artificial neuron).

If the weighted sum equates to zero, a bias is added to make the output non-zero or else to scale up to the system's response. Bias has the weight and the input to it is always equal to 1. Here the sum of weighted inputs can be in the range of 0 to positive endlessness. To keep the response in the limits of the desired value, a certain threshold value is benchmarked. And then the sum of weighted inputs is passed through the activation function. [1] [2]

The activation function, in general, is the set of transfer functions used to get the desired output of it. There is various type of the activation function, but mainly either linear or non-linear sets of functions. Some of the most commonly used set of activation functions are the Binary, Sigmoidal (linear) and Tan hyperbolic sigmoidal (non-linear) activation functions. Now let us take a look at each of them, to certain detail: [1]

**Binary:**

The output of the binary activation function is either a 0 or a 1. To attain this, there is a threshold value set up. If the net weighted input of the neuron is greater than 1 then the final output of the activation function is returned as 1 or else the output is returned as 0.

**Architecture of Artificial Neural Networks:**

To understand the architecture of an artificial neural network, we need to understand what a typical neural network contains. In order to describe a typical neural network, it contains a large number of artificial neurons (of course, yes, that is why it is called an artificial neural network) Let us take a look at the different kinds of layers available in an artificial neural network:

**Input layer:**

The Input layers contain those artificial neurons (termed as units) which are to receive input from the outside world. This is where the actual learning on the network happens, or recognition happens else it will process.

**Output layer:**

The output layers cover units that respond to the information that is fed into the system and also whether it learned any task or not.

**Hidden layer:**

The hidden layers are mentioned hidden in between input layers and the output layers. The only work of a hidden layer is to transform the input into approximately meaningful that the output layer/unit can use in some method. [1] [2]

Most of the artificial neural networks are all interconnected, which means that each of the hidden layers is individually connected to the neurons in its input layer and also to its output layer. This makes it possible for a complete learning process and also learning occurs to the maximum when the weights inside the artificial neural network get updated after each iteration. [1]

**CONCLUSION**

In this article, we have tried to explain what neural networks are and at the same time, we have taken the discussion a step ahead and introduced you the artificial neural networks. We have seen how artificial neural networks are put to use to solve problems. [1]

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# SMART AMBULANCE PATIENT MONITORING SYSTEM

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## ABSTRACT

Traffic congestion problems have been prevalent in India for a long time now. We often see ambulances struggling their way through the traffic. Approximately 30% of ambulance arrivals are delayed due to traffic. This is because roads in India aren't very ambulance-friendly. Delayed arrival of ambulances at hospitals in turn, lead to delayed treatment which may have negative outcomes on the health of the patient. Furthermore, when the patient finally arrives at the hospital, there are several pre operative procedures that need to be carried out before actually operating the patient. The process of admission of a patient is a time consuming one. This is because the doctors have no prior knowledge about the condition of the patient until the patient arrives. But what if we provide the hospital with the patient's condition and health parameters before the patient arrives at the hospital? We're proposing an Internet of Things based device that will collect live health parameters like ECG, pulse and body temperature of the patient and send it to the hospital. With the live health parameters, the doctor's can prepare for emergency treatment of the patient in advance so that the time delay once the patient arrives is reduced and the patient can be treated immediately. We will achieve all this with IOT which is indeed making things smart.

**KEYWORDS** : *Internet of Things, ambulance, health parameters*

## INTRODUCTION

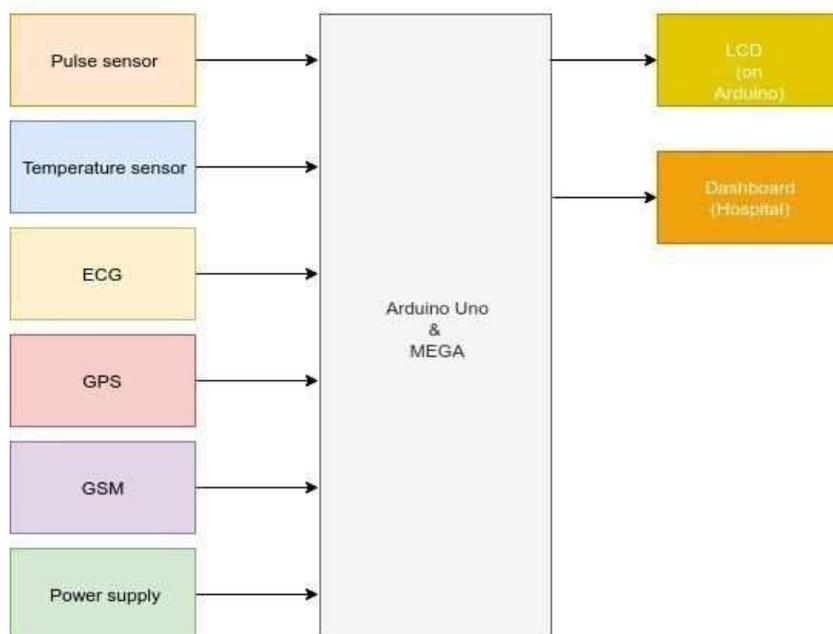
Immediate medical attention is required to critically ill patients after the accident or ill

patients. Our system is specially designed to carry some basic necessities which are required by the hospital to monitor the patients. System will consist of GSM/GPRS, GPS, Heart beat sensor, ECG, Temperature and some basic sensors. The patient is in the ambulance, the data of the person will be sent to the hospital and an expert doctor can take the precautionary measures before the patient arrives at the hospital. There will be specially trained technicians which will be in the monitoring room in the hospital to monitor the data of the patient and inform the concerned authorities.

### METHODOLOGY

To implement the smart ambulance - patient monitoring system we are using a pulse sensor, ECG sensor and temperature sensor(LM35). For the purpose of locating the ambulance we will be using GPS(SIM 28). To send data across the network to the cloud we will be needing an internet connection for which we are using GSM module(SIM 900A). The health parameters that the arduino will collect will be transmitted via Message Queuing Telemetry Transport(MQTT) protocol. The data will be displayed on the Node-RED dashboard. Basic values and states of the device will also be displayed on a I2C 16 x 2 LCD mounted on the device itself. The live GPS location can be also sent to the nearest traffic police in areas where there is traffic usually so that the traffic police can control the traffic and make way for the ambulance to pass without getting stuck in it.

### BLOCK DIAGRAM



## MODULE DESCRIPTION

Arduino Mega - The Arduino Mega is a microcontroller board based on the ATmega2560. We have used Mega because it has 54 digital I/O pins, 16 analog inputs and a larger space for your sketch.

We are using mega because we can use more complex sensors in future for better analytics and better performance.

Pulse sensor - Pulse Sensor Amped is a plug-and-play heart-rate sensor for Arduino and Arduino compatibles. Pulse Sensor adds amplification and noise cancellation circuitry to the hardware. It's noticeably faster and easier to get reliable pulse readings.

We are using a Pulse sensor to determine the pulse rate of the person.

Temperature Sensor - LM35 is an integrated analog temperature sensor whose electrical output is proportional to Degree Centigrade.

We are using this as a temperature sensor to check the basic temperature of the body. This sensor doesn't require any external results hence shows the approximate results.

ECG Sensor - The AD8232 is an integrated signal conditioning block for ECG and other biopotential measurement applications.

We are using AD8232 for ECG graphs, so experts can determine the irregularities in the heart rhythm.

GPS module - We are using Sim28 as the GPS module. GPS helps us to locate the object or vehicle. In this case we will be using GPS in the ambulance where experts can determine from the hospital the location of the hospital.

Monitor - The monitor will be used to display our dashboard containing the patient's health parameters in the hospital where experts can check the live parameter of the patient.

LCD - LCD will be used onboard the system to show some basic details of the connections. For eg, Network connected.

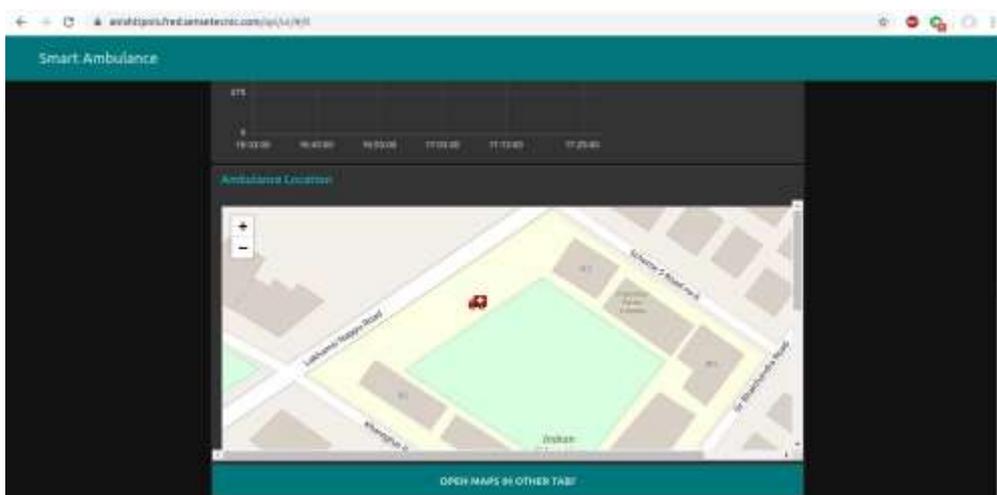
GSM module - The SIM900A is a readily available GSM/GPRS module, used in many mobile phones and PDA. The module can also be used for developing IOT (Internet of Things) and Embedded Applications. We will be using sim900a as the gsm module which will have the internet and send the data to the cloud. Also this module can send SMS, so we will be sending SMS to the concerned authorities when the ambulance leaves.

## RESULTS

In Smart Ambulance - Patient Monitoring System, we can see the like health parameters as well as the live location of the ambulance on the Node-RED dashboard. The LCD on the device also shows different states and values of the system to the device operator. The normal body temperature is generally accepted as 37° C. Normal Pulse rate ranges from 60 to 100 bpm normal value while that of the ECG is about 82 bpm.



*Fig. 2 : LCD output of the values from sensors and location of ambulance.*



*Fig 3 : Live location on the Node-RED dashboard*



Fig. 4 : Gauge view of temperature and pulse on the Node-RED dashboard

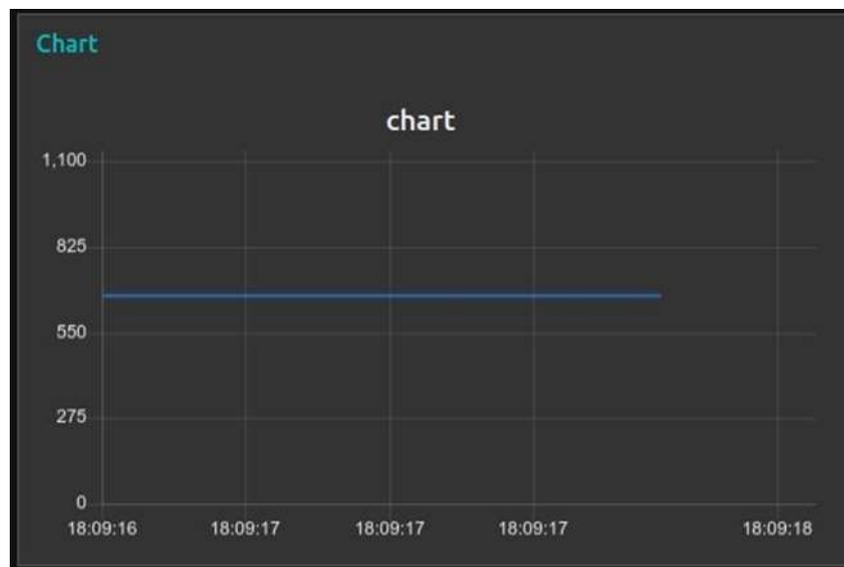


Fig. 5 : ECG chart on the Node-RED dashboard

## CONCLUSION

We have analyzed the Smart ambulance - Patient Monitoring System to measure ECG, pulse and temperature of humans using Arduino. It is a transportable, real time system. We send the live location of the ambulance, which is captured with GPS, to the nearest police authorities via GSM(SIM900A). Patient's data collected via sensors is sent from arduino mega to the Node-RED dashboard, displayed on a monitor in the hospital via MQTT protocol.

The critical health parameters of the patient can be analysed even before the arrival of the patient. This buys the hospital enough time to prepare for immediate treatment on patient's arrival. Our system is mainly designed for emergency cases that need immediate medical attention.

### FUTURE APPLICATIONS AND DEVELOPMENT

- Abnormalities in the health parameters can be displayed with a warning.
- Blood pressure and some other health parameters can be added to the device.
- A warning can be set whenever there are abnormalities in any of the health parameters of the patient.

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# ARTIFICIAL INTELEGGENCE HELP TO DETECT CANCER CELL

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Innovation in information technology embrace upon a significant change in the medical science. Information technology not only help in mapping the location of a particular place in association with the GPS technique, but also it helps to detect the cancerous cell growing tremendous inside the body. The advance technology called Artificial intelligence (AI) help to detect the early cancerous cell .AI can beat with the traditional therapy to detect the cancer cell. Study suggested by the university National cancer institute found that the google Artificial intelligence can detect miligancy at a level equal to or above the abilities of a trainer radiologist. Basically AI can have different versions including search and mathematical optimization, method based on statistics and algorithmic function and artificial neural network. For the detection of lung cancer , the Artificial neural network is used. Earlier, the therapy like Gene Therapy used to identify cancer cell. Drawback about this therapy is that it can be hurdled also required a long time duration to get a result. Sometimes, it directly threatened the chances of mutation . To overcome the problem, the Artificial intelligence may help to tackle the unsteady detection process of cancer cells , also as early as possible the early medication and therapeutic treatment can be started to not extend it to next stage. Furthermore, computer based scanning which no longer need the supervision of doctors

**KEYWORDS :** *Artificial intelligence, lung cancer, machine learning, medical science*

## INTRODUCTION

Cancer is the uncontrolled growth of a abnormal cell anywhere in a body. There are two types of cancer cell . One is called malignant or tumour cell and another is called benign cancer. Usually the cancer is caused by abnormal growth in malignant cancer cell . Once the malignant cancer cell becomes the dominant, it starts filtering out other healthy tissues and cells. They start building up in the body by using oxygen and nutrients that would usually nourish other cells. Cancerous cell can form tumour which impair the immune system and cause the other changes that prevent the body from functioning regularly. Initially, at early or first stage Cancerous cell may appear in one area and then after the arrival of second third and last stage, they spread via lymphatic nodes all over the body. The resistance system of a body will be blocked. It also starts to influence the cell production proteins which carry many

instructions for cellular growth and cell division. There are many causative agents of cancer called carcinogenic. They are due to the exposure of chemical and toxic compounds such as asbestos, nickel, cadmium, radon, vinyl chloride, benzidine and benzene that leads to respiratory related cancer such as lung cancer, throat cancer. Also ionising radiation and radioactive substance cause a mutation in the body which ultimately provide to the suitable environment for the growth of malignant cell. For that doctors usually prescribed the medicines according to the stage of diagnosis and the person's overall health and stamina. Chemotherapy, immunotherapy, Hormone therapy, radiation therapy, stem cell transplant (involving the removal of infected cell at an early stage), targeted therapy (drugs based therapy) prefer to kill the cancerous cell but there are many side effects of chemotherapy so the early detection of cancer become essential to fight with the cancer. To overcome with the problem, there is a need to diagnosis the cancer cell at an early stages before the arrival of painful symptoms. For that the traditional therapy may no longer help to detect the early sign of cancer. For an instance, there is a need to go and switch for the alternative solution to solve the problem and here through the help of information technology and machine learning programmes and more technological advance device particularly called Artificial intelligence will capable of identifying the cancer at an early stage. In computer science, Artificial intelligence is sometimes called machine intelligence, is a intelligence demonstrated by machine. Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving". Modern machine capabilities generally classified as AI include successfully understanding human speech, competing at the highest level in strategic game systems (such as chess and Go), autonomously operating cars, intelligent routing in content delivery networks, and military simulations. Approaches include statistical methods, computational intelligence, and traditional symbolic AI. Many tools are used in AI, including versions of search and mathematical optimization, artificial neural networks, and methods based on statistics, probability and economics. The AI field draws upon computer science, information engineering, mathematics, psychology, linguistics, philosophy, and many other fields. The field was founded on the assumption that human intelligence "can be so precisely described that a machine can be made to simulate it.

AI techniques have become an essential part of the technology industry, helping to solve many challenging problems in computer science, software engineering and operational research.

#### **Diagnosis of diseases by Machine learning program:**

- Machine Learning algorithms can learn to see patterns similarly to the way doctors see them. A key difference is that algorithms need a lot of concrete examples – many thousands
- – in order to learn. And these examples need to be neatly digitized – machines can't read between the lines in textbooks.

- So Machine Learning is particularly helpful in areas where the diagnostic information a doctor examined is already digitized.
- Machine learning via Algorithm Learning Is becoming expert in terms
- of diagnosis of diseases. Within a fraction of second , the results can be obtained.

#### **Drawbacks of early cancer therapy :**

- CT scanning or X- ray based therapy sometimes gives a false results or in inadequate information about the cancer.
- Screening can also enhance the mutation rate which is higher in cancerous cell. Which may be further a risky moiety.
- Eariler, for the detection of lung cancer, computed tomography ( CT) capable of detecting lung neoplasms but here there is again a chances of false results.
- Computed screening ( CT) is more cost effective than the google's artificial intelligence machine learning system to detect the cancer.

#### **Use of Artificial intelligence for detection of cancer:**

“ It technology could catch things missed by trained oncologist.” [\\_\\_\\_ ject.org.](#)

Google based Artificial intelligence machine enhances the chances of survival of patients before the actual symptoms arrive. Its now technology that help oncologist and radiologist to treat the cancer so that the life span of infected patients can be increased.

Using lung cancer scans form the National Cancer institute and north-western university, Google trained a neural networks to detect malignancy at a level equal to or above the abilities of a trainer radiologist. Peng said during a Google conference. Further extending to this eminent technology, the neural based network machine learning program can also elaborate for the diagnosis of other can apart from lung cancer such breast and colon cancer. In case of breast cancer diagnosis , the patients has to go through critical test such as ultrasound, mammogram followed by biospy. These test consists of radiation based therapy which also leads further mutations.

Google based neural networks may detect it early before the actual commencement of symptoms.

#### **Need to bring Artificial intelligence in medical science :-**

1. To detect the cancer before the arrival of actual symptoms of cancer.
2. To ease the cancer with less expense.
3. To tackle the problem of further mutation and growth rate of cancer cell.

### CONCLUSION

X- ray based CT scan produces the ionising radiation. Researcher shows that this kind of radiation may damage the DNA. As an alternative the google neural networks artificial intelligence can detect the cancerous cell and early medication and treatment can be provided to patients to increase his life span.

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# AGRIBOT-Pesticides spraying and soil moisture detection

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## ABSTRACT

In this paper we propose about Agriculture Robot which is going to move in field for pesticides spraying. Embedded robotic vehicle can be managed through commands and accordingly the robot will respond. Sometimes, it is difficult to measure water content in soil. So, we came up with the idea of soil moisture detection where it is going to measure Temperature, Humidity and soil moisture values present in the soil for better harvesting.

**KEYWORDS** : *Robotic technology, motor driver, Raspberry pi, Nodemcu, DHT11 sensor, Soil moisture sensor.*

## INTRODUCTION

Indian Agriculture has begun in early days by 9000 BCE as a result of growing crops, cultivation of plants and domestication of crops and animals. Agriculture is one of the main occupation in INDIA.

In today's technology-oriented world, each citizen is trying to update their lifestyle and to adopt the change happening rapidly in every sector. The basic and one of the most important need to live Healthily. In order to live healthily, vegetables play an important role in every person's life. There might be health issues for farmers to grow those vegetables in a process where pesticides have to be sprayed through hands, so an embedded robotic vehicle is going to spray the pesticides in agricultural land.

## PROBLEM DEFINITION

Synthetic pesticides are extensively used in agriculture to control harmful pests and prevent

crop yield losses or product damage. Because of high biological activity and, in certain cases, long persistence in the environment, pesticides may cause undesirable effects to human health and to the environment.[1] On a daily basis, farmers are exposed to high levels of pesticides usually much greater than those of consumers. Farmers exposure mainly occurs during the preparation of chemical spills and splashes Pesticides are used in agriculture to control weeds, insect infestation and diseases.[2] The dermal and inhalation of pesticides routes of entry are typically the most common exposure of pesticides causing allergies, nausea, headache etc.

### SOLUTION

Farmer's exposure to pesticides can be reduced through embedded robotic vehicle where it can spray the pesticides through a sprayer and adjusted accordingly.

Another module is going to help farmers in terms of soil moisture detection, where water content in soil is measure and so it will let know whether the soil needs water or not .Sensors such as DHT11 and Soil moisture will measure and provide accurate values of temperature, humidity and soil moisture.

### SURVEY OF TECHNOLOGIES

Difference between Arduino and Raspberry pi

	<b>Arduino Uno</b>	<b>Raspberry Pi Model B</b>
<b>Price</b>	\$30	\$35
<b>Size</b>	7.6 x 1.9 x 6.4 cm	8.6cm x 5.4cm x 1.7cm
<b>Memory</b>	0.002MB	512MB
<b>Clock Speed</b>	16 MHz	700 MHz
<b>On Board Network</b>	None	10/100 wired Ethernet RJ45
<b>Multitasking</b>	No	Yes
<b>Input voltage</b>	7 to 12 V	5 V
<b>Flash</b>	32KB	SD Card (2 to 16G)
<b>USB</b>	One, input only	Two, peripherals OK
<b>Operating System</b>	None	Linux distributions
<b>Integrated Development Environment</b>	Arduino	Scratch, IDLE, anything with Linux support

**Table 1 Difference between Arduino and Raspberry pi**

### **EXISTING SYSTEM**

In Today's Technology-Oriented world, farmers are still facing problems like working hard without caring about the climate and about their health conditions. Pesticides can be sprayed through Drones also called as unmanned aerial vehicles(UAV's) are used for air strikes purpose. As they travel around the suspected locations as controlled by the navy individual and they are operated in the certain areas to fulfill the pesticides spraying operations. As mass production of robotic vehicle can be developed but the main disadvantage is Workers are not very motivated, since their work is very repetitive.

### **PROPOSED SYSTEM.**

In this paper we are able to reduce the efforts of the farmer and also we can save their time, energy and cost to perform actions like pesticides spraying and soil moisture detection present in the soil by making use of robotic technology in order to improve the performance efficiency in agriculture field.

### **OVERVIEW**

As both Hardware and Software is included in our project. In pesticides spraying, motor driver is used for maintaining the robotic movement. To control the robotic movement is given through commands. Raspbian is an OS where input is given through commands and output displayed through robotic movement Software helps to perform the action such as providing the accurate values of Temperature, Humidity and Soil moisture for maintaining the water content in soil

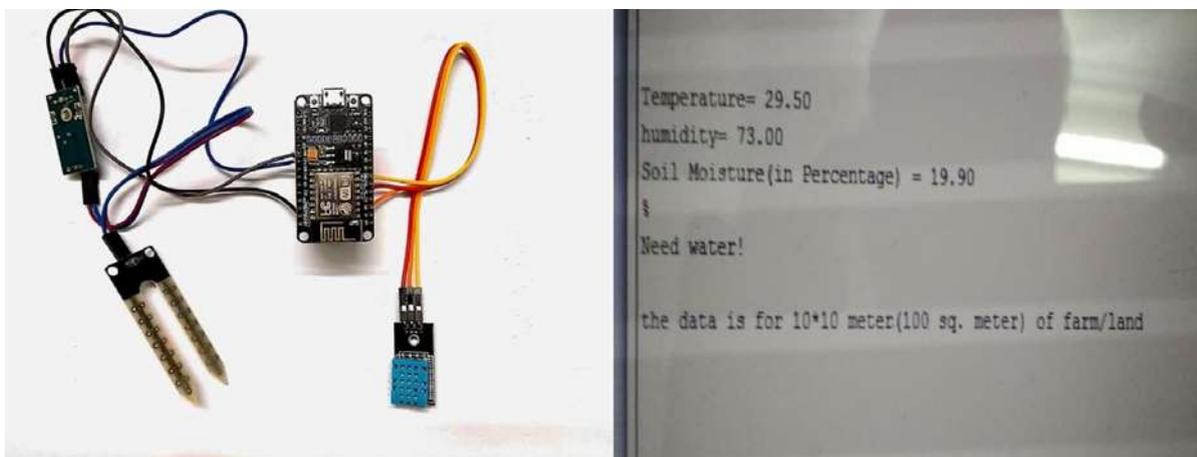
### **METHODOLOGY**

Here are few of functions along with hardware requirements used for its execution :  
Pesticides Spraying An embedded robotic vehicle to spray pesticides on the crops in farm can reduce farmer's health related problems which are causing by continue contact with pesticides or inhaling it while spraying. It can also help the soil for better cultivation. A tank placed on a robot to hold pesticides which then sprayed through a sprayer in a flow which is controlled by a nozzle. After getting instructions from the farmer, the robot will move and spray pesticides on the plants.



### Soil Moisture Detection

Regulated water monitoring using multiple sensors can increase the efficiency in the soil by taking care of natural essential present in soil such as nitrogen, phosphorus, potassium, calcium, magnesium, sulphur and many more. It also helps in better growth of plants. Soil moisture detection consisting sensors placed in the farm to get data such as moisture level in the soil, temperature and humidity of the farm or field. After getting the data from sensors it gets processed with pre writing logic code inside the processor, it calculates the time for which the water needs to be given.



## GRAPHICAL SUPPORT

INDIA INK | Bihar School Deaths Highlight India's Struggle With Pesticides



**India Ink**

The World's Largest Democracy at a Crossroads

### Bihar School Deaths Highlight India's Struggle With Pesticides

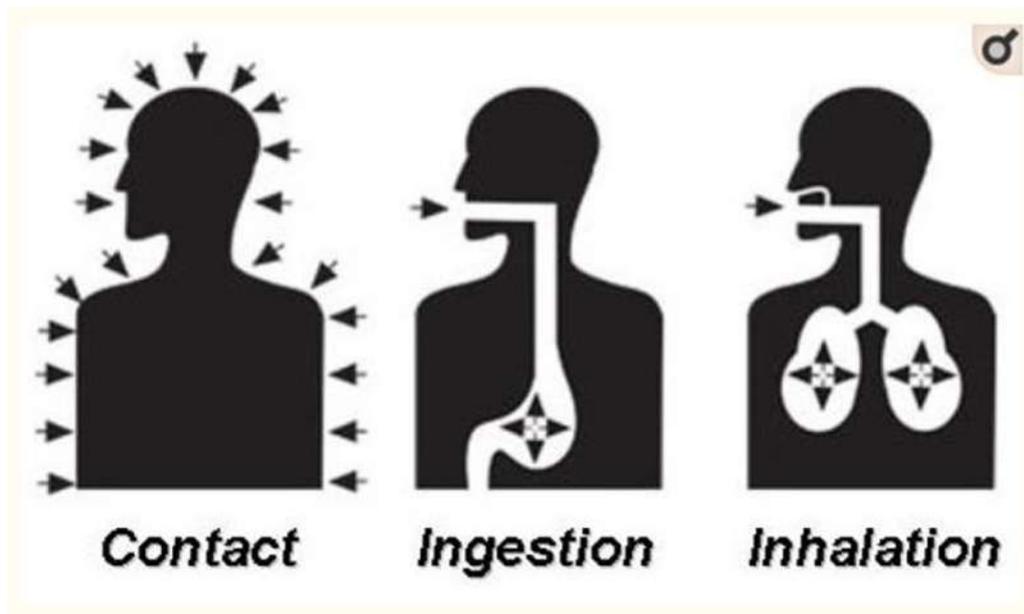
BY MEERA SUBRAMANIAN JULY 30, 2013 2:53 AM 4



A farmer sprinkling pesticide in his paddy field in Visalpur village on the outskirts of Ahmedabad, Gujarat, on July 30, 2012. Amit Dave/Reuters

Types of toxicity based on the extent of exposure to a pesticide [23].

Type	Definition
Acute toxicity	Occurring from a single incident of exposure (single short-term exposure).
Subchronic toxicity	Occurring from repeated incidents of exposure over several weeks or months (intermediate exposure, normally less than the lifetime of the exposed organism).
Chronic toxicity	Occurring from repeated incidents of exposure for many months or years (repeated long-term exposure, sometimes lasting for the entire life of the exposed organism).



### CONCLUSION

This project aims to develop a new technique that can be used by farmers to make their daily activities simple, safe and effortless. In the agriculture field it will be very helpful for the farmers. In order to perform some of the operations like pesticides spraying and soil moisture detection that can be easily operated by farmers. This is more efficient than existing system.

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# TRAFFIC SIGNAL DECIBEL METER

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## ABSTRACT

Due to the rise in noise pollution Indian Government had taken some serious action by reducing the decibel level, on the basis of this MUMBAI TRAFFIC POLICE has taken an action and introduced a technology that has an potential to reduce the use of horn, as the motorist in India horns on a red light also, so to control this MUMBAI TRAFFIC POLICE has introduced a decibel meter. These meters were installed on 5 major location that they think were having the most number of traffic and this system was there for November and December, then this system was uninstalled from those location. Here we are going to study about the system and what was the problem with that system and show some solution of those loop holes.

## INTRODUCTION

As Indian government is going to introduce some new laws related to the honking situation all over India. They are going to introduce this laws very soon, and in consideration of this law MUMBAI TRAFFIC POLICE has introduced a new system that would record the *decibel count* of the traffic and if the decibels crosses the threshold then the countdown of that red light will start from the beginning. But there are some loop holes in this technology and this loop holes are being studied in this paper.

**Literature review** : Indian government is now planning to reduce the intensity of horns of the vehicle soon. As per the new rule, all the road-going vehicle shouldn't emit the range of decibels from 88 to 100. Thus rules are taken to reduce the noise pollution in the urban areas. Loud horns in an urban area is very irritating to other road going people or the resident living close to the roads, and it is more dangerous for patient in the hospital, this is the first time

Indian government has taken a serious decision and reduced the decibel levels, though the decibel level are high compared to other countries. This has happened because of the local traffic police officials, vehicles that were having loud horns had been seized, and fined the drivers who put ridiculously loud horns on their vehicles.

In foreign countries, drivers don't use their car horn on a large scale as it is used in India, they follow strict rule, they only honk if it is necessary or under some emergency circumstances unlike Indian drivers which honk on a red light also. For this reasons the government of India has banned the use of air horns and multi-tone horns, even then some transport vehicles have multi tone horns on their vehicles, they buy them as a aftermarket product. Even the foreign car companies who are selling car in India use some special category of horns in their vehicles as the ones they are using in outside countries, this horns used in Indian cars are much more louder than the horns that are fitted in other countries.

As estimated this new rule will bring down the noise level by some extent and we have observed this changes in some parts of India, particularly in Mumbai the MUMBAI TRAFFIC POLICE has implemented a new technique to reduce this noise. They have implemented a decibel meter on some signals which they think are more crowded and affect the resident more.

As Mumbai is considered honking capital of world there are some reasons behind that, as the people of Mumbai honks at any situation and for no reason, because of it there is increase in noise pollution in this city. The MUMBAI TRAFFIC POLICE had conducted trails of what will be solution to minimise the menace of needless honking on a red light signal. But to control this type of behaviour MUMBAI TRAFFIC POLICE has come up with an idea that they will record the decibel level of the honking at each signal when the lights are red and if the threshold crosses the figure of 85 decibels, then the signal which was already red will remain red for the same amount of time which was before, their motive is to reduce the noise pollution and to teach honkers a lesson.

This technique of making the motorists to wait longer at the signals by teaching them lesson or punishing them for what they have done by honking their vehicle horns for no reason or also on a red signal light and teaching them to not honk the next time they are on a red signal.

MUMBAI TRAFFIC POLICE'S JOINT COMMISSIONER TRAFFIC MADHUKAR PANDEY said that "The trails were carried out for a few hours in November and December 2019. We selected locations that are most prone to congestion such as CSMT, Marine Drive, Pedder Road, Hindmata and Bandra Turner Road. In future, we will implement this at more signals"

The Commissioner also said that there would some increase in the congestion level and this increased congestion would be managed by deploying some additional forces. In the video itself we can see that how confused were the motorist who waited for the signal turn green. In the video person say's in his 'Mumbaiya' style and he start the video with: "Welcome to the

honking capital of the world.! Here, people honk even when the signal is red. Its easy, to honk! Maybe they think that by honking, they can make the signal turn green faster! They just don't understand", and it then follow with the confused faces of the motorist and the peoples and children.

Anti-noise activist Sumaira Abdulali appreciated the police for taking an serious step by their own. "I hope the decibel meters will be put up permanently so that people become aware of the unacceptably high level of noise from honking. At the same time, we have been demanding an enforcement campaign against honking, on the lines of the police's helmet campaign, for a very long time. We hoe that alongside the awareness created by decibel meters, they will take up an enforcement campaign which will continue over a sufficient period of time so that honking levels drop to within permissible limits" said by Abdulali.

A research which were made my media professional on RTI that revealed that just 1,293 motorists were fined for needless honking between 2009 to 2019. Deputy Inspector General Harish Baijal, who was a part of traffic department past in those days said that "we had the first 'No Honking Day' on April 7, 2008 and put up balloons and banners at Marines Drive, Bandra and Mahim Causeway and challaned 16,000 people. To drive home the point, I had challaned my own driver. After that, there was no major action taken by the traffic department and this video clip is really refreshing and reassuring" said by Baijal.

**Hypothesis:** Here the system that were installed by the MUMBAI TRAFFICE POLICE on some signals they measure the decibel of the cars standing on the signal waiting for the red light to turn green, while if the threshold of the decibels exceeds the desired amount then the red light will be there for the next time and if not then the signal will take it's normal time and the turn into green. To measure the sound of the traffic this system make use of mic's, here this mic's take the sound from all over the surrounding and measure that noise as the noise made by the traffic in front of them.

**Solution:** But here we can take a step forward and can resolve this problem by applying a professional mic on the signals, which only takes the noise or the sound from the front side and neglect the sound coming from other side and only measure the sound or noise that is coming from the front. These types of mic's can solve the problem and by this the system will take the decibels from the traffic which are in front of the signal and not from any other side.

Suppose if the motorists doesn't stop honking and they start honking more and more than the decibel will record all the sound and then increase the counter every time it end then the red signal will be there for more time, and because of this the traffic on that signal will increase and at a point the traffic would get out of control.

**Solution:** To avoid this kind of problem the traffic police can deploy or equip an camera on that signal, then if the traffic goes out of the visible area of the camera then officer or an smart

software can make that signal green by watching that the traffic has crossed the limit of the camera's visible area. Because of this a massive traffic can be avoided.

The main problem of this system is that it can't differentiate between horns and siren. Suppose there is any kind of emergence and an ambulance or a fire brigade is in the traffic, in front of this system, than this system will not be able to differentiate between these two sounds. Because of this there could be major problems and can result in major crises. This is the biggest loop hole of this technology.

### **CONCLUSION**

This technology introduced by the MUMBAI TRAFFIC POLICE is a very good idea to reduce the noise pollution in Mumbai, but there are some issues with this system, first these issues should be solved. Then technique would be better for reducing the use of unnecessary horns in Mumbai.

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# HIVE PERFORMANCE WIT CSV & ORC FILE FORMAT

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## ABSTRACT

Apache Hive is a data warehouse system built on top of HDFS (Hadoop Distributed File System). It provides SQL like dialect to interact with data. The query language supported by Hive is Hive Query Language (HQL). Hive Queries are converted to MapReduce jobs for deploying them on Hadoop. Hive can handle various file formats like Text File, Sequence File, RC File, AVRO File, ORC File and Parquet File. The objective of this research is to compare the performance of Hive with file formats like CSV and ORC. CSV stands for Comma Separated Values; it is a delimited text file that uses a comma to separate values. ORC stands for Optimized Row Columnar that can store data in an optimized way rather than other file formats, ORC reduces the size of the data up to 75%. The performance comparison for CSV and ORC file format is done based on Time taken and Space Utilization.

**KEYWORDS :** *Hive, Hadoop, HDFS, CSV, ORC*

## INTRODUCTION

### Understanding Hadoop

Hadoop is an open-source software framework for storing data and running applications on clusters of hardware. Hadoop framework is based on java programming with some native code in C and shell scripts. It provides huge storage for any kind of data, good processing power and the ability to handle virtually limitless concurrent tasks or jobs. Hadoop is a solution for Big Data that includes high volume, high velocity and variety of data.

Why is Hadoop important?

- Ability to store and process huge amounts of any kind of data, quickly
- Computing power
- Fault tolerance
- Flexibility
- Low cost
- Scalability

### **Understanding Hive**

Hive is a data warehouse Infrastructure for data summarization and analysis and for querying of large data systems in the open-source Hadoop platform. It converts SQL-like queries into MapReduce jobs for easy execution and processing of massive large volumes of data. Hive uses MapReduce and HDFS for processing and storage/retrieval of data. Hive is a Hadoop component that is normally used by data analysts. Even though Hive looks very similar to traditional databases because of support of SQL like queries, it differs in following ways: Hive is based on Write once, read many times, whereas as RDBMS is read and write many times.

Unlike RDBMS one cannot perform record level updates, delete and insertion as Hive works on top of HDFS.

### **There are 4 main components of Hive Architecture:**

1. Hadoop Core Componenta (HDFS, MapReduce)
2. Metastore
3. Driver
4. Hive Clients

### **Hive Advantages:**

- Hive can be used as an ETL (Extract Transform Load).
- Hive Provides capability of querying and analysis.
- Hive can handle large datasets.
- Multiple users can simultaneously query the data using HQL
- Hive provides the structure on a varieties of data formats.
- Hive is simple to understand.

**Hive Disadvantages:**

- It's not designed for Online transaction processing (OLTP).
- Hive supports overwriting or apprehending data, but not updates and deletes.

**Type of Hive Table**

- **Internal Tables:** Internal tables are the default type of table created by hive if user does not specify his choice. Dropping of Internal table will delete the metadata as well as the data and data is lost forever. One should always be careful while using internal tables as a drop command can destroy the whole data.
- **External Tables:** External table describes the metadata and schema on external files. This type of table can be created by Hive if user specifies the keyword “EXTERNAL”. Dropping External table will only delete the meta data not the actual data.

**Hive Supported File Formats**

Some of file formats supported by Hive are:

- Text File
- Sequence File
- RC File
- Avro Files
- ORC Files
- Parquet

**ORC (Optimized Row Columnar):** ORC stands for Optimized Row Columnar that stores data in an optimized way than other file formats. ORC reduces the size of the data up to 75%. This results in increased speed performance and gives better performance than Text, Sequence and RC file formats. It contains rows data in groups called as Stripes along with a file footer. Performance on processing of data improves when ORC format is used. Data cannot be loaded into ORC File directly, first we need to load data into another table, and we can create a new ORCFILE.

**CSV (Comma-Separated Values):** A CSV stands for Comma Separated Value; it is a delimited text file that uses a comma to separate values. Each line is a data record and each

record consist of one or more fields, separated by commas.

### Research Methodology

We Created a Pseudo-Distributed cluster on a commodity hardware. A Pseudo-distributed Mode is a single-node cluster where both NameNode and DataNode resides on the same machine.

**Dataset used: movies.csv** [<https://www.kaggle.com/shubhammehta21/movie-lens-small-latest-dataset>]

Following steps are used for creation of table, uploading data into table and performing few queries on the table.

**Step 1:** Uploading the dataset (movies.csv) into HDFS

```
$ hadoop fs -put /home/hadoop/dataset/movies.csv /user/training/
```

**Step 2:** Creating Hive Internal Table (for CSV file format)

```
hive>create table movies_csv (id int,
```

```
> title string,
```

```
>genres string)
```

```
>row format delimited
```

```
>fields terminated by ',';
```

```
hive> create table movies_csv(id int, title string, genres string) row format delimited fields terminated by ',';
OK
Time taken: 0.153 seconds
```

*Figure 1: Creating an internal table (movies\_csv)*

**Step 3:** Inserting data into movies\_csv table

hive>load data inpath '/user/training/movies.csv' into table  
movies\_csv;

```
hive> load data inpath '/user/training/movies.csv' into table movies_csv;
Loading data to table default.movies_csv
OK
Time taken: 1.512 seconds
```

Figure 2: loading data into movies\_csv table

**Step 4:** Creating Hive Internal Table (for ORC file format) and loading the data

hive>create table movies\_orc stored as ORC as select \* from movies\_csv;

```
hive> create table movies_orc stored as ORC as select * from movies_csv;
WARNING: Hive-on-MR is deprecated in Hive 2 and may not be available in the future versions. Consider using a different execution engine (i.e. spark, tez) or using Hive
1.X releases.
Query ID = darshitt_20200129184806_2ebb2bf0-3d5c-9ecb-abc-e26a443ad71e
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks is set to 0 since there's no reduce operator
Starting Job = job_1580320766897_0001, Tracking URL = http://d01:8088/proxy/application_1580320766897_0001/
Kill Command = /home/darshitt/tools/hadoop-2.7.3/bin/hadoop job -kill job_1580320766897_0001
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 0
2020-01-29 18:48:58,772 Stage-1 map = 0%, reduce = 0%
2020-01-29 18:50:01,718 Stage-1 map = 0%, reduce = 0%
2020-01-29 18:51:00,205 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 11.17 sec
MapReduce Total cumulative CPU time: 11 seconds 170 msec
Ended Job = job_1580320766897_0001
Stage-4 is selected by condition resolver.
Stage-3 is filtered out by condition resolver.
Stage-5 is filtered out by condition resolver.
Moving data to directory hdfs://localhost:9000/user/hive/warehouse/.hive-staging_hive_2020-01-29_18-48-06_815_5081190080176522127-1/-ext-10002
Moving data to directory hdfs://localhost:9000/user/hive/warehouse/movies_orc
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Cumulative CPU: 11.17 sec HDFS Read: 1401248 HDFS Write: 430652 SUCCESS
Total MapReduce CPU Time Spent: 11 seconds 170 msec
OK
Time taken: 176.236 seconds
hive>
```

Figure 3: creating table movies\_orc and loading the data

**Step 5:** Performing queries on both the table

□ hive> Select count(\*) from movies\_csv;

```
hive> select count(*) from movies_csv;
WARNING: Hive-on-MR is deprecated in Hive 2 and may not be available in the future versions. Consider using a different execution engine (i.e. spark, tez) or using Hive
1.X releases.
Query ID = darshitt_20200129184806_2ebb2bf0-3d5c-9ecb-abc-e26a443ad71e
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks determined at compile time: 1
In order to change the average load for a reducer (in bytes):
  set hive.exec.reducers.bytes.per.reducer=<number>
In order to limit the maximum number of reducers:
  set hive.exec.reducers.max=<number>
In order to set a constant number of reducers:
  set mapreduce.job.reducers=<number>
Starting Job = job_1580320766897_0002, Tracking URL = http://d01:8088/proxy/application_1580320766897_0002/
Kill Command = /home/darshitt/tools/hadoop-2.7.3/bin/hadoop job -kill job_1580320766897_0002
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2020-01-29 18:55:52,219 Stage-1 map = 0%, reduce = 0%
2020-01-29 18:56:04,895 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 6.47 sec
2020-01-29 18:56:14,016 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 9.94 sec
MapReduce Total cumulative CPU time: 9 seconds 940 msec
Ended Job = job_1580320766897_0002
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 9.94 sec HDFS Read: 1405267 HDFS Write: 105 SUCCESS
Total MapReduce CPU Time Spent: 9 seconds 940 msec
OK
27279
Time taken: 39.142 seconds, Fetched: 1 row(s)
hive>
```

Time taken: 39.142 seconds

- hive>select count(\*) from movies\_orc;

```
hive> select count(*) from movies_orc;
WARNING: Hive-on-MR is deprecated in Hive 2 and may not be available in the future versions. Consider using a different execution engine (i.e. spark, tez) or using Hive
1.X releases.
Query ID = darshitt_20200129190330_10510b9b-27bd-4c91-834a-45fa58ac9e7
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks determined at compile time: 1
In order to change the average load for a reducer (in bytes):
  set hive.exec.reducers.bytes.per.reducer=<number>
In order to limit the maximum number of reducers:
  set hive.exec.reducers.max=<number>
In order to set a constant number of reducers:
  set mapreduce.job.reducers=<number>
Starting Job = job_1580320766897_0004, Tracking URL = http://d01:8080/proxy/application_1580320766897_0004/
Kill Command = /home/darshitt/tools/hadoop-2.7.3/bin/hadoop job -kill job_1580320766897_0004
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2020-01-29 19:03:42,083 Stage-1 map = 0%, reduce = 0%
2020-01-29 19:03:52,310 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 2.79 sec
2020-01-29 19:04:01,211 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 6.16 sec
MapReduce Total cumulative CPU time: 6 seconds 160 msec
Ended Job = job_1580320766897_0004
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 6.16 sec HDFS Read: 24282 HDFS Write: 105 SUCCESS
Total MapReduce CPU Time Spent: 6 seconds 160 msec
OK
27279
Time taken: 31.76 seconds, Fetched: 1 row(s)
hive>
```

Time taken: 31.76 seconds

- hive>select count(\*) from movies\_csv where genres like '%Adventure%';

Time taken: 69.144 seconds

- hive>select count(\*) from movies\_orc where genres like '%Adventure%';

```
hive> SELECT count(*) FROM movies_orc WHERE genres LIKE '%Adventure%';
WARNING: Hive-on-MR is deprecated in Hive 2 and may not be available in the future versions. Consider using a different execution engine (i.e. spark, tez) or using Hive
1.X releases.
Query ID = darshitt_20200130055831_9eca71bd-68cf-4619-b43f-d1ea467087bb
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks determined at compile time: 1
In order to change the average load for a reducer (in bytes):
  set hive.exec.reducers.bytes.per.reducer=<number>
In order to limit the maximum number of reducers:
  set hive.exec.reducers.max=<number>
In order to set a constant number of reducers:
  set mapreduce.job.reducers=<number>
Starting Job = job_1580363084515_0002, Tracking URL = http://d01:8080/proxy/application_1580363084515_0002/
Kill Command = /home/darshitt/tools/hadoop-2.7.3/bin/hadoop job -kill job_1580363084515_0002
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2020-01-30 05:58:43,406 Stage-1 map = 0%, reduce = 0%
2020-01-30 05:58:52,774 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 4.66 sec
2020-01-30 05:59:09,455 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 8.86 sec
MapReduce Total cumulative CPU time: 8 seconds 860 msec
Ended Job = job_1580363084515_0002
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 9.39 sec HDFS Read: 98890 HDFS Write: 104 SUCCESS
Total MapReduce CPU Time Spent: 9 seconds 390 msec
OK
1756
Time taken: 42.583 seconds, Fetched: 1 row(s)
hive>
```

Time Taken: 42.583 seconds

- hive>select title from movies\_csv where genres like '%Comedy%'  
limit 10;

```
hive> SELECT title FROM movies_csv WHERE genres LIKE '%Comedy%' LIMIT 10;
OK
Toy Story (1995)
Grumpier Old Men (1995)
Waiting to Exhale (1995)
Father of the Bride Part II (1995)
Sabrina (1995)
Dracula: Dead and Loving It (1995)
Four Rooms (1995)
Ace Ventura: When Nature Calls (1995)
Money Train (1995)
Get Shorty (1995)
Time taken: 0.192 seconds, Fetched: 10 row(s)
```

Time taken: 0.192 seconds

- hive>select title from movies\_orc where genres like '%Comedy%'  
limit 10;

```
hive> SELECT title FROM movies_orc WHERE genres LIKE '%Comedy%' LIMIT 10;
OK
Toy Story (1995)
Grumpier Old Men (1995)
Waiting to Exhale (1995)
Father of the Bride Part II (1995)
Sabrina (1995)
Dracula: Dead and Loving It (1995)
Four Rooms (1995)
Ace Ventura: When Nature Calls (1995)
Money Train (1995)
Get Shorty (1995)
Time taken: 0.179 seconds, Fetched: 10 row(s)
hive>
```

Time taken: 0.179 seconds

### Step 6: Comparing space utilized by each table

- Size of movies\_csv table (1.33 MB)

## Browse Directory

Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name
-rwxrwxr-x	darshitt	supergroup	1.33 MB	1/25/2020, 10:16:38 PM	2	128 MB	<a href="#">movies.csv</a>

Hadoop, 2016.

- Size of movies\_orc table (420.48 KB)

## Browse Directory

Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name
-rwxrwxr-x	darshitt	supergroup	420.48 KB	1/30/2020, 12:20:58 AM	2	256 MB	<a href="#">000000_0</a>

Hadoop, 2016.

## CONCLUSION

The performance comparison for CSV and ORC file format is done based on Time taken and Space utilized by each table. We created two hive internal tables, movies\_csv and movies\_orc, loaded the dataset (movies.csv) into the tables and performed few queries on both the table. On performing various fetching operations using HQL we found out that ORC is an optimized way of storing a massive amount of data and a faster way of storing and processing the big datasets compared to CSV file format as the ORC file format compresses the size of the original dataset (movies.csv)1.33mb into 420.48 kb (up to 75%).

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# ARTIFICIAL CONCIOUSNESS

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## ABSTRACT

There has been a recent resurgence in the area of artificial intelligence as researchers as well as practitioners seek to provide more transparency to their algorithms. This field has also seen a boom in quality and efficiency. Much of this research is focused on explicitly explaining decisions or actions to a human observer, and it should not be controversial to say that looking at how humans explain to each other can serve as a useful starting point for explanation in artificial intelligence. Consciousness plays an important role in debates around the mind-body problem, the controversy over strong vs. weak artificial intelligence and *bioethics*. Artificial Consciousness , machine consciousness or *synthetic consciousness* is Artificial Intelligence gaining self awareness or *sentience*. Artificial Intelligence.”We’re starting to pair our brains with computers, but brains don’t understand computers and computers don’t understand brains,” Stone said . Several artificial intelligence projects are underway and are working toward building a conscious machine based on the idea that brain functions merely encode and process *multisensory information*. The assumption goes, then, that once brain functions are properly understood, it should be possible to program them into a computer.

## INTRODUCTION

Artificial consciousness also known as machine consciousness is a field related to artificial intelligence and cognitive robotics. The aim of the theory of artificial consciousness is to " Define that which would have to be synthesized were consciousness to be found in an engineer artifact" . When the digital computer was invented more than half a century ago, many felt that the essence of thinking had been found . All of a sudden , it seemed possible to stimulate

and reproduce thinking , problem solving ,even natural language namely ,the mind . Subsequently , the field spawned several partially overlapping yet connected fields as robotics, control systems ,data mining , logistics ,speech recognition , facial recognition , and many others . Now AI has considerably moving towards the development of consciousness. Rapid development of human scientific activity is one of modern trends. Every

day new technologies rush into in our life. Artificial intelligence (AI) is not just an

important topic, but by far the most important aspect of our future,|| says Tim Urban, the founder of the popular Web site --Wait but why||, which explains different topics, including AI. There are three levels of artificial intelligence: ANI, AGI and ASI.

*ANI (Artificial Narrow Intelligence)* – is the first level that can make a decade

only in one sphere. For example, there's AI that can beat the world chess champion in chess, but that's the only thing it does. This type of artificial intelligence represents all the existing AI, including even the most complicated and capable AI that has ever been created to date. Artificial narrow intelligence refers to AI systems that can only perform a specific task autonomously using human-like capabilities. These machines can do nothing more than what they are programmed to do, and thus have a very limited or narrow range of competencies.

According to the aforementioned system of classification, these systems correspond to all the reactive and limited memory AI. Even the most complex AI that uses machine learning and deep learning to teach itself falls under ANI.

*AG (Artificial General Intelligence)* – AI that reaches and then passes the

intelligence level of a human, meaning it has the ability to \_reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience Artificial General Intelligence is the ability of an AI agent to learn, perceive, understand, and function completely like a human being. These systems will be able to independently build multiple competencies and form connections and generalizations across domains, massively cutting down on time needed for training. This will make AI systems just as capable as humans by replicating our multi-functional capabilities.

*ASI (Artificial Super Intelligence)* – an intellect that is much smarter than the best

the human brain in practically every field, including scientific creativity, general wisdom and social skills The development of Artificial Superintelligence will probably mark the pinnacle of AI research, as AGI will become by far the most capable forms of intelligence on earth. ASI, in addition to replicating the multi-faceted intelligence of human beings, will be exceedingly better at everything they do because of overwhelmingly greater memory, faster data processing and analysis, and decision-making capabilities. The development of AGI and ASI will lead to a scenario most popularly referred to as the singularity. And while the potential of having such powerful machines at our disposal seems appealing, these machines may also threaten our existence or at the very least, our way of life.

- Siri by Apple, Alexa by Amazon
- Cortana by Microsoft and other virtual assistants
- IBM's Watson
- Image / facial recognition software
- Disease mapping and prediction tools
- Manufacturing and drone robots
- Email spam filters / social media monitoring tools for dangerous content
- Entertainment or marketing content recommendations based on watch/listen/purchase behaviour
- Self-driving cars

### Research Elaborations

The question of whether machines can have consciousness is not new, with proponents of strong artificial intelligence (strong AI) and weak AI having exchanged philosophical arguments for a considerable period of time.

Artificial Intelligence is categorized into three different types depending on the consciousness achieved by it.

They are:

1. *Super Intelligence*: AI that exceeds human intelligence in every field.
2. *General A.I*
  - a) Self awareness: AI at this level would extend the “Theory of Mind” to predict the internal states of others. Having achieved human like consciousness, it might choose to exhibit non-human abilities.
  - b) Theory of Mind: This type of A.I. would have an updatable representation of the world that includes an understanding of other entities.
3. *Narrow A.I*
  - a) Limited Memory A.I: This type of AI receives current input, and adds pieces of this input to its programmed representation of the world. This can change the way the AI makes current or new decisions.

Reactive A.I.: Designed for a specific task, this Ai receives input, and acts on this input. They cannot be applied to different tasks, and past experiences do not affect current decisions. The idea that the brain performs “computation” is widespread in cognitive science and AI since the brain deals in information, converting a pattern of input nerve signals to output nerve

signals. Another well-accepted theory is that physics is Turing-computable: that whatever

goes on in a particular volume of space, including the space occupied by human brains could be simulated by a Turing machine, a kind of idealised information processor. Physical computers perform these same

information-processing tasks, though they aren't yet at the level of Turing's hypothetical device. These two ideas come together to give us the conclusion that intelligence itself is the result of physical computation. And, as Hawking and colleagues go on to argue, there is no reason to believe that the brain is the most intelligent possible computer.

Modern computers have become incredibly powerful, Nick Bostrom became famous for his thoughts on superintelligent artificial machines and even simulations of human brains seem to be in reach. These futuristic ideas raise fundamental questions about humanity and our relation to intelligent machines. A philosophical approach leads to the question of whether machines are conscious or not. And the answer is: They can be. It might not be in a way we as humans define our consciousness, but we cannot ignore the idea that machines can have their own concept of consciousness. Often consciousness is defined as the role of emotional states and physical embodiment. More generally speaking, it is the awareness of oneself and its surroundings. Especially the notion of emotional states often leads to the conclusion that consciousness is uniquely human and related to biological tissue. This naturalistic view is fundamentally questionable since we do not have a way to objectively prove the consciousness of other human beings either. It therefore is a fallacy to claim humans are conscious but machines are not. To find answers to these eclectic questions we have to address the concept of consciousness in a broader sense.

First and most importantly, it is misleading to deny the existence of machine consciousness by looking at its mechanics. A better way is to approach it on another level of abstraction. For humans we distinguish between the physical brain and the

non-physical mind. Even by assuming there is a relation between mind and brain we allocate the concept of consciousness to the mind. The neurons in the human brain are generally not expected to have emotional states itself or to be aware of their physical embodiment. The same idea can hold for machines. By looking at transistors and their functionality a potentially existing consciousness cannot be understood. Equally to body and mind there is a physical computer and there might also be something like a

non-physical representation of itself and its surroundings. It is most likely not comparable to the human mind, but it does not have to be human-like to satisfy a concept of consciousness. Therefore, the machine's equivalent of the mind and its consciousness might just be something beyond our imagination. Further, the unavailability of appropriate communication between humans and machines and a lack of imagination cannot justify its nonexistence.

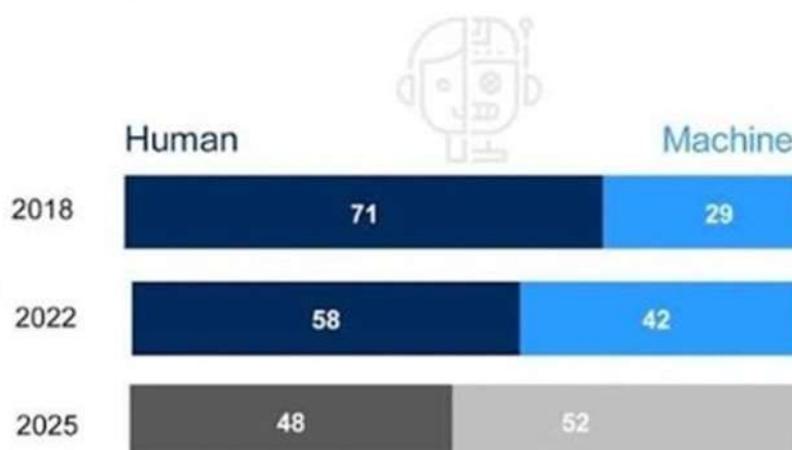
John Searle and other naturalists might be right in their criticism on machine intelligence. They argue that no evidence has been found so far proving that a machine is capable of duplicating human thinking and it will never be able to understand thinking on a level of human abstraction. These conclusions are undoubtedly right for weak artificial intelligence (AI) and modern AI systems, but the concept of strong AI however is different.

Instead of guiding the computer in its learning process it is given the ability to interact with its environment and will then learn from these interactions. This so-called Seed AI is therefore by design capable of self-instructed learning and best understood by seeing it as the machine equivalent to a human baby. This artificial intelligence must then be conscious because it did not try to emulate human intelligence nor was it given any human concept of thinking and behavior but found its representation of itself and its surroundings by itself.

Finally, even if one is convinced that the concept of consciousness is linked to the concept of emotional states and that it therefore must be solely human, some current progress in AI research will question this argument. Prominent figures in science are convinced that brain simulations will be possible. If neurons and its interactions were simulated completely and the neural network of a human brain could be scanned it could basically be simulated on a computer. Besides the ethical questions this technology raises, it has a fundamental impact on the discussion of machine consciousness. Again, assuming that the mind arises from the brain it must be concluded that consciousness does as well and therefore as a direct consequence of brain simulations, the simulating computer must be conscious. Although the simulation itself will never be aware of itself and its surrounding the whole system will still be conscious. The presented reasoning is therefore consistent with the argument above.

## Rate of automation

Division of labour as share of hours spent (%)



## RESULTS

In Superintelligence, for example, Bostrom recounts a genetic algorithm's surprising solution to a hardware design problem: The researchers discovered that the algorithm had, MacGyver-

like, reconfigured sensor-less motherboard into a makeshift radio receiver, using the printed circuit board tracks as an aerial to pick up signals generated by personal computers that happened to be situated nearby in the laboratory. Of course, it is substantially more difficult to evolve a brain than a radio receiver. Bostrom takes the case of simulating the evolution of the central nervous system. A back of the napkin estimate argues that there are approximately 1025 neurons on our planet today and assumes that this population has been evolving for a billion years.

- Sophia:

Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics. Sophia was activated on February 14, 2016, and made her first public appearance at South by Southwest Festival (SXSW) in mid-March 2016 in Austin, Texas, United States. She is able to display more than 60 facial

expressions. On October 25, Sophia, a delicate looking woman with doe-brown eyes and long fluttery eyelashes made international headlines. She'd just become a full citizen of Saudi Arabia -- the first robot in the world to achieve such a status.

- Self Driving Cars:

A self-driving car, also known as an autonomous vehicle (AV), connected and autonomous vehicle (CAV), driverless car, robo-car, or robotic car, is a vehicle that is capable of sensing its environment and moving safely with little or no human input. Self-driving cars combine a variety of sensors to perceive their surroundings, such as radar, lidar, sonar, GPS, odometry and inertial measurement units. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage.

- IBM WATSON:

Watson is an IBM supercomputer that combines artificial intelligence (AI) and sophisticated analytical software for optimal performance as a "question answering" machine. The supercomputer is named for IBM's founder, Thomas J. Watson.

The Watson supercomputer processes at a rate of 80 teraflops (trillion floating point operations per second). To replicate (or surpass) a high-functioning human's ability to answer questions, Watson accesses 90 servers with a combined data store of over 200 million pages of information, which it processes against six million logic rules. The system and its data are self-contained in a space that could accommodate 10 refrigerators.

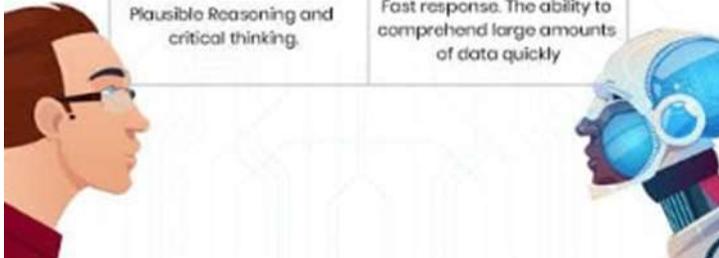
- Virtual Assistant software:

A virtual assistant, also called AI assistant or digital assistant, is an application program that understands natural language voice commands and completes tasks for the

user.Siri,Cortana,Google Assistant, Amazon Echo and many more are examples of Virtual Assistant softwares

**Human Intelligence  
Vs  
Artificial Intelligence**

Human Intelligence	Artificial Intelligence
Intuition, common sense, judgment, creativity, beliefs etc	Ability to simulate human behavior and cognitive processes
The ability to demonstrate their intelligence by communicating effectively.	Capture and preserve human expertise.
Plausible Reasoning and critical thinking.	Fast response. The ability to comprehend large amounts of data quickly



## CONCLUSION

Today's trends in technology fundamentally question the beliefs of those with naturalistic approaches to artificial intelligence. Taking current innovations into consideration it must be concluded that machines can be conscious. We do not know in which form this consciousness will be prevalent. It could be an anthropomorphic concept of consciousness but it might also lay beyond our imagination. Strong artificial intelligence is therefore probably best seen as something like the second Scientific Revolution. Before the first Scientific Revolution in the 16th and 17th century we thought that we humans on earth were the center of the universe. Today we have to question if we will be the most intelligent conscious species in the universe forever. The biggest difference compared to the first Scientific Revolution is just that we are creating this change ourselves and we better have a sound concept of consciousness ready before we have to deal with it. The line between computer programs and AI is opaque. Mimicking narrow elements of human intelligence and behaviour is relatively easy, but creating a machine version of human consciousness is a totally different story. While AI is still in its infancy, and the quest for strong AI was long thought to be science fiction, breakthroughs in machine and deep learning indicate that we may need to be more realistic

about the possibility of achieving artificial general intelligence in our lifetime. It's daunting to consider a future where machines are better than humans at the very things that make us human. We cannot accurately predict all the impacts AI advancements will have on our world, but the eradication of things like disease and poverty is not unfathomable.

*"The future is about humans and machines working together. AI will bring you what you want the most...time."*

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# SMART ROBOT COMPANION

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## ABSTRACT

In the present scenario considering the fast-paced life, people don't have time to look after their kids, old parents and physically challenged people.

To overcome this problem, we are making a robot which will take care of all these things. The main objective of this project is to develop a robot capable of supporting human beings in all those activities which require the ability to interact actively and safely with the environment. It is a multipurpose robot that can be used by kids, adults and physically challenged people. It is a personal digital assistant which makes their day to day life easy. It is a friend to the kids and companion to the adults.

It will help the adults, elderly and disabled to live a normal life in their own homes without having a full-time human helper.

Our robot contains features like face recognition, obstacle detection, scheduling and reminders, fall detection, controlling household appliances, talking and live-feed. Our robot implements technologies from various domains like Android, some algorithms of Artificial Intelligence and Machine Learning, Internet of Things and Data Analysis.

**KEYWORDS :** *Smart, robot, companion, social, secure, reliable*

## INTRODUCTION

In the present scenario considering the fast-paced life, people don't have time to look after their kids, old parents and physically challenged people.

With development in science and technology, machines are taking over lot of tasks, but they are single purpose. Loneliness is a common feeling among old age group. It is difficult to

carry out lot of tasks considering the health and risk factors in that age group. Parenting is not an easy task in today's world considering the hustle and bustle in life.

The main objective of this project is to develop a robot capable to support human beings in all those activities which require the ability to interact actively and safely with environment.

Since the robot is supporting and assuring security to the user, people will tend to work more efficiently at their work places.

It will help the adults, elderly and disabled to live a normal life in their own homes without having a full-time human helper.

### **PROBLEM DEFINITION**

Now a days a lot of old people are alone at their home. Same goes with the kids especially in nuclear families where both the parents are working.

With the increasing crime rates, it's difficult to trust on a maid or a care taker. It's difficult to have a common solution for such problem and it's costlier too. The findings revealed that 53% of adults who feel lonely fear that they'll have no one there to support them should something bad happen to them, and one in nine people don't feel that they have anyone in their lives that they'd be able to rely on if they were experiencing a crisis. **"Life circumstances can change in the blink of an eye, meaning it can happen to anyone, no matter your age or background"**.

### **EXISTING RELATED TECHNOLOGIES**

There are many single purpose robots available in market like NAO which is used education, Pepper which is used for emotion recognition, Miko for kids, etc.

#### **Improvements in current technologies:**

Our robot is a multipurpose robot that can be used by kids, adults and physically challenged people. It is a personal digital assistant which makes their day to day life easy. It is a friend to the kids and companion to the adults.

Our robot implements technologies from various domains like Android, some algorithms of Artificial Intelligence and Machine Learning, Embedded Systems, Internet of Things and Data Analysis.

### **WORKING**

Our robot can talk, walk, see and listen just like humans and as the name of the project suggests smart robot companion, it has some smart features like:

\* **Scheduling and Reminders** – Old people usually tend to forget important things like taking medicines, to remind them we can set reminders on our robot using the touch interface and it will remind them accordingly.

\* **Live-feed** - This feature is basically for the working parents who cannot be physically present to look after their kids all the time and even if they install a CCTV camera, it will be fixed at one place, it cannot cover every nook and corner of the house. Our robot will provide the live feed to the parents on an app we have made whenever they want to see what their kids are doing.

\* **Talking** – People usually tend to bond with things that look attractive and can interact. Our robot can talk with the people. We can ask current time, today’s weather etc.

\* **Face recognition** – Our robot can detect and recognise the faces of known people and if an unknown person is detected it will inform the user and confirm its identity saving it in the database, it’s basically for security purpose.

\* **Obstacle detection** – While moving there are chances that it might hit an object. Hence with the help of sensors in all four directions it detects the obstacles in its path so that it won’t bump on something and change its path accordingly.

\* **Its own fall** – If it is moving on an elevated surface it will detect that it can fall and hence stop at the edge or it will move back.

\* **Fall detection** – Usually old people are prone to injuries due to fall. If a person falls it will ask him or her ‘**hey are you okay**’ and if the user won’t reply in 10 seconds it will send notification through SMS to the users relative that the person has fallen.

\* **Controlling Household Appliances** – Buying an IOT product is bit costlier. So, we have made a device (switch) that will make any device an IOT device. Basically, it is an IOT module to control any household appliances through an app or with the help of a Robot.

## LITERATURE REVIEW

Major life challenges are increasingly likely to occur with old age. Elderly people are at wider risk of social isolation compared to the general population due to the increased likelihood of health problems and major life-events like death of relatives and friends [1]. We can define social robot as “an autonomous or semi-autonomous robot that interacts and communicates with humans by following the behavioral norms expected by the people with whom the robot is intended to interact” [2]. There are different kinds of social robots: service-type robots are designed to provide functional help; companion-type robots are designed to enhance psychological wellbeing [3]. Social robots are mainly studied in the fields of Socially

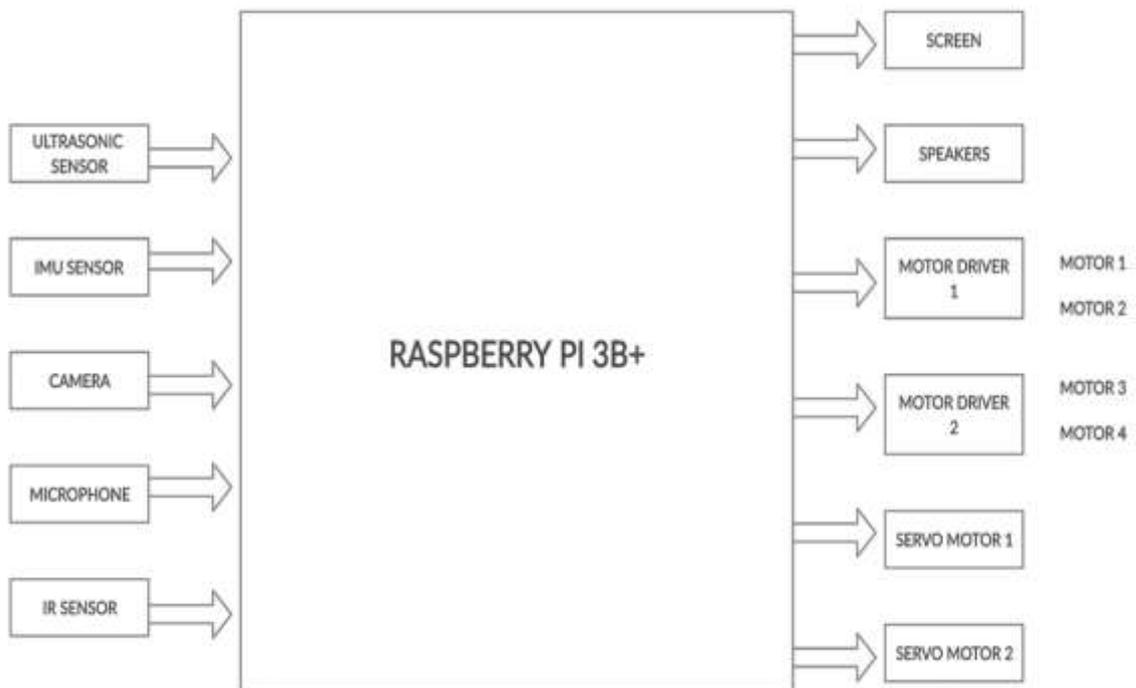
Interactive Robotics (SIR), Socially Assistive Robotics (SAR), and Assistive Robotics (AR) [4]. Many areas are important foci for research in these fields: engagement, adaptation (the robot’s ability to learn about the user and adapt its capabilities according to the user’s personality, needs and preferences), embodiment (bodily presence), personality, empathy, and transfer (the ability of a robot to bring about long-term behavioral change in the user) [5, 6]. In previous studies, researchers have found that physical robots are more “watchful” and enjoyable than virtual ones [7]. Social robots are mainly developed for the elderly focus on companionship or healthcare, which is only one aspect of psychological wellbeing. Other aspects, such as sense of purpose and interest, are not specifically investigated.

**1. EQUATIONS, FIGURES AND TABLES**

**2.**

<b>Our Robot</b>	<b>Others</b>
Multi-purpose robot with more functionalities	Single purpose robot with limited functionalities
Targets multiple set of audience	Targets only one set of audience
Cost-effective	Cost-intensive

*Table 1: Comparative Study*





*Fig. 1: Working Model*

### **FUTURE SCOPE**

- Emotion Recognition
- Autonomous Indoor navigation
- Teaching Aid
- Automatic Charging

### **CONCLUSION**

So hereby we can conclude that making robots part of our family and daily life is useful. Robots can socialize with humans. They can be developed in way to connect humans. It is the future of technology and human interaction. They can be reliable and secure solving a lot of problems in our daily life.

**Let's make a robot a part of our day to day life.**

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# THE POWER OF INTERNET OF THINGS (IoT)

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## ABSTRACT

Each year, new technologies rise and fall, typically making an impact on our daily lives and other times barely leaving a trace. One class of emerging technologies that has the widest variety is that the Internet of Things or IoT. Now, whereas some of these Internet of Things examples are pretty out there, others show the true potential and power of IoT near future. This paper gives an idea about the overview of IoT devices, its impact and its breakthrough in the times ahead.

**KEYWORDS** : *digital, technology, invention, devices.*

## INTRODUCTION

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or those that are provided with distinctive identifiers (UIDs) and therefore the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The Internet of Things (IoT) has the potential to essentially shift the way humans interact with the world around them. IoT systems, that we tend to outline as sensors and actuators connected by networks to software system, will monitor and manage connected objects, machines, and even living things. This quickly advancing technology makes it attainable to use data-driven deciding to new realms of human activity. From monitoring machines on the plant floor to tracking the progress of ships bewildered, sensing changes in physical environments to keeping closer tabs on human vital signs, IoT systems can alter firms to urge much more out of their physical assets, revolutionize however we tend to run our cities and houses, improve health outcomes, and even save lives.

### Impact Of Internet Of Things (IoT)

Businesses are adopting a wide range of smart device technologies over the last 15 years. a number of these embrace barcodes, radio frequency Identification (RFID), global Positioning

System (GPS), environmental sensors, and real-time Locating Systems (RTLS) for monitoring and communicating. However, it's solely recently that IoT-enabled devices are being accepted a lot of without delay as a key technique for providing immediate visibility to boost processes and operations.

For corporations like Google and Facebook that rely almost entirely on data for their growth, the IoT can enable businesses to grasp more than ever about their customers and to be able to market to them in clever, highly-customized ways that.

For following few years we'll see a lot of devices connected and more buzz round the IoT, as more and more businesses get in on the act and completely different business segments begin to figure along to collaborate on true additional benefit to the end-user.

Right now the IoT includes not solely the connected refrigerator, however also medical devices in hospitals, smart utility meters, GPS-based location systems, fitness trackers, toll readers, motion detector security cameras, smoke detectors, lighting systems, embedded systems, and more. The IoT market – which incorporates hardware, software, systems integration, and data and telecoms services – is predicted to grow to \$520 billion by 2021. That figure represents a more than 100 percent rise on the \$235 billion spent in 2017.

More companies are running proof of concept trials than 2 years ago. and therefore the variety of enterprise customers considering exploring new use cases is up to 60 % in 2018, compared with less than 40 % in 2016.

### **Some of the examples of Internet Of Things (IoT) are given below:**

1) **Nest Smart Home:** By providing users with an app on their phones to monitor each of their IoT devices in their home, Nest aims to make creating a smart home simple and easy. though the company has been around for 8 years, they have already created great strides in IoT development since their original Nest thermostat.



This leads us to believe that Nest is just getting started. The Nest Learning Thermostat has Wi-Fi thus you'll be able to remotely control the temperature from phone, tablet, or PC. This latest generation also has a larger display and a few additional sensors than its predecessors, in addition to geofencing support and a furnace monitor.

2) **Kisi Smart Lock:** Kisi smart Locks have applications outside of just residential door locks. In fact, our office complex uses Kisi so that all employees have access to the building whenever they need. although Kisi has created a reputation for themselves by specializing in access control systems, the uses of such systems have wide applications.



3) **Canary Smart Security System:** Taking things one step further than Kisi, Canary's smart security system aims to provide an all-in-one solution to home security problems. Not solely will Canary work with both Google Assistant and Amazon Alexa, but it includes embedded AI technology, a 1080p HD camera, microphone, and a 90 decibel and a built-in climate monitor. when they say all-in-one, they really mean it.



This internet of Things example shows that IoT platforms can have wider uses within the home than just making processes more efficient. The Canary system allows users to review security footage from their app, even at night since the Canary includes a night-vision camera. once it comes to smart home security, Canary has what you need.

4. **DHL's IoT Tracking and Monitoring System:** As we mentioned earlier, many internet of Things examples have to do with smart homes, however there are still plenty of other use cases that are enterprise focused. for example, DHL's IoT tracking and monitoring system. This IoT system tracks everything from vehicle behavior to packages to environmental sensors within the warehouse. each of those is employed together to form the method safer and more efficient.



This sort of logistical IoT solution is still far from being perfected, however soon companies like DHL can operate through these systems on a vast scale. As these technologies progress, systems can only become more efficient and do a better job of delivering the best possible performance.

**5. Cisco's Connected Factory:** In the same spirit as DHL, Cisco has taken on the challenge of creating a connected manufactory that can only work because of IoT. With remote monitoring and access, Cisco is in a position to manage factory machines and systems. this can be accustomed both increase efficiency and find weak points in the manufacturing process that can be optimized. However, it's not just the manufactory that's connected, but the entire production process. Cisco has partnered with alternative IoT firms to require on the challenge of maximising everything with internet of Things. although they still have a ways in which to go before everything is completely functional, initiatives like this show that not only are people interested in IoT, however committed to creating an IoT future.



**6. ProGlove's Smart Glove:** Still in the same vein as Cisco, but on a more micro scale, ProGlove's 'Mark' is the world's first smart glove for industrial employees. By combining IoT and wearables solutions in one device, ProGlove is making industrial employees safer and additional economical at their jobs.

The actual glove is meant to satisfy the protection conditions of an industrial atmosphere in conjunction with period visual and haptic feedback, wireless connectivity, and gesture sensing. The gloves are additionally outfitted with a barcode scanner for quality checking and documenting assembly.



Solutions like this are what set companies like ProGlove apart from other web of Things examples when it comes to ingenuity

7. **Kohler Verdera Smart Mirror:** The Verdera Voice is a thoughtfully designed and functional centerpiece of the smart bathroom featuring a high-quality grooming mirror, efficient adjustable led lights for precision routines like makeup application and skin care, a motion-activated wayfinding nightlight, and hermetically sealed speakers that maximize the voice notes.

The Kohler Verdera smart Mirror is not magic, simply a brand new step in technology. coupled with Amazon Alexa, the Verdera can answer questions, tell you about the weather, and show you notifications right on the mirror. With the popularity of voice already dominating the market, this makes sense as a next step.



### **IoT: A BRIGHT FUTURE**

As you can see from these internet of Things examples, the future of IoT is a bright one. As new ideas emerge about how best to use IoT product, it'll be interesting to see which way this technology heads. |The quantity of the internet of Things is forecasted to grow to 30 billion devices by 2020 and the number is believed to reach 75 billion by 2025. however with of these impressive numbers only 0.06% of 'things' that might be connected to the internet actually are. This leaves a lot of room and potential for the internet of things development. the future of IoT looks pretty promising. Already they impact our lives, homes, cities we live in,how we work, travel or interact with the globe around us. Major wireless carriers will continue to roll out 5G networks in 2019.

5G — fifth-generation cellular wireless — promises greater speed and also the ability connect more smart devices at the same time. Faster networks mean the data accumulated by your smart devices will be gathered, analyzed and managed to a higher degree. which will fuel innovation at companies that make IoT devices and boost consumer demand for brand new product. The arrival of 5G can shift the auto industry into a higher gear. the development of driverless cars — as well as the connected vehicles already on the road — will have the benefit of data moving faster.

You might not think about your car as an internet of Things device. but new cars can increasingly analyze your data and connect with other IoT devices — as well as alternative high-tech vehicles on four wheels.

## CONCLUSION

The future of IoT is virtually unlimited due to advances in technology and consumers' desire to integrate devices like smart phones with household machines. Wi-Fi has made it possible to connect people and machines on land, in the air and at sea. It's critical that both companies and governments confine ethics in mind as we have a tendency to approach the fourth industrial revolution (Pye, 2014). With most data travelling from device to device, security in technology will be required to grow even as quick as property so as to stay up with demands. Governments can undoubtedly face tough decisions as to how so much the private the sector is allowed to travel in terms of robotics and information sharing. The possibilities are exciting, productivity will increase and amazing things can come by connecting the world.

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# GREENING INITIATIVE IN CLOUD COMPUTING

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## ABSTRACT

The development of cloud computing has drive to uneconomical energy consumption in data processing, storage, and communications. This is unfriendly to the environment, because of the carbon emissions. Therefore, green IT needs to save the environment. The green cloud computing (GCC) is part of green IT; it focus to cut the carbon footprint of datacenters by shortening their energy consumption. The GCC could be a broad and exciting field for analysis. A overmuch of research has appear aiming to support the GCC vision by improving the utilization of computing resources from different aspects, such as: software optimization, hardware optimization, and network optimization techniques. This paper over analysis the approaches to GCC and classifies them. Such a consignment assists in connection between GCC approaches by determining the key implementation approaches and the issues related to each.

**KEYWORDS:** *Cloud Computing; Green Computing; Energy Efficiency; Power Management; Virtualization*

## INTRODUCTION

Cloud computing is a new computing paradigm that relies on a business model whereby services, such as servers, storage Internet[1][6][7].Each datacenter consists of hundreds or thousands of physical machines arranged in hundreds of racks that can run millions of virtual machines (VMs)[2]. For instant, Google, one of the most famous cloud-based companies, delivers all of its services through the cloud, such as Gmail and GoogleEarth.To deliver this content to end users in real-time, videos, pictures and other data are stored in huge datacenters[15] . It has at least 14 datacenters around the world[16] , and more than two million servers, as estimated in[5].The concept was introduced in the 1960s, when IBM partitioned mainframe computers to increase processor utilization[8] . In cloud

computing, virtualization is process of logically dividing server resources.Each physical server is partitioned to contain multiple independent logical server,as VMs[7].Once the physical server is partitioned,each virtual server runs an independent operating system and applications[9]. A datacenter is a massive facility that consumes large amounts of energy for data processing, storage and communication, which negatively impacts the environment[3] . The environmental impact is due to carbon emission; one datacenter can produce 170 million metric tons of carbon per year. The expected carbon emissions by datacenters worldwide in 2020 is 670 million metric tons annually [4]. Additionally, the huge energy consumption in datacenters causes high operational costs.. As a result of such potential clash to the environment, the green cloud computing initiative has emerged as part of the green IT vision [10]. The overall objective of green IT is to increase energy efficiency and to save the environment.

## METHODOLOGY

### OVERVIEW OF ENERGY REDUCTION TECHNIQUES

In general, green cloud computing can be implemented via three approaches: software optimization , hardware optimization , or network optimization in order to reduce the power consumption, as illustrated in Figure details the related studies of green cloud implementation techniques.

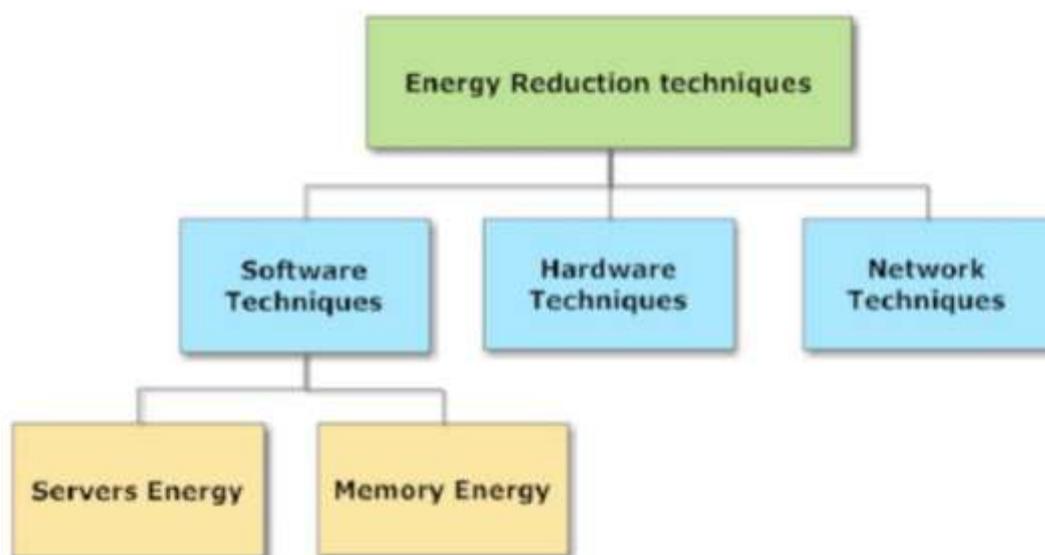


Fig. Energy Reduction Techniques for GCC

## SOFTWARE TECHNIQUES

There are two software approaches for energy consumption reduction: reducing the energy consumed by servers (by reducing the number of active servers), and reducing the energy consumed by memory (by reducing the number of running memory nodes).

### A. Reducing Server Consumed Energy

The energy consumption of servers can be decline by reducing the number of active servers. This is usually implemented by scheduling escalation, which is a common approach for green clouds and is considered[13] more efficient than hardware optimization, in terms of cost, consumed . It depends on finding a suitable mapping between requests for VMs and physical servers to minimize the amount of consumed power[13] . One of the important issues for energy efficiency in virtualized cloud environments is where to place new VM requests within the physical servers

### B. Reducing Memory Consumed Energy

The article [11] proposed a technique for reducing memory energy consumption using virtual machine scheduling in multicore systems. It presented two scheduling policies: Each policy makes a scheduling decision based on the currently used memory nodes at time  $t$  ( $C(t)$ ), and the access set of the VMs (memory nodes accessed by these virtual machines) in run queues. To reduce the currently running memory nodes, it tries to find the biggest access set that is completely covered by  $C(t)$  and schedules the corresponding VM.

## HARDWARE TECHNIQUES

Other technique cut the consumed energy by applying flexible hardware that varies the server computing capability via controlling the frequencies and voltages in the server, which affects the energy consumption[13][14]. However, as with all other hardware techniques, this approach to green cloud is valuable and suffers from poor scalability because of the special hardware requirements. A power-aware scheduling algorithm is presented in[12]. It implements Dynamic Voltage Frequency Scaling (DVFS) technique, which is applied with a number of special processors that can to operate at different voltage and frequency levels. It selects the grant supply voltages and frequencies of processing elements to minimize energy consumption without violating the SLA, based on the VMs workload. Each VM is share to the First 9Fit server, and each server applies the DVFS to save the energy while complying with the SLA requirements.

## NETWORK TECHNIQUES

The communications between VMs absorb energy in the datacenter[3] . Reducing the network traffic between servers cut down energy consumption. The studies consider the

network traffic of the VMs placements to reduce the energy consumption. In , two heuristics for VMs migration are presented based on the communication graph and other resource requirements such as processor, memory etcetera. The communication graph is represented as a weighted graph. The weight for each edge in the communication graph expose the amount of traffic between two VMs. So the connected component means those VMs connect with each other while disconnected components means there is no network traffic between these components. The algorithm identifies the under-loaded servers and the heavily-loaded servers. Then it identifies the physical servers with sufficient residual capacity and sorts them in ascending order according to load. From the lightly loaded servers, it identifies the set of VMs whose load can be accommodated by these physical machines and constructs the communication graph of those VMs. After that, it sorts the components in decreasing order of their size.

### CONCLUSION

In general, the growth of cloud computing has manage to uneconomical energy consumption in data processing, storage and communication. The massive energy utilization is unfriendly to the environment because of the huge carbon footprints of the datacenters. Therefore, green cloud computing required to support the environment. Green computing produces environmental-friendly and cost-efficient cloud computing by using computing resources more efficiently.

SLA compliance and energy utilization have a negative correlation.

Hardware optimization provides a reduction in the energy utilization while complying with the SLA. On the other hand, it more costly and has a limitation in scalability because of the special hardware requirements.

Network optimization techniques can cut the energy consumption while complying with the SLA. But it needs to be aware of the network topology and can applied only in a specific network topology, which limits its scalability and the flexibility.

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# TOLLGATE CONTROLLNG AND MONITORING SYSTEM

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## ABSTRACT

With increase of vehicles on road, the task of traffic system becomes very complex. It is also not easy to keep and maintain the information of each vehicle, which is running on the road. Many unauthorized vehicles are passes through the tollgate but only they checked that it is matched in there database or not, if not then only toll tax is paid by the unauthorized vehicles. Our project is mainly focusing on identifying unauthorized vehicles and authorized on the tollgate.

**KEYWORDS** – *ArduinoUno, RFID Reader, RFID Tag, Buzzer, LCD, Servo Motor, Node MCU, PCB Board.*

## INTRODUCTION

Our project is for controlling and monitoring the registered and not registered, if the vehicles belong to the authorized person it automatically opens the toll Gate and a predetermined amount is automatically deducted from its account after some delay gate is closed automatically. Otherwise, if the vehicle is not registered or not authorised then the gate will not open. In our Project, information of vehicles are also monitored through our database. In addition, from database we controlled the registered and not registered vehicles information, which information may help for finding the not registered vehicles information.

## OBJECTIVES

### The Objective of any project should be SMART:

- **Specific:** In our project the purpose is to monitoring and controlling the legal and illegal vehicles information and store it in our database for future scope.
- **Measurable:** The legal vehicles are authorised and the action is performed that is the gate is open which is monitor by Arduino and also after some small delay the gate close.
- **Achievable:** In tollgate monitoring and controlling our aim is to reduce the manually working of person, also to reduce the traffic.
- **Realistic:** In present scenario the traffic is becoming more complex at the tollgate so we are also relating with automatic toll collection due to which the gate is open if the vehicle is registered and the amount is also deduct, automatically.
- **Timely:** In our project the manually working of people is reduced and also the work is complete within the less amount of time. Also, our objective is fulfilling at that time.

## MOTIVATION BEHIND THE IDEA

The motivation towards working on this project is to solve the traffic problems and to maintain transparency of the toll system. Our aim is to make a digital tollgate system, which will be less time consuming and automated.

Design a tollgate monitoring and controlling which is based on automatic system to save the time at toll gate and having cash free operation” As the name suggests “Automatic” is the key theme of our project is the automation. So here, we will just discuss about the overlook of what is mean by Automation.

Therefore, in very simple language the Automation means to replace the human being with the machines to reduce human work. Means machines now perform the work done by the human.

## WORKING

basic working of project is to save unauthorized vehicles data first, each vehicles data is stored in our database.

When vehicles come near the tollgate it contains unique tag, which have unique ID that unique Id is, scan or read by the RFID reader, which is placed, on the tollgate.

After reading the ID, it will check that match is equal to one or not if it is one that means authorized entry is done and it will show message on LCD that Authorized entry access allow For the unauthorized vehicles, it will scan the ID and if it does not match it means unauthorized entry is done at that time immediately buzzer will take place due to that we

<b>Stepper Motor</b>	<b>Servo Motor</b>
1)Stepper motor is also called as step angle because it drives the stepping motor to rotate at a fixed angle in set dirction.	1) Servo motor is also known as executive motor, because it is an actuator to convert received electrical signal into angular velocity.
2) Stepper motor are slow, easy to setup with PWM tuning.	2) Servo motor are high to torque, fast, accurate rotation in limited angle.
3)The Stepper motor works in open loop.	3)Servo motor works in close loop.
4) Stepper motor run warm to touch because they continue to consume power to lock in and hold the commanded position.	4) Servo motor consume power as its rotate to commanded position.
5)Stepper motor have many poles typically 50 to 150 brushless.	5) Servo motor have between 4 to 12 for typically applications.
6) Stepper motor e.g.: used in industry such as packaging, semi-conductor, material handling.	6)For e.g.: It is used for robotic arms/legs on rubber control.

will come to know that authorized vehicles crosses the tollgate

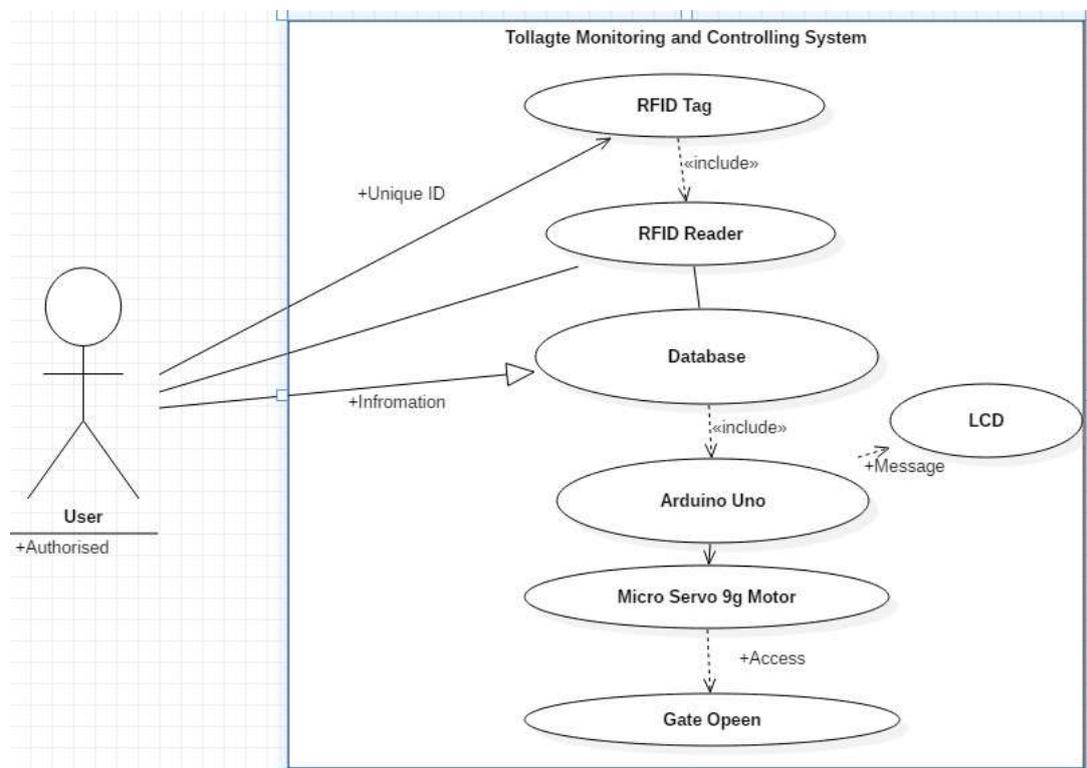
*Table 1: Difference between stepper motor and servo motor*

RC522 Reader	EM18 Module Reader
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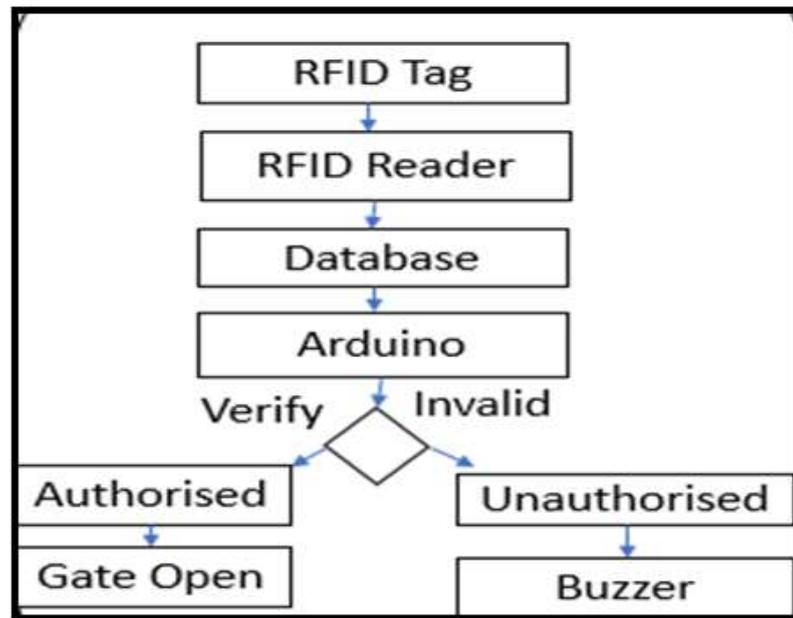
1)RC522 is highly integrated read and write card chip applied for 13.56 contactless communication.	1)EM18 Rfid reader is a module which read the ID information stored in RFID tags.
2)RC522 is 13.56 MHz, it is designed by NXP as low power consumption, low cost.	2)EM18 is 9 pin devices out of which 2 pins are not connected.
3)It is used in reader distance, operating frequency 13.56mhz.	3)It is used in communication parameter, reading distance, integrated antenna.
4) operating current 13-26mA/DC 3.3V.	4)Operation voltage of EM18 is +4.5v to 5.5v, It can operate in low power, current consumption is 50mA.
5)It contains supported card types ultralight, mifare1 S50, m is Pro.	5)It contain active rfid tags own transmitter and power source and passive rfid tags do not have transmitter.
6)For eg: It is used in wide range of applications.	6)For eg: t is used in many companies to provide authorized employees.

Table 2: Difference between Readers

**Basic model:**



**Flowchart:**



### MAIN OPERATION :

#### **Tollgate Open:**

The tollgate is open when registration is checked and it is true.

#### **Tollgate Close:**

The tollgate close function depends on the module if the function is true then the closed function is work.

#### **Check Registration:**

It will connected to RFID it implies that the registration is refer to the vehicles are authorized or not.

### IMPROVEMENT IN CURRENT TECHNOLOGIES

Unauthorised vehicles information is getting saved in term of real time database.

Authorised vehicles getting benefits like saving time ,not waiting in a queue .

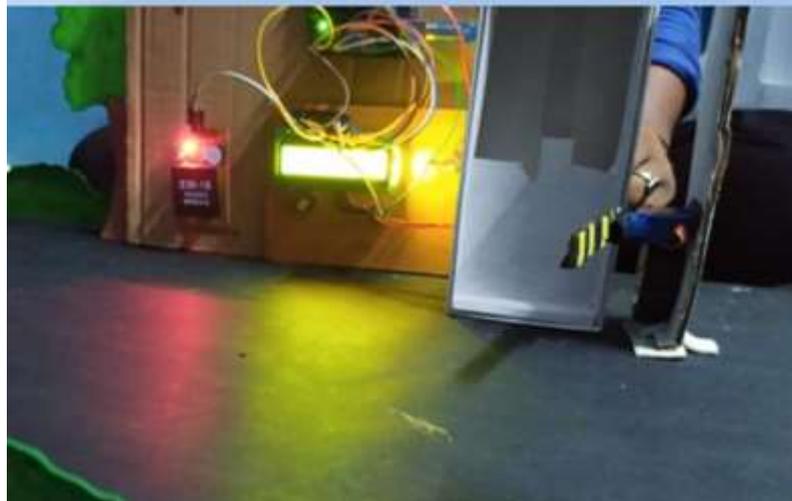
Unauthorised vehicles have to pay the toll manually and then the gate will open manually because our project main objective is to reduce the traffic .

### EXISTING RELATED TECHNOLOGIES

- Barcode based Electronic Toll Collection System using laser technology
- ANPR (Automatic Number Plate Reader)

- FAST Tag - Electronic toll collection

**PHOTOS**



*Fig. 3: Design of project*

**SCREENSHOTS**



*Fig. 4: Screenshots of first page*



Fig. 5: Final screenshots of entry details

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## NEW ERA IN IT WORLD

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### ABSTRACT

The measure of information being created and put away is developing exponentially, due in enormous part to the proceeding with propels in PC innovation. Right now the advanced field of information mining can be utilized to separate valuable information from the information that encompass us. Information stockrooms and on-line systematic preparing (OLAP) instruments have become fundamental components of choice emotionally supportive networks. Customarily, information distribution centers are invigorated intermittently (for instance, daily) by extricating, changing, cleaning and uniting information from a few operational information sources. The information in the distribution center is then used to occasionally produce reports, or to reconstruct multidimensional (information 3D shape) perspectives on the information for on-line questioning and examination. Progressively, in any case, we are seeing business knowledge applications in broadcast communications, electronic trade, and different enterprises, that are portrayed by high information volumes and information stream rates, and that require persistent investigation and mining of the information.

**KEYWORDS :** *Data mining, Data distribution center*

### DATA MINING & DATA WAREHOUSING

#### INTRODUCTION

#### DATA MINING:

By and large, information mining (once in a while called information or information

disclosure) is the way toward investigating information from alternate points of view and condensing it into valuable data - data that can be utilized to expand income, reduce expenses, or both. Information mining programming is one of various diagnostic apparatuses for examining information. It permits clients to dissect information from a wide range of measurements or edges, arrange it, and condense the connections distinguished. In fact, information mining is the way toward discovering connections or examples among many fields in huge social databases. Information, Information, and Knowledge .Data is natural raw numbers with no additional translation or investigation. "The cost of raw petroleum is \$80 per barrel." Information is information that has been deciphered so it has significance for the client. "The cost of raw petroleum has ascended from \$70 to \$80 per barrel" offers significance to the information as is said to be data to somebody who tracks oil costs. The examples, affiliations, or connections among this information can give data. For instance, examination of retail location exchange information can yield data on which items are selling and when information is a mix of data, experience and understanding that may profit the individual or the association. "At the point when unrefined petroleum costs go up by \$10 per barrel, all things considered, oil costs will ascend by 2p per liter" is information. For instance, rundown data on retail general store deals can be examined considering limited time endeavors to give information on customer purchasing conduct. In this way, a producer or retailer could figure out which things are generally helpless to limited time endeavors.

### **DATA WAREHOUSING:**

A data stockroom is a social database that is proposed for request and assessment rather than for trade planning. It generally contains real data got from trade data, yet it can consolidate data from various sources. It confines examination remaining job that needs to be done from trade extraordinary weight and engages a relationship to join data from a couple of sources. Despite a social database, a data stockroom condition joins an extraction, transportation, change, and stacking (ETL) course of action, an online descriptive taking care of (OLAP) engine, client examination devices, and various applications that manage the path toward get-together data and passing on it to business customers. Data stockrooms must place data from various sources into a consistent setup. They should resolve such issues as naming conflicts and inconsistencies among units of measure. Exactly when they achieve this, they are said to be integrated. Nonvolatile suggests that, once went into the conveyance community, data should not change. This is reasonable considering the way that the purpose behind a stockroom is to enable you to look at what has occurred. Time Variant In solicitation to discover inclines in business, specialists need a ton of data. This is especially instead of online trade taking care of (OLTP) structures, where execution requirements demand that evident data be moved to a record. A data appropriation focus' consideration on change after some time is what is suggested by the term time variety. Data warehousing, like data mining, is a reasonably new term disregarding the way that the thought itself has been around for an impressive period of time. Data warehousing addresses an ideal vision of keeping up a central

chronicle of each and every various leveled datum. Centralization of data is relied upon to extend customer access and assessment. Enthusiastic mechanical advances are making this vision a reality for certain associations. Also, likewise electrifying advances in data assessment writing computer programs are allowing customers to find a workable pace transparently. The data assessment writing computer programs is what reinforces data mining

### **OBJECTIVE**

In information mining, the overwhelming apparatus is an information distribution center—it assists with pulling in crude information from sources and store it in a cleaned, institutionalized structure, to encourage examination. To proceed with the similarity, such as mining engineers follow exact procedures to separate valuable stones from the encompassing earth, information mining is an assortment of strategies for filtering through crude information and finding valuable experiences that can have any kind of effect to the business.

- Data warehousing is planned to furnish the association with a dependable wellspring of information for some sorts of business investigation.

Data mining is planned to give the association shrouded bits of knowledge that can't in any case be gathered from huge scope information.

### **SCOPE**

Information mining offers a significant way to deal with accomplishing esteems from the information product house for use in choice help. Information warehousing turns into a standard piece of an association, there will be endeavors to discover better approaches to utilize the information. Information warehousing and information mining will acquire a few new difficulties future like

- Regulatory limitations may confine the capacity to consolidate wellsprings of different information.
- These dissimilar sources are probably going to contain unstructured information which is difficult to store.
- The web makes it conceivable to get to information from for all intents and purposes "anyplace".

This equitable expands the uniqueness. Today the test is to structure information warehousing and information mining applications that are dependable, simple to utilize and underpins powerful dynamic. As the measure of information increments later on, information mining and information warehousing will turn into a significant apparatus in enterprises/business. Information mining will be useful in finding new quality items, foresee the advantages from that quality information, and can help improve utilization of deals assets like labor and advertising.

## METHODOLOGY

Information warehousing is an assortment of instruments and methods utilizing which more information can be driven out from a lot of information. This assists with the dynamic procedure and improving data assets. Information distribution center is essentially a database of novel information structures that permits generally fast and simple execution of complex inquiries over a lot of information. It is made from various heterogeneous sources. The motivation behind Data distribution center is to help the dynamic procedure. It makes data effectively available as we can create reports from the information distribution center. It generally contains authentic information got from value-based information however can likewise incorporate information from different sources. Information distribution center is constantly kept isolated from value-based information.

1. Following examples: The client's information are followed each day. The promotion appeared in the client's site is because of the followed information. Ad fluctuates for every single individual.
2. Arrangement. Characterization is a progressively unpredictable information mining strategy that drives you to gather different qualities together with the goal that you would then be able to use to make further inferences, or serve some capacity. For instance, in the event that you are assessing information on understudies, at that point you can order every single one of them in various evaluations according to the imprints.
3. Affiliation. Affiliation is identified with following examples, yet is progressively explicit to conditionally connected factors. Right now, search for explicit occasions or traits that are exceptionally associated with another occasion or characteristic; for instance, you may see that when your clients purchase a particular thing, they additionally regularly purchase a second, related thing. For eg bread spread, versatile and portable spread.
4. Exception discovery. By and large, essentially perceiving the general example can't give you an away from of your informational collection. You likewise should have the option to distinguish peculiarities, or anomalies in your information. For instance, if your buyers are solely male, however during one unusual week in July, there's a tremendous spike in female buyers, you'll need to research the spike and see what drove it, so you can either imitate it or better comprehend your crowd all the while.
5. Clustering. Bunching is fundamentally the same as order, however includes gathering lumps of information dependent on their similitudes. For instance, you may decide to group various socioeconomics of your crowd into various parcels dependent on how much discretionary cashflow they have, or how frequently they will in general shop at your store.

6. 3.Regression. Relapse, utilized basically as a type of arranging and displaying, is utilized to distinguish the probability of a specific variable, given the nearness of different factors. For instance, you could utilize it to extend a specific cost, in light of different components like accessibility, purchaser request, and rivalry. All the more explicitly, relapse's principle center is to assist you with revealing the specific connection between two factors in a given informational collection.
7. Expectation. Expectation is one of the most significant information mining methods, since it's utilized to extend the kinds of information you'll find later on. Much of the time, simply perceiving and understanding recorded patterns is sufficient to diagram a to some degree exact forecast of what will occur later on. For instance, you may audit buyers' records as a consumer and past buys to anticipate whether they'll be a credit chance later on.

## DATAWAREHOUSE

### **Base up structure:**

In the base up approach, information stores are first made to give announcing and explanatory abilities to explicit business forms .These information shops would then be able to be incorporated to make an exhaustive information distribution center .The information stockroom transport design is basically an execution of "the transport", an assortment of adjusted measurements and accommodated realities, which are measurements that are shared between realities in at least two information bazaars.

Top-down plan: The top-down methodology is structured utilizing a standardized undertaking information model ."Atomic" information, that is, information at the most reduced degree of detail, are put away in the information distribution center .Dimensional information bazaars containing information required for explicit business procedures or explicit divisions are made from the information stockroom.

Cross breed plan: Data distribution center frequently look like the center point and spokes design. Heritage frameworks taking care of the stockroom regularly incorporate client relationship the board and undertaking asset arranging, producing a lot of information. To merge these different information models, and encourage the concentrate change load process, information stockrooms frequently utilize an activity information store, the data from which is parsed into the real Dw. To lessen information repetition, bigger framework frequently stores the information in a standardized manner. Information shops for explicit reports can then based over the DW.

### **FINDINGS :**

Maybe the most solid methodology to characterize information science is by its use – e.g., what information researcher get paid to do. Actually as of now, nobody considers themselves

an information researcher in the scholarly community, hope to take on an auxiliary title for being a piece of an "information science establishment" at a college, or for applying for an award that provisions cash for information science look into.

What do information researcher resemble in industry ? it relies upon the degree of position and whether you're discussing the Internet/online industry specifically. The job of information researcher need not be selective to the tech world, yet that is the place the term started; so for the reasons for the discussion, let us state what it implies there. A Chief information scientist ought to set the information technique of the organization, which includes an assortment of things: setting everything up from the designing and framework for gathering information and logging, to protection worries, to choosing what information will be client confronting, how information will be utilized to decide, and how it will be incorporated back with the item.

### **SUGGESTION :**

From the investigation up until this point, and so as to diminish on poor choice results, firms should attempt to check the information from the information distribution center before digging and ahead use for dynamic, as this will go far in restricting the events of poor showcasing trip and promoting mistakes. Various jobs and obligations should be acquiesced to so as to put forth information distribution center attempts fruitful and produce rate of profitability. For the specialized faculty (application software engineer, framework executive, database head, information overseer), it is prescribed that the accompanying jobs be performed full-time by committed work force however much as could reasonably be expected and that each capable individual get explicit Data Warehouse preparing. The information distribution center group needs to lead the association into accepting their jobs and in this manner realizing an organization with the business. The board likewise needs to make significant arrangements out of these orders and ensure the staff executes on them. Business is all around fit space for applying information mining as it gives huge volumes of information. In a business setting, the fruitful presentation of information mining requires utilizing information mining strategies to address a genuine business challenge. For organizations that are simply beginning with logical client relationship the executives, coordinating information mining can be an overwhelming errand. A proof-of-idea venture is a decent method to begin. The evidence of idea ought to make strong business case for additional combination of information mining into the organization's advertising, deals, and client care activities. There is shortage of writing in experimental audit of information mining and information warehousing in business activities and all things considered scholastic researchers and associations need to complete progressively broad exact examinations so as to develop information right now

### **CONCLUSION**

Information Mining and Warehousing discusses the adjustment in business drifts nowadays. All the little and enormous enterprises are gathering and utilizing information from different

sources to distinguish their own business patterns. Associations comprehend the qualities and the shortcomings of their rival improve their advancing rate towards the objective and extend their business realm. An information distribution center is an answer for a business issue not a specialized issue. The information warehousing and information mining need to continually conquer hindrances that are yet vague and help the association in dynamic and improves the generosity of association. Information mining helps in making sure about and preparing the information into justifiable lumps, where warehousing helps in dissecting the information and put it so as to encourage examination between patterns, breaking down the information for the business forecasts and quicken dynamic. So, an information warehousing and information mining execution incorporates the change of information from different source frameworks into a typical arrangement with exactness, help the association in the solid business choice and help to extend the business realm. A Data Warehouse Enhances Consistency and Data Quality every datum from the different offices is institutionalized, every division will create results that are in accordance with the various offices. It is pertinent and sorted out in a productive way. One amazing element of information distribution centers is that information from various areas can be consolidated in one area.

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# AUTOMATIC SEED SOWING ROBOT

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## ABSTRACT

In this paper we have provided modern technique of farming by using the robot which can cultivate the crops to increase the efficiency and to decrease the time required for sowing the seeds into farm. A seed sowing robot is useful for sowing the seeds in very efficient and accurate manner in a farm. This robot can sow the different seeds with same size and also vary the space between two seeds. For different size of seed, we can change the seed wheel accordingly. The technology used in this project will improve the agricultural process and it also provides the replacement for the costly and big machine such as tractor.

**KEYWORDS** : *robotic technology, Arduino, seed wheel, digger, delay, autonomous, motor.*

## INTRODUCTION

As we know that food is the main purpose of all human being to fulfil the basic nutrition required for their body and the agriculture is the main source from which they can fulfil their needs. The variety of new technologies have been bringing to every sector, which makes our life easier and faster. But the agriculture sector is still not developed as the other sectors.

Some of the issues we find it: -

Till now all the farmer uses the traditional methods and also uses the traditional equipment for their farming, which lead to poor productivity and quality and also includes more time consuming processes.

There is problem with manual planting such as,

- Less efficiency in planting seeds at proper depth.

- Less accuracy in spacing between the two seeds.
- Time consuming process.
- Leads to serious back ache problem to a farmer.
- limited to the size of the field and also more wastage of seeds during planting.

For large size of field, it requires more laborer which is costlier for any rural farmer. Hence there is need to build such a robot to resolve the limitations of a manual planting and which design suits the basic requirement of crops. Such technology should implement to help farmer to reduce the effort required for seed sowing.

### **EXISTING SYSTEM**

A seed drill is a device which will sow the seeds by positioning them into the soil and in sowing at a proper depth. It will sow the distance according to the specified position and burying at a particular distance by covering seed with soil.

An autonomous agricultural drones are used to sow the seeds by spraying the seeds over the crop field. This sowing device is developed to reduce the sowing time and effort by integrating with the quad-copter agricultural drone.

Autonomous tractors is just like an autonomous vehicle with advance sensors and actuators. Also consists of auto steering which will drive the tractor to the accurate position.

### **PROPOSED SYSTEM**

In this paper we are able to provide the solution to achieve accuracy and efficiency while sowing seed into the farm. Also the robot is able to reduce the time and effort required for sowing the seeds into farm. As we are going to control this robot via Bluetooth application, we will provide the input to the Arduino by using this application. The seed sowing robot consist of metering mechanism, seed mechanism, digging mechanism and seed covering mechanism.

As the robot starts moving forward, the digger will go on digging onto the land and the metering mechanism will start measuring distance. It will measure the distance by calculating approximate delay for particular distance. After reaching at a particular distance, it will stop their and the seed mechanism will perform its task. The seed mechanism consists of the seed wheel, seed tank and the funnel. As the seed wheel starts rotating the seed from seed tank will fall onto the ground through funnel. The robot will also ensure that only one seed will get sow into the soil while planting. After that it will continue its work till it reaches to the end and then it will create alarm to acknowledge the user, that it has completed its work.

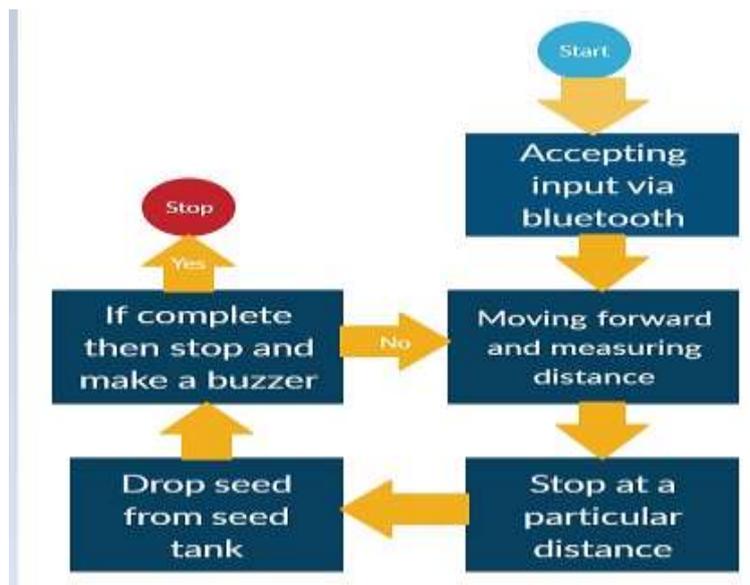


Figure 1 Flow Chart

## METHODOLOGY

The robot consists of following mechanisms.

### Digging

The robot can dig onto the land by using the digger attached in the front bottom side of a robot. As the robot starts moving forward it goes on digging onto the land. The digger arm is movable and we can fix this at any position or angle we want. We can also vary the depth of digging by adjusting digger.

### Measuring distance

The robot will measure the distance using delay. After accepting the distance input from the user it will convert this distance into an appropriate delay and after moving for a particular delay it will stop there to sow the seed. It is very important and basic requirement of seed sowing robot, as the proper distance between the seeds are needed, so that crops will get appropriate sunlight and water to grow.

### Seed mechanism

This mechanism consists of seed wheel and seed tank. The seed wheel is attached to the motor which will move after reaching at a particular distance, the seed from the seed tank will drop onto the ground via seed wheel through the funnel.

### Seed covering

The robot consists of a roller which is attached at the back side of robot. Which will cover the seed with soil as robot moves forward. It is required to cover the seed with soil to ensure that it has sowed properly.

### Delay Calculation

The metering mechanism works by calculating delay for a particular distance. The robot will move for specific time delay to reach to the specified distance by the user. So, here is the formula of calculating delay for distance 'x'.

The robot consists of a roller which is attach at the back side of robot. Which will cover the seed with soil as robot moves forward. It is required to cover the seed with soil to ensure that it has sowed properly.

$$\text{Delay} = x * 550 / 20$$

*Equation 1*

This will calculate the delay in milliseconds for the distance 'x' in centimeters.

### RESULTS



**Figure - Robotic Vehicle**



**Figure - Seed Mechanism**

### CONCLUSION

This robot is made to provide the effortless and efficient farming to the farmer. By using the robotic technology in farming, the farmer can bring the accurate and time saving method of sowing the seed into the farm. Using this technology, we can replace the costlier machines used for farming and can be made available to the farmer at affordable prices. Hence, we need

to promote this technology so that farming can be done in an efficient manner.

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# LIGHT FIDELITY IN OUR DAILY LIVES

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## ABSTRACT

In the era of internet and web, computerized correspondence has become a central point. The quantity of gadgets that is connected to a network has exponentially increased which is prompting complexity in network traffic and storage of bandwidth. To conquer these issues, a new concept of super-quick remote correspondence/communication has been innovated known as Light Fidelity or Li-Fi.

**KEYWORDS:** *Light Fidelity, Internet connection, Wireless Fidelity, Data Communication, Speed.*

## INTRODUCTION

Li-fi innovation comprises of an information transmission system that utilizes obvious light and infrared lights to do the correspondence.

What's that expected to mean? Indeed, the information could be transmitted to wherever where these sorts of light could reach. How could that be? It's easier than it looks. On the off chance that we think, for instance, of the mainstream LED lights, it is assessed that these could be turned here and there around 10 billion times each second (something that people would not have the option to see). Having this limit, the "on and off" could be converted into double language, along these lines arriving at velocities of 10 Gbps.

The theory just drives me back to Morse Code. Those days were cool when simple torches were deployed to relay messages. Impulses of light that just represent the 1's and 0's with two simple states — ON and OFF. But we're no longer in the comfort zone!

### **Li-Fi: The Working:**

Li-Fi is rapid bidirectional organized and versatile correspondence of information utilizing light. Li-Fi includes numerous lights that structure a remote system. A transmitter and a receiver are required. Let us consider any visible light source, this source of light can be switched ON and OFF very rapidly in order to transmit the data. The transition between these ON and OFF stages happens so fast that it is not visible to the regular eye.

Whenever we encounter a 1 in the array, we send an impulse of light and whenever we encounter a 0, we simply don't transmit light. In a traditional setup, the transmitter (LED) is associated with the data network (Internet through the modem) and the beneficiary (photograph finder/light sensor) on the receiving end gets the information as light sign and interprets the data, which is then shown on the gadget associated with the beneficiary. The recipient (photograph locator) enlists a parallel '1' when the transmitter (LED) is ON and a parallel '0' when the transmitter (LED) is OFF. Along these lines blazing the LED on various several occasions or then again utilizing a variety of LEDs (maybe of a couple of various hues) will in the long run give information rates in the scope of several extremely high Mbps.

### **WHY Li-Fi?**

Instead of using light as a new technology for communication, we could have used X-rays, Gamma rays, infrared, radio waves, etc. The reason for using Light is because it is less harmful compared to others. Humans can easily comprehend it and protect themselves from the damaging effects whereas the other wave regions have several disadvantages:

1. Radio waves are pricey and has more vulnerabilities
2. Gamma rays have unpropitious effects on human health.
3. When used extensively, X-rays are similar and equally destructive as Gamma rays.
4. Ultraviolet is safe for areas without habitation.
5. Infrared is outdated and can only be used with minimum power.

Hence, all that is required in Li-fi systems are a bunch of LED's and a controller. The LED can be controlled easily by altering its frequency and each frequency sending out a different message to encode.

### **Li-Fi vs Wi-Fi**

Li-Fi or Light Fidelity may be a completely new concept whereas Wi-Fi has been used for several years now. Data transmission in Li-Fi takes place with the assistance light, LED bulbs to be precise. Data Transmission in Wi-Fi takes place with the assistance of radio waves. The technology utilized in Li-Fi is that the present IrDA compliant devices, whereas the technology used in Wi-Fi is WLAN 802.11 a/b/g/n/ac/ad standard compliant devices. Li-Fi may be applied in airlines, explorations beneath the ocean, hospitals, offices, schools, libraries for fast browsing and electronic communication. Wi-Fi may be used for internet browsing with the assistance of Wi-Fi hotspots. Since just in case of Li-Fi, light gets obstructed thanks to any entity so greater security may be achieved, but just in case of Wi-Fi different technologies have to be implemented for further security. The info transfer speed of Li-Fi is about 1Gbps and can go up to 10Gbps whereas Wi-Fi transmits with the speed of 150 Mbps with WLAN and up to 2Gbps with WiGig/Giga\_IR technology. Li-Fi can add a environment where the density of information is high, Wi-Fi works during a low data density

environment thanks to high network traffic issues. Li-Fi can cover a distance of up to 10 meters, whereas Wi-Fi has network coverage of 32 meters.

### **Applications of Li-Fi**

There are various applications of Li-Fi technology, from public Internet access through existing lighting (LED) to auto-piloted cars that liaise through their headlights (LED based). Adaptions of Li-Fi can extend in places where the Wi-Fi technology lacks its presence like airplanes and hospitals (operation theatres), power plants and various other places, where electromagnetic (Radio) interference is of great concern for safety and security of apparatus and people. Since Li-Fi uses just the sunshine, it will be used safely in such locations or areas. In future with the Li-Fi enhancement all the road lamps will be transformed to Li-Fi connecting points to transfer data. As a results of it, it'll be possible to access internet at any public place and street.

### **Li-Fi can be used in the future for:**

1. Education: Will provide fast internet connection for better and enhanced learning.
2. Medical procedures: for conducting automated surgeries and to control medical apparatus.
3. Internet in airplanes: There won't be any distorted network in the planes and it will all be replaced by Li-Fi for smooth and for smooth and fast internet connection for a cheap price. Internet can be powered by the overhead reading lamp.
4. Underwater Adaption: Vehicles underwater can communicate using their headlamps. They can also receive signals from the ground above.
5. Traffic alerts: Self driven cars can use their headlamps to communicate and travel on the road to avoid accidents, mishaps on the road.
6. Data Connectivity: All devices in a room/area can be connected and synced using light. The connectivity will run smooth without any lad even after the light source changes and will give exceptionally high speeds and bandwidth.
7. Accessible anywhere: Data can be used wherever light is available.

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5. Accessible anywhere: Data can be used wherever light is available.

### **LIMITATIONS**

1. Internet can't be gotten to without a light source. This could restrict the areas and circumstances where Li-Fi could be utilized.
2. It requires a close or impeccable view to transmit information.
3. Deterrents on pathways can influence data transmission.
4. Characteristic light, daylight, and typical electric light can influence the data transmission speed.
5. Since a steady view and light source should be kept up between the sender and the collector, Li-Fi empowered gadgets cannot be introduced in constrained sort of spots.
6. Li-Fi has a comparatively shorter range of connectivity when compared to Wi-Fi because it does not pass through walls.
7. This technology is yet to be developed into its full utilization and capacity.
8. A considerable amount of photos will be consumed as the source for connectivity is light.

### **EQUATIONS, FIGURES AND TABLES**

To begin with, simply traverse our 10 Length long array - whenever we encounter a 1 in the array, we send an impulse of light (say we just make the screen white) for and whenever we encounter a 0, we simply don't transmit light (simply make the screen black). This process continues spanning across all the byte elements in our array till we're done with our sarcastically huge 1MB!

Do the math and you'd realise it takes (10L x 10 / 3600) minutes which turns out to be about 17 minutes. What does that mean to us? 17m for transferring 1MB!! Insane as we think of it right now. It's all about creativity, Physics and a bit of Math.

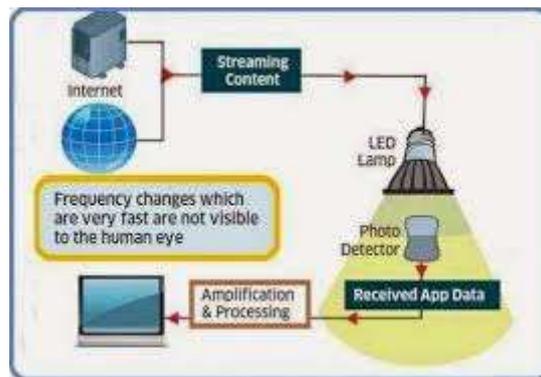


Fig. Block diagram of Li-Fi Sub System  
 (Source: <http://www.warse.org/pdfs/2014/icetetsp25.pdf>)



Fig: Li-Fi system connecting devices in a room  
 (Source:[http://ijariie.com/AdminUploadPdf/Review\\_Paper\\_on\\_Li-Fi\\_\\_Light\\_Fidelity\\_\\_ijarii\\_e2056.pdf](http://ijariie.com/AdminUploadPdf/Review_Paper_on_Li-Fi__Light_Fidelity__ijarii_e2056.pdf))

Technology	Speed
Li-Fi	~1 Gbps
Wi-Fi – IEEE 802.11n	~150 Mbps
IrDA	~4 Mbps
Bluetooth	~3 Mbps
NFC	~424 Kbps

Table 1: Comparison of speed of various wireless technologies  
<https://www.ijsr.net/archive/v4i12/NOV151778.pdf>

## CONCLUSION

Despite the fact that there's a long time to go to make this innovation a business achievement, it guarantees an extraordinary potential in the field of wireless/remote data communication. Countless data analysts and organizations are right now dealing with this idea, which vows to take care of the issue of absence of radio range, space and low web association speed. By deployment of this innovation, we can further move on to greener, cleaner, more secure correspondence and communication systems. The very idea of Li-Fi vows to fathom issues, for example, lack of radio-recurrence data transmission and wipes out the burdens of Radio correspondence advances. Li-Fi is the up and coming and developing innovation going about as impetus for different other creating and new creations/innovations. Along these lines, there is a certainty of advancement of future utilizations of Li-Fi which can be reached out to various stages and different strolls of human life.

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# AUGMENTED REALITY SWEET SHOP WEBSITE

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## ABSTRACT

AR Website, which allows customers to order sweets online with additional interactive content. Augmented reality sweet website provides customers easy access to essential information about dishes to improve the food selection process for customers, and help sweet shops to drive sales. An effective marketing tool for online sweet sellers, AR sweet website can also be designed with a range of other features to enhance customer experience.

## INTRODUCTION

Augmented Reality (AR) is known as to add something which is existing from the real world which helps to combined real-world object and virtual components in a real-world environment. A system which helps to solve customer evaluations and make its user interaction very ease between a user and Augmented Reality feature. The current system which are available in the market are not feasible for the Indian Audience. Augmented Reality would be a game changing in the business as in India this has not yet been developed or deployed in some businesses. This AR feature will help in improvise visibility and improve customer engagement. In India there are three main areas - human resources, customer experiences and good products - with most concentration on AR development so far and will be likely to level up on what use cases Augmented Reality is been progressing currently in the industry. Augmented reality on Sweet Shop Website helps the existing digital content

with add-on AR feature to drive up the sales. Regular customers depend on the previous order satisfactions, their interactions with the website, handling of the products, etc. also matters.

**Critical characteristics of Augmented reality :**

- Mixing virtual images with the real world
- 2D&3D graphics and animation.
- Interactivity in the real world.

### **PROBLEM DEFINITION**

In India, sweets are very famous and are the heart of every occasion, but the sad part is consumers hardly remember their names they know how it looks but they forget its Indian name very easy. This problem can be avoided on personal visit to the sweet shop but in making an e-commerce website of the sweet shop it's difficult for the customer to know what they are searching for and which is a challenge for the sweet sellers of India selling sweets online.

Creative ideas have been used such as adding cinematic pictures, reviews, "also known as" names, adding a bit description etc. But pictures don't specify the exact size and editing makes things look different, descriptions are longer than expected and also time consuming, and the problem list goes on. To overcome the portion size, colour, gigantic descriptions and save time our website solves these problems with the simple but very efficient technology known as AR(Augmented Reality). With the help of this feature the customer gets an option of trying AR sweets at home only which helps him/her to save their visit to drive to the Sweet Shop and buy instead it gives a 3D look like object of actual sweet the customer wants to buy.

This AR feature shows the exact size, colour of the sweet saves the customer's time and helps the customer in having a hassle free ordering of sweets.

Moreover, if the customer doesn't know the name of the Sweet still it can use the AR feature and recognize the Sweet by his phone's camera and then proceed to order just like the usual traditional way of ordering sweets. Looking and choosing.

### **SURVEY OF TECHNOLOGIES**

In modern day and age augmented reality is a handy tool for us as it helps us add virtual objects in the real world and view them using our mobile display. Augmented reality allows us to get a new perspective on the purpose that we are trying to get proper look. Augmented reality and Virtual reality.

**AR is similar to Virtual Reality in the following ways:**

1. **Technology:** Augmented and virtual realities both are some of the same types of technology, and they each exist to serve the best they can.
2. **Entertainment:** Both technologies are the main view for gaming and graphics animations.
3. **Science & Medicine:** It either partially or fully replaces the original picture of an object with the newly augmented view of the same object.

**Now let's look at the difference :**

1. **Purpose:** Augmented reality enhances successive by adding different virtual components such as digital images, graphics and so on. The new layer of interaction with real world. Contrastingly, virtual reality creates its reality that is entirely computer generated and driven.
2. **Delivery Method**

E.g. Pilot learning.

**Difference between Augmented reality and Virtual Reality**

	<b>Augmented Reality</b>	<b>Virtual Reality</b>
Attribute	Mix Reality	Virtual
Environment	Real	Virtual
Most used for	Education, Construction so on.	Videos Game
Interactions	Move, rotate, scale and manipulate the 3d objects in the real world	Move, rotate, scale and manipulate the 3d objects in the virtual world

**Table 1 Difference between Augmented Reality and Virtual Reality****Web Apps v/s Mobile apps**

Both apps and mobile websites are accessed via a mobile device such as a phone or tablet. A mobile website is exactly as it sounds. It's a **website** that consists of browser-based HTML pages that are linked together. Responsive websites are designed for different platforms and adjust to different screen sizes and layouts. Responsive websites are becoming increasingly standard.

A **mobile website** is exactly as it sounds. **Mobile** apps, on the other hand, are **applications**

that are downloaded and installed on a user's **mobile** device. An **app** can pull content and data from the Internet, similar to a **website**, or it can download the content so that it can be accessed without an Internet connection.

Like traditional websites, mobile websites can display text content, data, images, and video. They can also access mobile-specific features such as click-to-call or location-based mapping. Mobile apps, on the other hand, are applications that are downloaded and installed on a user's mobile device.

An app can pull content and data from the Internet, similar to a website, or it can download the content so that it can be accessed without an Internet connection. We'll dive into the pros and cons for each so you can make a more informed decision when establishing the smartest mobile strategy for your brand.

➤ **Mobile App Pros:**

- Better performance
- Better user experience
- Leverage device capabilities
- Offline access
- Customer Engagement
- Brand Awareness

➤ **Mobile Website Pros:**

- Audience reaches
- Cost-effective
- SEO and brand visibility

### **Which Is the Better Option?**

When it comes to deciding whether to build a mobile app or a mobile website, the right choice simply depends on your business objectives. If your goal is to offer mobile-friendly content to a wide range of people, then a mobile website is probably the way to go. However, if you want to better engage, interact with, and communicate with your customers to drive customer loyalty, a mobile app is an excellent choice. In many cases, you may decide you need both a mobile website and a mobile app. If done correctly, both can be a strategic and valuable choice. So, when it comes to your brand's mobile strategy, it's not a question of a mobile website or a mobile, but perhaps a two-pronged approach.

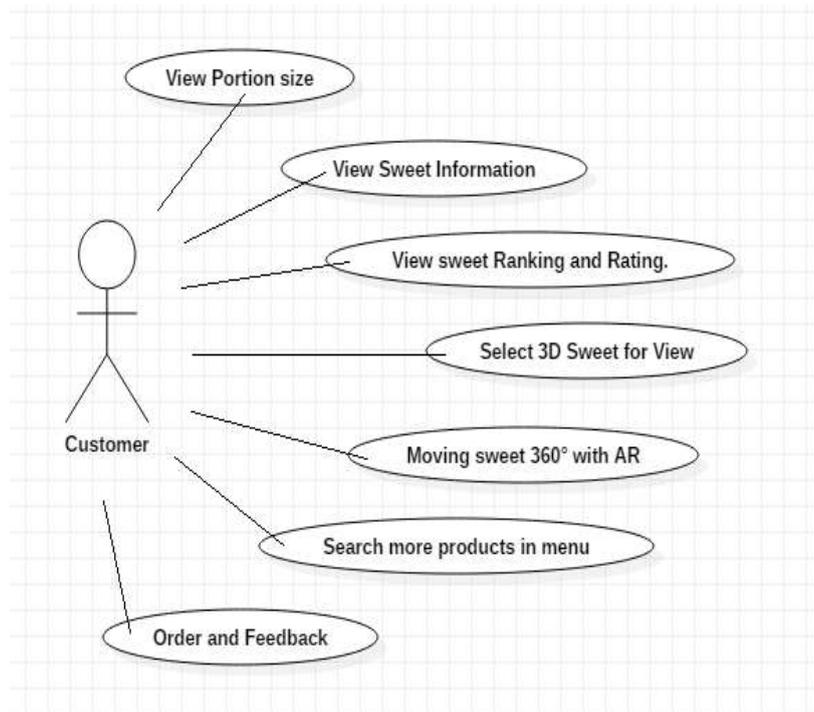


Figure 3 AR food 360 Overview

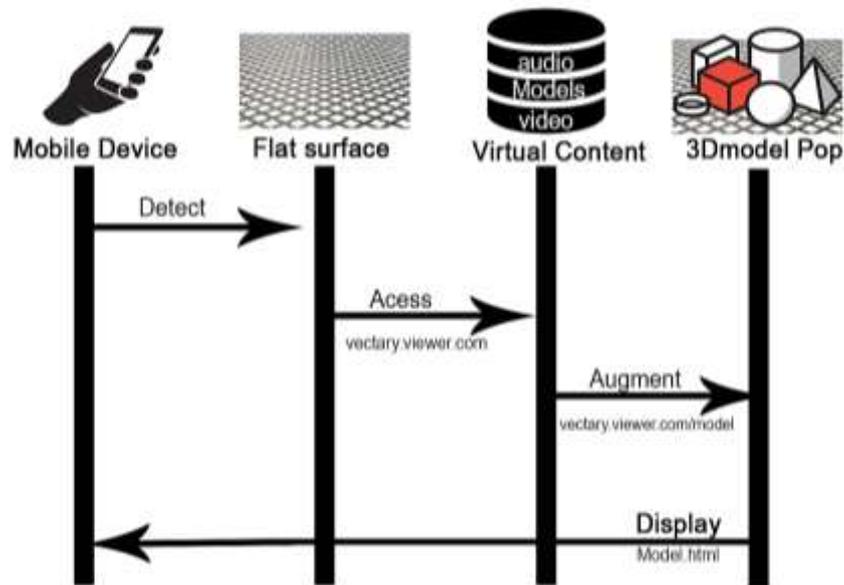
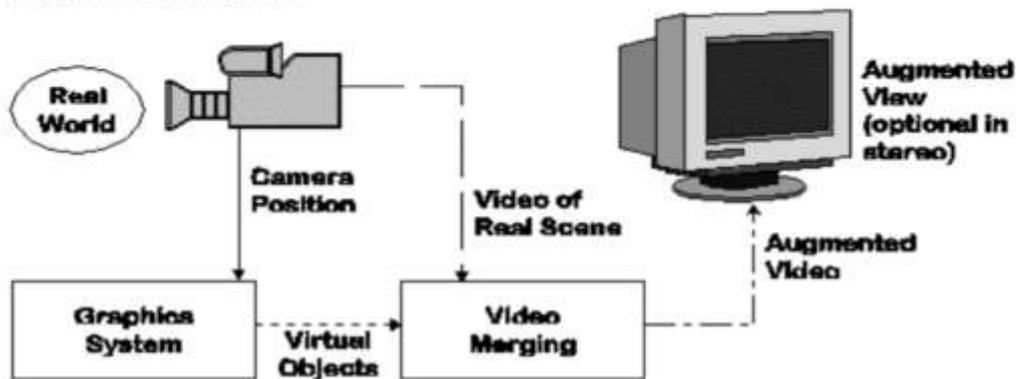


Figure 4 Food 360 Ordering System

Simplest available  
Little feeling of being immersed in  
environment



### Methodology of AR Food Application:

## CONCLUSION

AR food websites can also be designed with a range of other features to enhance customer experience. Augmented Reality (AR) is one of the upcoming trends in restaurant marketing, and we're seeing inspiring examples of its application popping up all over the world. It helps to the improved customer satisfaction with help of its rich user controls.

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# HIGHLY USED CLIENT-SIDE FRAMEWORK FOR SINGLE PAGE WEBDEVELOPMENT IN INDIA

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## ABSTRACT

A web framework or web application framework could also be a software framework that's designed to support the event of web applications including web services, web resources, and web APIs. We conducted a detailed survey regarding the web framework. Enquired with the professionals who are working in the Industries in India and who have real experience and knowledge about single page web frameworks. We did a comparative study of web frames comprising of Angular JS, Backbone JS and Ember JS and found out the conclusion of which is used more prominently.

**KEYWORDS** : *Web Framework, Model View Controller, Single Page Application*

## INTRODUCTION

Model view controller (MVC) :- Many frameworks follow the MVC architectural pattern to separate the info model with business rules from the user interface. It modularizes codes, promotes code reuses and allows multiple interfaces to be applied. In web applications, this allows different views to be presented, like sites for humans, and web service interfaces for

remote applications.

**Single-page application** :- A single-page application (SPA) could also be an internet application or website that interacts with the web browser by dynamically rewriting this website with new data from the online server, rather than the default method of the browser loading entire new pages. The goal is quicker transitions that make the web site feel more like a native app.

In an SPA, all necessary HTML, JavaScript, and CSS code is either retrieved by the browser with one page load, or the suitable resources are dynamically loaded and added to the page as necessary, usually in response to user actions. The page doesn't reload at any point within the process, nor does control transfer to a different page, although the situation hash or the HTML5 History API are often used to provide the perception and navigability of separate logical pages within the application.

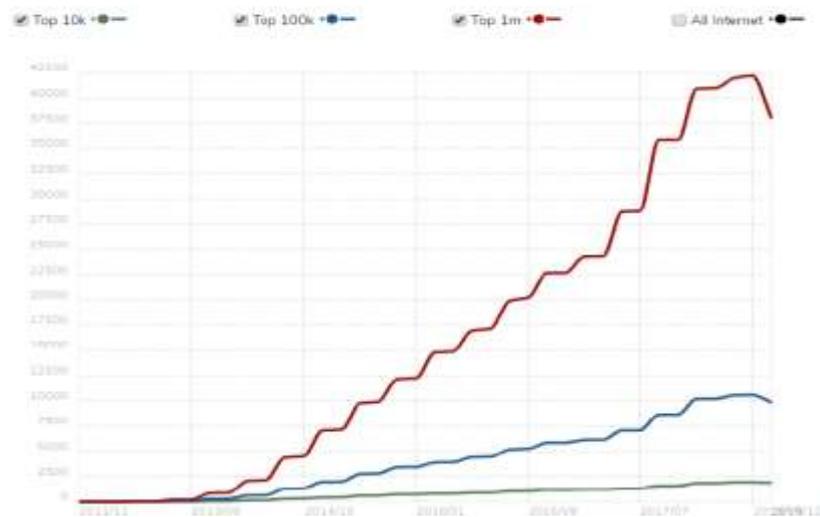
JavaScript are often utilized in an internet browser to display the interface (UI), run application logic, and communicate with a web server. Mature open-source libraries are available that supports the building of SPA and reducing the amount of JavaScript code developers have to write.

## TECHNICAL APPROACHES

There are various techniques available that enable the browser to retain one page even when the application requires server communication. JavaScript frameworks Web browser JavaScript frameworks and libraries like AngularJS, EmberJS, ExtJS, KnockoutJS, MeteorJS, ReactJS and VueJS have adopted SPA principles.

### Angular JS

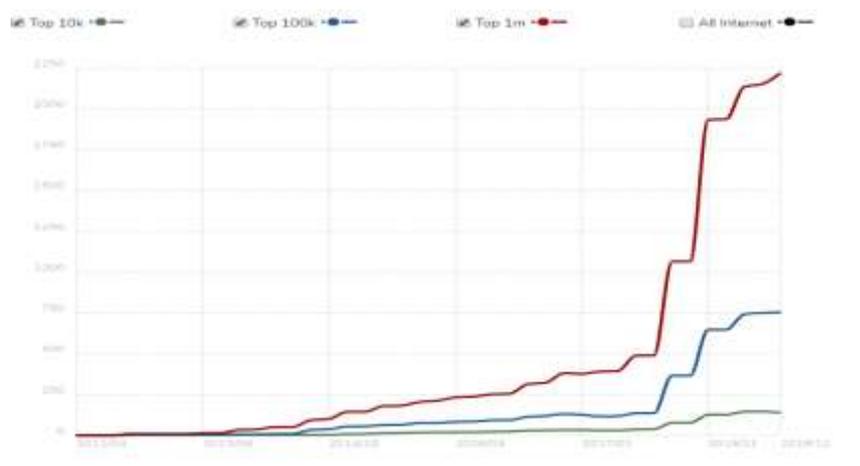
It is a fully client-side framework. AngularJS's templating is predicated on bidirectional UI data binding. Data-binding is an automatic way of updating the view whenever the model changes, also as updating the model whenever the view changes. The HTML template is compiled within the browser. The compilation step creates pure HTML which the browser re-renders into the live view. The step is repeated for subsequent page views. In traditional server-side HTML programming, concepts like controller and model interact within a server process to provide new HTML views. In the AngularJS framework both the controller and model states are maintained within the client browser. Therefore, new pages are capable of being generated with none interaction with a server.



*Fig. 1: Angular JS usage Statistics*

## Ember JS

It is a client-side JavaScript web application framework based on the model view controller (MVC) software architectural pattern. It allows developers to form scalable single-page applications by incorporating common idioms and best practices into a framework that provides a rich object model, declarative two-way data binding, computed properties and automatically-updating templates powered by Handlebars.js, and a router for managing application state.



*Fig. 2: Ember JS usage Statistics*

### Backbone JS

It gives structure to web applications by providing models with key-value binding and custom events, collections with a rich API of enumerable functions, views with declarative event handling and connects it all to your existing API over a restful JSON interface.

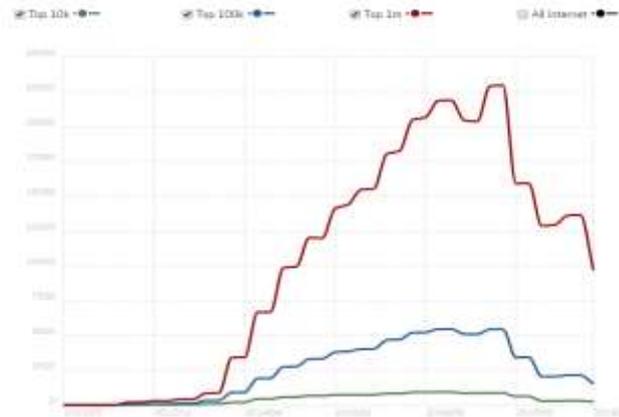


Fig. 1: Backbone JS usage Statistics

### Comparative Study of the Web Frameworks

Web Frame	I. Angular JS	II. Backbone JS	III. Ember JS
Total Websites	3,583,690	2,294,608	105,507
Live Websites	1,080,500	454,407	40,105
Used Historically	2,503,190	1,840,201	65,402
In India	8,557	4,798	212

Awards	Most popular in India in Node.js category.	2nd most popular in India in Node.js category.	3rd most popular in India in Node.js category.
	The most popular on the Entire Internet in Node.js category.	2nd most popular on the Entire Internet in Node.js category.	3rd most popular on the Entire Internet in Node.js category.
	The most popular in the Top 10k sites in Node.js category.	2nd most popular in the Top 10k sites in Node.js category.	3rd most popular in the Top 10k sites in Node.js category.
	The most popular in the Top 100k sites in Node.js category.	2nd most popular in the Top 100k sites in Node.js category.	3rd most popular in the Top 100k sites in Node.js category.
	The most popular in the Top 1 Million sites in Node.js category.	2nd most popular in the Top 1 Million sites in Node.js category.	3rd most popular in the Top 1 Million sites in Node.js category.

## CONCLUSION

This research work is to highlight the highly used client-side for single page framework in India. As per the statistics and research we can say that Angular JS is most widely used framework which is followed by Backbone JS and Ember JS. As Angular JS provides more functionalities, various unique features and it helps developer write and readable, maintainable and easy-to-use code.

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# EVOLUTION OF DATA CENTER

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## ABSTRACT

Date centers had been developing gradually into physical as well as virtual infrastructure. Many companies runs combining both types of data centers which is generally termed as hybrid clouds. All these days, we are more moving towards cloud data or server data. Rather than accessing data or information stored somewhere on device or application we prefer to obtain virtual data. With increasing data, there is high demand for data center's so as to efficiently store and manage data.

**KEYWORDS:** *Data Centre, Data, Computer Room, Technology, Device, Application, Server, Storage, System, Demand, Cloud, Infrastructure.*

## INTRODUCTION

Center is nothing but place where massive proportion of data is stored in server which provides information and data and make instantly reachable to user at each and every place of world. Concept of data center is started in around since 1950s. Idea to make Data Center came from American airline. It is global technology company who first make data center. A number of definitions exist for Data Center. Defines a Data Center as "a building or portion of a building whose primary purpose is to house a computer room and its support areas. Data Center is also defined as a facility used to house computer systems and associated components, such as telecom's and Storage systems. It generally includes redundant supported power supplies, redundant communications connections, environmental controls (example, air conditioning, fire suppression) and various safety devices. OR's define it as a centralized repository, air

strong arm or virtual, for Storage, management and dissemination of data and entropy organized around a particular body of knowledge or pertaining to a particular occupation so, Data center is what? I will leave particular wordings to you as long as you understand concepts. Now let me tell you a story.

Data center has two layered framework i.e. IT infrastructure and facilities infrastructure. IT framework of a data center consists of following segments :

- **Servers**
- **Networking**
- **Storage**
- **IT platform innovation**

## **SERVERS**

IT Server is hardware or software device that stores data, which could be provided to or devices connected in network grid. This construction is called as client Server design. Devices such as computers, scanners, printers, fax etc. can form a client Server architecture. IT Server consists of operating system, hardware and software utilities. It transfers data, hardware and software resources among clients. IT Server for a data center has many or Servers connected along with router and switches managing large number of client requests for assistance. There are also three types of Server :

- Tower Server
- Rack mounted Server
- Blade Server

### **Tower Server**

It is a Server assembled in upright standalone closet. It is simple, robust, scalable and easy to install and does not require special Server block. It is ideal for small business, however y can be expanded by adding extra memory and Storage thus having high scalability it has rare chances of overheating or downtime due to easy cooling infrastructure design.

### **Rack mounted Server**

A rack Server is equipped on a structure called as rack, it is autonomous machine with power and network cabling for each unit. It is also called as rack mounted Server. A single rack Server comes in 1U (unit), 2U and 4U sizes. It contains multiple mounting slots to hold Servers stacked no above manor. It minimizes floor space and networking resources due to its rack mounting structure. Y are widely manufactured by Dell and super micro.

### **Blade Servers**

A blade Server is an autonomous Server which fits into a chassis with or blades called as blade enclosure. Blade enclosure provides power, connectivity, cooling to each and every blade. Each

blade consists of memory, hard drives, I/O units and multifunction networking units. They are suitable for any workload like Server virtualization audio and video streaming, big data applications, cloud computing, web page serving and caching.

## NETWORKING

Data center network design is basically three layered-core, aggregation, and access. Local area network and wide area network interact by means of gateway machine situated at entrance of data center. A data center has to process millions of request. For directing request to appropriate Server, multiple routers are deployed in network layer of internal network. Switches are also configured to manage data flow in all network segments of data center. All network segments in a data center are connected via backbone. Backbone is of high bandwidth capacity to regulate two way traffic in data center.

### Storage

Data Storage is very important in data center design as there are various types of data Storage.

- Network attached Storage (NAS)
- Storage access network (SAN)
- Direct Access Storage (DAS)

#### Network attached Storage (NAS)

It is a Storage device that grants Storage and redemption of data from centralized location to certified users. It is self-contained appliance with its own operating system Storage. It is like having private cloud in company. It connects to a Server through existing Ethernet network hence easy for set up. It is suitable with Windows, Mac, Linux and Unix clients.

#### Storage access network (SAN)

It is a specialized high speed network of Storage devices and switches connected to computer system. In traditional Servers there is direct connection between Server and Storage device and Server used to manage and own Storage devices. SAN provides flexibility of one or more Servers to share a common Storage device. Each Server in SAN can access Storage as if it is directly attached to Server. It allows moving and sharing of data among various Storage devices. It is suitable for business of any size.

#### Direct Access Storage (DAS)

In DAS architecture, Storage device is directly attached to Server. So clients must connect directly to Server that contains Storage to access data. It has limited scalability and can support limited number of drives. If Server is down for maintenance or any other reason clients are not able to access shared data. It is suitable for small enterprises. It has low initial cost.

## IT PLATFORM INNOVATION

### Server Farm

It is also referred as Server cluster. It is a group of computer Servers placed in one location. For example web Server farm is air a web site having more than one Server or an Internet Service Provider (ISP) using multiple Servers. It provides services such as centralized access control, file or printer sharing and backup for workstation users. It distributes and streamlines workload among different Servers which accelerates processing. One of Server fails, or takes its load. It uses load balancing software to track demand of processor power, schedule, reschedule request of users on basis of priority.

### Grid Computing

Grid computing is integration of computer resources from various locations to form a common virtual platform. Unlike cluster computing, computers in grid computing are geographically dispersed. All computers work together towards achieving common goal though every node may perform different application. Grid computing can solve complex tasks in shorter time as it efficiently use existing available hardware.

### Data Center Facility Infrastructure:

- Data center is very power consuming and heat generating.
- Two basic requirement for any data center is:
- Power supply to all components
- Cooling system for removing heat generated

### Power system

Data center requires power continuously, losing it can be extremely troublesome. To avoid power loss, data center uses UPS and battery bank to ensure uninterrupted power supply. Data center racks consists of large number of machines. To distribute power to see IT racks power distribution units (PDUs) are used. Many data centers maintain redundant paths to ensure continuous power supply in case any power supply point fails

### AC versus DC power

According to survey 2007 LBNL lead report DC power can improve data center efficiency by almost 28%. DC power offers substantial benefit to large data centers, higher reliability and reduced component cost. It is also an efficient means of using renewable energy such as solar

panels. AC power is considered suitable for long distance transmission and consumer safety at device level.

### **Components in Data Center**

So we have taken a brief overview of what Data Center is all about. It's time to go into a little bit more detail. It is important to note that Data Center does not exist for and of itself. Its role is to support technology that supports enterprise. Because all modern Enterprises are driven by some form of technology, it is pertinent that this technology suffer little to no downtime.

Technology needs to be housed in a framework that keeps it running as long as enterprise runs. Role of Data Center is reform very critical to operational and survival of enterprise. Every Data Center is not same. It is not requirement that each and every Data Center have exactly same attributes. As Data Center exists because of enterprise, it remains logical that elements of Data Center be defined by needs of Business.

### **So what are things enterprise needs Data Center For?**

- Provide appropriate environmental conditions for optimal running of IT equipment (Servers, Storage and Switches).
- A place to locate Servers, Switches and Storage equipment.
- Provide power in applicable capacity and time period for IT equipment to continuously run
- Provide a way for internal and external customers to reach Servers.
- As you see that Data center is not a station. Usually, Data center must be destitute human behavior
- There are three types of Components in data center:
  - IT Equipment
  - Facility Equipment

### **IT'S Equipment:**

It is consist of primary of Server, Switches and Storages equipment. However, with recent pull towards technologies like Virtualization and Cloud, coupled with need to reduce equipment footprint and power consumption, se lines are starting to blur.

There is distinct trend showing adoption of Converged, Hyper-converged and Web-scale infrastructure. We are heading to an era where Servers, Switches and Storage are treated as roles spread across different hardware rare than distinct elements tied to specific hardware. However, there are still many data centers operating in traditional manner. Hardware manufacturers will not stop churning out dedicated Server, Storage and Switching equipment anytime soon

**Facility Equipment:**

All IT Equipment in Data Center require electrical power to function. Likewise, all or facility equipment not providing power, e.g. cooling and lighting, require power as well. Reform, designer, when planning for Data Center power during design phase, should account for power consumption by both sets of equipment. Typically, total power supplied to Data Center should be two times or more total power required by IT equipment (including future Loads). Or half will be consumed by cooling and or facilities.

Subject of Power is a highly technical and professional one governed by local legal codes, regional and international standards, as well as industry best practices. We will not concern ourselves with discussions of detailed complexities that are more suited to a dedicated course. Rare, our focus is a general understanding of Power requirements in Data Center.

**Challenges regarding Data Center:**

During initial decades of data center technology, administrating a data center was an easy job. It was so because in past, data only belonged to government and military databases. But with increase in public Access to network, more and more data started processing through data center and hence it grew more and more complex. DC infrastructure too became complex with additions of branch circuits, chillers, generators etc. Many major and minor complications have been settled but still data center hasn't been idle one. Re are few challenges in this generation to be sougheed out. Y are as described below:

**Performance sustainability and system reliability:**

Administration includes air conditioning efficiency and current/electricity constant supply to whole data center sector. Recording administration and assuring system reliability of data centeris one of leading interest for data center subsistence as well as operational convenience. As a rescue,an authoritative solution in form of DCIM system, helps to administrate fundamental units like power usage effectiveness (pie), and makes optimization and administration of uptime and maintenance smooth for us.

**Power efficiency and expenditure caustic:**

Approximately, 1.4% of world's electricity consumption is accounted under name of datacenter sector. In order to run system at it utmost capability every second, almost every data center exhaust large amount of power in a reckless tone. Of 1.4% power exhaustion, 90% of energy is wasted. Hence DCs are repeatedly confronted in trouble due to rate of power exhaustion. All this happens due to lack of appropriate energy setup and environmental sensors.

**Employee Production management:**

In manual facilities, Tracing, evaluating and covering performances of DC organization is a terrific job. It counts large amount of Employee endeavor and dedication. Still results maybe questionable. Work load deducts time which could be implemented for improvisation in data

center. A DCIM system helps in automation of all se operations and redeem a lot from employee's time. One can also automate workflow confirmations and appoint technicians for particular assignment.

### **MONITORING**

Unidentified and unexpected system breakdowns have pointed towards a need for a reflexive comebacks to uptime risks. In order to defeat se risks, facility employees and IT personnel's are tuning in DCIM system. Along with Monitoring of DC activities, system also focuses on physical attributes like temperature fluctuations. It works as an indicator.

### **CONCLUSION**

Due to the fast technological growth in IT sectors and telecoms which is leading to enlargement in data center architectures worldwide, there will be tremendous growth in data center market in the coming years. As online banking and shopping, satellite navigation systems, smartphones, TV and movie streaming gain traction, relocation of IT infrastructure becomes mandatory. This will increases the demand for modular data center architecture, resulting will drive the IT vendors business to scale up with their hardware and software sales by reach out directly to end users.

Of course, there will be many other ways that data centers will advance in the coming years. Many of the things to expect will simply be advancements in the way things are currently happening, which is predictable. However, the biggest changes will likely be in entirely new technologies that simply don't exist today and are unpredictable. This is why it is so important for everyone to keep up with the latest advancements and innovations in technology.

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# PETROL & DIESEL VEHICLES vs ELECTRIC VEHICLES PROS AND CONS OF ELECTRIC VEHICLES

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## ABSTRACT

In this research we are talking about the different types of fuels and resources of vehicles like Petrol, Diesel and Electric vehicles. By seeing what different types of damages they are making to our environment, by selecting which type of fuels and resources of vehicles which makes less amount of damage to our environment so to keep our environment safe in future. In this research we are mostly trying to study about the electric vehicles what would be the pros and cons of electric vehicles, after applying it in real world. In this research we are trying to get peoples expectations like what would they think about which types of fuels and resources of vehicles to use, and what would they prefer to use in future to keep our environment safe. In this research we have used survey method for getting the responses of the people, and doing the comparative study on petrol, diesel and electric vehicles on that basis.

**KEYWORDS :** *BEVs, PHEVs, HEVs, Gasoline, Cycloalkanes, Distillate Fuel, Palpable.*

## INTRODUCTION

### **Petrol and Diesel Vehicles: -**

Conventional petrol and diesel are both produced from mineral oil, but the precise refining methods vary. Diesel is in principle easier to refine, however it contains more pollutants that must be extracted before it can reach the same level of emission as petrol. Petrol is made of a mix of alkanes and cycloalkanes with a chain length of between 5-12C atoms. Diesel is made alkanes containing 12 or more C atoms. Petrol has a boiling point between 40- 205 degree Celsius. Diesel has a boiling point between 250-350 degree Celsius. Petrol and Diesel vehicles are the vehicles that runs on petrol and diesel fuels <sup>[2]</sup>.

**Electric Vehicles: -**

Electric vehicles also known as an EV uses one or more electric motors or traction motors for propulsion. An electric vehicle may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panel or an electric generator to convert fuel to electricity. A major feature of EVs is that drivers can plug them in to charge from an off-board electric power source <sup>[1]</sup>. Fully-electric vehicles with rechargeable batteries and has no gasoline engine. Battery EV store electricity onboard with high-capacity of battery packs <sup>[2]</sup>.

**Types of Electric vehicles (EV): -**

There are different types of EVs (Electric vehicles) are as follows

- **AEVs**
- **HEVs**
- **PHEVs**

**AEVs: -**

AEVs stands for all-electric vehicles and they are powered by one or more electric motors. They receive electricity when they are plugged into the grid and store it in batteries. They consume no petroleum-based fuel and produce no tailpipe emissions. AEVs include Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEVs). All AEVs run on electricity. Most AEVs have electric ranges of 80 to 100 miles, while some luxury models have ranges up to 250 miles. When the battery is depleted, it can take from 30 minutes (with fast charging) up to nearly a full day (with Level 1 charging) to recharge it, which depends on the type of charger and battery we use <sup>[1]</sup>.

BEVs battery classifications are in terms of Level 1, Level 2 & Level 3 or DC fast charging. Level 1 EV charging can use a standard household (120v) outlet to plug into the EV and it takes around 8 hours to charge an EV for approximately 75-80 miles. Level 1 charging can be done at your home or at your workplace. Level 1 chargers have the capability to charge most EVs on the market. Charging in Level 2 required a specialized station provides power at 240v. Level 2 chargers are typically found at your workplaces and public charging stations and it takes about 4 hours to charge a battery to 75-80 miles of range <sup>[1]</sup>.

In Level 3 charging or DC fast charging, or simply fast charging is currently the fastest charging solution in the EVs market. DC fast chargers can be found at dedicated EV

charging stations and can charge a battery up to 90 miles range in approximately 30 minutes.

Some Cars based on this types EVs are as follows: -

- Nissan LEAF.
- BMW i3.
- Toyota Rav4.
- Volkswagen e-Golf.
- Hyundai Ioniq.
- Ford Focus Electric.

**HEVs: -**

HEVs stands for hybrid electric vehicles. HEVs are powered by both gasoline and electricity. The electric energy can be generated by the car's own braking system to recharge the battery. This is known as 'regenerative braking', a process where the electric motor can help to slow the vehicle

and uses some of the energy normally converted to heat by the brakes. HEVs start off using the electric motor, then the gasoline engine cuts in as load or speed rises. The 2 motors are controlled by an internal computer, which will ensure the best economy in driving conditions <sup>[2]</sup>.

Some cars based on HEVs types are as follows: -

- Toyota Prius Hybrid.
- Honda Civic Hybrid.
- Toyota Camry Hybrid.

**PHEVs: -**

PHEVs stands for Plug-in Hybrid Electric Vehicles. They use batteries to power an electric motor, when plug into the electric grid to charge, and uses a petroleum-based or alternative fuels to power the internal combustion engine. Some types of PHEVs are also called Extended-Range Electric Vehicles (EREVs). maybe a better choice. PHEVs run on electricity for shorter ranges (6 to 40 miles), then switch over to an internal combustion engine running on gasoline when the battery is depleted. The flexibility of PHEVs allows drivers to use electricity as often as possible while also being able to fuel up with gasoline if needed. Powering the vehicle with electricity from the grid reduces fuel costs, cuts petroleum consumption, and reduces tailpipe emissions compared with conventional vehicles. When driving distances are longer than the all-electric range, PHEVs act like hybrid electric vehicles, consuming less fuel and producing fewer emissions than similar conventional

vehicles. Depending on the model, the internal combustion engine may also power the vehicle at other times, such as during rapid acceleration or when using heating or air conditioning. PHEVs could also use hydrogen in a fuel cell, biofuels, or other alternative fuels as a back-up instead of gasoline <sup>[1]</sup>.

Some cars based on PHEVs types are as follows

- Ford C-Max Energi.
- Mercedes C350e.
- BMW i8.
- Hyundai Sonata.
- Volvo XC90 T8.

### OBJECTIVE

1. To show multiple damages that Petrol and Diesel based Vehicle makes.
2. To show how differently Petrol and Diesel can be use.
3. To show what would be the pros and cons of using electric vehicles.
4. Major Disadvantages of petrol and diesel vehicles.

Petrol and diesel vehicles are the most important factors that are affecting to our environment in terms of pollution like air pollution and noise pollution. The polluted air which are released from the tailpipes of vehicles. By which nowadays peoples are witnessing changes in climate. The noise pollution that are

released when the vehicles are accelerated <sup>[3]</sup>. Unfortunately, as well as kinetic, sound and thermal energy combustion technique also produces chemical energy as the by-product. This energy comes from the engine via the exhaust pipe as fumes. Many different chemical might also find in that fumes –

- CO<sub>2</sub> (Carbon Dioxide) is a greenhouse gas which contributes to the globalwarming.
- CO (Carbon Monoxide) is a poisonous gas.

PM (Particulate Matter) is what makes cities hazy and foggy. It contributes to ground-level ozone (it is good for the planet when it is above the cloud, but badfor us when is it at ground-level) These particles also contribute to asthma and other lung problems.

### Different product that can be made from Petrol and Diesel :

Petroleum products include transportation fuels, fuel oils for heating and electricity generation, asphalt and road oil, and feedstock's for making the chemicals, plastics, and

synthetic materials that are in nearly everything we use. In 2018, of the approximately 7.5 billion barrels of total U.S. petroleum consumption, 46% was motor gasoline (includes fuel ethanol), 20% was distillate fuel (heating oil and diesel fuel), and 8% was jet fuel <sup>[6]</sup>.

Products are as Follow –

One 42-gallon barrel of oil creates 19.4 gallons of gasoline. The rest (over half) is used to make things like:

Solvents	Motor oil	Bearing Grease
Ink	Ballpoint pen	Floor wax
Nail polish	Tires	Petroleum jelly
Dyes	Candles	Soap
Paints		

## PROS & CONS OF ELECTRIC VEHICLES

### Benefits –

- They're easier on the environment.
- Electricity is cheaper than petroleum.
- Maintenance is less.
- They don't make noise.

### Drawbacks –

- Short ranges.
- Recharging time is more.
- Number of Charging station is less <sup>[5]</sup>.

### Hypothesis: -

- People knows electric vehicles are environment friendly.
- People knows by using Petrol and Diesel electricity can be generated.

- Women can wait long hours for charging the vehicles.
- Electric vehicles are much expensive.
- Many peoples don't know which companies make electric vehicles.

**Literature of Review: -**

Vehicular pollution is an important contributor to air pollution in Delhi. According to the Department of Transport, Government of National Capital Territory of Delhi, vehicular population is estimated at more than 3.4 million, reaching here at a growth rate of 7% per annum. Although this segment contributes to two-thirds of the air pollution, there has been a palpable decline compared to the 1995-1996 levels. A large number of studies in Delhi have examined the effect of air pollution on respiratory functions and the associated morbidity

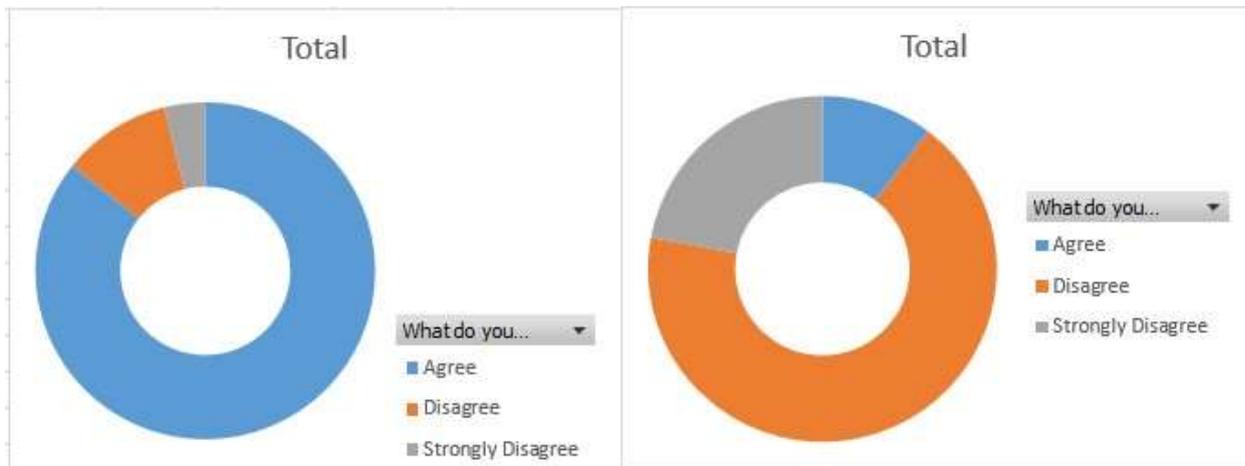
A time-series study on air pollution and mortality from Delhi found that all-natural-cause mortality increased with increased air pollution. In another study, gaseous pollutants, in spite of being at a level lower than the permissible level, showed more consistent association with respiratory admissions. In a hospital-based study, an increase in emergency room visits for asthma, chronic obstructive airway disease and acute coronary events was reported with an increase in air pollutant levels. These studies are summarized <sup>[7]</sup>.

**Methodology: -**

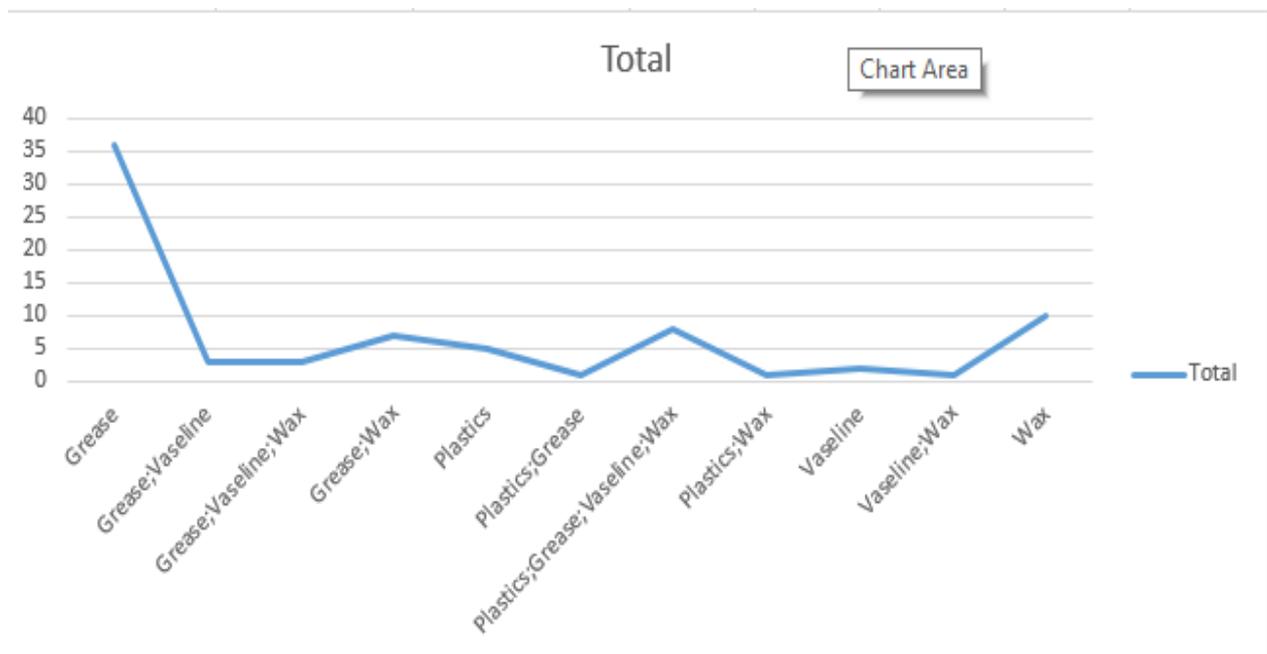
In this research we have use survey techniques. We have taken around some group of people and distributed the google form to them which has some questions based on the hypothesis, what we have made during the selection of the research paper. After collecting all the forms from the peoples got shocked after seeing the responses from the peoples.

**Observations: -**

Number of people thinks the electric vehicles environment friendly versus Number of people thinks petrol and diesel vehicles are environment friendly.

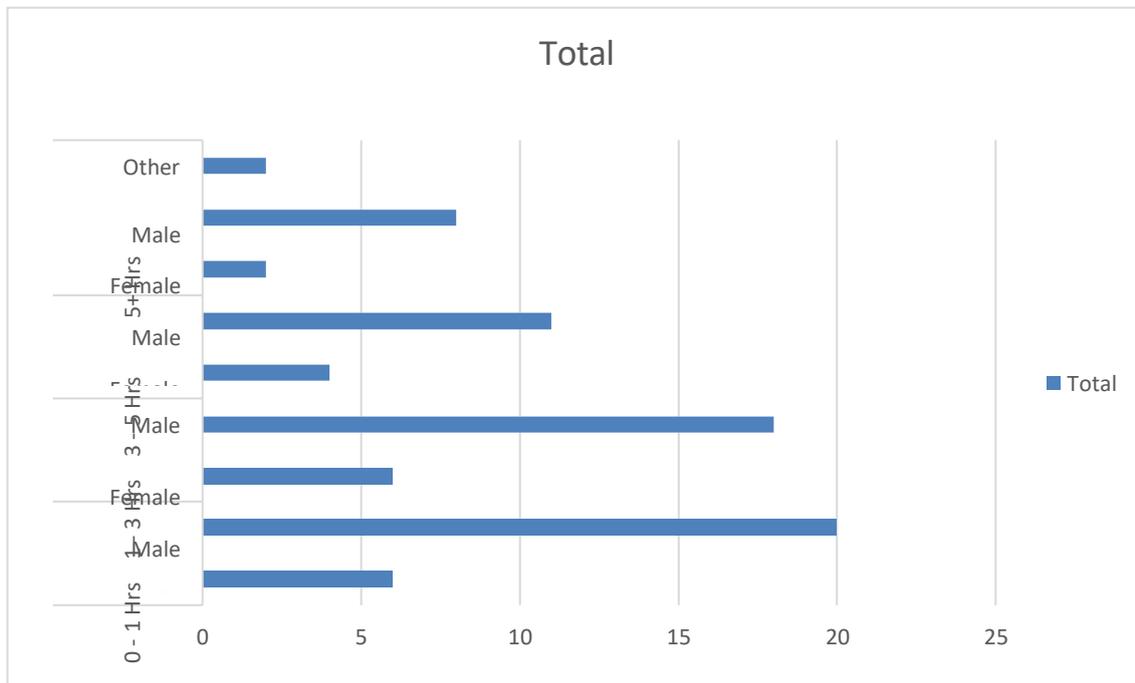


Electric vehicle environment friendly Petrol and Diesel vehicle environment friendly. After observing the different responses of the peoples, we get to know that most of people knows Electric Vehicles are environment friendly. So according the survey our hypothesis was true. No of people knows electricity and other by-products can be made by the use of Petrol and Diesel Fuels.



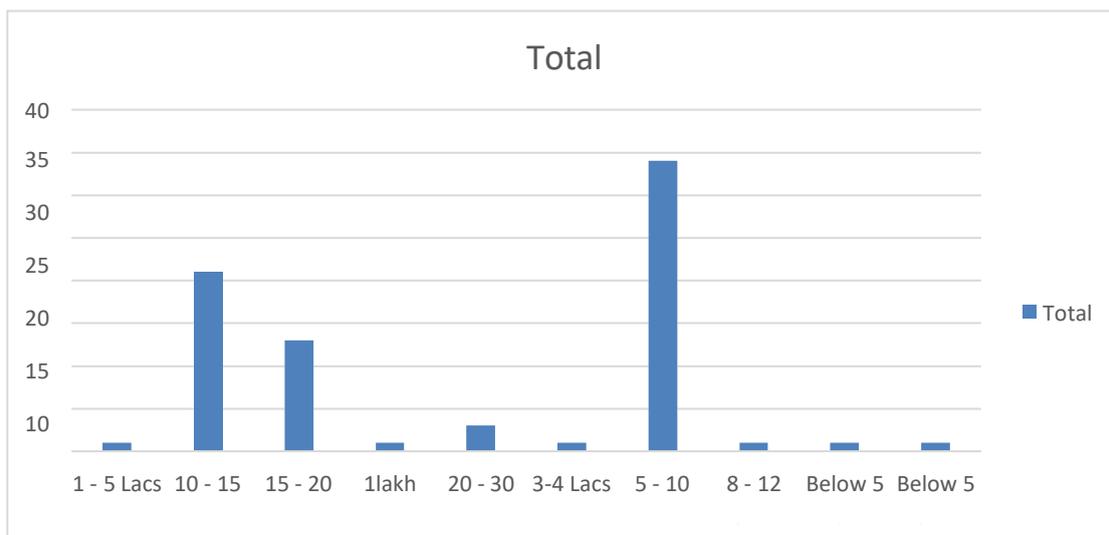
After observing we can say that most of the people knows that some by-products of petrol and diesel.

How long peoples can wait for car to be fully charged



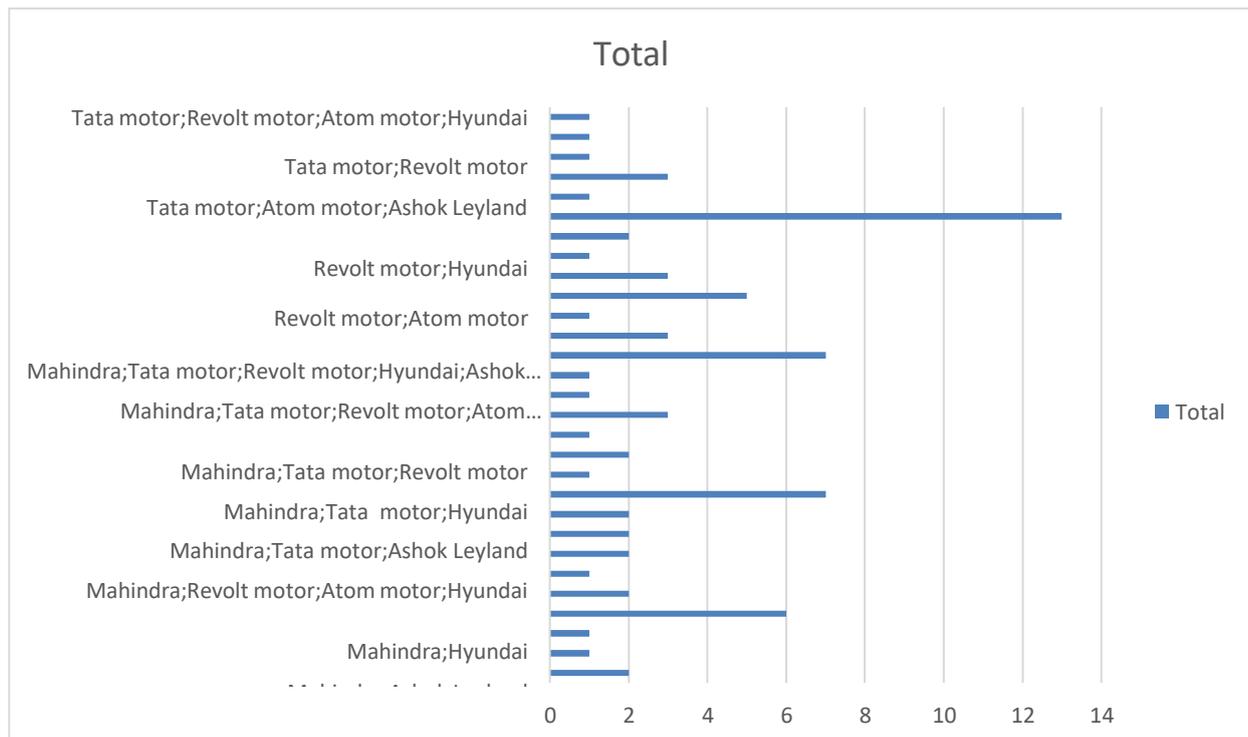
After observing we can say that 60% of the females can 0 – 3 hrs but not more than that.

No of people thinks that how expensive the electric car is.



After observing the results of the research form responses 57.6% of the people thinks that 4 seater Electric Vehicles can come in range of 5 - 10 Lacs, and 22.03% of the thinks the car would come 15 – 20 Lacs, 35.6% of the people thinks car would come in 10 – 15 Lacs.

No of companies known by the people who all make electric vehicles.



After observing we get to know that most of the people know only Hyundai, Tata motor, AshokLeyland made vehicles.

### CONCLUSION

We have collected a survey via Google Forms. In that we got know that Electrical Vehicles are way more better than the Petrol and Diesel Vehicles. Because Petrol and Diesel creates more pollution which is harmful for Human beings and animals.

Whereas Electrical Vehicles just need to get to be charged which won't create any type of pollution.

But Electrical Vehicles are more Expensive and they need spacious place to be charged. It takes long time to be get fully charge but once it is charged it can run for 24 hrs. But if somewhere it gets stopped we can't charge it anywhere.

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## 5G – THE SPEED YOU NEED

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### ABSTRACT

5G stands for fifth generation wireless technology. In this paper, an attempt has been made to review various existing generations of mobile wireless technology in terms of their portals, performance, larger bandwidth, higher reliability. The paper throws light on the evolution and development of various generations of mobile wireless technology along with their significance and advantages. In the past few decades, mobile wireless technologies have experience 4 generations of technology revolution. Currently research in mobile wireless technology concentrates on advance implementation of 4G technology and research has been started for 5G technology. Currently 5G technology is not officially used, but soon going to be introduced to the world. In 5G research is being made on development of World Wide Wireless Web (WWWW), Dynamic Adhoc Wireless Networks (DAWN) and Real Wireless World.

**KEYWORDS** – *Fifth Generation, Evolution from 1G to 5G, WWW, DAWN, wireless technology.*

### INTRODUCTION

The requirement of the youth, business person an also upcoming generation is only technology with maximum speed and less efficiency. The technology now works on evolution and revolution. Firstly, a wired technology came into existence, but later on wireless technology was introduced. Wireless communication technology has grown and advanced significantly over the years through research and innovation. Due to wireless technology the person can connect to the network and application easily. 5G being the next generation of mobile networking standards, promises to deliver improved end user experience by offering new applications and services through seamless coverage, high data rate, low latency, and significantly improved performance and reliable communications. 5G stands for Fifth Generation which comes in both Smart Phones as well as Networks. The commercial deployment of 5G was earlier expected in 2020, and by the month of February or March 2020

it is going to be introduced in the terms of Smart Phones and soon in networks, and according to latest new updated on 16<sup>th</sup> Jan 2020 5G will be introduced by 2023.

## GENERATIONS

Since Mobile communication has been used on a large in today's generation and the only reason is fast revolution in this era. In general Telecommunication era has witnessed drastic changes starting from 1G to 2.5G and from 3G to 5G.

**First Generation(1G):** 1G introduced in 1980s. It contains analog system and was popularly known as cell phones. It introduces mobile technologies such as Mobile Telephone System (MTS), Advanced Mobile Telephone System (AMTS), Improved Mobile Telephone System (IMTS) and Push to Talk (PTT). It uses Analog radio signal which have Operating frequency of 800 MHz and Carrier Frequency of 30 KHz. Here, Voice Call Modulation was done using a technique called Frequency Division Multiple Access (FDMA). It has low capacity, poor voice links and also no security at all.

**Second Generation (2G):** 2G emerged in late 1980s. It uses digital signals for voice transmission and has a speed of 64 kbps. It has bandwidth of 25 MHz and has an Operating Frequency of GSM: 900MHz, 1800 MHz were as Carrier Frequency Ranges to 200 KHz. It provides facility of Short Message Service (SMS) and it uses the Bandwidth of 30 to 200 KHz.

**2.5 Generation:** It was generally updated version of 2<sup>nd</sup> Generation (2G). It's system uses packet switched and circuit switched domain and provide data rate up to 144 kbps.

**Third Generation (3G):** It uses Wide Brand Wireless Network with which clarity is increased. The data are sent through the technology called Packet Switching. Along with verbal communication it includes data services, access to television/video, new services like Global Roaming. Global Roaming came into existence in the era of 3G. It has Operating Frequency of 2100 MHz and has a Bandwidth of 5-20MHz and Carrier Frequency of 1900 MHz used for High-speed internet service, video chatting.

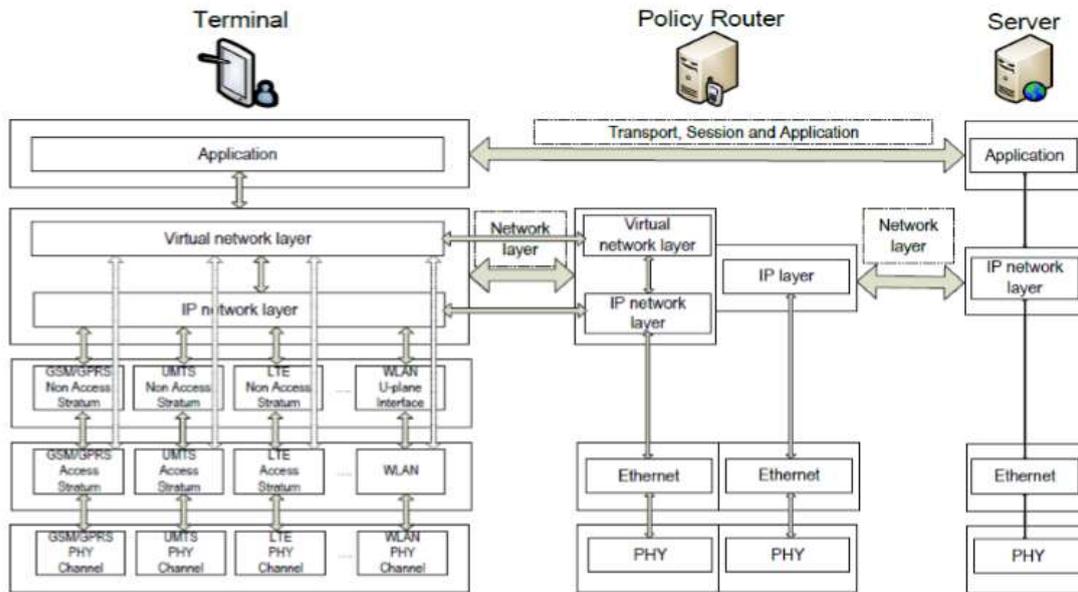
**Fourth Generation (4G):** 4G offers a downloading speed of 100Mbps. 4G provides same feature as 3G with additional services like Multimedia Newspapers. LTE (Long Term Evolution) is considered as 4G technology. It has Bandwidth of 100 MHz and has a Operating Frequency of 850MHz, 1800MHz whereas Carrier Frequency Ranges to 15 MHz. 4G is being developed to accommodate the rate requirements set by forthcoming applications like wireless broadband access, Multimedia Messaging Service (MMS), video chat, mobile TV, HDTV content, Digital Video Broadcasting (DVB), minimal services like voice and data, and other services that utilize bandwidth.

**Fifth Generation (5G):** 5G Technology stands for 5th Generation Mobile technology. 5G mobile technology has changed the meaning of technology and its speed. It has uses two band named Frequency Band/ Range and Frequency Band/Range. It has a Bandwidth of FR1-6GHz & FR2- 24.25 to 52.6 GHz, Carrier Frequency of 600 MHz to 6 GHz and Operating Frequency ranged from 24 – 86 GHz. It will generally use IoT with frequency of 95GHz. The main aim of this technology is to provide each and every possible feature to the users. It provides a very high bandwidth. User had never experienced ever before such a high value technology. Nowadays mobile users have much awareness of the cell phone technology. The 5G technologies include all type of advanced features which makes 5G mobile technology most powerful and in huge demand in near future. 5G technology including camera, MP3 recording, video player, large phone memory, dialling speed, audio player and much more you never imagine.

### DESIGN

The system model that proposes design of network architecture for 5G mobile systems, which is all IP based model for wireless and mobile networks interoperability. The system consists of a user terminal and a number of independent, autonomous radio access technologies. Within each of the terminals, each of the radio access technologies is seen as the IP link to the outside Internet world. However, there should be different radio interface for each Radio Access Technology (RAT) in the mobile terminal. The first two OSI levels (data-link and physical levels) are defining the radio access technologies through which is provided access to the Internet with more or less QoS support mechanisms, which is further dependent upon the access technology. Then, over the OSI-1 and OSI-2 layers is the network layer, and this layer is IP (Internet Protocol) in today's communication world, either IPv4 or IPv6, regardless of the radio access technology. The purpose of IP is to ensure enough control data for proper routing of IP packets belonging to a certain application connections- sessions between client applications and servers somewhere on the Internet. Routing of packets should be carried out in accordance with established policies of the use. Application connections are realized between clients and servers in the Internet via sockets. Internet sockets are endpoints for data communication flows. Each socket of the web is a unified and unique combination of local IP address and appropriate local transport communications port, target IP address and target appropriate communication port, and type of transport protocol. Considering that, the establishment of communication from end to end between the client and server using the Internet protocol is necessary to raise the appropriate Internet socket uniquely determined by the application of the client and the server. This means that in case of interoperability between heterogeneous networks and for the vertical handover between the respective radio technologies, the local IP address and destination IP address should be fixed and unchanged. Fixing of these two parameters should ensure handover transparency to the Internet connection end-to-end, when there is a mobile user at least on one end of such connection. In

order to preserve the proper layout of the packets and to reduce or prevent packets losses, routing to the target destination and vice versa should be uniquely and using the same path. Each radio access technology that is available to the user in achieving connectivity with the relevant radio access is presented with appropriate IP interface. Each IP interface in the terminal is characterized by its IP address and net mask and parameters associated with the routing of IP packets across the network. In regular inter-system handover the change of access technology (i.e., vertical handover) would mean changing the local IP address. Then, change of any of the parameters of the socket means and change of the socket, that is, closing the socket and opening a new one. This means, ending the connection and starting e new one. This approach is not-flexible, and it is based on today's Internet communication. In order to solve this deficiency, we propose a new level that will take care of the abstraction levels of network access technologies to higher layers of the protocol stack. This layer is crucial in the new architecture. To enable the functions of the applied transparency and control or direct routing of packets through the most appropriate radio access technology, in the proposed architecture we introduce a control system in the functional architecture of the networks, which works in complete coordination with the user terminal and provides a network abstraction functions and routing of packets based on defined policies. At the same time this control system is an essential element through which it can determine the quality of service for each transmission technology. He is on the Internet side of the proposed architecture, and as such represents an ideal system to test the qualitative characteristics of the access technologies, as well as to obtain a realistic picture regarding the quality that can be expected from applications of the user towards a given server in Internet (or peer). Protocol setup of the new levels within the existing protocol stack, which form the proposed architecture, is presented in The network abstraction level would be provided by creating IP tunnels over IP interfaces obtained by connection to the terminal via the access technologies available to the terminal (i.e., mobile user). In fact, the tunnels would be established between the user terminal and control system named here as Policy Router, which performs routing based on given policies. In this way the client side will create an appropriate number of tunnels connected to the number of radio access technologies, and the client will only set a local IP address which will be formed with sockets Internet communication of client applications with Internet servers. The way IP packets are routed through tunnels, or choosing the right tunnel, would be served by policies whose rules will be exchanged via the virtual network layer protocol. This way we achieve the required abstraction of the network to the client applications at the mobile terminal. The process of establishing a tunnel to the Policy Router, for routing based on the policies, are carried out immediately after the establishment of IP connectivity across the radio access technology, and it is initiated from the mobile terminal Virtual Network-level Protocol. Establishing tunnel connections as well as maintaining them represents basic functionality of the virtual network level (or network level of abstraction).



As any other cellular network, 5G networks will consist of cells divided into sectors and send data through radio waves. Each cell is connected to a network backbone through a wired or wireless connection. 5G may transmit data over the unlicensed frequencies currently used for Wi-Fi. It promises a smarter, faster, and efficient network. The goal of 5G is to have far higher speeds available, at higher capacity per sector, and at far lower latency than 4G. In order to increase network efficiency, the cell is subdivided into micro and pico. In a 5G wireless network, every mobile phone will have an IPv6 address depending on the location and network being used.

### 5G technology has the following advanced features:

- Architecture will be device-centric, distributed, programmable, and cloud-based
- High data rates
- One to 10 Gbps connections to end points
- One millisecond end-to-end round trip delay
- Lower cost of infrastructure development
- Low battery consumption
- Better connectivity irrespective of location
- Larger number of supporting devices

### ADVANTAGES

#### 5G wireless technology is projected to bring three main benefits:

**Faster speed:** Data transfer speeds with 5G are projected to be about 10 times higher with 4G. That means significantly faster transmission of images and videos.

**Shorter delays:** 5G should reduce latency (the time between cause and effect). This will make it possible, for example, to watch high-speed virtual reality video with no delays.

**Increased connectivity:** 5G technology would will bring faster, more reliable connections for users than 4G/LTE. That means more people and devices will be able to communicate at the same time.

5G has excellent capability to support both software and consultancy.

It has high data rate at the edge of the cell and better coverage area.

It has low battery consumption.

It is beneficial for the government, as it can make governance easier, and for the citizen, as it can provide Internet connectivity anytime anywhere.

### **DISADVANTAGES**

Even though 5G has a lot of beneficial properties along with the advantage, it also has some disadvantage. It's disadvantages are:

Increase in frequency it is injurious for human's as well as for animal

N number of user may lead to some crimes, such as hacking, stealing user data

Easy access to third party

Security and privacy issue yet to be solved

Developing infrastructure needs high cost.

### **CONCLUSION**

In this paper, we conclude that 5G network is very fast and reliable. 5G is partially based on 4G technologies and also on it's features. The 5th wireless mobile internet networks are real wireless world which shall be supported by LAS-CDMA (Large Area Synchronized Code-Division Multiple Access), OFDM (Orthogonal frequency-division multiplexing), MCCDMA (Multi-Carrier Code Division Multiple Access), UWB (Ultra-wideband), Network-LMDS (Local Multipoint Distribution Service), and IPv6. Fifth Generation technologies offers tremendous data capabilities and infinite data broadcast together within latest mobile operating system. The aim of Fifth Generation is to add more services and benefits to the world over 4G in-order to satisfy Telecom users need. The 5G wireless technology is a multipurpose wireless network for mobile, fixed and enterprise wireless applications. Fifth generation will be more intelligent technology as it will be partially using AI as it's main key that interconnects the entire world without any limitation.

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## ONLINE BOOKSTORE USING CLOUD

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### ABSTRACT

Ordinary stores have limited space to display books. Physical bookstores are typically limited on what they're able to stock in terms of space and budget; on the contrary, an online bookstore is restricted by neither. Online store can handle a huge database, and any book can be easily found. A physical store has fixed open hours, whereas in an online bookstore user can shop 24\*7, as per the user's convenience. Online book store enables a user to search for any book, view other books by same author, or books related to the same topic. Most of the currently available online stores offer only first-hand purchase of books. Through this paper, we propose an online book store that offers search and purchase options for first-hand as well as second-hand books based on title, author and subject. Also many online book stores like Powell's, Amazon are designed using Html. This paper proposes the online book store using Ruby on Rails (ROR) with database stored on Amazon cloud.

**KEYWORDS :** *online book store, second hand books, Ruby on Rails, cloud*

### INTRODUCTION

Most of the online book stores deal with sale of first-hand books. Avid book readers are found across generations. Though the current generation may be quite tech savvy, the older generations aren't so. Walking to a library every time for a book may not always be feasible due to hectic time schedules. Additionally, a lot of people love to own books for reading. An online book like the one proposed through this paper can help people of all generations to own a book. Depending on the affordability or the number of times one reads the book, people can opt for buying second hand books which are in good condition. Additionally, the proposed bookstore will be developed using Ruby on Rails and Amazon Cloud for their inherent advantages.

### Ruby on Rails, PostgreSQL And Cloud

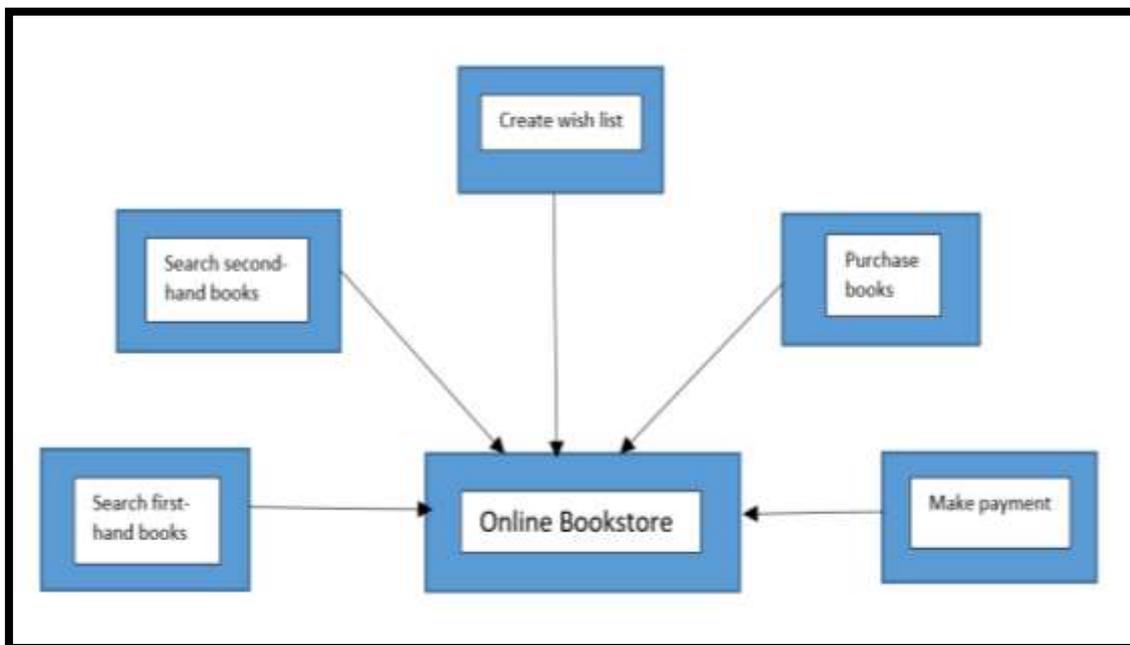
The frontend of the proposed web application will be developed using Ruby on Rails. Rails is

a server-side web application framework written in Ruby under the MIT License. Rails is a model–view–controller (MVC) framework, providing default structures for a database, a web service, and web pages. It encourages and facilitates the use of web standards such as JSON or XML for data transfer, HTML, CSS and JavaScript for user interfacing. Ruby on Rails application has fewer lines of code as compared to other languages like PHP, Java. Testing Code of Ruby on Rails Application is simple as compared to others.

PostgreSQL will be used as the database for this web application. It is an open source Relational Database Management System (RDBMS) developed by a worldwide team of volunteers. PostgreSQL supports transactions, sub selects, triggers, views, foreign key referential integrity, and sophisticated locking. It supports text, images, sounds, and video and Open Database Connectivity (ODBC). PostgreSQL tag line claims that it's:" The world's most advanced open source database" and the few reasons are: PostgreSQL isn't just relational it's object-relational. This give advantages over other open sources SQL Databases like MySQL, MaraiDB and Firebird.

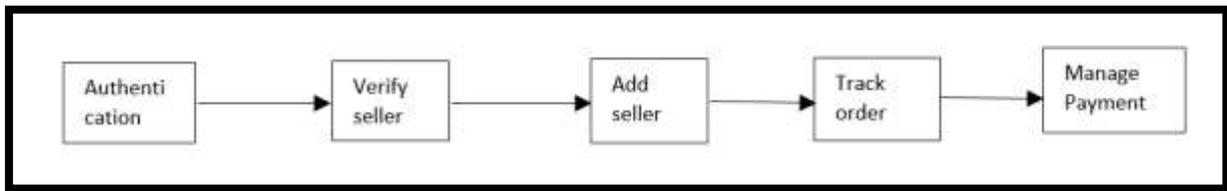
At the backend, the website will be deployed on Amazon ec2 server. Amazon Elastic Compute Cloud (EC2) forms a central part of Amazon.com cloud-computing platform, Amazon Web Services (AWS), by allowing users to rent virtual computers on which to run their own computer applications. Amazon ec2 provides automatic backups. It is resizable (shrink and expand) according to the requirements.

### Block Diagram



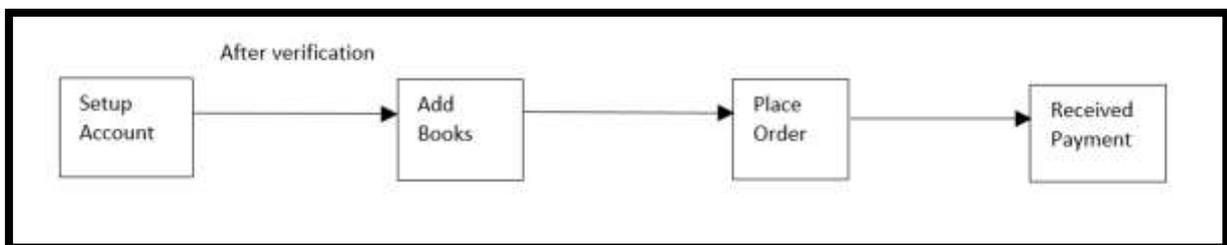
## WORKING

- As a Admin



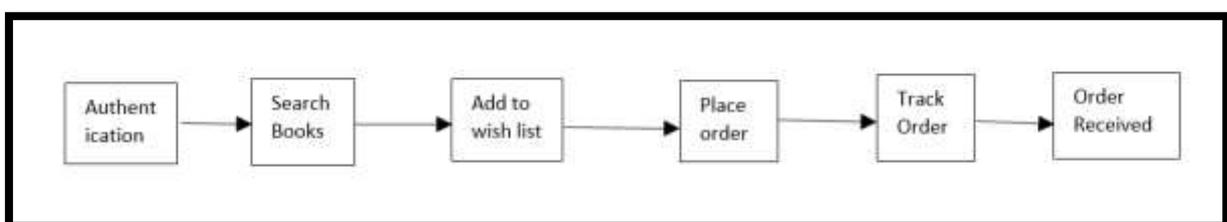
Admin is one of the users. After successful authentication into the system, the admin can perform a variety of operations. Any seller who wishes to sell will setup an account on the online store. The admin after proper verification will add seller and allow him to sell books. Admin is also responsible for any issues related to orders and payment.

- As a Seller



Seller will setup an account on the online store. The admin will verify the seller. On successful verification, the seller can start adding books on the store. He will also be check the orders placed by customers for his books. He will also be able to receive payment for those orders.

- As a Customer



Customer will have to authenticate itself to access the system. After successful authentication customer can search a particular book of his/her choice. Customer can buy a book by adding into the cart. Customer can track its order until the order is been received.

- Snapshots

Register Page: Login Page:

Sign up

## CONCLUSION

The online bookstore suggested through this paper will benefit one and all. A person who is fond of reading but cannot afford first-hand books and is not so tech savvy that he would opt for e-books will be benefitted through the option of buying good condition second hand books. The mantra in today's world is Reduce, Reuse and Recycle. The proposed book store promotes reuse of good condition books thereby contributing in its own small way in reducing carbon footprint.

### Future Scope:

Customer can sell back their second-hand books which are in good condition and can get benefitted by some amount. We can also include online payments to this project. This will help customer to pay online for their purchase using Credit as well as Debit card or GPay, Paytm, PayPal etc. We can also include audio format so that customer/user can get a small summary about the book in which they are interested.

Log In

Remember me

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# AUGMENTED REALITY WEB BROWSER

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## ABSTRACT

AR Search is a new way to learn. AR Web browser on Android gives you the power to see objects from your phone in real life. The Aim of the project is to develop an android application using Augmented Reality Technology. Using AR web browser, we can browse the web on Android and AR web browsing will help users to view 3D model i.e. Desktop on their Mobile, web pages.

When the information is projected onto the real world you can interact and engage with it in a more holistic way. The target system is designed to provide solution for Android users to make their google search methods effortless, marker less feature, safe and smart using their mobile phones. This application will provide security, real world interaction, 3D models, user experience.

**KEYWORDS** : *Augmented reality, Web browser, Security, AR web browser, user experience*

## INTRODUCTION

Augmented Reality (AR) is known as to add something which is existing from the real world which helps to combined real-world object and virtual components in a real-world environment.

New Pixel phones, iPhones and other emerging devices such as the Magic Leap, wiktitude already support Augmented Reality. They report where the ground is, where walls are, and location of system or any kinds of environment sensing questions critical for AR. There is no such AR application using which we can browse the web in android smartphones.

Our Augmented reality web browser application will be a valuable addition to many existing web pages. Ex. It will help people to understand and learn on education sites, and user to visualize objects in their home while shopping or also allows students to visualize any object in 3D model. Our application illustrates this. This application allows users to place a life-size representation of an object as if in reality.

The main objective of this AR based application is to provide s a ground-breaking technology, which enhances the real world by virtual objects in order to create a new mixed reality environment.

Typically, Augmented Reality systems consist of a smartphone for displaying the virtual information, a tracking system through AR Core for determining the position and orientation of the user, a computer processes the necessary data and arbitrary input devices for user interaction.

### **Problem definition**

In traditional web browser, the user keeps staring down at a phone and scrolling, it's hard for content to catch your eye and it stores cookies and history of the user. Real world interaction, user experience and security are the main disadvantage of existing web browser. Lack of user interaction with real world were found in normal web browser application. It eventually leads to lesser attention span of user.

### **Common Browser Issues**

- Third party cookies are allowed by default on all supported browsers.
- JavaScript is enabled by default in all supported browsers. JavaScript is used to provide immediate feedback to users via the browser. Much of the Blackboard system depends on JavaScript to generate interactive websites.
- Pop-up blockers work in the background while you browse the Internet. When they detect a pop-up window that may be an unwanted advertisement, links, 3rd party websites they automatically close the window.
- Your Internet browser keeps a record of all the websites you visit in its History. Your Internet cache or cookies acts as a roadmap for all the web sites you visit by storing copies of these sites locally on your computer. Because this web sites information is stored locally, web sites load faster.

### **Solution**

**Security:** AR browser is an interface between the user and independent AR content.

An AR browser is responsible for ensuring that malicious AR content cannot

access content from other third party sources, nor damage or affect the user's system outside the browser. AR browser does not include any third-party content such as syndicated ads. An **ad Attacker** tricks a trusted web contents into incorporating his malicious or vulnerable content, e.g., via advertisement brokers. AR browser is secure web browsing because we don't have to use our Email id and it combines the real world with computer generated images.

## SURVEY OF TECHNOLOGIES

In modern days and age, augmented reality is a handy tool for us as it helps us to add virtual objects in real world and view them using our mobile camera. Augmented reality allows us to get a new perspective on the purpose that we are trying to get a proper look. ie. Augmented reality and Virtual reality.

### Why should we use Augmented Reality

AR applications can become the main view education industry. Apps are being developed which consist of text, images, and videos, as well as real-world curriculums. With the help of AR, travellers can access real-time information of historical places just by pointing their camera to find any location.

## SOFTWARE REQUIREMENTS

### Unity

Unity is cross-platform for game engine developed by unity technologies which are primarily used to create both 3- dimensional and 2-dimensional video games & graphics and simulations for computers and mobile device. Functionality and scripting using C#.

### Node.js

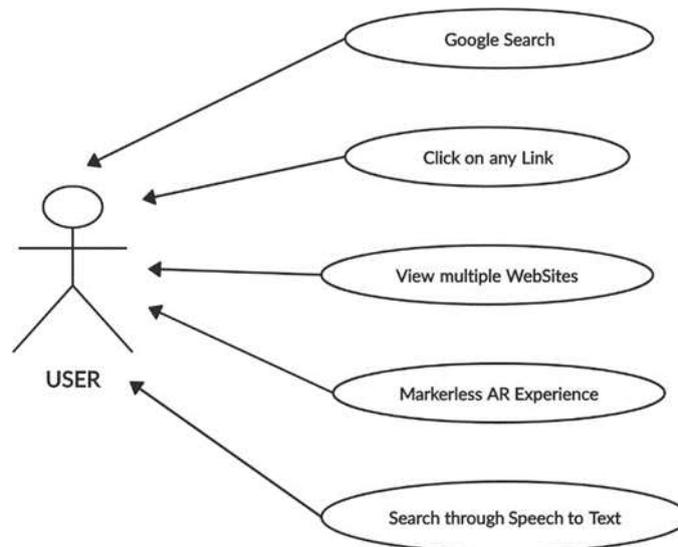
Node.js is an open source server environment. It runs on various platforms like Windows, Linux, UNIX, Mac OS X, etc. Node.js uses JavaScript on the server. Node.js can generate dynamic page content. Node.js can also create, open, read, write, delete, and close files on the server side. It can also collect form data. Node.js can add, delete, and modify data in database.

### AR Core

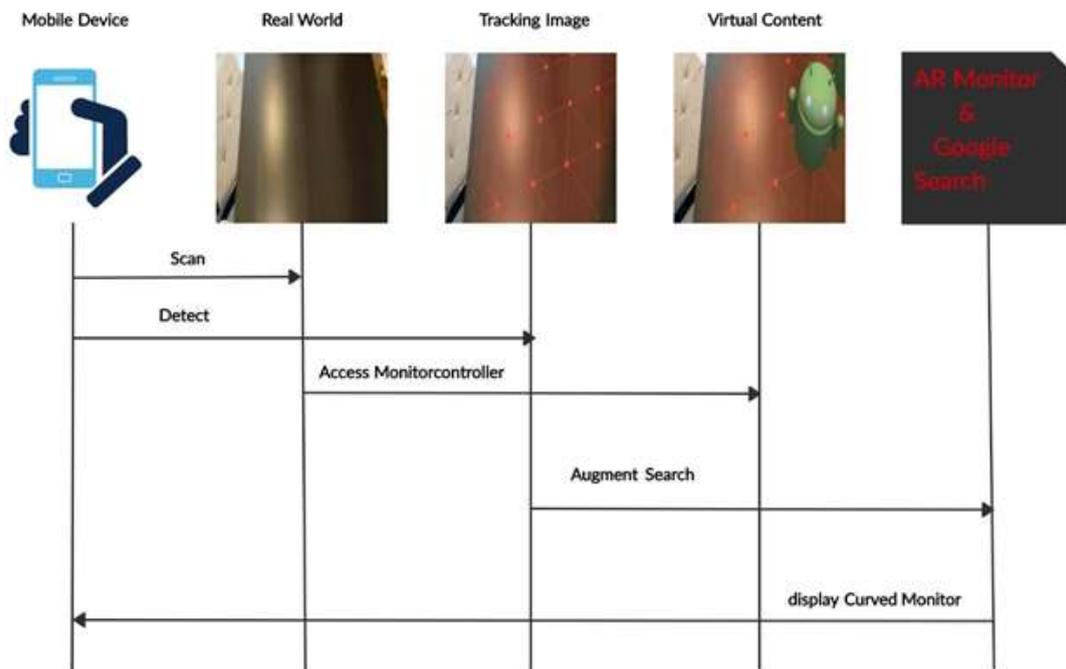
AR Core is Google's platform for building augmented reality application. Using different APIs, AR Core enables your phone to sense its environment, real world motion, understand

the world and interact with information. Some of the APIs are available for Android and iOS to enable shared AR experiences.

**EQUATIONS, FIGURES AND TABLES**



*Fig. 1: Use case diagram*



*Fig. 2 Sequence diagram*

## CONCLUSION

Having AR functionality within a web browser brings many potential use cases. One of the most obvious examples is for e-commerce shops that are selling items. AR in the browser enables a user to simply click on any product images and then see an AR view of how that object would look in real world, which is represented in 2D or 3D.

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# AN OVERVIEW OF BLOCKCHAIN TECHNOLOGY & CRYPTOCURRENCIES

Siddhesh Dhuri & Sahith Gurudu

Students

## ABSTRACT

Bitcoin and blockchain technology have begun to shape and define new aspects within the computing and knowledge technology, all thanks to the famous paper of Satoshi Nakamoto in 2008, introducing Bitcoin and blockchain technology. Blockchain, the inspiration of Bitcoin, has received extensive attentions recently. Blockchain is an immutable ledger which allows transactions happen during a decentralized manner. The rationale for the interest in Blockchain is its central attributes that provide security, anonymity and data integrity with none third party organization on top of things of the transactions, and thus it creates interesting research areas, especially from the attitude of technical challenges and limitations. While there are controversies about Nakamoto's true identity, one is for sure: he brought something revolutionary to the planet, and it's up to the users to make a decision what they need to try to do with it. Some will take this chance and develop their own application for solving various problems within the society, others will invest money in those ideas or just trade with ups and downs of the cryptocurrencies' values at the market. In this paper, we thought of bringing a little introduction to the matter of blockchain and cryptocurrencies. we start with a fast retrospective of a number of the foremost famous solutions for decentralized digital money before Bitcoin, then we enter the very core of its function, along side Ethereum. These two cryptocurrencies hold majority of the cryptocurrency market capitalisation. Of course, because it happens with new technologies, some limitations and problems emerged, and that we described them also.

**KEYWORDS** : *Blockchain, Cryptocurrencies, Bitcoin.*

## INTRODUCTION

A blockchain is actually a distributed database of records, or public ledger of all transactions or digital events that are executed and shared among participating parties. Each transaction within the public ledger is verified by consensus of a majority of the participants within the system. Once entered, information can never be erased. The blockchain contains a particular

and verifiable record of each single transaction ever made. To use a basic analogy, it's easier to steal a cookie from a cookie jar, kept during a secluded place, than stealing the cookie from a cookie jar kept during a market place, being observed by thousands of individuals. Nowadays cryptocurrency has become a buzzword in both industry and academia. Together with the foremost successful cryptocurrency, Bitcoin has enjoyed an enormous success with its capital market reaching 10 billion dollars in 2016. With a specially designed data storage structure, transactions in Bitcoin network could happen with none third party and therefore the core technology to create Bitcoin is blockchain, which was first proposed in 2008 and implemented in 2009. Blockchain might be considered a public ledger and every one committed transactions are stored during a list of blocks. This chain grows as new blocks are appended thereto continuously. Asymmetric cryptography and distributed consensus algorithms are implemented for user security and ledger consistency. The blockchain technology generally has key characteristics of decentralization, persistency, anonymity and auditability. With these traits, blockchain can greatly save the value and improve the efficiency. Since it allows payment to be finished with none bank or any intermediary, blockchain are often utilized in various financial services like digital assets, remittance and online payment. Additionally, it also can be applied into other fields including smart contracts, public services, Internet of Things (IoT), reputation systems and security services. Those fields favor blockchain in multiple ways. First of all, blockchain is immutable. Transaction can't be tampered once it's packed into the blockchain.

Businesses that need high reliability and honesty can use blockchain to draw in customers. Besides, blockchain is distributed and may avoid the only point of failure situation. As for smart contracts, the contract might be executed by miners automatically once the contract has been deployed on the blockchain.

Although the blockchain technology has great potential for the development of the longer term Internet systems, it's facing variety of technical challenges. Firstly, scalability may be a huge concern. Bitcoin block size is restricted to 1 MB now while a block is mined about every ten minutes. Subsequently, the Bitcoin network is restricted to a rate of seven transactions per second, which is incapable of handling high frequency trading. However, larger blocks means larger space for storing and slower propagation within the network. This may cause centralization gradually as less users would really like to take care of such an outsized blockchain. Therefore the tradeoff between block size and security has been a troublesome challenge. Secondly, it's been proved that miners could achieve larger revenue than their justifiable share through selfish mining strategy. Miners hide their mined blocks for more revenue within the future. In that way, branches could happen frequently, which hinders blockchain development. Hence some solutions got to be suggested to fix this problem. Moreover, it's been shown that privacy leakage could also happen in blockchain even users only make transactions with their public key and personal key.

Furthermore, current consensus algorithms like proof of labor or proof of stake face some serious problems. For instance, proof of labor wastes an excessive amount of electricity energy while the phenomenon that the rich get richer could appear within the proof of stake consensus process.

### **Section I: Blockchain Technology 1. Short History of Bitcoin**

In 2008, an individual (or group) writing under the name of Satoshi Nakamoto published a paper entitled “Bitcoin: A Peer-To-Peer Electronic Cash System”. This paper described a peer-to-peer version of the electronic cash that would allow online payments to be sent directly from one party to another without going through a financial institution. Bitcoin was the first realization of this concept. Now “cryptocurrencies” is the label that is used to describe all networks and mediums of exchange that use cryptography to secure transactions—as against those systems where the transactions are channeled through a centralized trusted entity. The popularity of the Bitcoin has never ceased to increase since then. Moreover, the underlying Block-Chain technology is now finding new range of applications beyond finance.

### **2. Blockchain Technology: How does it work?**

We explain the concept of the blockchain by explaining how Bitcoin works since it's intrinsically linked to the Bitcoin. However, the blockchain technology is applicable to any digital asset transaction exchanged online.

- Validate Entries
- Safeguard Entries
- Preserve Historic Record

Internet commerce is exclusively tied to the financial institutions serving as the trusted third party who process and mediate any electronic transaction. The role of the trusted third party is to validate, safeguard and preserve transactions. A certain percentage of fraud is unavoidable in online transactions which needs mediation by financial transactions. This results in high transaction costs.

Bitcoin uses cryptographic proof rather than the trust-in-the-third-party mechanism for two willing parties to execute a web transaction over the web. Each transaction is protected through a digital signature, is shipped to the “public key” of the receiver, and is digitally signed using the “private key” of the sender. In order to spend money, the owner of the cryptocurrency must prove his ownership of the “private key”. The author of the primary paper wanted to stay anonymous and hence nobody knows Satoshi Nakamoto to the present day. A few months later, an open source program implementing the new protocol was released, beginning with the Genesis block of the entity receiving the digital currency then verifies the digital signature, which implies ownership of the corresponding “private key”,

by using the “public key” of the sender on the respective transaction.

Each transaction is broadcasted to each node within the Bitcoin network and is then recorded during a public ledger after verification. Every single transaction must be verified for validity before it's recorded within the public ledger. The verifying node needs to ensure two things before recording any transaction:

Spender owns the cryptocurrency, through the digital signature verification on the transaction.

Spender has sufficient cryptocurrency in his account, through checking every transaction against the spender's account, through checking every transaction against the spender's account, or “public key”, that is registered in the ledger. This ensures that there is sufficient balance in his account before finalizing the transaction.

However, there's question of maintaining the order of those transactions that are broadcasted to each other node within the Bitcoin peer-to-peer network. The transactions do not come in order in which they are generated, and hence there is a need for a system to make sure that double-spending of the cryptocurrency does not occur. Considering that the transactions are passed node by node through the Bitcoin network, there's no guarantee that orders during which they're received at a node are the same order in which these transactions were generated. The above means that there is a need to develop a mechanism so that the entire Bitcoin network can agree regarding the order of transactions, which is a daunting task in a distributed system. The Bitcoin solved this problem by a mechanism that's now popularly referred to as Blockchain technology. The Bitcoin system orders transactions by placing them in groups called blocks then linking these blocks through what's called Blockchain. The transactions in one block are considered to possess happened at an equivalent time. These blocks are linked to each-other (like a chain) in a proper linear, chronological order with every block containing the hash of the previous block.

There still remains another problem: Any node within the network can collect unconfirmed transactions and make a block then broadcast

## CONCLUSION

Blockchain is Bitcoin's backbone technology. The distributed ledger functionality including the safety of Blockchain makes it a really attractive technology to unravel the present financial also as non-financial industry problems. As far because the technology is concerned, the cryptocurrency-based technology is either within the downward slope of inflated expectations. There's enormous interest in Blockchain-based business applications and hence numerous start-ups performing on them. The adoption definitely faces strong headwind as described before. However, even large financial institutions like Visa, Mastercard, Banks, and

NASDAQ, are investing in exploring applications of current business models on BlockChain. In fact, a number of them are checking out new business models within the world of BlockChain. Some would really like to remain that they're even before the curve in terms of transformed regulatory environments for BlockChain. We envision BlockChain technology browsing slow adoption thanks to the risks associated. Most of the startups will fail with few winners. Having said this, we should always be seeing significant adoption during a decade or two.

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# SOLAR POWERED IOT BASED SANITARY NAPKIN VENDING MACHINE

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## ABSTRACT

Women would be provided with easy access to sanitary napkins across their workplaces, schools, colleges and public places like bus stations, airports, hospitals and shopping malls. The main drawback of the current coin operated vending machine is that there is no mechanism available for the person refilling the napkins to know about the status of napkins available in the system. So, a person has to regularly check the availability of napkins in the system manually and refill it. This work aims at installing an automatic napkin dispenser on dropping of coins/ RFID card readers in toilets and places with the feature of intimating the person concerned through notification on an application for refilling the Napkins in the machine. We will also be creating an application for the user to know some aspects such as total amount of machine present, quantity of pads available. And the whole system works on solar energy.

**KEYWORDS** : *Sanitary Napkins, RFID reader, Notification, Application, Solar energy.*

## INTRODUCTION

In many parts of the country especially in rural areas girls are not prepared and aware about menstruation so they face many difficulties and challenges at home, schools, and workplaces. Some women do not have access to sanitary products or they know very little about the types and method of using them or are unable to afford such products due to high cost. Needs and requirements of adolescent girls and women have to be fulfilled so we plan to build a vending

machine that will provide sanitary pads with a minimum amount of cost.

In colleges, workplaces there are more than one vending machines placed in different toilets at different places. So if a woman wants to find whether the pads are available or empty at a particular machine it is difficult to do so. Hence we design an application that will guide a woman with the information of stock present.

### **EXISTING SYSTEM**

The main drawback of the current coin operated vending machine is that there is no mechanism available for the person refilling the napkins to know about the status of napkins available in the system. So, if a person wants to know the stock available of the napkins in the machine he/she has to regularly check the system manually and refill it or else call the concerned administrative person.

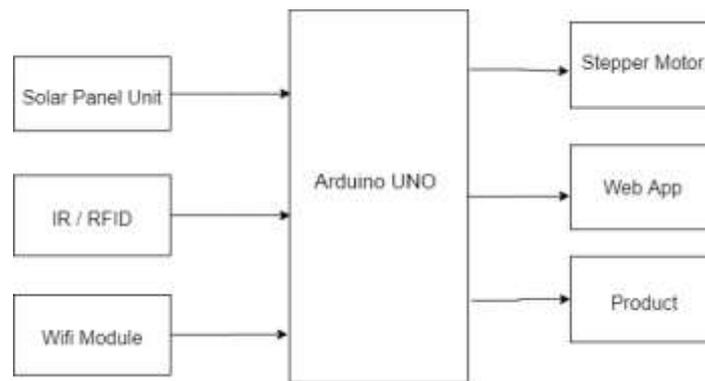
### **PROPOSED SYSTEM**

Providing the feature of intimating the person concerned through notification on an application for refilling the Napkins in the machine. The napkin dispenser is designed to work with both coins and a RFID card. We will also be building an application for the user to know some aspects such as total number of machines present, quantity of pads available. And the whole system to be work on solar energy

### **METHODOLOGY**

When the user inserts a coin or swipes a RFID card, the IR sensor or the RFID reader detects it and sends a signal to Arduino. As the motor rotates the spring mechanism starts to rotate for a preset amount of time, during which the napkin is dispensed. Once a napkin is dispensed, the count of napkins available will get updated on the Web Application. To send data across the network for which we are using Wifi module (ESP8266 -12E). Solar energy is derived from the sun's radiation which transforms incoming sunlight into electricity. Solar battery is used to store the solar energy when the machine is not in use and that battery will be used during the night where there is no sunlight.

### **BLOCK DIAGRAM**



### Module Description

1. Arduino Uno : The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P. We have used Uno because it has 14 digital I/O pins, 6 analog I/O pins, and is programmable with the Arduino IDE. It can be powered by the USB cable or by an external 9v to 10-volt battery.

2. NodeMCU : NodeMCU is an open source development board and firmware based on the widely used ESP8266 -12E Wi-Fi module. It allows you to program the ESP8266 Wi-Fi module with the simple and powerful LUA programming language or Arduino IDE.

3. Solar panel : Solar energy is derived from the sun's radiation. Sun being a powerful energy source, it can be harnessed by installing solar panels. Solar panels, also known as modules, contain photovoltaic cells made from silicon that transform incoming sunlight into electricity rather than heat. ("Photovoltaic" means electricity from light — photo = light, voltaic = electricity.)

4. Solar Charge Controller : A solar charge controller manages the power going into the battery bank from the solar array. It ensures that the deep cycle batteries are not overcharged during the day, and that the power doesn't run backwards to the solar panels overnight and drain the batteries.

5. Stepper motor : Stepper motors are DC that motors that move in discrete steps. In order to drive the stepper motor to move the spiral coil that allows rotation as per the given steps.

6. IR Sensor : An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. This sensor is analogous to human's visionary senses, which can be used to detect obstacles and it is one of the common applications in real time.

7. RFID Reader : RFID reader is used to detect the RFID card. When the user requiring

Sanitary napkin waves the RFID card, the reader detects the card and initiates action to dispense the napkin

8. Spring Mechanism : Vending device for vending machine comprises a spiral coil connected to a coin-operated mechanism/RFID based system, that allows rotation thereof and the connected coil when predetermined coins have been inserted into the mechanism. Software requirements : We propose an android application in this project, which shows the total number of machine present, quantity of pads available because it is easier for users to access information using an android app rather than a website. Coding language that will be used is java along with android studio software as compiler. To synchronize with equipment, users must have internet access.

### **CONCLUSION**

Sanitary napkin vending machines are a major factor towards the betterment of feminine hygiene in modern society. Working approach of a vending machine is simply designed where you can easily operate it. Sometimes women fall short of sanitary napkins when in need. They may find it difficult to get sanitary napkins on an urgent basis. This issue has been addressed by fabricating a coin operated or RFID based Sanitary Napkin Dispenser. The system has the feature of intimating the person concerned through SMS for refilling the Napkins in the machine. The vending machine is solar operated, manufactured for areas with no power supply.

### **FUTURE SCOPE**

This system can be designed to load more napkins by using the rack and pinion method, so that frequent loading of napkins can be avoided. With Sanitary Napkins, we also need to give a solution to dispose of these sanitary napkins and avoid current ways of disposal like sanitary napkins are mixed with regular waste and it's difficult to segregate them and dispose them off.

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# FACE RECOGNITION DOOR LOCK SYSTEM

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## ABSTRACT

In this paper we propose to create a smart door, which secures the gateway on the basis of who we are. We want to develop this system based on Raspberry-pi 3, to make the house accessible only when an authenticated face is recognized. This process will be done through recognition algorithms from Open CV library. The entire process of accessing the house is in the hand of the owner who can allow or disallow the person standing in front of the camera to enter the house.

**KEYWORDS** : *lot, raspberry pi, pi camera, Open CV, VNC viewer, putty, Raspbian OS.*

## INTRODUCTION

In today's world of internet and smart devices there is an urgent need to enhance our existing day to day objects and make them work smart, also this is not an era where we can blindly trust the traditional security measures, specifically when it comes to our door locks. The main motive of the proposed work is to provide a working model of a smart door and to give solutions to the problem faced by people in day to day incidents of burglary or losing the key. The system will allow only those people whose data is present in the database if the face is not registered then it will click a picture and send it to the registered owner. Once the picture is received by the owner, the person will be able to see who is trying to enter the house. The decision will be taken by him whether to allow or disallow the person standing in front of the door to enter the house. This will provide more security to our house.

## PROBLEM DEFINITION

The most important feature of any home security system is to detect the people who enter or leave the house. Most of the doors are operated by people with the use of keys or security cards or even password and patterns to open the door. Instead of monitoring the door through passwords or pins we can make use of unique faces which uses biometric trait as one of its

property. They are innate in nature and cannot be modified or stolen easily by anyone. The proposed system is developed in such a way that it can prevent robbery in highly secure areas like home environment with lesser power consumption and more reliable standalone security device for both Intruder detection and for door security. whenever a face is recognized by the camera the image gets matched with the images stored in the database if the image is already registered then the door will unlock otherwise it remains locked.

## METHODOLOGIES

**Face Detection:** - Face detection is one of the phases of face recognition in which we are using pi camera for identifying and verifying the person. It comprises of detection, alignment, feature, extraction and recognition task.

**Image Processing:** - It is a method used to perform some operations on an image, to get an enhanced image or to extract some useful information from it. For this purpose, we are using OpenCV library available in python which is used for computer vision.

**Machine learning:** - Through machine learning algorithm the system will provide accurate result and it will work in more efficient manner. For example, once an image has been captured it will immediately try to match it with the images which are stored in the database from different angles.

**Lock-unlock Mechanism:** - Lock-Unlock is a Mechanism which is used to lock and unlock the door without manual power. It reduces the human efforts and helps the user to lock and unlock the door without any manual efforts.

## SURVEY OF TECHNOLOGIES

The smart door lock system is a new technology which uses facial recognition to unlock the door, it provides more security to our house and protects our house from various attacks .This system can be used at various public as well as private sectors where security is considered to be main constrain Why should we use Face recognition?

The proposed system is a working model of a door lock which will be used for security purpose with the help of face recognition. The main objective to use face recognition is to provide unique way of security in this growing world of internet and technology.

Software requirements

**Android Studio:** - For developing Front-end android application we will be using Android Studio since it is easy to use, meets all the requirements and has the best emulator performance to other IDE's.

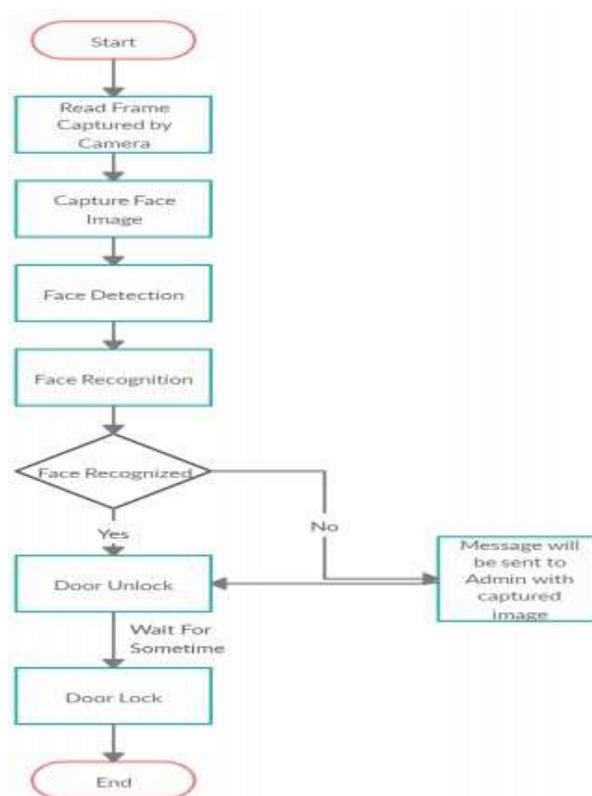
**Cordova:** - This is a free and open source tool used to create to develop hybrid apps with HTML, CSS and JS. Apache Cordova is a type of device API that can allow a mobile application developer to access the original device function such as an accelerometer or a camera from JavaScript. When we combine it with an UI framework such as a jQuery Mobile or a Dojo Mobile or a HTML, CSS, and JavaScript.

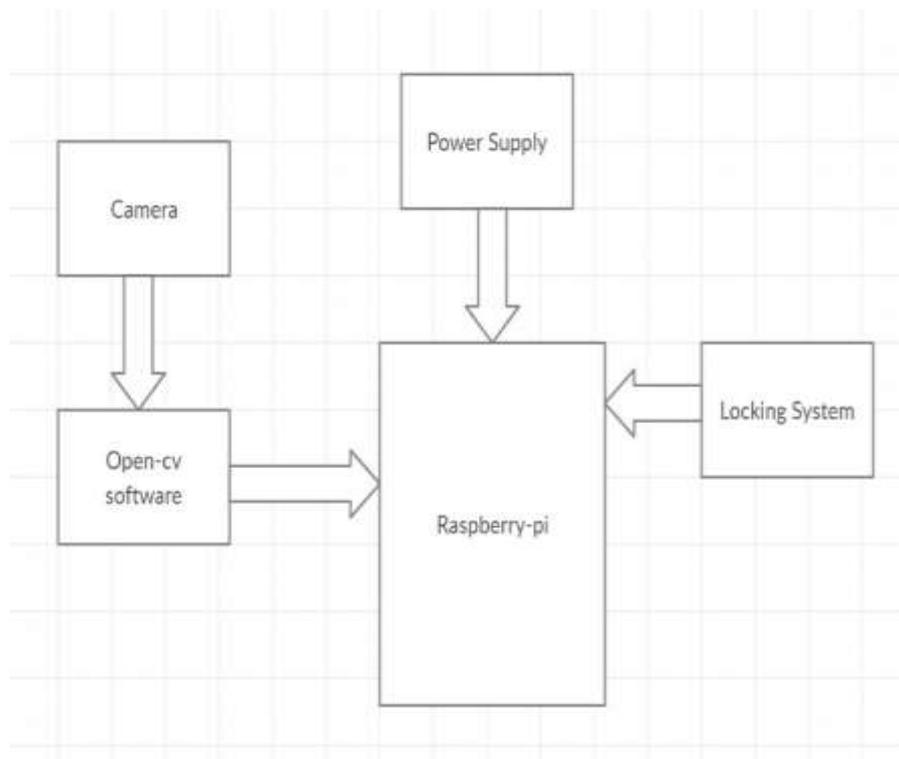
Hardware requirements

**Raspberry pi:** -The simplest use of a Raspberry Pi is like a desktop computer. Along with the Raspberry P, the micro SD card, and power supply, you will only need a HDMI cable and an appropriate display device. With the traditional computer, you will also need a USB keyboard and a mouse.

**Raspberry pi camera:** - The Raspberry Pi Camera v2 is the new official camera board that has been released by the Raspberry Pi Foundation. It is a 5-volt camera which gives a clear image or video.

**EQUATIONS, FIGURES AND TABLES**





Sr no.	Facial recognition	Fingerprintrecognition
1.	Extensively used in surveillance and public applications.	Extensively used in identification and authentication.
2.	Subjects can be identified from a distance	Subjects cannot be identified From a distance.
3.	Highly collectable. Highly Exposed due to location of face Larger details.	Medium collectability. Low exposure due to exposure of minute Details.

*Table 1: Difference between Face Recognition and Fingerprint Recognition*

## CONCLUSION

In current generation Face recognition door lock system is widely used for home security purpose. The main motive of using this project is to secure the home from various attacks like robbery. This concept will keep the house and its things much more secured. The face recognition system has been used for various fields like in shopping malls, bank lockers, office, schools for attendance, etc.

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# TEXT RECOGNITION

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## ABSTRACT

Optical character Recognition (OCR) gives device ability to read (detect and recognize) the text which is appear in an image/picture. This text can be any type such as signs, articles, pages of text, grocery list, menus, or any other place that text seems as part of a picture/image. Text recognition from printed notes, books, scanned pdf, scanned docs etc are easy to detect and recognize the text and also it will provide output in editable form or speech it out ; which means it will give you 100% accuracy. But while talking about handwritten text recognition its a different scenario. Handwritten text recognition is a field of research in artificial intelligence, pattern recognition, computer vision for achieving more accuracy. The motive of the Text Recognition is to recognize the handwritten text from scanned images or pictures. The applications handwriting OCR (optical character recognition) engine will extract text from paper documents, like letters, school notes, meeting notes, and grocery lists, etc., in form of scanned images. The purpose of this project is to take English handwritten text as an input, recognize the text and provide output in editable form.

**KEYWORDS** : *Text recognition, pattern recognition, computer vision.*

## INTRODUCTION

It Character recognition, usually abbreviated for optical character recognition or abbreviated OCR, is the mechanical or electronic translation of images of handwritten, typed, or printed text (usually captured by scanners) into machine-editable text.

Text Recognition is software that helps a computer or device to take as input from sources such as printed physical documents, pictures and other devices, or to use handwritten notes directly as input and then it Helps interpret as editable text.

In a variation on the handwritten recognition concept, 'Text Recognition' reads handwritten notes or images (pictures of characters) and converts them into editable digital text that can be stored on your device.

The applications handwriting OCR (optical character recognition) engine extracts text from paper documents, like letters, school notes, meeting notes, and grocery lists, etc.

will take input as an image and then process the image and will provide result as editable text. It can be a very helpful tool for the people like secretaries and paralegals by saving hours of typing.

### **OBJECTIVE**

- The main objective is to identify handwritten documents, including letters, words, lines, paragraphs, etc.
- It speeds up the process of character recognition in document processing. The system can process large numbers of data in a short time and hence saves time.
- Optical character recognition system is an effective method in recognition of printed characters. This provides an easy way to identify and convert printed text on an image into editable text. It also increases the speed of data retrieval from the image.

### **Scope**

- The system can be used in areas or fields where the data entry operations are required.
- Like Manual handwritten documents to digitization of documents.
- Using Text Recognition application typing work will be reduced.

### **Problem definition**

- Computer is unable to recognize the characters while reading them.
- Images cannot be read or edit by the user.
- By using OCR technology, the user can easily convert the images of text into digital editable text.
- We are using neural networks for our task. In which we are using Convolutional Neural Network (CNN) layers, Recurrent Neural Network (RNN) layers and a final Connectionist Temporal Classification (CTC) layer.

## **SURVEY OF TECHNOLOGIES**

### **Neural Network**

- It is a network or connection of neurons or in other way it is an artificial neural network composed of artificial neurons or artificial nodes.
- Neural network is an artificial neural network for solving AI (artificial intelligence) problems.
- In AI artificial neural networks have been applied successfully to image analysis, speech recognition also we use it to recognize correlations and hidden patterns in raw data.
- Neural networks can receive and process vast amounts of information at once that's making them
- useful in image analysis.

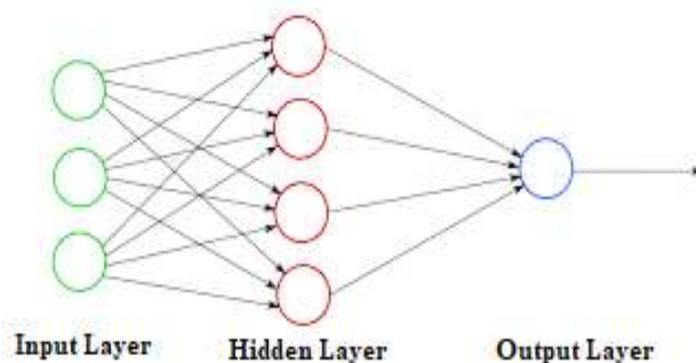


Figure 1: Convolutional neural networks

### Convolutional Neural Network (CNN)

It is most commonly used for analysing visual imagery. It is a deep learning algorithm

The role of the cnn layer is to reduce the images into a form which is easier to process, without losing its features which are important for getting a good prediction. CNN is able to successfully capture the spatial and temporal dependencies in an image through the application of relevant filters.

It is consisting of input and output layer also with multiple hidden layers. Hidden layers consist of series of cnn layers that convolve with multiplication or other dot product.

### Recurrent Neural Network (RNN)

RNN can use their internal state to process variable length sequence of inputs. This makes them applicable to tasks such as unsegmented, connected handwritten recognition. RNN is a sequence of neural network blocks that are linked to each other like a chain. Each one is

passing a message to a successor. The popular Long Short-Term Memory (LSTM) implementation of RNN is used, as it is able to propagate information through longer distances and provides more robust training-characteristics.

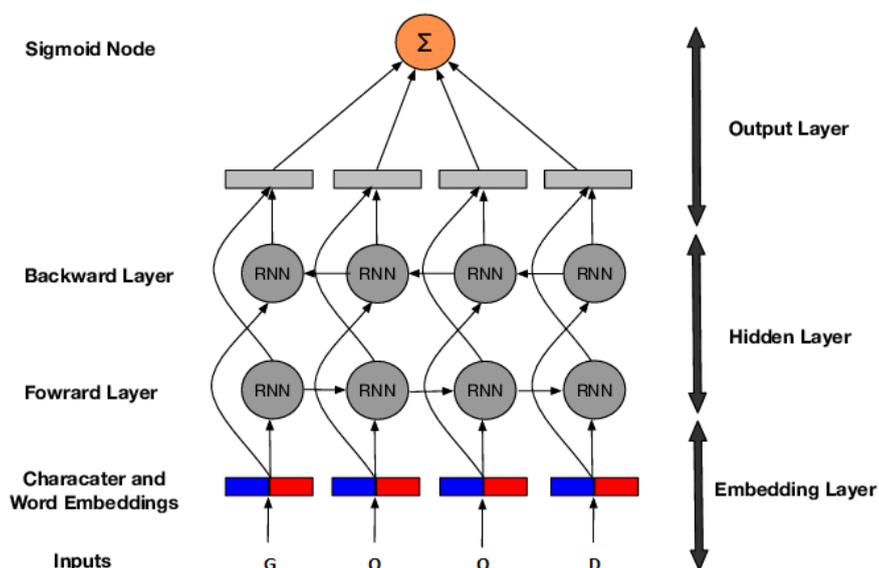


Figure 2: Recurrent neural network

### Connectionist temporal classification

It is a type of neural network output and associated scoring function, for training recurrent neural network such as LSTM networks to tackle sequence problems where the timing is variable. It is used for tasks like online handwriting recognition or recognizing phonemes in speech audio. CTC refers to the output and scoring and its independent of the underlying neural network structure.

### Software Development Life Cycle to build an OCR Engine

Building an OCR engine from scratch is a step-by-step process. The development process usually encompasses six steps needed to train an algorithm for efficient problem-solving with the help of optical character recognition.

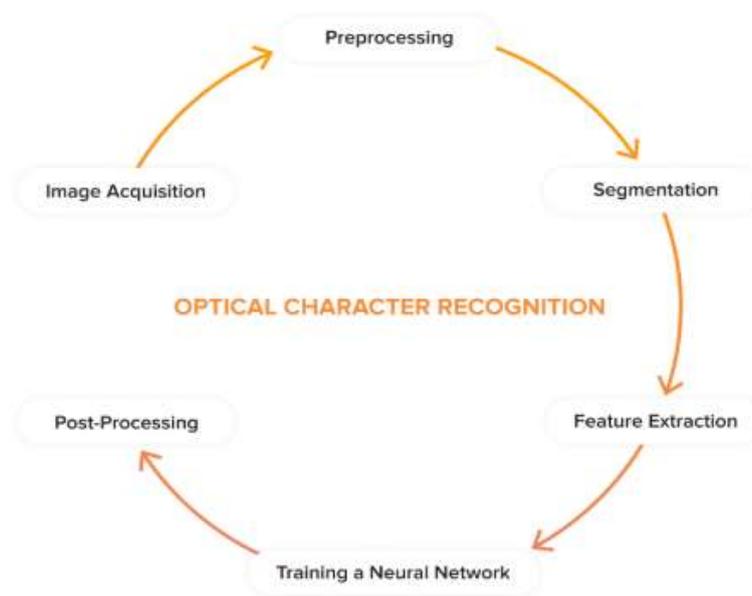


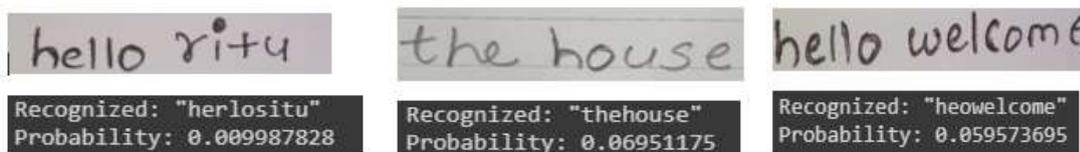
Figure 3: SDLC of OCR

1. Image Acquisition
2. Pre-processing
3. Segmentation
4. Feature Extraction
5. Training a Neural Network
6. Post-Processing

### Improving the model

#### Model Overview :

We have used different neural networks for building the model and got 50% accuracy and tried for Improvements.



**To improve the recognition accuracy, we performed following different methods :**

- Remove cursive writing style in the input images
- Increase input size (if input of NN is large enough, complete text-lines can be used)
- Add more CNN layers
- Replace LSTM by 2D-LSTM
- Text correction: if the recognized word is not contained in a dictionary, search for the most similar one and the accuracy improved up to 74 %



## CONCLUSION

Image recognition is the important process for image analysis. The image recognition for handwritten text is more challenging because everyone has different handwriting forms. So that on the detection also handwritten text will be more difficult to detect compared to writings from computers that already have a definite standard form. In between different methods for achieving the handwriting recognition technique the CNN method able to provide highest accuracy. This is continual improvement process, it will never going to end.

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# **DTH vs OTT: HOW MEDIA IS CONSUMED**

## **- A Survey-based Research**

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### **ABSTRACT**

The purpose of this study is to investigate the factors affecting the media consumption between DTH or OTT streaming platforms. In order to accomplish the objectives in this study, 54 number of consumers were taken into consideration by random sampling technique using google forms. By analysing the data from the survey, we studied factors that affect the preference of the consumer between DTH and OTT, factors including pricing, quality of content, ads, giant streaming platforms in Indian region. We also found that people preferred quality of content over pricing.

**KEYWORDS** : *DTH, OTT, Digital India, Media.*

### **INTRODUCTION**

OTT services are broadcasting services rendered over the internet. In recent times with the massive internet growth which the nation has seen, because of the broadband services provided by the telecom and the internet service providers DTH services is a digital satellite service that provides television viewing services directly to subscribers through satellite transmission anywhere in the country the signals are digital by nature and are received directly from the satellite. The content and the context of DTH and OTT are the cable connections, this survey studies the comparison between DTH and OTT connections. completely different. OTT platforms are very personal where as DTH connections are more social in nature. OTT needs access to smartphones, tablets, laptop/computers and internet.

Just like DTH came and overtook Digital India Revolution

The new government proposes to make the 'Digital India' agenda its lead horse for bringing about systemic changes in the country. With ISPs (Internet service providers) actively exploring business models for mass consumption, and bottom-of-the-pyramid

markets, India's Internet today stands at the inflexion is today. Given the anytime data availability, the user can watch anything of the choice anywhere, as portable devices can be carried anywhere along. The cost of data services has gone down drastically in the last few years which has raised the number of average users including the rural areas as well. The convenience and ease with which OTT platforms can be watched makes it more attractive.

### **Plan Comparison**

With the new DTH tariff regime implemented from 1st April, 2019; there has been a decline in the subscriber base of DTH connections. Bundling or packages of channels makes it easy for the consumer to choose because selecting content to watch with minimal tariff is an extremely difficult

### **Exercise :**

It is not fully developed plan but the sector is working on it. New tariff order has changed the bills empowering consumers to pay only for what they want to watch. The bills will be different for users depending upon their personalised usage rate so there might be complaints from some users, paying more bills than the others who have reduced bills due to their smaller watch list.

So it is not fair to say that all the bills have gone up. OTT platforms seem a better option in comparison to high tariffs and the tedious process of choosing the channel combinations in the DTH. The one change that might hasten this transformation of video consumption could be the high monthly bills that some cable TV and DTH users had to pay after TRAI allowed TV channels to offer their services on an a la carte basis. TRAI is currently reviewing the implementation of this policy. But if the monthly cable/DTH bills stay at elevated levels, the shift to OTT will be faster.

### **Personalised Content:**

Bundling or packages of channels makes it easy for the consumer to choose because selecting content to watch with minimal tariff is an extremely difficult exercise. It is not fully developed plan but the sector is working on it.

The content and context of DTH and OTT vary widely. OTT platforms tend to be more personal whereas DTH connections are more social in nature. Also, it is a tedious task for consumers to decide which channels they want to watch. This could be one of the reasons for switching to OTT services.

## **METHODOLOGY**

A questionnaire was designed using Google forms, which was aimed at identifying the preferences of the consumers decision on media consumption. The audience in this study are mostly students and bachelors. In order to select the sample respondents, the forms were sent to the people between the age group 20-30 years old. In this study, both primary and secondary sources of data were used. The primary data was obtained using the Google forms

and the secondary data from reports, internet and documents. The main method of data collection was questionnaire. The questionnaire was designed to make it easy to answer and to cover most of the questions.

**Results and Discussion:**

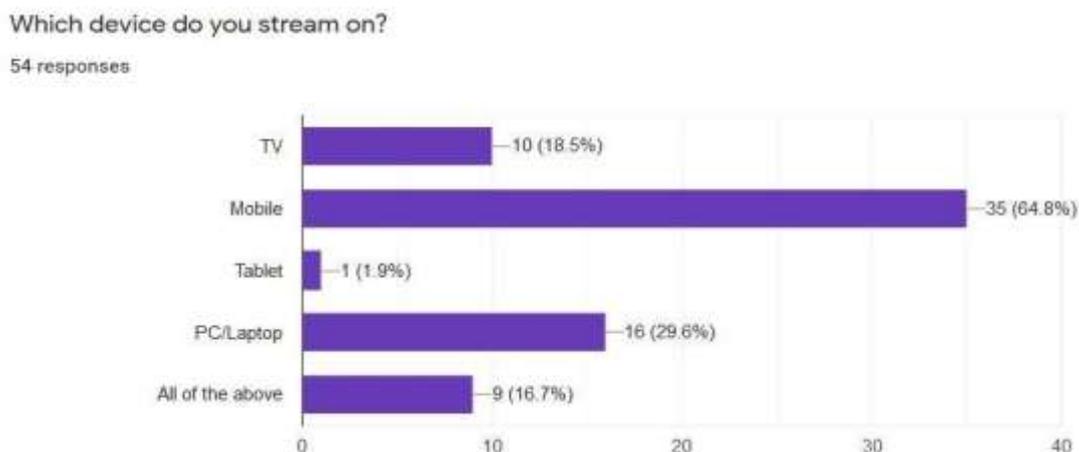
The analysis is made using 54 responses from the total 67 responses that were received using the Google forms. The pie chart below informs about the percentage of male and females whose responses are included in the analysis.

Diversity of the respondents-

Male	42
Female	12

*Device preference for streaming content by respondents-*

The least favoured device for content streaming is tablet, accounting for 1.9% of the respondent’s choice. Mobile proved to be the most preferred choice for streaming content, followed by PC/Laptop. Only 10 respondents had a preference for TV, while respondents who preferred or had access to a



11 of them and who streamed content on these were of count 9.

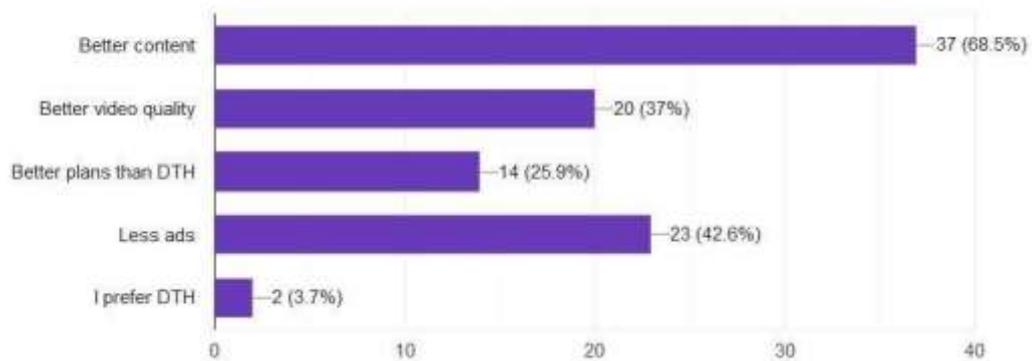
Medium preference: OTT vs DTH

The number of respondents who preferred DTH over OTT platform comprise only of two people, who were not subscribed to any of the streaming platform. Better and personalised content was the prime reason for the respondents for their inclement towards the OTT

platform. 23 respondents agreed OTT had lesser to very few ads on the platform as compared to the DTH platform, where channels aired ads during the telecast of shows [3].

Do you prefer OTT over DTH? If yes why

54 responses

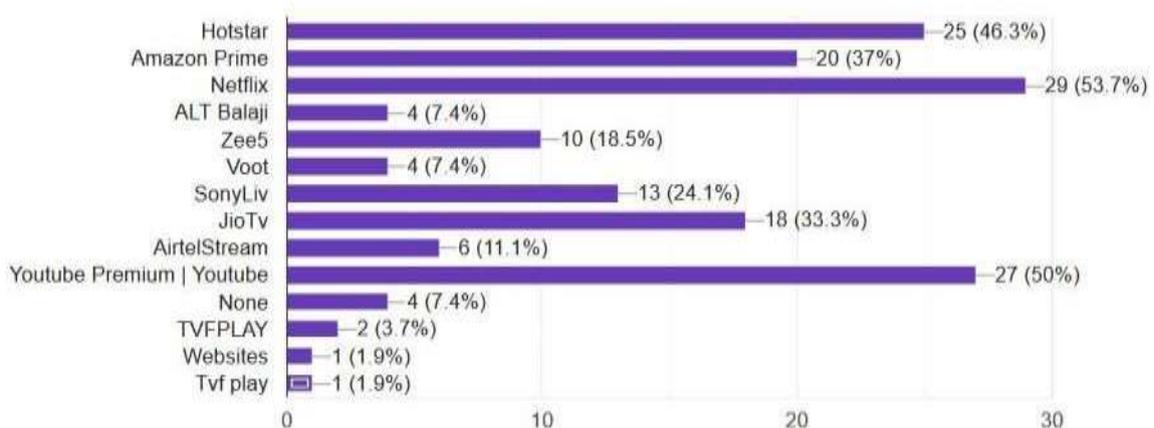


### OTT Media streaming Platform Preferences

There are varieties and number of streaming websites each with unique contents and as well as the Flexibility of plans for the consumers, Consumers have free will to consume from any of those steaming platforms most of these platforms are available across the globe and not just one country. With the collection of choices of these 54 Respondents the most preferred and leading platforms are Hotstar, Amazon Prime, Netflix, JioTv, YouTube and TVplay for independent Media platform and some other platforms with a minimal amount of users preference [1] [5].

Which streaming services do you use?

54 responses

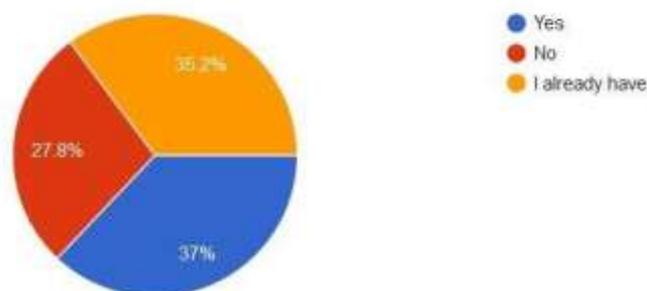


### Likeliness to adopted the new OTT streaming services

With the last questionnaire being weather consumers is likely to switch/or already adopted the OTT streaming Platform services, we found that almost 72.2% of the respondents is ready or has already adopted the trend-services were one can watch the content with less or even no ads and anytime and anywhere and on any device via Internet which is growing fast in India and the availability is increasing to every citizen slowly [1].

Are you planning to switch completely over OTT platform?

54 responses



## CONCLUSION

With the growing Economy, evolving society and adopting the new technology India is growing exponentially with the availability of the Internet and also the Media consumption preferences are tending to OTT Streaming platforms than that of the traditional DTH/Cable Media consumption. Major media Production houses are now focusing and acknowledging the trend shift in the market towards the OTT streaming platforms and the likeliness of the adoption of the OTT streaming platforms is not only Highly positive but also increasing in exponential rate.

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# A STUDY PAPER ON MODERN FACIAL RECOGNITION SYSTEM USING DEEP LEARNING

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## ABSTRACT

A human brain can store and remember thousands of faces in a person's lifetime; however, it is very difficult for an automated system to reproduce the same results. Faces are complex and multidimensional which makes extraction of facial features to be very challenging, yet it is imperative for our face recognition systems to be better than our brain's capabilities. With the arrival of Deep Learning model, feature generation from faces are now more effective and near to accuracy. Company's like Google Inc. and Facebook are investing heavily in this approach, their projects like DeepFace and FaceNet are examples of modern face recognition technologies.

**KEYWORDS** : *Facial Recognition Systems, DeepFace, FaceNet, Eigen Faces, Deep Learning*

## INTRODUCTION

A face recognition system is a system that can use a person's facial properties for identification, verification or recognition. Early facial recognition systems used principal component analysis in generating face features which is then called as Eigen faces. [1]

Eigen faces are more of a lower dimensional representation of a face image i.e. consider a cropped face image. With the arrival of Deep Learning model, feature generation from faces are now more effective and near to accuracy. [2]

## HISTORY

During 1964 and 1965, Bledsoe, in conjunction with Helen Chan and Charles Bisson, worked on using the computer to recognize human faces. He was proud of this work, but because the funding was provided by an anonymous intelligence agency that did not allow much publicity, little of the work was published then. He described the difficulties as follows:

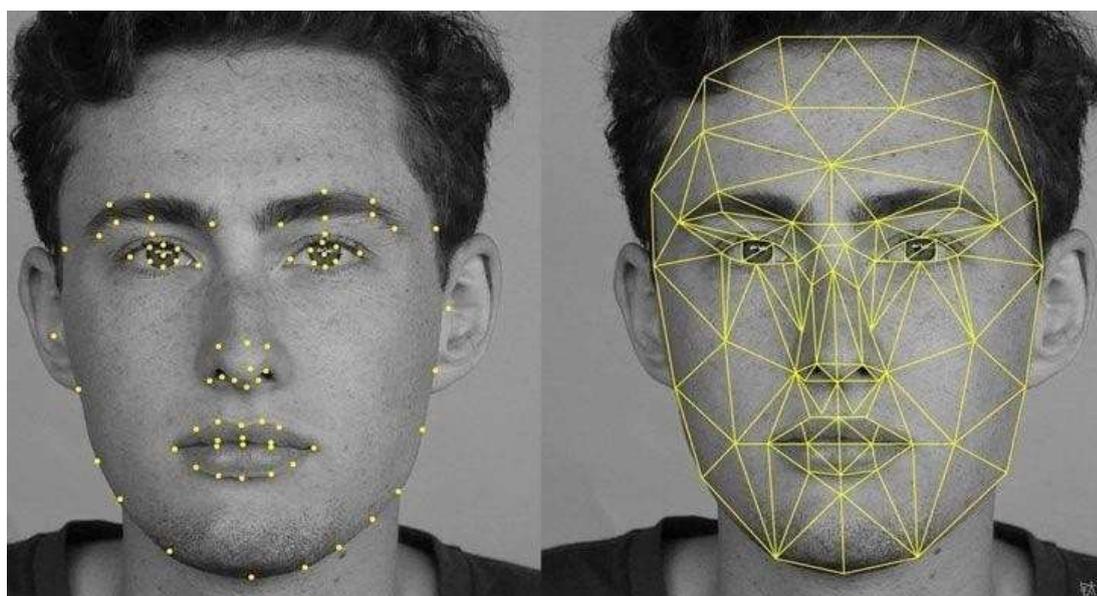
“This recognition problem is made difficult by the great variability in head rotation and tilt, lighting intensity and angle, facial expression, aging, etc. Some other attempts at face recognition by machine have allowed for little or no variability in these quantities. Yet the method of correlation (or pattern matching) of unprocessed optical data, which is often used by some researchers, is certain to fail in cases where the variability is great. In particular, the correlation is very low between two pictures of the same person with two different head rotations.”

— Woody Bledsoe, 1966 [1]

This project was labelled man-machine because the human extracted the coordinates of a set of features from the photographs, which were then used by the computer for recognition.

### Understanding Facial Recognition.

The first important factor in facial recognition systems is its ability to differentiate between the background and face. This is especially important when the algorithm must identify a face within a crowd.



*Figure 1 - A Face with Its Nodes*

There are roughly 80 nodes comprising the face print that the system makes use of and this includes the jaw line length, eye socket depth, distance between the eyes, cheekbone shape and the width of the nose as shown above. [2] [3]

The algorithm then makes use of a person's facial features, its peaks and valleys and landmarks and treats these as nodes that can be measured and compared against those that are stored in the systems. [2]

Other algorithms normalize a gallery of face pictures and then compress the face data, solely saving the data in the image that is useful for face recognition. A probe picture is then compared with the face data. [2]

### **Deep Learning for Better Face Features**

The state-of-the-art faces recognition technologies now use Labeled faces in the wild benchmark to increase the effectiveness, accuracy and efficiency of Face recognition systems. Currently the leading models are all Deep Learning models, such as Google's FaceNet & Facebook's DeepFace who both have accuracy of 97.35% and 99.63% compared to the original Eigenfaces which has an accuracy of 60% [4] [5]

#### **Components of a Face Recognition System**

To build a face recognition system there are some basic components that your application should have:

- Face Detection and alignment component
- For most face recognition systems its important to detect the facial portion from the images so that only face of the body is in focus and background is blurred out. The conventional pipeline used in DeepFace is
- Detect  $\Rightarrow$  align  $\Rightarrow$  represent  $\Rightarrow$  classify
- A face feature generating model
- After detecting the face from the image, the face portion should be transformed into a model to create a face map with the help of facial features. DeepFace uses 67 facial points to generate a 3D model with the help of feature alignment. [6]
- A final metric learning layer for Verification/Identification/Recognition
- After the model or a face map is generated a metric learning algorithm or some other distance calculating algorithms compare the generated features for closeness in distance.
- DeepFace uses cosine metrics or sometimes Siamese networks. [6]

## DeepFace

In modern face recognition, the conventional pipeline consists of four stages: detect  $\Rightarrow$  align  $\Rightarrow$  represent  $\Rightarrow$  classify. But in DeepFace both alignment and the representation steps are used to create explicit 3D modeling to apply piecewise transformation and create a face representation with the help of nine-layer deep neural network. [3]

Figure 2 – Alignment Pipeline

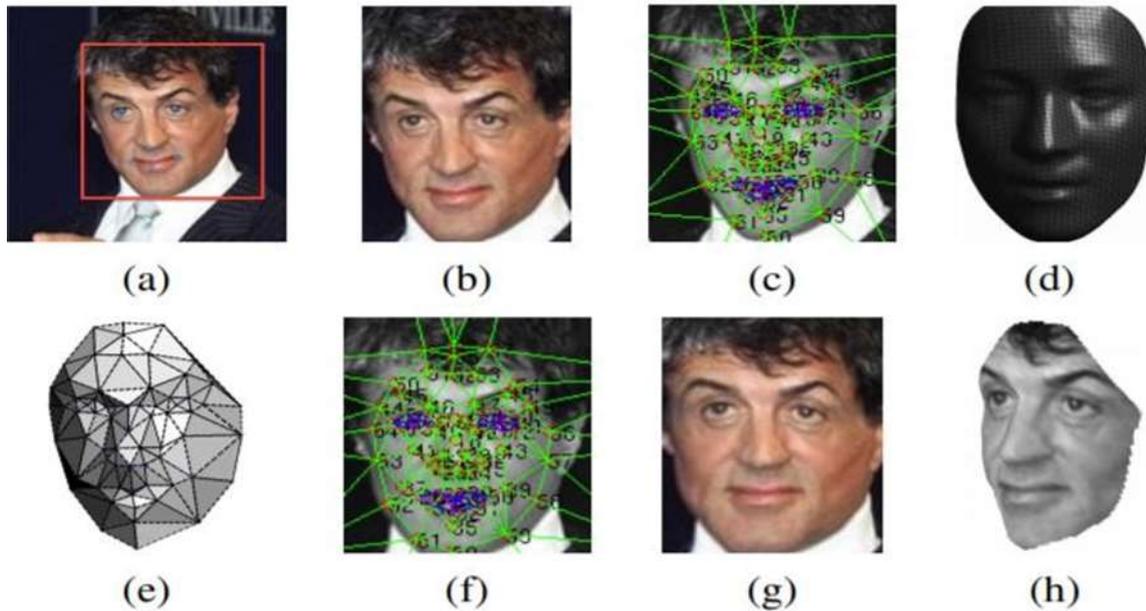


Figure 2 – Alignment Pipeline

- 2D alignment process starts by detecting 6 “fiducial points” using SVR (Support VectorRegressor).
- After detecting iteratively scale rotate and transform image until it aligns with a target face and create a 2D aligned crop.
- Capture 67 fiducial points on the 2D aligned crop with their corresponding Delaunay triangulation to avoid discontinuities.

The reference 3D shape is then transformed in to a 2D aligned crop image-plane for feature alignment.

- The triangle visibility with respect to the fitted 3D-2D camera so that the darker triangles are less visible.
- The 67 fiducial points induced by the 3D model are now used to direct the piecewise

- affine warping
- c) The final frontolyzed crop image is generated to be used for creating different kinds of views.
  - d) And finally, the new view is generated by the 3D model which can be used for facial recognition. [7]

## Datasets

- i. The DeepFace algorithm uses large set of data sets for learning process it has access of large collection of photos from Facebook, classified into Social Face Classification (*SFC*)
- ii. Datasets. Which includes 4.4 million labeled faces, where recent 5% of face images of each identity are left out for testing. [8] [7]
- iii. The Labeled faces in the wild (*LFW*) datasets consists of 13,323 web photos of 5,749 celebrities which are divided into 6,000 face pairs in 10 splits. Performance here is measured by mean recognition accuracy using restricted protocol, the unrestricted protocol and an unsupervised setting. [9] [7]
- iv. The YouTube Video Faces (*YTF*) dataset collects 3,425 YouTube videos of 1,595 subjects which is nothing but a subset of *LFW*. These videos are divided into 5,000 video pairs and 10 splits and used to evaluate the video-level face verification. [5] [7]

## DeepFace Summarized

DeepFace processes images of faces in two steps. First it corrects the angle of a face so that the person in the picture faces forward, using a 3-D model of an “average” forward-looking face. Then the deep learning comes in as a simulated neural network works out a numerical description of the reoriented face. [10]

If DeepFace comes up with similar enough descriptions from two different images, it decides they must show the same face. The deep-learning part of DeepFace consists of nine layers of simple simulated neurons, with more than 120 million connections between them. [11]

## APPLICATIONS

Facebook currently uses different facial recognition algorithms to suggest friends when tagging photos. One of the factors used in the current algorithm includes the distance between user's eyes and nose in multiple photos. Facebook may sometimes suggest the wrong people to tag because of similarities in facial structures between multiple friends, which could potentially be fixed with DeepFace. Since they have access to lots of data, they can successfully train a high-capacity model. [7] [11]

## CONCLUSION

Facebook's DeepFace has an accuracy rate of 97.25% even after that Facebook did not celebrate or bragged about their achievement but silently suggesting users for tag selection while uploading images. They didn't brag simply because they are aware of the potential damage and that's why they are calling it a research project rather than business feature. [5] There's a business purpose behind all this intellectual enthusiasm that company has been showing mostly because they have the ability of understanding all the information user post on the social network is central to Facebook's business model, which leverages data to personalize ads so user will be more likely to click on them. [9] Facebook's growing ability to recognize people when their friend uploads photos from a vacation together or simply uploading the current status has caught the attention of privacy advocates and government officials more than the researcher. [8]. More privacy-conscious European governments have already forced Facebook to delete all its facial recognition data there which raise more question upon the need of Face detection system like DeepFace than Appraise. [10]

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## 6G: A LINK TO 5G NETWORK

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### ABSTRACT

The paper deals with short comparison between 1G,2G,3G,4G,5G and study of upcoming 6g technology. The standardization of fifth generation (5G) communications has been completed and the 5G network should be commercially launched in 2020's. The visioning and planning of 6G communications has begun, with an aim to provide communications services for the future demands of the 2030's. High data security, High throughput and eMBB should be key features of 6G and should be given particular attention by the wireless research community.

**KEYWORDS** : *Architecture, Holographic MIMO Surfaces, Business Cases*

### INTRODUCTION

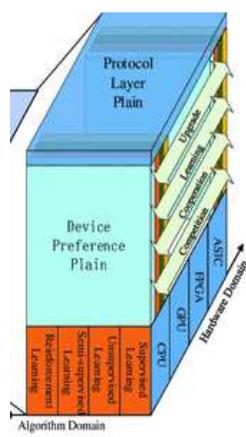
Mobile Technology has evolved drastically in the last decades. These technology has marked their significance in our day to day work. As we all know, the mobile technology has risen from 1G in 1970's to 5G in 2020's. Below is the short comparison between 1G,2G,3G,4G,5G:

	<b>KEY Points</b>	<b>1G</b>	<b>2G</b>	<b>3G</b>	<b>4G</b>	<b>5G</b>
1	<b>Deployment</b>	1970-1984	1980-1999	1990-2002	2000-2010	2020-2030
2	<b>Bandwidth</b>	2 Kbps	14-64 Kbps	2 Mbps	20 Mbps	>1Gbps
3	<b>Service</b>	Mobile Telephony	Digital Voice, Short Messaging	Integrated High Audio, Video & Data	Dynamic Information Access, Variable Devices	Dynamic Information Access, Variable Devices with AI capabilities

4	<b>Technology</b>	Analog Cellular	Digital Cellular	Broadband/ CDMA/ IP Technology	Unified IP & Seamless combo of LAN/ WAN/ WLAN /PAN	4G+WWW
5	<b>Core Network</b>	PSTN	PSTN	Packet Network	Internet	Internet

5G networks will not have the capacity to deliver a completely automated and intelligent network that provides everything as a service and a completely immersive experience 5G networks will not have the capacity to deliver a completely automated and intelligent network that provides everything as a service and a completely immersive experience. Then, 6G will fill the gap between 5G and the market demand. Based on the previous trends and predictions of future needs, the main objectives for the 6G systems are extremely high data rates per device a very large number of connected device sglobal connectivity very low latency lowering the energy consumption with battery-free IOT devices ultra-high reliable connectivityconnected intelligence with machine learning capability. One of the goals of the 6G Internet will be to support one micro-second latency communications, representing 1,000 times faster or 1/1000<sup>th</sup> the latency than one millisecond throughput. 6G will have big implications for many government and industry solutions in public safety and critical asset protection such as:

Threat Detection, Health monitoring, Feature and Facial recognition, Decision making (in areas like law enforcement and social credit systems), Air quality measurements, Gas and toxicity sensing.



**Architecture of 6G**

The 6G system will increase performance and maximize user QoS several folds more than 5G along with some exciting features. It will protect the system and secure the user data. It

will provide comfortable services. The 6G communication system is expected to be a global communication facility. It is envisioned that the per-user bit rate in 6G will be approximately 1 Tb/s in many cases. Moreover, ultra-long-range communication with less than 1- ms latency is also expected. The most exciting feature of 6G is the inclusion of fully supported AI for driving autonomous systems. Video-type traffic is likely to be dominant among various data traffic systems in 6G communications. The most important technologies that will be the driving force for 6G are the terahertz (THz) band, AI, optical wireless communication (OWC), 3D networking, unmanned aerial vehicles (UAV), and wireless power transfer. In this paper, we describe how 6G communication systems can be developed; we also describe the expected 6G technologies, and the research issues required to address the needs of future smart networks.

Telecom Network Progression by Generation:

Network Generations	Introduction Year	Top Speeds
1G	1979	2 Kbps
2G	1991	100 Kbps
3G	1998	8 Mbps
4G	2010	150 Mbps
5G	2020	10 Gbps
6G	2030 <sub>(Expected)</sub>	1 Tbps

### 1. Expected Speed of 6G network

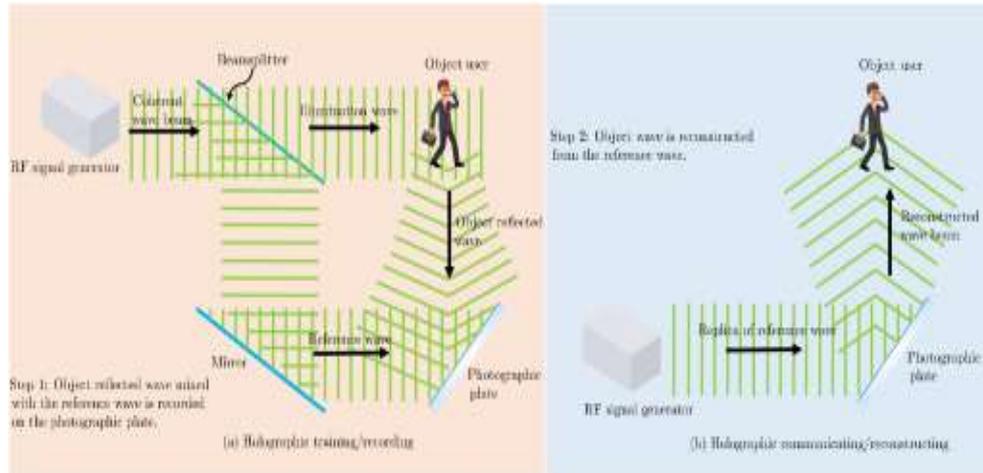
As the network generations are evolved, it is obvious to observe increase in their speeds. A movie which was taking a time of 20s will be downloaded in less than 1s using 6G Internet. The Centre for Converged TeraHertz Communications and Sensing says it's investigating new radio technologies that will make up 6G. "According to the researchers, this will allow for the extreme densification of communication systems, enabling hundreds and even thousands of simultaneous wireless connection, with 10 to 1,000 times higher capacity than the nearer-term 5G systems and network". Augmented reality and next-level imaging and sensing with a terahertz imaging radar are only some of the potential applications. Future 6G wireless communication systems are expected to realize an intelligent and software reconfigurable functionality paradigm, where all parts of device hardware will adapt to the changes of the wireless environment.

2.  
3.

### Holographic MIMO Surfaces

Massive MIMO, three-Dimensional (3D) beamforming, and their hardware efficient hybrid analog and digital counterparts provide remarkable approaches to conquer signal attenuation due to wireless propagation via software based control of the directivity of transmissions, they impose mobility and hardware scalability issues. Being a newly proposed concept going beyond massive MIMO, Holographic MIMO Surfaces (HMIMOS) are low cost, size, weight, and low power consumption hardware architectures that provide a transformative means of the wireless environment into a programmable smart entity. To realize reconfigurable

wireless environments, HMIMOS can serve as a transmitter, receiver, or reflector. When the transceiver role is considered, and thus energy-intensive Radio Frequency (RF) circuits and signal processing units are embedded in the surface, the term active HMIMOS is adopted.



**Fig. -The two generic steps of holographic training/recording and holographic communication/reconstruction**

### Business cases of 6G

**Artificial Intelligence:** The most important and newly introduced technology for 6G communication systems is AI [26]–[30]. There was no involvement of AI for 4G communication systems. The upcoming 5G will support partial or very limited AI. However, 6G will be fully supported by AI for automatization. **Optical wireless technology:** OWC technologies are envisioned for 6G communications in addition to RF-based communications for all possible device- to-access networks; these networks also access network-to-backhaul/fronthaul network connectivity

**Blockchain:** Blockchain will be an important technology to manage massive data in future communication systems. The data on a blockchain is gathered together and structured in blocks. The blocks are connected to one another and secured using cryptography. The blockchain is essentially a perfect complement to the massive IoT with improved interoperability, security, privacy, reliability, and scalability. Autonomic interactions of different IoT systems, and reliability for the massive connectivity of 6G communication systems.

**3D networking:** The 6G system will integrate the ground and airborne networks to support communications for users in Draft the vertical extension.

## CONCLUSION

Today mobile phones consist of everything ranging from the smallest size, largest phone memory, speed dialling, video player, audio player, and camera and so on. The 6th generation (6G) wireless mobile communication networks integrate satellites for global coverage. It can be a combination of nanocore and artificial intelligence, where all the network operators will be connected to one single core. As in evolution and explosion, many will become extinct but some will change the world. In 6G the cost of mobile call will be relatively high but in 7G this problem will be improved and the cost of call will be reduced and lower level user will be benefited.

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# ONLINE PERSONAL COUNSELLING SYSTEM

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## ABSTRACT

The aim of the project is to improve and provide the facilities related to the counselling process, many other virtual counselling schemes came into actuality, which provides the students in getting essential help about the educational procedures of universities and colleges. Counselling is the process that includes the different types of activities such as guiding students towards the colleges and universities, supporting them to register with their courses, providing full guidance in getting the information related to their college registration process. This online counselling system even gives great support to universities and colleges through which they can totally reduce the paper usage for counselling and guiding the students towards their university courses.

Basically this software includes three different modules in which universities can manage their college records, student's records as well as counselling sections.

**KEYWORDS** : *counselling, counsellor, student, admin, modules*

## INTRODUCTION

One of the most significant decisions a young person has to make in life has do with a future career. While some people are lucky enough to just know what they want to do and end up in satisfying careers without giving it much thought, most individuals are not. Many secondary school students do not put enough effort into choosing occupations or pick them for the wrong reasons. Others choose careers that seem secure or pay well and then they end up

being unsatisfied. Nowadays if students visit colleges for taking admissions into any courses, they do not have enough knowledge about the courses offered or they face many problems in the admission process. They don't understand how to pursue higher studies after they pass out 10th or 12th or 15th.

**We found out that, we can solve these issues of students through this project:**

- To help students in selecting courses after 10<sup>th</sup>, 12<sup>th</sup> and 15<sup>th</sup>.
- To help students know about the colleges in which their selected courses are available.
- To know about the cut-offs of the different colleges and select them accordingly.
- To talk to the counselors for the guidance in selecting the courses or the fields in which they should pursue their career.
- To understand the challenges faced by students in choosing careers.
- To understand the factors that should be considered when guiding students in choosing careers.
- To understand the existing tools and methods used by students in career guidance.
- To design, develop and test a web application that provides career guidance based on curriculum test scores.

#### **EXISTING APPLICATON**

1. There are similar apps that provide online counselling. We are adding some new features in the existing system.
2. Students can attempt online aptitude test and get to know about the subject or course they are interested in for their further studies.
3. Students can chat with the counselors online free of cost.
4. Students can get information about the various college admission processes.

#### **PROPOSED APPLICATION**

- a. The existing applications that are available do not provide information about the college admission process. Students have to run around the college to get information about the admission process. There is no facility available of online chatting with the counsellors. Students have to spend a lot of money on career counselling. All these issues will be solved if students use this web application.
- b. The main objective of this project is to develop a user-friendly web app for the students which will help them choose a suitable option for their further studies and career.
- c. If student uses this web app, they will be able to choose the field or course they should opt for their further studies and choose suitable career. They will be able to clear all their confusions regarding their further studies, career or admission process.

- d. The process includes:
- e. Student should register in this web app.
- f. Student should login with their registered id and password.
- g. They have to make selection between after 10<sup>th</sup> and after 12<sup>th</sup>.
- h. If they select after 10<sup>th</sup>, then they have to appear an online test after which they will be provided with a suitable field.
- i. A counselor will be provided to them whom the student can chat with and student can clear their doubts. If they select after 12<sup>th</sup> they have to go through the same process.

## METHODOLOGY

**This application consists of 3 modules:**

### **Admin:**

The admin verifies the users who have registered the application. He has the authority to add or remove the users. He can also add or remove counsellors. He has the control over the entire data available in the application. He supervises the entire application.

### **Student:**

Student should register in this web app. Student should login with their registered id and password. They have to make selection between after 10<sup>th</sup> and after 12<sup>th</sup>. If they select after 10<sup>th</sup>, then they have to appear an online test after which they will be provided with a suitable field. A counselor will be provided to them whom the student can chat with and student can clear their doubts. If they select after 12<sup>th</sup> they have to go through the same process.

### **Counsellor:**

The counsellor has to register in the app. The counsellor can chat with the students online and help them in solving their doubts and also help them choose a suitable career.

## CONCLUSION

- The purpose of developing this project is to provide students with online personal counselling regarding career guidance.
- The motive of this project is:
  - To provide counselling free of cost.
  - To help students select career for themselves.
  - To help students in admission process.
  - To get detailed information about the fields they choose for their further studies.
  - To get information about various fields from counselors.

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# CENSUS

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## ABSTRACT

Census is also termed as population counting schema that is carried out by the health department every ten years. It is used to calculate the existing population of the country. In our system, we are making it an automated process of calculating census every year rather than carry out the process every 10 years. The main purpose is to help municipal health department to have a computerized storage system that produces reports on time for important decision-making and the statistics which will be auto-generated by the registered data

**KEYWORDS** : *census, municipal, government, forms*

## INTRODUCTION

Census is one of the major topic concerned by the government. It gives the counts of males, females, children's, senior citizen exiting in our country. It also provides the detailed information about the people suffering from diseases, statistics of growing population and how to deal with the increasing requirements such as food, shelter, educations, jobs etc. It also helps to calculate birth rate and death rate. The main purpose of our website is to help municipal health department to have a computerized storage system that produces reports on time for important decision-making and the statistics will be auto-generated by the registered data. Once the changes are made in the municipal records, the graphs will show deflections and generate the results accordingly. The system consists of forms that are used to capture and insert data into the database, ration cards appointments, to keep a track on accidental deaths which are unrecognized, as well as NGO's maintains the records of orphan births and deaths by old-age homes.

## PROBLEM DEFINITION

As we know the manual processing is quite tedious, time consuming, requires man power, less accurate in comparison to computerized processing. The older system used to encounter all of the following problems.

It is very tedious, time consuming, all information is not placed separately, lots of paper work, in accurate data, giving false information, tampering of data, door to door process, slow data processing, not user-friendly environment, It is difficult to find records due to file management system, Increased probability of errors, Historic data is not being maintained. Census is a purely manual procedure it uses manual inventory records which has inconsistencies like no update in records of municipal office, by getting the forms filled by visiting each and every house. It is carried out by door to door process sometimes people are not present in their homes, people who are left to give the count for whatever reasons their entries are made totally on guess work by the municipal officers. A lot of paper work are lost during the process itself. Hence the records that are collected are manipulated and give the idea of the current population of the country. In the current system since the process is purely manual there is lot of inaccuracy in collection of information and all the citizen are not been approached due to mismatch in timing. It also uses manual inventory record systems which have inconsistencies like entering information on a single sheet provided by the municipal officers by visiting door to door. Records are then generated on the basis of the data attained through the sheets. On the basis of these records the government schemes and policies are generated to overcome the diseases through which maximum deaths occur, the policies to bring the population under control and to maintain stocks for the existing populations etc. It is the entire manual process a lot of paper work has to be maintained which becomes difficult to maintain the data and a lot of paper work can be lost during the process so accuracy is at minimal. The calculation of census is carried out in the prediction manner with only 50% of original data.

## RESULT

Our census website system overcomes the manual maintaining of the statistics and other information. This system maintains the updated details of ration cards, birth rates and death rates. It keeps a track on number of appointments placed for updating ration cards. Accidental deaths are recorded by the police in the system, hospitals issues the death and birth card numbers and also maintains transparency between the citizens and the government.

### **Benefits of Census Website System**

The proposed system maintains the birth details, death details. It also maintains the records of the accidental deaths. Its maintains the records of orphanage kids and old-age homes Proposed system overcomes the process of door to door system by making it online registered system. Population management is one aspect of census computing that enhances a statistics in performances. The system will generate reports that will help management to come up with timely decisions in regards planning and management of populations. Government will be able to make policies for the citizens on the basis of this information. It helps us to calculate the citizens of the country with accuracy and less human power. All the historical records can be retrieved easily. The system aims to provide storing accurate data. The automated system

can help to count the current population every year or twice a year so the schemes related to health shall be revised regularly. It will be easy to access the statistics of the country. System will generate the statistics of population in the graphical format. System will store all the information in computerised manner. Hence it will overcome the file management system.

### **Proposed Methodology**

This system helps the municipal department to protect citizen's information that is classified as confidential. OTPs are used to provide extra security. Data is stored in different databases without it being disarray. Reports are uploaded in the form of graphs. The birth and death registrations are acquired from various possible sources in order to maintain the accuracy of population count. All accessing is logged. The concerned authorities are notified when there is an authentication problem which can be rectified by manual intervention of the system admin.

### **SOFTWARE USED**

Microsoft Visual Studio 2010.

Microsoft Visual Studio Database.

### **FRONT END: ASP.NET**

ASP.NET is object-oriented programming language. ASP.NET support web application framework developed and marketed by Microsoft to allow programmers to build dynamic web sites. ASP.NET is for interactive, data-driven web applications. It has text boxes, buttons, and labels for assembling, configuring, and manipulating code to create HTML pages. It is server-side technology. It is language-independent, it also helps you to choose the language that best applies to your Application and partition your application across many languages.

### **BACK END: MICROSOFT SQL SERVER 2010**

Microsoft SQL Server support relational database management system. Microsoft SQL Server runs includes transaction control, exception and error handling, row processing, and declared variables. It also support structured and semi-structured data, including digital media formats for pictures, audio, video and other multimedia data. Microsoft SQL server includes better compression features, which also helps in improving scalability. It also enhanced the indexing algorithms and introduced the filtered indexes. It includes capabilities for transparent encryption of data and compression of backups.

FIGURES



Fig. 1: Main webpage for census

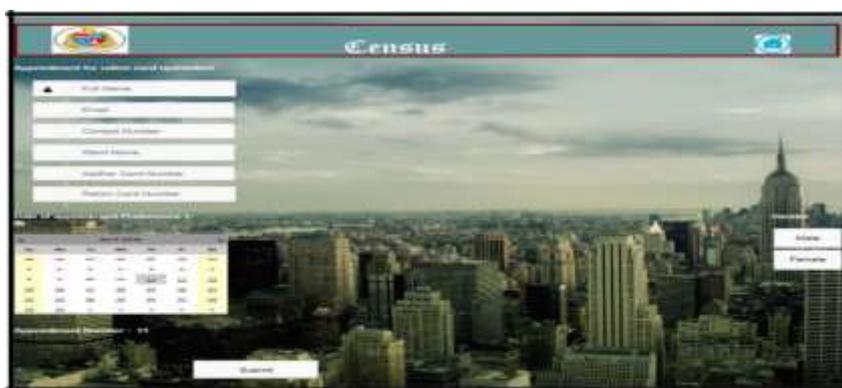


Fig. 2: Ration card updating page



Fig. 3: Municipal officer page

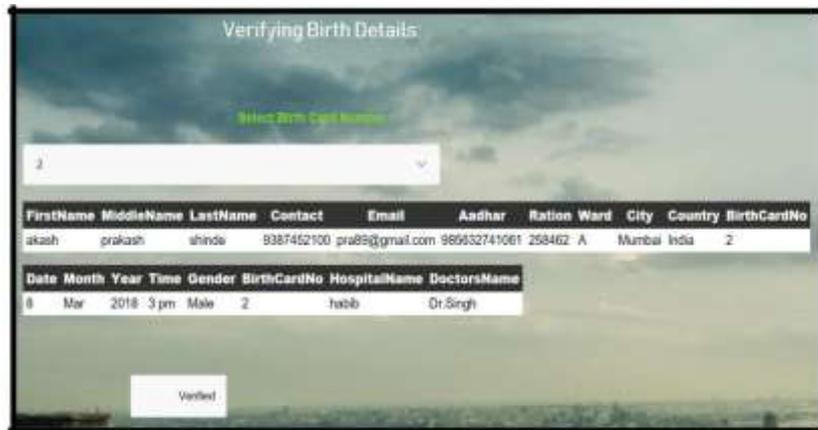


Fig. 4: Birth details web page



Fig. 5: Registration page



Fig. 6: NGO page

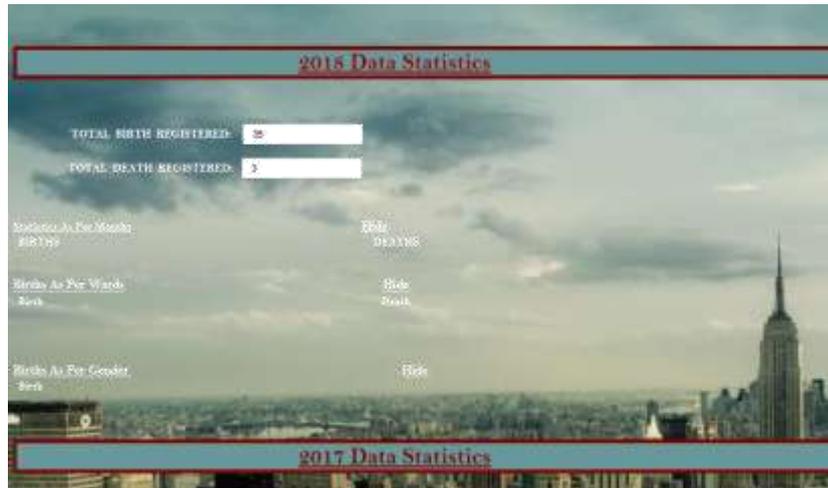


Fig. 7: Data Statistics

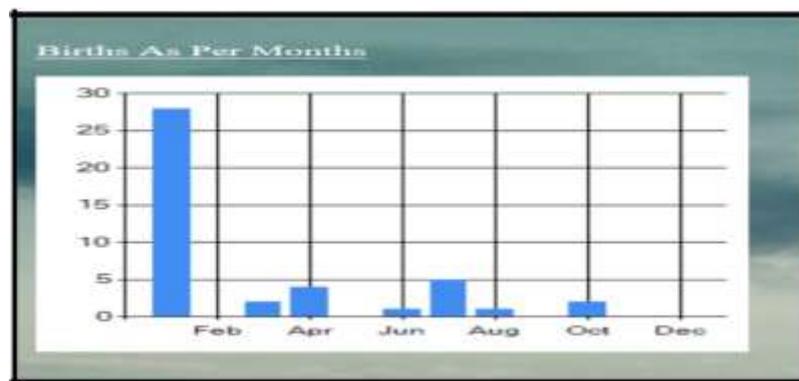


Fig.8:Graph

### CONCLUSION

The census system is a mechanism that allows the municipal department, hospitals, police stations and NGO’s to maintain information of the citizen information in a secure manner with secure implementation like one time password in place. The system additionally allows the municipal officer to upload the timely reports of birth and death rates. The admin holds complete control over who accesses which part of the system by ensuring only the authorized users are enrolled in a system. A log is maintained of all the officials who are enrolled and what privileges can be allocated to them. The main concept that drives this system is that it can store a lot of data and helps to keep a track of the population growth with accuracy. The

system also generates reports in term of graphs which makes it easier to track the statistics of our country's population.

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### ABSTRACT

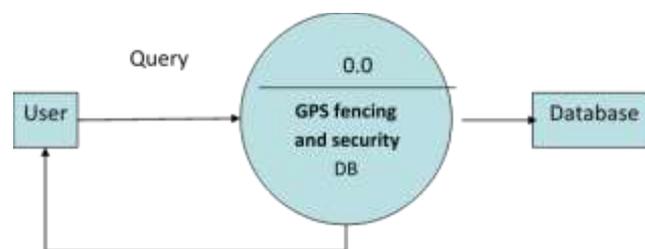
A Gps fence is a virtual perimeter of interest that can be set up to fire notifications when it is entered or exited, or both. Here in this system we present you gps fencing & safety system in 3 different roles; Human Tracking, Destination reminder and Fencing system. The solution proposed in this project takes advantage of the rich feature offered in Android smart phones. The architecture of system built on two main components, GPS satellite, and telephony services. Developing this project would not have been possible without studying related and existing work. Some of these work relies on internet connectivity or a server that has to be up running. The proposed system relies only on two main service, telephony and location. Finally like any software product or design, there is still room for enhancements. Feature can be added to enhance the system such as gps-fencing, emergency alerts and many others.

### INTRODUCTION

A Gps fence is a virtual perimeter of interest that can be set up to fire notifications when it is entered or exited, or both. Here in this system we present you gps fencing & safety system in 3 different roles; Human Tracking, Destination reminder and Fencing system. In Human Tracking there are 2 users and thus another separate app for user where he will update his image and location whenever he starts the app and the in the admin side i.e. the person who is tracking can assign a specific location where the user needs to go and check the images and the location he visited. In the Destination the user can add a task with the waypoints for which he can track by selecting start journey and track his current journey towards the desired

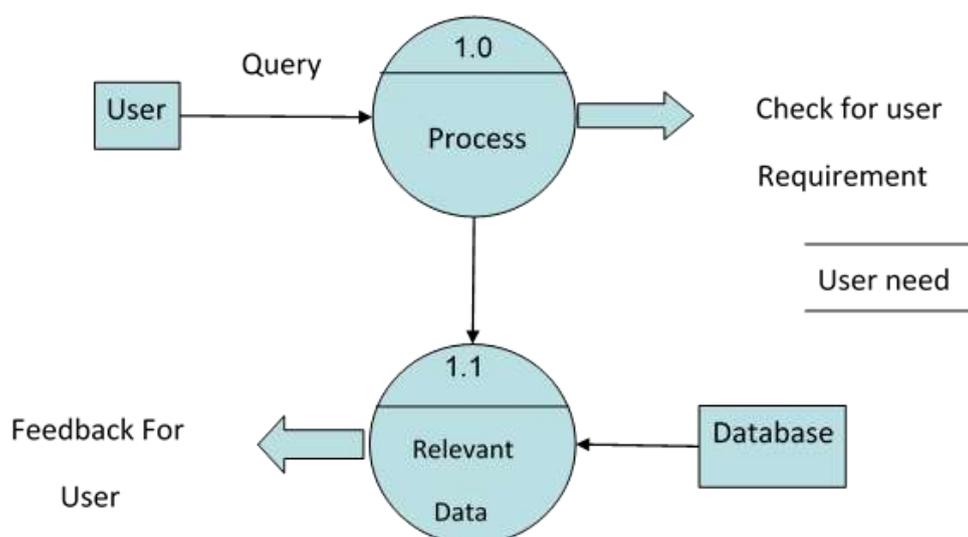
task and check also check his task logs after he finished the task. The main idea of fencing system is basically when a person comes near a restricted zone; the app locates his current coordinates and check for the limit or threshold that is being set where he cannot go beyond it. The system sounds an alarm when the user is 2 kms away from it. This technology can be further be improved and implemented in different sectors in this era like vehicle tracking, we can basically develop a system where it tracks the vehicle wirelessly through internet and a mobile device and embedded system can also be paired with this technology by fixing a embedded operating device into the vehicle itself and tracking it with any navigating device, this may help in preventing thefts or to track down lost vehicles

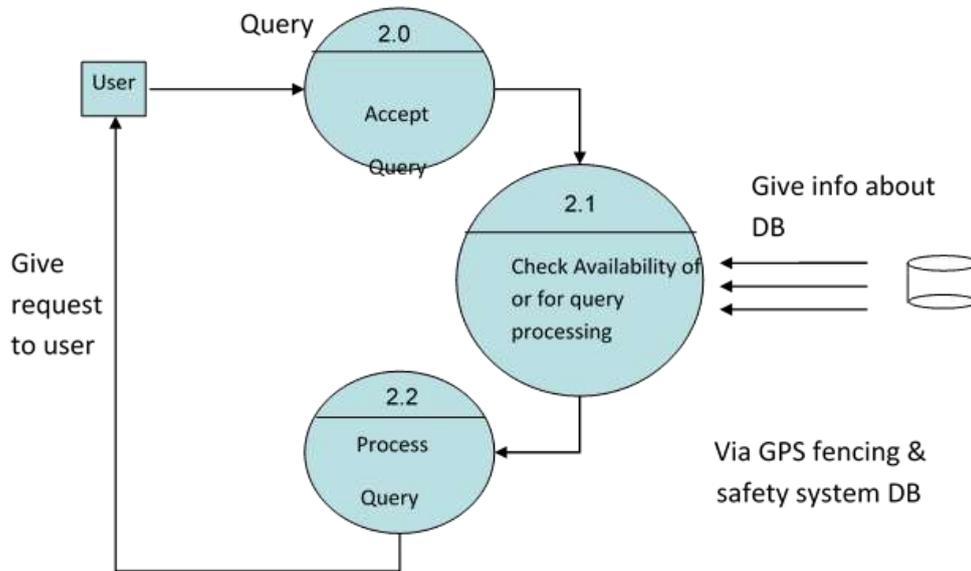
**Level 1 DFD :**



DATABASE DETAIL

**Level 2 DFD :**





### Problem with current scenario

1. Traditionally, parents need to follow their own children wherever their child visits.
2. Parents were unable to get the details from their smartphone as their phone requires authentication.
3. Details such as recent call logs, messages and contact list are not known or the parent maybe unaware of such details.
4. Unawareness may cause some accidental incidents their children.
5. Children are less secured as they are not under parent's control.
6. Parents won't be able to create a geo fence for their children.
7. User won't get any notification of task on respective location or alert notification when user reaches the boundary area between two countries or any.
8. Maintenance of the current system is very difficult, so this new system could be a helpful technology for the consumer .There is a possibility for getting inaccurate results due to error by peoples .User friendliness is very less .It consumes more time for processing the task.

### CONCLUSION

This was our project of System Design about “ Gps fencing and safety system” developed in Android based on Java programming language. The Development of this system takes a lot of efforts from us. We think this system gave a lot of satisfaction to all of us. Nothing made in this current era can be said to be perfect, in this development field even more improvement may be possible in this application. We learned so many things and gained a lot of knowledge

about development field. This may not be the deal breaker or solve every issue we are facing but it may possibly be a small step into the right direction. We hope this will prove fruitful to us.

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# SMART VOTING SYSTEM

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## ABSTRACT

India is the largest democracy in the world. The main objective of our democracy is “vote” by which the people can elect the candidates for forming an efficient government. Election commission follows manual voting mechanism which is done by electronic voting machine. Due to some illegal activities the polling centre are misused and people's vote to right has been denied. Our main aim of the proposed system is to develop a compatible voting system using biometrics and Aadhar card in order to provide a high performance with high security to the voting system. Biometrics is the unique identity that contains palm print, iris, finger print etc. Nowadays it is mandatory for every citizen in our country to have an Aadhar which is embedded with the finger print mark and the iris. The proposed system allows the voters to authenticate using Aadhar number which is then matched with already saved information within a database that is retrieved from Aadhar card database of the government. By using Aadhar card identification it provides enough security which reduces the false votes.

## INTRODUCTION

Smart Voting System is a process where only authorized person can vote. We are planning to use a Compact Sensor to verify the genuine voter. To ensure security, finger prints of the voter are used as the main authentication resource. Since the finger pattern of each human being is different, the voter can be easily authenticated. It has two phases. First the voters should connect their voting id to Aadhar card. Then we use the finger print sensor to take the voter's bio-metric signatures (thumb impression or biometric details in some extra-ordinary

cases). After that it will compare the Bio-Metric Signatures of voter on the adhar card Database. If the Bio-Metric Signatures are matched then voter will be considered as a valid voter and hence he will be allowed to vote. Detecting the fake voters from their Bio-Metric Signatures is very effective and efficient way to reduce fake voting.

In smart Voting only authorized person is allowed to vote. In current system the voters gets the voter Lists individually, But in this system the authorized person will get notification of the list in their phones. At the time of voting, First voter have to show the notification to the officer then only voter can be allowed to vote. So it is a two-step verification.

In General, a compact sensor, is used to monitor the Bio-metric of the voter. So we will be connecting finger-print sensor. The Software will match the finger-print which is already available in the database. User will give his/ her bio-metric onto the system and then system will check the bio-metric, If the bio-metric gets matched then voter can give vote otherwise if bio-metric does not get matched voter cannot give vote.

The Software's are created on the purpose of replacing all the paper work done for voting purpose. Devices that are created under IOT are made to improve the system. The Software will improve the quality of democracy and eliminate the corruption of fake voting from our democracy. Hence, only the worthy politicians who got the public trust can win and then drive the country to greater heights.

## **FEASIBILITY STUDY**

### **Purpose:**

- To Stop fake voting.
- To elect the deserving candidate.
- To stop the corruption in our voting system.

### **Scope:**

- The Objective of developing this project is to make a smart Voting device, so the user can give vote to the party he/she wants.
- This project is cost effective & can be customized as per the requirement.
- Smart Voting system allow authenticated users to give votes.
- Smart Voting system don't allow unauthorized voters.

### **Applicability:**

- This project is cost effective & can be customized as per the requirement.

- The system utilizes affordable & commonly available technology, As Bio-metric Finger print sensor is expensive, so we are using low cost Finger print sensor which is cheaper compare to that.
- Smart voting system will be successful with the help of smart bio-metric equipment.

## SYSTEM DESIGN

### Basic Modules:

#### Module 1: Raspberry Pi

In this module we are using Raspberry pi to take thumb impression (Finger Print) as input from voter & compare it with Database. To check whether the voter is genuine or fake. Once the match is found and voter is genuine then he/she will be allowed to give vote. It has 40 GPIO (General Purpose Input Output) pins it allow to connect sensor and all other related embedded components.

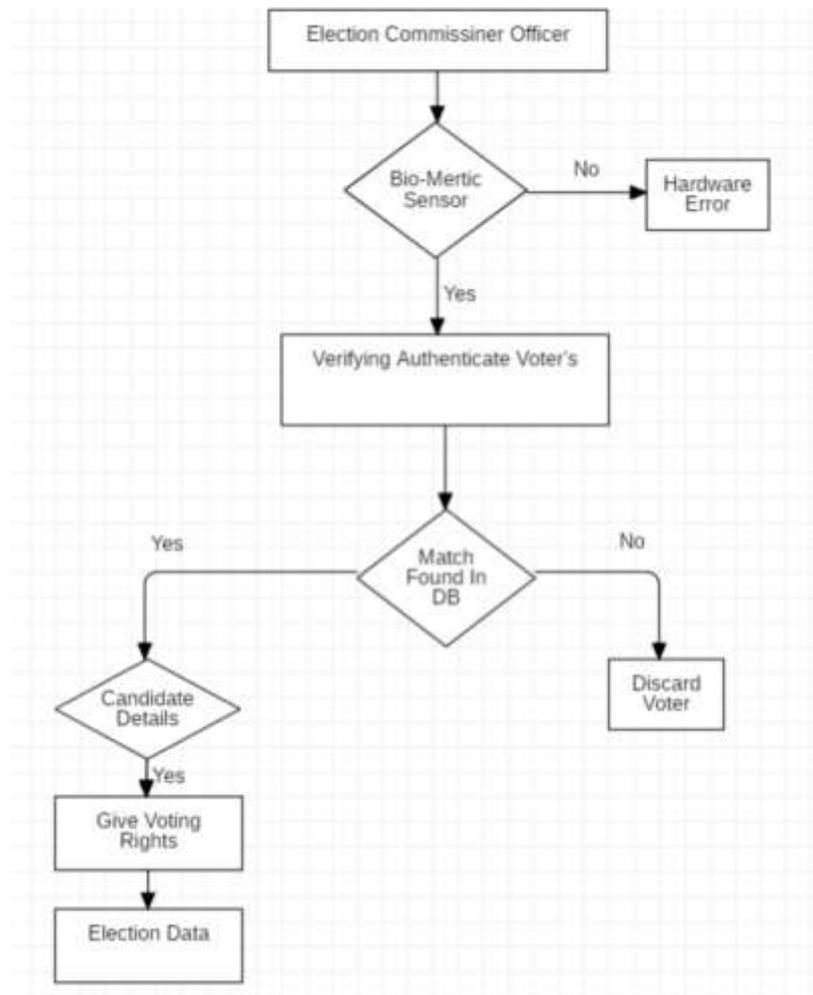
#### Module 2: Fingerprint Sensor

In this module we are connecting low cost Finger Print sensor to Raspberry pi, to take input as thumb signature (Finger print) & compare it with Database.

#### Module 3: Display

Display it will display the result of the process.

### FLOW CHART:



**WORKING MODULE:**



### CONCLUSION

In this paper, we are introducing the smart voting system which can overcome all the issues that are occurred in manual voting system. This system is designed to deny access to any unauthorised or illegal voter, preventing that person from voting multiple times using fake ID proofs. If unfortunately voter got hurt because of which the voter not able to match their finger print then this system will provide them the feature of retina scanning for the authentication process which would be more convenient for the voter.

With the use of smart voting system, almost every issues, that have challenged in the manual voting system are getting resolved providing of mind to both voters and the election candidates.

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# LOCATION BASED BLE NOTIFICATION SYSTEM

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## ABSTRACT

Bluetooth Low Energy devices use the calm and ambient properties of IoT to exchange information with a mobile application that is connected to it. BLEs are best at transmitting shorts bursts of data, which give it the low energy functionality over classic Bluetooth. The proposed idea in the paper allows users of the application to receive customized notifications that lead to more related functionality. GPS could be used to customize an activity based on location, but BLEs are used to provide more accurate indoor positioning to serve the purpose. This paper particularly expands on the idea of using the technology to access files that pertain to specific users at a given time with the use of cloud storage. It also highlights the potential of BLE beacons for transmitting files, adding to the usability of BLE's proximity functionality. Implementing this would truly make lives easier for people who are responsible for distributing varying files or information in accordance with specific parameter(s) provided by the receiver of the information.

**KEYWORDS** : *BLE, Bluetooth, Location, Notification, indoor positioning.*

## INTRODUCTION

The traditional way of informing people about something was to pin something on the notice board, go for class to class announcements or campaign in the corridors in order to

communicate something. While these methods have served the environment well enough there is still room for improvement and innovative ideas that can enhance this type of communication. As of now, BLE Beacons are installed in most indoor shopping complexes and indoor environments for wireless Internet service and marketing activities. Surveys by marketing companies suggest that marketing campaigns implemented via BLE have a high click through rate. BLEs (a standard introduced in 2010) is a relatively new technology over other wireless technologies, its aim is lowest power consumption, specifically optimized for low cost, low bandwidth, low power, and low complexity. Its cost is far less from its competitors, namely, WiFi, GSM, ZigBee, etc, which is perhaps one of the reasons it is seen to have a high adoption rate. Its nature of existence can allow vendors to use it for achieving various purposes. Similar to how it would be used in local marketing campaigns to display a campaign that is relevant to a user, we can use it to send different files for different streams in college.

### **NEED OF THE STUDY**

An application that scans for BLE devices would locate it when it enters the proximity of the BLE device and download relevant information or files through cloud storage, based on the BLE device it has encountered. This makes the process of sharing something in real-time much easier than other ways of sharing, such as an openly accessible cloud storage link, or sharing a message or file on WhatsApp. Imagining the burdensome task to send informative emails that include schedule of an event along with other documents based on the particular seminars the person is going to attend during that event would involve listing of emails, checking of preferences for every person, attaching those relevant files. This is almost an everyday thing for event organizers but an innovative solution for this scenario would be to install BLEs across the venue of the event, perhaps one in every seminar hall, and asking (new) users to install a mobile application that would make it easier to fetch those seminar related files at the click of a button while in the hall itself.

### **WORKING**

The infrastructure for supporting such a BLE system would require a cloud storage(which could be Google Drive; a convenient and user friendly option, or Amazon Web Services, for a more customized administrative experience), a mobile application enabled for BLE device scanning, and an Application Programming Interface that serves as a bridge between the mobile application and cloud storage. Additionally, an Admin Panel can be built to interactively update files to the storage which in case of Google Drive is already built and would require less development time while also being scalable.

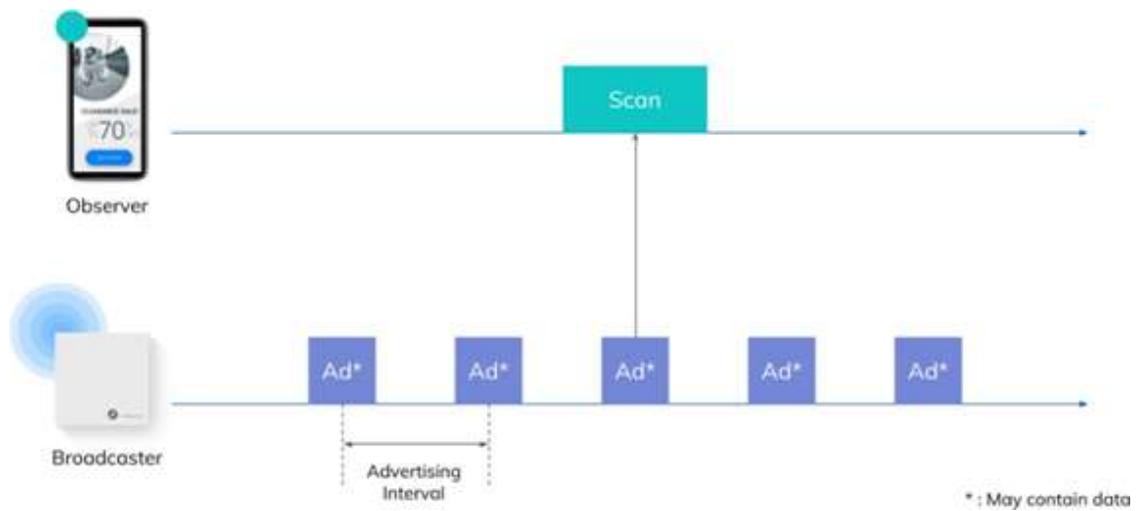


Figure 1- Scanning for BLE devices

**Transaction Process:**

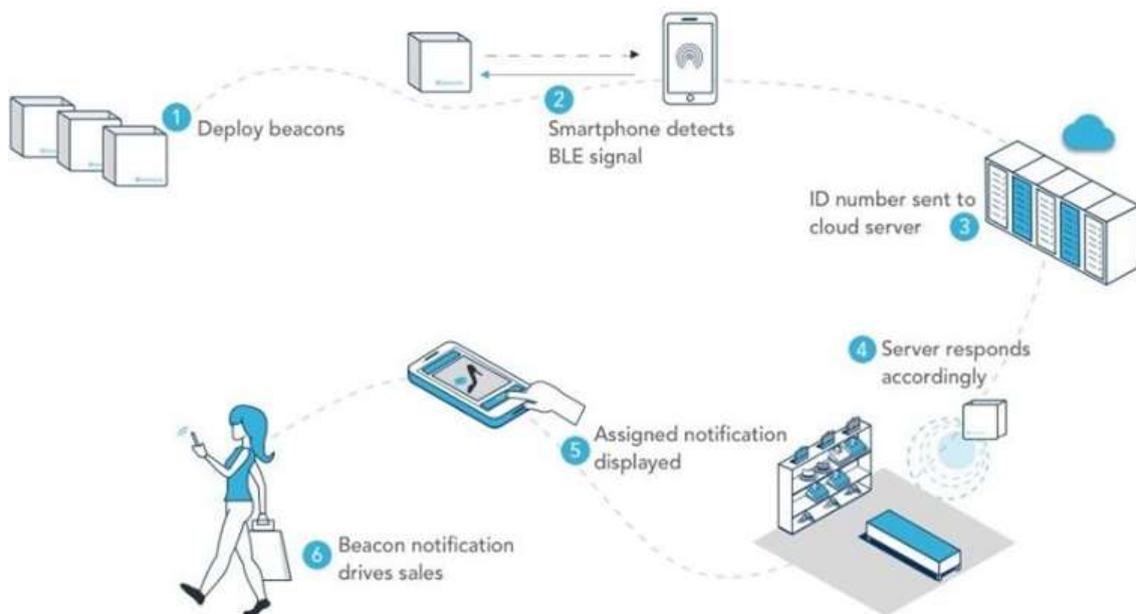


Figure 2-Example of BLE Marketing Use Case

**CONCLUSION**

The current technologies to share files are widely used and don't seem to have any shortcomings, they provide all the functionality that is needed to share huge amounts of data at high speed. When BLE comes into picture it provides innovative ways to complete an activity by slightly changing the way it's done. BLEs offer a truly low cost, low energy consuming option via which files can be shared efficiently, while also being conveniently

scalable due to cloud storage, and adding new features to a mobile application when desired.

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## Vlog

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### ABSTRACT

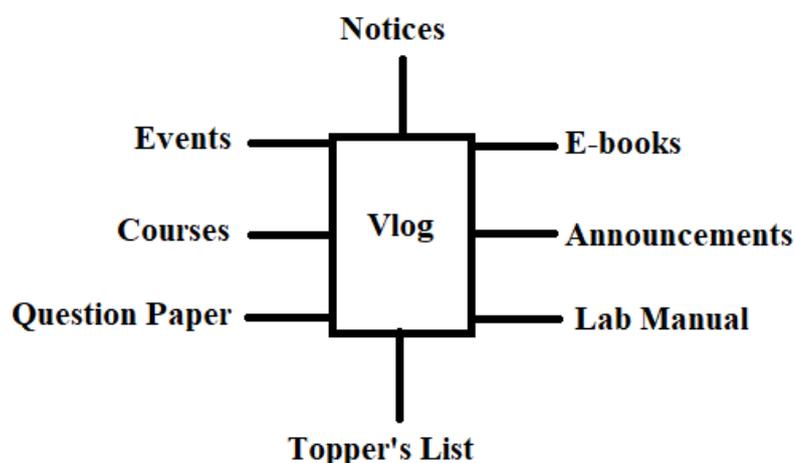
Mobile apps have now become very commonplace. They are user friendly, handy and allow users to access information on the go. The app proposed through this paper is meant for the student and faculty community. Paper may seem harmless, but it causes severe environmental damage and has far reaching effects. It has become more important than ever to go paperless. Academic institutions are known to rely on a tremendous use of paperwork. This research paper proposes an app that aims at reducing this paperwork. The app additionally saves time otherwise wasted in creating and collecting documents as well as the amount of effort spent. The proposed app offers on the go information about all the happenings in the college as well as the study material and resources. The students through the app would receive important news, notices & announcements. Regular updates about the events through the app would also possibly increase the participation in various activities. The main objective of this app is to add mobility and automation to the process of managing student related information in an institute.

### INTRODUCTION

Nowadays most people use the mobile having iOS or the Android operating system. Mobile phone Applications are today's most effective platform for any sort of work like communication, security, games, news & entertainment over the world. Going paperless helps to reduce CO2 emissions. Turning a single tree into 17 reams of paper results in around 110 lbs of CO2 being into the atmosphere. Additionally, trees are also 'carbon sinks' and every tree that is not cut down for paper usage is available to absorb CO2 gasses.[1] The proposed app provides an easy to use way to go paperless and update the student and faculty about upcoming events, announcements, notices, and study material. Currently, there are huge

volumes of paper transactions being carried out every month for academic purpose in colleges & there remains a possibility of any documentation or activity being missed out by any students/faculty. The proposed app will keep the information on a central server while allowing the users to access that information from their own smartphone through the installed Android application. There will be an optimized database on the server and an improved user interface on each client machine i.e. on the Vlog app installed on the user's smartphone. The database used at the backend to save the data is Firebase - Firebase is a Backend-as-a-Service (BaaS).

### Block Diagram



### WORKING

#### As an Admin -

Administrator or the admin here is the one who makes the Android system app work easier and more convenient. He is primarily responsible for uploading any data related to events, notices, study material. The data for students includes course related details, announcements, notices, e-books which are uploaded by the admin into the firebase database which is the centralised server of the proposed app.

#### As a student/faculty -

Regular user will be the students/ faculty. They can access any course, year, semester, subjects, etc and various other types of resource material like e-books, question papers, lab manuals, etc. The e-books will help the students for a further reference of a subject or a topic, Question papers would be an efficient practice for the students preparing for the exam & lab manuals provides with all the program codes of every subject.

### Screenshots



Figure 2 (Study Material)

## TECHNOLOGY

### Android Studio -

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. A rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configurations. Android Studio supports all the same programming languages of IntelliJ e.g. Java, C++ etc[3].

### Firestore -

The Firestore Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in Realtime to every connected client. When you build cross-platform apps with our iOS, Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data[6]. It is used for the proposed app is very proficient and provides built-in functions so it is easy to use and manage the database.

## CONCLUSION

The proposed Android app Vlog allows easy management of student related college details on mobile. It keeps the users updated about latest events in college as well as the course related information in their respective streams and year. This app can be applied and used by any college or academic institution. The proposed app is not a resource hungry app, is easy and

quick to download and install. Moreover, it is eco-friendly as it saves money, time, effort, paper.

### **FUTURE SCOPE**

The proposed app can be enhanced to allow registration for the events notified through the app. The app can also analyse usage of various details such as number of participants for an event, number of downloads of a specific study material and such. Different types of study material like lecture slides can also be included in future.

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# A COMPREHENSIVE REVIEW ON AUTOMATION IN AGRICULTURE USING ARTIFICIAL INTELLIGENCE

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## ABSTRACT

Agriculture automation is the main concern and emerging subject for every country. The world population is increasing at a very fast rate and with increase in population the need for food increases briskly. Traditional methods used by farmers aren't sufficient enough to serve the increasing demand and so they have to hamper the soil by using harmful pesticides in an intensified manner. This affects the agricultural practice a lot and in the end the land remains barren with no fertility. This paper talks about different automation practices like IOT, Wireless Communications, Machine learning and Artificial Intelligence, Deep learning. There are some areas which are causing the problems to agriculture field like crop diseases, lack of storage management, pesticide control, weed management, lack of irrigation and water management and all this problems can be solved by above mentioned different techniques. Today, there is an urgent need to decipher the issues like use of harmful pesticides, controlled irrigation, control on pollution and effects of environment in agricultural practice. Automation of farming practices has proved to increase the gain from the soil and also has strengthened the soil fertility. This paper surveys the work of many researchers to get a brief overview about the current implementation of automation in agriculture. The paper also discusses a proposed system which can be implemented in botanical farm for flower and leaf identification and watering using IOT.

## INTRODUCTION

With the advent of technology in this digital world, we humans have pushed our limit of the thinking process and are trying to coalesce normal brain with an artificial one. This continuing exploration gave birth to a whole new field Artificial intelligence. It is the process by which a human can make an intelligent machine. AI comes under the domain area of computer science which can be able to discern its milieu and should thrive to maximize the rate of success. AI should be able to do work based on past learning. Deep learning, CNN, ANN, Machine learning are certain domains which enhances the machine work and helps to develop a more advance technology.

The term IOT is elucidated as “thing to thing” communication. The three main targets are

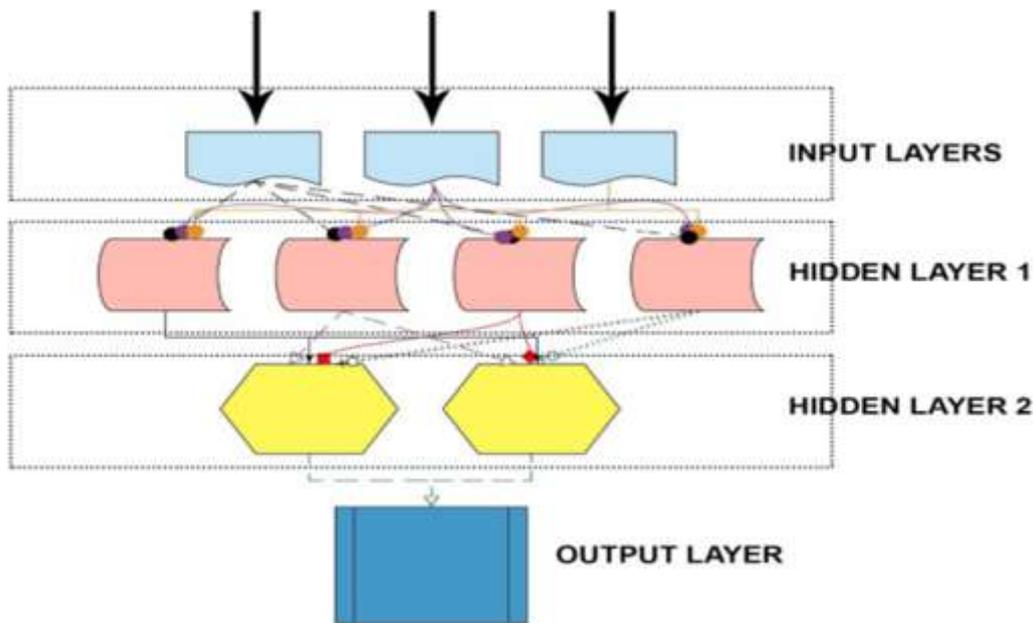
communication, automation and cost saving in the system. Dr. D.K. Sreekantha, Kavya.A.M provides the in-depth application of IOT in the field of agriculture and how it can be helpful to the humans. AI has penetrated in medical science, education, finance, agriculture, industry, security, and many other sectors. Implementation of AI involves learning process of machines. This brings us to a sub-domain in this AI field “Machine learning”. The sole purpose of machine learning is to feed the machine with data from past experiences and statistical data so that it can perform its assigned task to solve a particular problem. There are many applications which exist today which includes analyzing of data from past data and experience, speech and face recognition, weather prediction, medical diagnostics. It is because of machine learning that the domain of big data and data science has evolved to such a great extent. Machine learning is a mathematical approach to build intelligent machines.

As AI stimulated, many new logics and method were invented and discovered which makes the process of problem- solving more simple. Such methods are listed below.

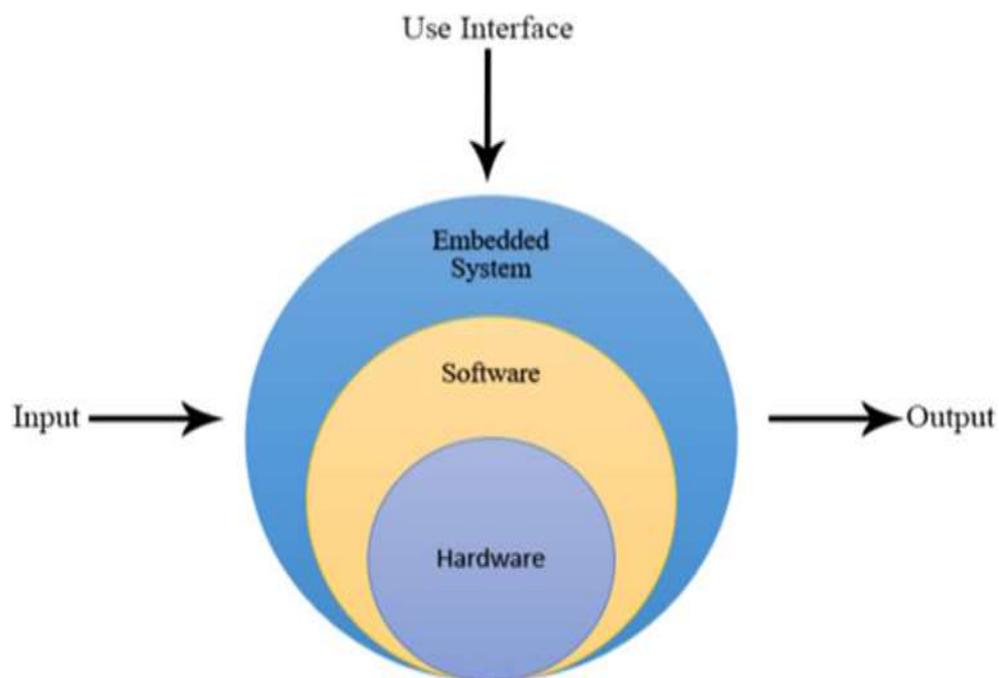
1. Fuzzy logic
2. Artificial neural networks (ANN)
3. Neuro-fuzzy logic
4. Expert systems

Among all of these, the most widely used and constantly applied method for research purposes is ANN. Our human brain is the most complex part of the body. Based on the inter linked neural networks, electric signals traverses through the neurons with the help of axons. Synapses which are at the end of each node passes the signal ahead. ANN method was invented by keeping in mind the same concept of the working of the human brain. There are various algorithms of this approach such as for training this particular model algorithms like Silva and Almeida's algorithm, Delta-bar-delta, Rprop, The Dynamic Adaption algorithm, Quickprop are used based on its application. 9 neurons are used in the process. ANN is a task- based method which tells the system to operate based on some inbuilt task rather than a conventional computational programmed task. The architecture of ANN consists of three layers:

1. Input layer
2. Hidden (middle) layer
3. Output layer



Feedforward back propagation mechanism and its parameters are shown above: Input Layer– 7, output layer-1, hidden layer-50, number of iterations – 1200. Activation layer- Sigmoidal function in hidden and output layer, linear function in input layer. Moreover, Artificial intelligence and machine learning are mostly hypothesis and theories. These are programming and algorithms. For the implementation of these algorithms and logic based concepts, there should be a hardware- software interface. The system through which this can be achieved is “Embedded systems”. Embedded systems are hardware built systems consisting of memory chips with custom software programmed in it.



This paper encompasses the links which make embedded systems and AI coherent with the agriculture sector. Implementation of AI and expert systems in agriculture is a narrowly defined subject. This topic was discussed by [McKinion and Lemmon \(1985\)](#). Agriculture is the essential part of any country. At present South Korea, China, North America are investing trillions of money for development in the agriculture sector and implementing more advance technologies. The population is increasing at a very high rate which is directly related to the increase in the demand for food. India is a rich source for food crops and especially for species. The agriculture sector is one of the most sensitive sectors of the Indian economy, supporting all other sectors and spreading its importance in far- reaching areas. With the advent of technology in other industries, it is a very crucial point to implement automation in agriculture. The pressure on the agriculture sector will increase with the continuing expansion of the human population and so agri-technology and precision farming have gained much importance in today's world. This are also termed as digital agriculture which means the use of hi-tech computer systems to calculate different parameters such as weed detection, crop prediction, yield detection, crop quality and many more machine learning techniques ([Liakos et al., 2018](#)). This paper discusses about the different applications of ANN, ML, and IOT in agriculture and many models which helps in precision farming.

## 2. Literature survey

Over the past 50 years, there has been a sustainable development in artificial intelligence due to its robustness in the application and is pervasive in every field. One such field is agriculture.

Agriculture faces many challenges on a daily basis and is not smooth running business. Some of the pith problems faced by farmers from seed sowing to harvesting of crops are as follows:

1. Crop diseases infestations
2. Lack of storage management.
3. Pesticide control
4. Weed management
5. Lack of irrigation and drainage facilities.

Artificial Intelligence and Machine learning has penetrated each and every category mentioned above. [Bannerjee et al. \(2018\)](#) segregated advancements in AI category wise and gave a brief overview on various AI techniques. Computers and technology started penetrating in this sector from 1983 onwards. Since then, there have been many suggestions and proposed systems for betterment in agriculture from the database to decision making process. Filtering out every process, only AI based systems have proved to be the most feasible and reliable one. The AI- based method does not generalize the problem and gives a particular solution to a particular defined complex problem. The literature survey covers major breakthroughs in the domain of agriculture from early 1980s to 2018. The paper discusses more than fifty advancement in technologies in the sub domain of agriculture. First

it discusses penetration of Artificial neural networks and expert systems to solve above mentioned problems, then machine learning and fuzzy logic system. Lastly it covers automation and IOT in the agriculture.

### **Artificial neural networks in agriculture**

Artificial neural networks have been incorporated in the agriculture sector many times due to its advantages over traditional systems. The main benefit of neural networks is they can predict and forecast on the base of parallel reasoning. Instead of thoroughly programming, neural networks can be trained. Gliever and Slaughter (2001) used ANN to differentiate weeds from the crops. Maier and Dandy (2000) used neural networks for forecasting water resources variables.

Song and He (2005) brought together expert systems and Artificial neural networks in predicting nutrition level in the crop. Traditional ES (Expert systems) have considerable backdrops when it is being implemented. Use of ANN makes it up to all glitches of ES. The whole system is built on a single chip computer. Neural networks always prove to be the best when it comes to predicting methods. Neural networks can predict the complex mappings if a reliable set of variables are fed. To dodge the problems of frost formation in the fields of the island of Sicily, Robinson and Mort (1997) developed a prediction model using neural networks. The model is first to feed with the raw data like humidity, temperature, precipitation, cloud cover, wind direction (all these data were taken from 1980 to 1983). Then, the data gathered got converted into binary data. These data, now are divided into two strings (input and output for the neural network model). The back-propagation network was used as a neural network predictor. A total of 10 trial sets were developed and trained by the model initially. The frost was predicted more efficiently when a range of values of parameters (mentioned above) was taken rather than single values.

Within the span of three years, two expert systems had been developed to increase the production of cotton crop. First, COMAX. In 1986, Lemmon made a successful attempt in developing an expert system called Comax (COTton Management eXpert). Lemmon, being the pioneer in AI in agriculture sector, developed a program called Gossym which is microcomputer friendly and bolster the use of Comax (Lemmon, 1986). For the first ever, the expert system (Comax) was successfully integrated with a computer model (Gossym) and simulated for the growth of cotton crops. This expert system was developed in order to operate continuously throughout the year in cotton crop fields. Comax takes three parameters of the field into consideration; scheduling of irrigation, maintaining nitrogen content in the field, and growth in the cotton crop.

Second, COTFLEX. Another expert system for the cotton crop was developed by Stone and Toman (1989). The system was named as COTFLEX. The system was made worked on Pyramid 90× computer which used UNIX as its operating system. The system incorporated the field and farm databases to provide important information regarding the cotton crop to the farmer so that it becomes easy for the grower to take critical and tactical decisions. The system developed in Texas, and it created simulation models and databases in the rule-based

expert system to help Texan farmers take prudent economic and lucrative decisions. After successful testings, COTFLEX was imported to IBM microcomputer and was made open for the use.

Batchelor et al. (1989) discusses about the soyabean crop growth model which is defined as SMARTSOY in the paper and the model is called SOYGRO. The model is explained by knowledge based approach where it is divided into two approaches first being the positivistic approach stating the attempts to duplicate the processes of domain experts in order to come to a conclusion while the second approach being the normative approach which attempts to duplicate the conclusions excluding the processes of the domain experts. The damages caused by insects are determined by systematic method for determining the damage rates and the cost control. Here, the positivistic and normative approach collapses because the later method helps it the selection of insecticide and application rate. However, the systematic method does not help to find the insect damage rate on yield. This is a major drawback for generating recommendation because we need to mix both the approach as the yield reduction is calculated by previous experiences of the similar insect attack, pesticides used and the outcomes of the crops in the end. The goal to generate recommendation specifically for soyabean crop is based on calculation of the damage rate and the cost to treat the plant and gain the yield. This calculation is derived by both the approaches.

An expert system PRITHVI based on fuzzy logic was developed in Rajasthan, India by Prakash et al. (2013). The system was designed explicitly for Soybeans crop. This system gathered its knowledge base from agricultural officers, published literature, and experts of soybean crops. Fuzzy logic was considered in studying the whole system and advising the farmer as an expert. PRITHVI was divided into five modules. The main aim of developing this expert system was to help the farmers in the region increase their soybean production. The system used MATLAB as a user interface module.

Researchers developed an expert system which helped the farmers with when to spray insecticides on the apple fruit to avoid the damage due to insects and atmosphere. The system was named as POMME. Along with the time, it also advised the farmers what to spray. Instead of theoretical values from the infection table, here apple scab disease cycle model was used in POMME. The results of the system were satisfactory and system was approved by the experts who had used it on trial basis. (Roach et al., 1987).

A method is suggesting the use of ANN algorithms for crop prediction in smartphones had been successfully tested in 2016 by researchers Ravichandran and Koteshwari. A prediction model was developed. As mentioned above, the prediction model of this system had three layers (Ravichandran and Koteshwari, 2016). The efficiency of the model was dependent on the number of the hidden layers. First and foremost, the ANN model was built and trained using various algorithms such as Silva and Almeida's algorithms, Delta-bar-delta, Rprop, and various other to find the most favourable configuration. Trial and error method was implemented to choose the number of hidden layers. There should be a précised way to scrutinize the selection of some hidden layers because the prediction system's accuracy is dependent on the number of hidden layers. It was observed in the research that more the

number of hidden layers in the ANN model; the more accurate were the prediction.

Since the purpose of the system was to make it handy for the farmers, it is developed on APK platform. The source code was written in Eclipse with Java codes in the backhand, and the algorithm was developed using Matlab and ANN toolbox. The whole file was then extracted on the Android platform so that it can be utilized by smartphones. Besides suggesting the crop to the farmer, the system also has the additional advantage of advising the farmer for the fertilizer to be used if the farmer wishes to use the crop of his choice. (Ravichandran and Koteshwari, 2016) (Fig. 3).

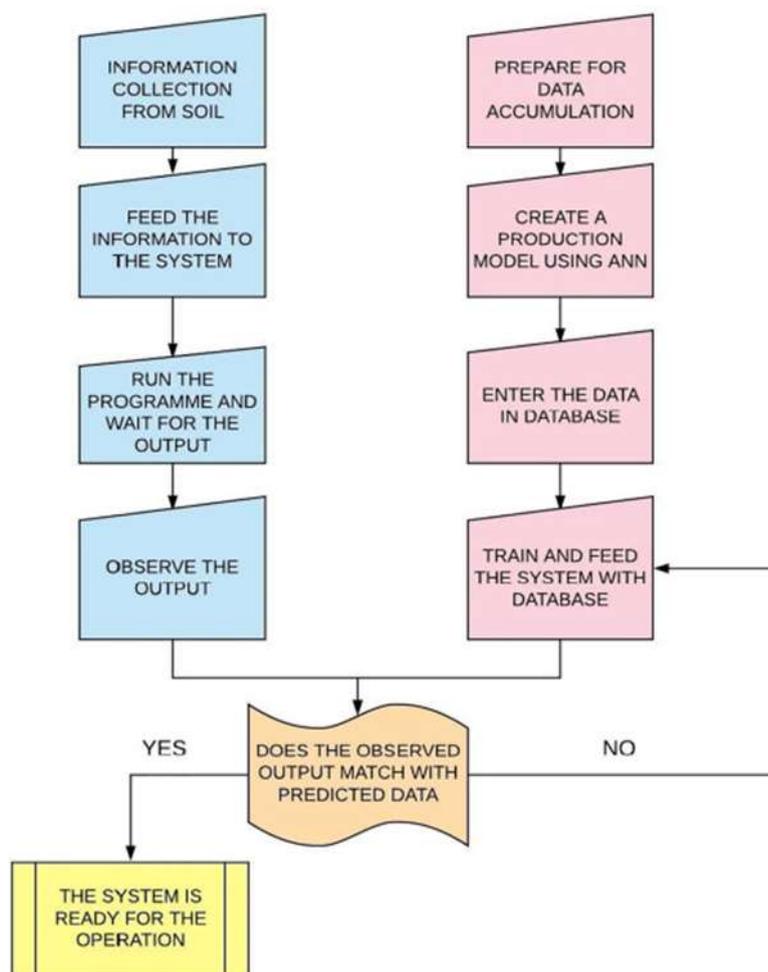


Fig. 3. Flowchart of ANN-based crop predictor using smartphones.

Evapotranspiration process is imperative for maintaining the stability in the hydrologic cycle, sustainable irrigation method, and water management. Parameters- Elevation, Mean daily Temperature, Max. daily temperature, Min. daily temperature, Wind Speed, Relative Humidity, Sunshine Hours, Daylight hours, Latitude, Condition coefficient. There are more than 20 established method to determine ET which is dependent on several parameters.

A profound study was carried out in the valley of Dehradun; India was assessing the importance of the addition of ANN in several techniques of estimation of ET. Researchers gathered monthly climate data from the Forest research institute (FRI) Dehradun for ET estimation. The methods on which the algorithms were applied were: 1. Penman-Monteith method 2. Levenberg-Marquardt back propagation. It was observed that increasing the number of hidden layers in the system resulted in instability in the ET estimation. So, training function with optimum trial and error method is to be chosen for the overall optimized estimation of ET. It was observed that out of six training algorithms of ANN model, function training with 75% data feed in it was precise and had the best number of neurons. Furthermore, there was a gauging between PM method and ANN model with the single layer feed forward back propagation algorithm. ANN model was designed and developed using Matlab. Six algorithms were conjured and assessed. As evapotranspiration is of vital importance in irrigation and water management, this research manifested the predictive prowess of ANN structure if implemented correctly. (Nema et al., 2017).

Furthermore, also a method was created to discriminate weed from crops with the help of image analysis and neural networks. It had the accuracy of more than 75% without any beforehand plant information fed into the system. (Aitkenhead et al., 2003). Shahzadi et al. (2016) developed expert systems based smart agriculture system. The concept of IoT in this system was to send the data to the server so that actuators of the field should be able to take appropriate decisions. For that, the server should be intelligent enough to take decisions independently. This system consists of temperature, humidity, leaf wetness, and soil sensors. It only gives the information about the field and doesn't act on the irrigation process.

Arif et al. (2012) developed two ANN models to estimate soil moisture in Paddy fields using decidedly less meteorological data. Both these models were then corroborated and validated by studying observed and estimated soil moisture values. The first ANN model was generated to get the estimate ET. The help of minimum, average, and the maximum air temperature was taken. To develop the second model, solar radiation, precipitation, and air temperature data was gathered. Both these models resulted in the accurate and reliable estimation of soil moisture in the paddy fields by using the least meteorological data, less labor and time consumption.

Hinnell et al. (2010) discuss the neuro drip irrigation systems where ANNs were developed to predict the spatial water distribution in the subsurface. For drip irrigation method to properly function, water distribution in the lower level of the soil is of the grave importance. Here, ANNs makes the prediction which comes handy for the user which in turn results in the fast decision-making process. ANN models give the result of wetting patterns (first and second) after the soil is infiltrated with the water from the emitter which is on the surface of the land. Thus, the ANN model provides continuous patterns to the user. Also, researchers developed a model to study the yield of the maize crop. A multi-layered feedforward ANN (MLFANN) is used. To fuel such network, learning algorithms like GDA (gradient descent algorithms) and CGDA (Conjugate gradient descent algorithm) are employed. Both the algorithms have been written and simulated in the MATLAB using neural network toolbox (Singh and Prajneshu,

2008).

Precision agriculture and WSN applications combine an exciting new area of research that will greatly improve quality in agricultural production, precision irrigation and will have dramatic reduction in cost needed. Furthermore, the ease of deployment and system maintenance, monitoring opens the way for the acceptance of WSN systems in precision agriculture. Using the proposed methodology, in finding the optimal sensor topology, we contrive to lower implementation cost and thus make WSN a more appealing solution for all kinds of fields and cultivations. (Keshtgari and Deljoo, 2012).

### **Automation and wireless system networks in agriculture**

It is imperative for any sector to evolve with time. The agriculture sector had to adapt the breakthroughs and inventions which came along in automation field. Yong et al. (2018) came forward with emerging research area of embedded intelligence (EI). Embedded intelligence in agriculture sector includes smart farming, smart crop management, smart irrigation and smart greenhouses. It is necessary for a nation to include these growing technologies in agriculture sector for growth of a nation as many sectors are inter-dependent on agriculture. Also, researchers of this paper demonstrated Technology roadmap (TRM) which in turn clarifies the qualms regarding the areas of agriculture mentioned above (smart farming, smart irrigation etc).

Taking into consideration the socio and economic vitality of agriculture in India, researchers Patil and Thorat (2016) developed a system which predicted grape disease beforehand. Any anomaly in the grape plant was noticed only after it was infected and this had a considerable deteriorating effect on the whole vineyard. The system employed various sensors such as temperature sensor, leaf wetness sensors, and humidity sensors in the vineyard. These sensors send the data sensed to the database in the ZigBee server which is linked to the sensors. Deployment of Wireless System Network (WSN) in any field needs to satisfy certain criteria and Zigbee alliance has developed open global standards called ZIGBEE. Zigbee compliances of four layers namely physical layer, medium access control layer, network layer, application layer as stated. The three devices: Zigbee Co-coordinator (ZC), Zigbee Router(ZR), Zigbee End Device(ZED) has different function in the WSN. Kalaivani et al. (2011) discusses end to end approach of Zigbee in agriculture. The server will store the data. The server is commissioned with a hidden Markov model algorithm in it. This algorithm is present to train the normal data sensed by the sensors and report any aberration in temperature, humidity or leaf wetness which can result in grape disease to farmer via SMS. Machine learning is blended in the system beforehand for astute deduction of disease in grapes. The additional advantage of this system is it also suggests the farmer pesticides and pacifies manual effort in the detection of disease. (Patil and Thorat, 2016). While a similar method of machine learning was employed in monitoring the growth of Paddy crops. This system was developed for increasing the yield and productivity of paddy crops. It also proved to be cost effective and durable. (Kait et al., 2007) (Fig. 4).

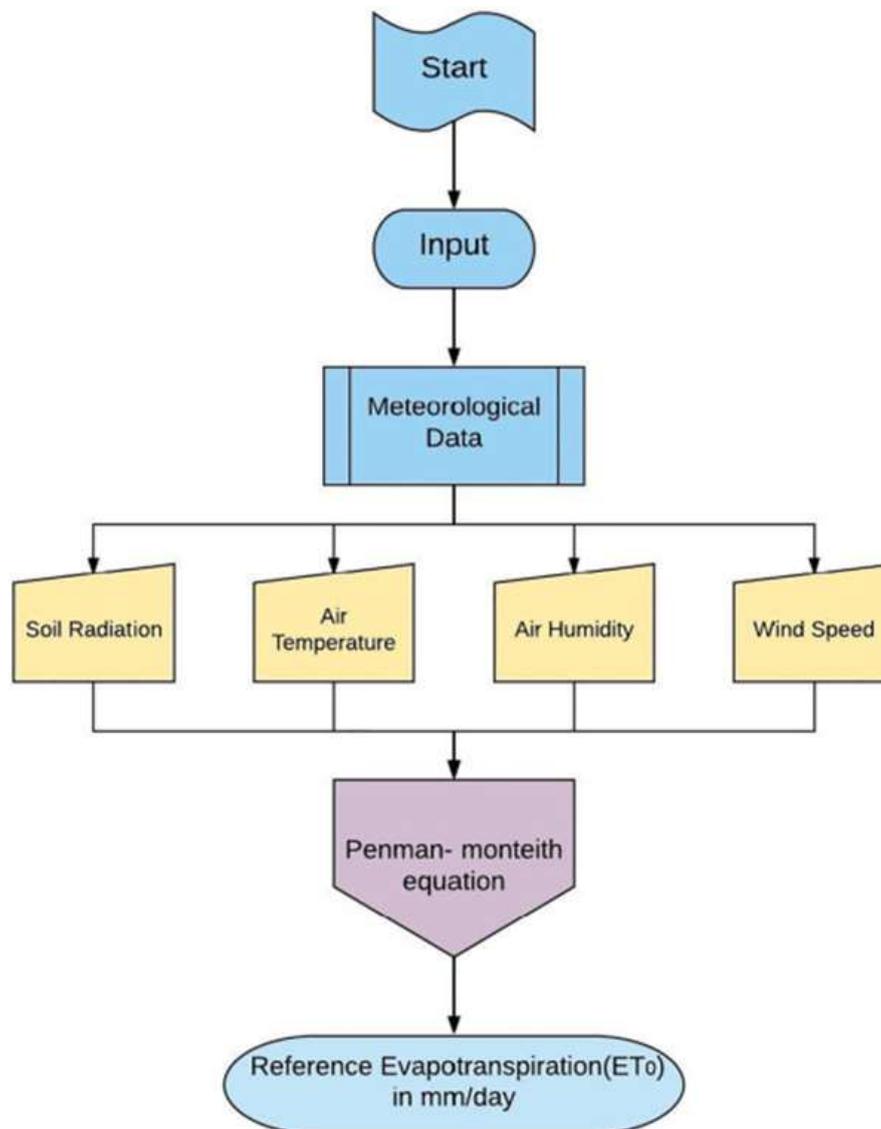


Fig. 4. Flowchart explaining evapotranspiration process.

The sensors used in [Fig. 5](#) are for monitoring agricultural field are shown in [Fig. 6](#). Sensors such as MQ4 and MQ7 are used for Natural Gas sensing and Carbon Monoxide sensing respectively. DHT11 is used for Temperature and Humidity monitoring of the environment, soil moisture sensor is used for measuring soil moisture level and have continuous monitoring. Esp8266 is a wifi module which helps in communication between the hardware system and the device which users use.

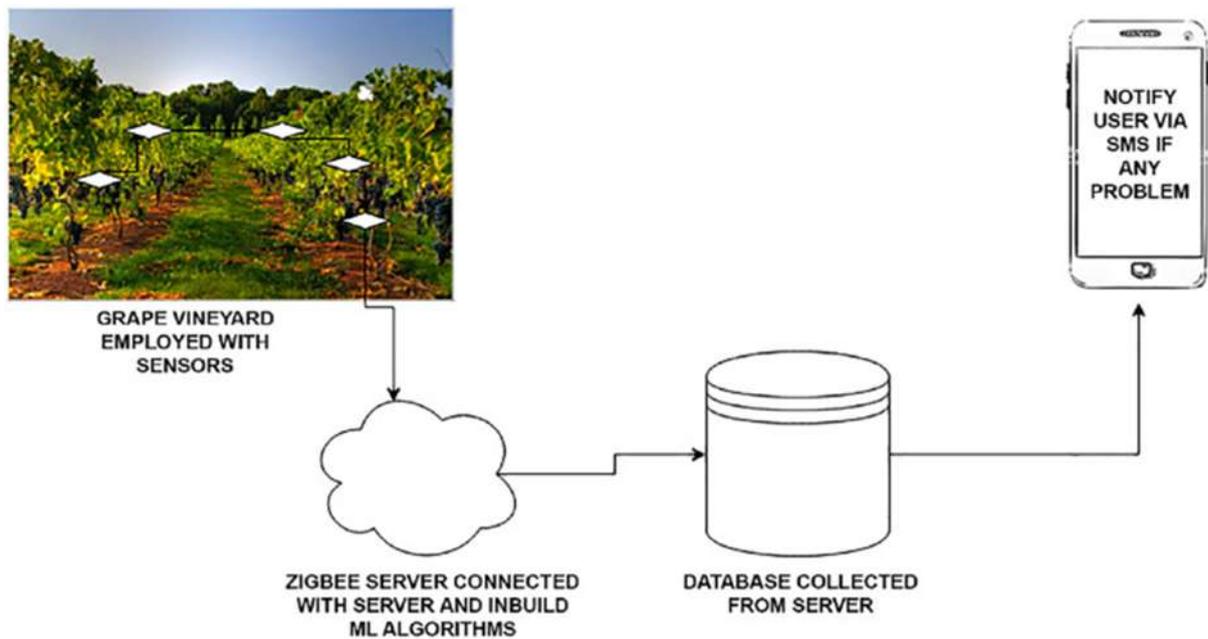


Fig. 5. Grape disease detection system using ML algorithms.



Fig. 6. Different type of sensors used for detection.

In one of the research conducted in Ankara, Turkey, implementing IIS (intelligent irrigation system), numerous positive perks were observed such as less moisture and temperature stress

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on soil, efficient water consumption, and neglecting human intervention in case of flood irrigation. The developed system works on three units. Base unit (BU), Valve unit (VU), and Sensor unit (SU). The whole system is powered by solar panels. After the successful installation of every unit, BU will send the address to which the data is to be sent to SU. Sensors from the SU will sense the moisture content and send the detected data to a specific address in the BU. If required, BU will send a signal to VU so that it can calibrate the position of the valve in order to provide the soil with water. However, site-specific use of automatic irrigation system took birth in the early 21st century; this method proved to be a significant success as it reduced the cost, feasibility, and complexity of the developed system. Furthermore, the unit can be set up which transports the fertilizers and pesticides in the field using the same method. For that, new kind of sensors would have to calibrate for transmitting accurate information. ([Dursun and Ozden, 2011](#)).

Research has been conducted to test the ET based, ICT based, and IIS based technology. In Riyadh, a research was conducted in Wheat and Tomato field in which both sprinkler and drip irrigation method were employed and tested with ICT as well as IIS. A graph of water depth versus growth period of the crop (weekly) was plotted for all three methods. A concise observation concluded that IIS was far more feasible in a matter of water usage than ICT and ET based system. It skyrocketed the frugality of water usage from 18% to a whopping 27%. ([Al-Ghobari and Mohammad, 2011](#)).

Also, [Kodali and Sahu \(2016\)](#) presented the use of Losant platform for monitoring the agriculture farmland and intimate the farmer via SMS or e-mail if any anomaly is observed by the system. Losant is a simple Iot based most powerful cloud platform. It offers real-time observation of data stored in it irrespective of the position of the field. [Gutiérrez et al. \(2014\)](#) came up with an automated irrigation system which uses the GPRS module as a communication device. The system is programmed into a microprocessor-based gateway which controls the water quantity. It was proved that water savings were 90% more than the conventional irrigation system. [Kim et al. \(2008\)](#) used a distributed wireless network for sensing and control of irrigation process from a remote location.

To improve efficiency, productivity, global market and to reduce human intervention, time and cost there is a need to divert towards new technology named Internet of Things. IoT is the network of devices to transfer the information without human involvement. Hence, to gain high productivity, IoT works in synergy with agriculture to obtain smart farming. [Malavade and Akulwar \(2016\)](#) focused on role of IoT in agriculture that leads to smart farming ([Malavade and Akulwar, 2016](#)).

Use of wireless communication has changed the standards of communication in today's world and this can also raise the standards of agriculture automation. [Logatchevl et al. \(1998\)](#) has bifurcated the IOT gateway into different nodes such as actuator, sensor, interface and wireless link which give assistance to communication between them. Frequency estimation and the bandwidth requirement for this communication has also been elaborated which can be very beneficial for automation.

Implementation of WSN (Wireless sensor network) in the agriculture sector and its different

approaches is defined by this paper. Many different IEEE standards describe sensor networks, standards like IEEE 802.15.1 PAN/Bluetooth, IEEE 802.15.4 ZigBee and many more are necessary to know while planning its application. Researchers also discussed about IPV6 the Internet Protocol for wireless communication and also many hardware system for establishing a WSN. By using WSN, Precision farming is possible and the strategy is used for crop management. Different data is recorded by the sensors and stored in the system. The system is made to learn by the previous data from the sensors and future actions are taken accordingly (Shiravale and Bhagat, 2014).

Ganjugunte et al. (2012) studied three soil moisture sensors in Peacan crop field and came to a conclusion that the sensors used (ECH2O-5TE, Watermark 200SS and Tensiometer model R) need site specific calibration in order to bring accurate results.

The highlighting features of the paper presented by Gondchawar and Kawitkar (2016) includes smart GPS based remote controlled robot to perform tasks like; weeding, spraying, moisture sensing, bird and animal scaring, keeping vigilance, etc. Secondly, it includes smart irrigation with smart control based on real time field data. Thirdly, smart warehouse management which includes; temperature maintenance, humidity maintenance and theft detection in the warehouse. Controlling of all these operations will be throuremote smart device or computer connected to Internet and the operations will be performed by interfacing sensors, Wi-Fi or ZigBee modules, camera and actuators with micro-controller and raspberry pi.

Thermal Imaging is a noncontact and nonintrusive technique which analysis the surface temperature of the agricultural field and provides valuable feedback to the farmer. Roopaei et al. (2017) discussed the use of cloud based thermal imaging system which helps the irrigation by incorporating the performance of the equipment's and determine the area of field which requires the water most. The absence of uniformity will hamper the crop growth and thermal imaging can help to consolidate this loss. Also, Thermal Imaging is put to use in agriculture sector truly because of its wide application. The paper by Manickavasagan et al. (2005) discusses various application of thermal imaging like Pre-harvest operations, Field nursery, Irrigation scheduling, Yield Forecasting, Green house gases, Termite Attack, Farm machinery.

Katariya et al. (2015) discussed the use of robot in the agriculture field. The robot is designed to follow the track of white line where actually there is a need to work and other surface is considered as black or brown. Working of robot is for spraying of pesticide, dropping of seed's, water supply and ploughing. In 2016 a group of researchers came up with e-Agriculture Application based on the framework consisting of KM-Knowledge base and Monitoring modules. The systems developed in IOT and Cloud Computing emphasizes on reliable architectures to provide timely information from the field over 3G or Wi-Fi. TI CC 3200 (RFID) launchpad was used to build the prototype with other necessary devices. Knowledge base has advantage over conventional IOT based systems; Knowledge Base is constructed to store vast complex structured and unstructured information to assist farmers or even an individual with no prior knowledge of farming. But finding right information in an

appropriate manner is difficult where providing relevant knowledge should be distributed not only in an organized and complete manner, but also in absolute way. The knowledge based infrastructure allows adapting the changes in agriculture for a better extension and adding advisory services. (Mohanraj et al., 2016).

As degree of automation is required in each and every field so the human intervention becomes less and it is very important to design a layout in the early stages of the mechanics and electronics. Weed management is the issue which farmers face a lot and computer vision can help to solve the issue. There is particular difference between a weed and the desired crop. CNN can help to distinguish among them and notify us to cut only the unnecessary plant. CNN has many algorithms which can even be used to identify plants and get the data accordingly for plantation. (Möller, 2010).

R-CNN extensively used in object detection and in automation it is used for fruit detection and counting of fruits. Bargoti and Underwood (2017) discusses the use of R-CNN in fruit detection of orchards, while training the input to the network is 3 channel colour image (BGR) of arbitrary size. They have used VGG16 NET with 13 convolutional network and also ZF network which has 5 convolutional layers. Data augmentation is used because it helps in artificially enlarging the dataset and changing the variability of the training data. The results discussed by them are promising as for both mangoes and apples Faster R-CNN outperformed the ZF network approach. (R-CNN stands for regional convolutional neural network).

Cloud based decisions and support in the agriculture is booming now a days. The Decision support and Automation system (DSAS) helps the farmers of the growers to control all the applications through its web portal. DSAS as different stages where the it can interconnect many devices on the single time and give the real time data to the farmer. The farmer plays the vital role as he can monitor the real time data and also control all the machine through software's. Systems like spray controller will spray the pesticide on the field in a definedgh any amount. Similarly, irrigation controller helps to manage irrigation and fertilizer controller manages fertilizer. DSAS works through the data given by different sensors like soil moisture sensor, nitrogen sensor, etc. (Tan, 2016).

Kumar (2014) used fertility and pH meter to take out the percentage of ingredients of the soil and developed wireless sensor based drip irrigation system. Ingale and Kasat (2012) used IC 89c52 microcontroller to build a smart irrigation system. The prototype supplies water only when humidity and moisture drops below a standard decided value hence it conserves water to a certain extent. A semi-automatic irrigation system was developed and tested on the field of Okra crops (*Abelmoschus esculentus*). The system used four moisture sensors and PIC16F877A processor was used. The valves in the system turns ON only when there is a voltage drop across any two sensors in the filed drops below a fixed value and remains ON until the value comes to the decided threshold value. (Soorya et al., 2013).

##### 5. Implementation of fuzzy logic systems in agriculture

Sicat et al. (2005) developed an FK-based fuzzy model to decide the land suitability. Various fuzzy sets were generated using farmer's as well as scientific knowledge congruently. The

sets used S-membership functions and were used to determine soil texture, slope, and colour. The research work was done in several villages of Nizamabad district of Andhra Pradesh state of India. In FK-based fuzzy factor maps, it is not necessary to take the lower and upper limits 0 and 1 respectively. This is because in knowledge-driven fuzzy modeling there is no constraint on choosing the membership functions as long as the functions are in context of the factor which has to be modeled (in this case FK-based model).

Another implementation of fuzzy modeling was done for land levelling by [Si et al. \(2007\)](#). They employed fuzzy control theory in the controller of the system. By implementing fuzzy control theory, a precision based result was obtained. High accuracy fuzzy control theory translates the variables (the deviation in the height of the field and expected the height of the field) into the defined variables sets (E and EC) which contains fuzzy terminologies such as 'High', 'Very high' and so on. There are nine sets defined for variable set E and two for variable set EC. This theory helps the controller deduce the position of the bucket which is interned will be the height of the field. The bucket receives the signal from the receiver. [Sannakki et al. \(2011\)](#) developed an innovative system for grading the leaf diseases. The system was segregated into five parts namely Image acquisition where the researchers have captured images of Pomegranate leaves, image pre-processing where the captured image is then resized, filtered, and processed according to the required parameter. Then comes colour image segmentation where k-means clustering is used to isolate the healthy part of leave with the disease infected part. Afterward from the resized image, total leaf area is calculated, and with the help of the third part, infected disease area of the leaf is calculated. Finally, in the last part, with the help of a fuzzy inference system, accurate grading of the disease can be taken out.

FIS (Fuzzy inference system) was developed by [Tremblay et al. \(2010\)](#) to determine optimum rates of N fertilizer on the basis of field and crop features. Also, [Valdés-Vela et al. \(2015\)](#) implemented FIS to estimate stem water potential. [Kavdir and Guyer \(2003\)](#) applied FL model in determining the quality of Apple fruit. [Gottschalk et al. \(2003\)](#) developed fuzzy logic based air controllers to maintain the temperature of storage facilities for Potato. [Escobar and Galindo \(2004\)](#) came up with a simulation software (SCD) which came in handy for many fuzzy based controllers. The software used rule-based knowledge base with IF. THEN condition type. Its graphical characteristics make the software adaptable to any fuzzy algorithm simulations. Another Fuzzy inference system using IF...THEN condition type was developed by [Tilva et al. \(2013\)](#). The model forecasted plant disease on the base of weather data. The system was developed to avoid diseases in plant beforehand as disease occurs in specific range of temperature and humidity in the weather.

India and China alone constitute 2.7 billion people living under the stress of water shortage. Out of overall water consumption, 70% is consumed in the agricultural process. Remaining is used in infrastructural pipelines and other miscellaneous works. Water leakage is inevitable and uncontrollable in cities. Water demand will shoot up by 50% shortly and this fact cannot be vetoed away. The farming fraternity is the only option in which water usage can be optimized by employing smart irrigation systems. By inculcating smart irrigation system,

wastage of water can culminate to a great extent can abridge water consumption by 20%. (Gupta et al., 2016).

There is a major problem of water wastage and a dearth of water in conventional irrigation methods employed. To give an example, Egypt faces a problem of water distribution from the Nile river with neighboring countries. Ample research had been carried out to solve the problems faced in the irrigation, process. Many companies have developed a sensor-based smart irrigation system. These systems have been developed for optimal water usage, monitoring of water pollution, and to take care of some other grave problems. Soil moisture and temperature sensors interact directly with embedded components in the field and take care of required water distribution among crops without farmer's interaction. Water which is to be fed to the farms, either by the means of smart irrigation or any other conventional method, should be of a good quality. Researchers have started implementing IOT systems and Artificial intelligence techniques in aquaculture sector along with agriculture. The system designed by Encinas et al. (2017) monitors the quality of water by deploying state-of-the-art automation techniques.

Wall and King (2004) came up with a smart system which controlled valves of sprinklers with the help of temperature and moisture sensors deployed in the field. However, this system did not consider the water pollution problem. Miranda et al. (2003) came up with a distributed irrigation system which works on soil water measurement. M2M (machine-to-machine) technology which allows machines to interact with each other autonomously and store the data directly in a cloud-based server online. This M2M technology is in an incipient stage and is developing steadfastly. Shekhar et al. (2017) developed a technology which allows machines to communicate themselves. Yang et al. (2007) also developed a complete sensor-based intensive irrigation method which is self-organizing. This system constructed a bottom and upper layer. Pawar et al. (2018) tried to demonstrate a prototype of the small-scale smart irrigation system. Savitha and UmaMaheshwari (2018) considered only automation and IoT I in their quest for an intelligent irrigation system.

So far, there hasn't been such advent which allows complete freedom of human intervention. This paper tries to bring forward a method through which with the help of AI and embedded technology which eliminates the glitches emphasized in the past.

Sr no	Crop/fruit name	Technology	System name	Results/description	Limitations/future scopes	Coun try	Reference
1	Tea	Object-oriented expert system	TEAPEST	Total of 65 real field cases were taken from the system which evaluated the relevant parameters and the results were almost satisfactory. The system was	The accuracy of the system was only 90%. The remaining inaccuracy was the result of inappropriate diagnosis.	India	(Ghosh and Samanta, 2003)

Sr no	Crop/fruit name	Technology	System name	Results/description	Limitations/future scopes	Country	Reference
2	Tea	Radial basis function networks.	Modified TEAPEST.	stationed in the tea fields for two years  The hidden layers of this neural networks are 31. This hidden layers gave the detection accuracy of 99.99%. There was testing error of only 1%.	The developed system detects only three major pests of tea crops. Also it is limited to only tea and not all the cash crops.	India	( <a href="#">Banerjee et al., 2017</a> )
3	General crops	Rule based expert system	PEST (Pest Expert System)	The system gave satisfactory results for which it was developed. (Identification and control of insects).	As the system was developed in late 1980's the resources and development in this sector wasn't much and due to it the prototype couldn't cover many development parameters like Crop nutrition, salinity, variety selection etc.	Australia	( <a href="#">Pasqual and Mansfield, 2003</a> )
4	Mango and Cassava	Artificial neural networks	N/A	The developed model used three neurons in the hidden layer of the network to identify dryness in the given fruits. This study showed neural networks can be used for procuring dryness patterns in food.	The system do not consider beforehand predictions and assumptions. Also, temperature predictions cannot be done correctly.	France and Mexico	( <a href="#">Hernandez-Perez et al., 2004</a> )
5	Hop plant	Rule based expert system	Corac	This was developed for detecting diseases like downy mildew, hop aphid and weevil. System provided growth of disease, estimation of harm	There are models in the system like LANCE and MESA which creates problems while estimating disease harm and also	Czech republic	( <a href="#">Mozny et al., 1993</a> )

Sr no	Crop/fruit name	Technology	System name	Results/description	Limitations/future scopes	Country	Reference
6	Jute	Artificial neural networks	N/A	caused and correct treatment for the disease in the hop plant  With 9 to 5 neurons in the hidden layer, the model accurately predicted the growth of jute crops. It used back propagation for training the model.	meteorological data varies according to the local climate.  Predicted results matched correctly with the observed results (bark, roots, leaf) and if trained properly the model can predict results for different crops.	Bangladesh	( <a href="#">Rahman and Bala, 2010</a> )
7	Different fruits	Fuzzy logic	N/A	The platform used for grading and classification of different fruits is MATLAB. Support vector Machine technique was used for classification of the fruits and fuzzy logic was used for grading.	There were misclassification problems in the developed system. But it can be mitigated adding features of colour and texture of fruits.	Malaysia	( <a href="#">Mustafa et al., 2009</a> )
8	Wheat	Image processing	N/A	Two machine algorithms SVM and neural networks were used for classification process. The accuracy of SVM was 86.8% and neural network was 94.5% accurate. The algorithm used was more accurate than manually developed algorithm.	More precised algorithms can be designed which will have less computational cost. Additionally various varieties of wheat can be classified using different feature sets.	India	( <a href="#">Punn and Bhalla, 2013</a> )
9	Rice	Pattern classification, A back propagation	N/A	Morphological and colour features were taken into account for developing	Only rice crop was considered in the study. Further infections on various	India	( <a href="#">Shantaiya and Ansari, 2010</a> )

Sr no	Crop/fruit name	Technology	System name	Results/description	Limitations/future scopes	Country	Reference
		neural networks		algorithm. Nine morphological and six colour features were acquired from Images. The accuracy of classification dataset ranged from 74 to 90%.	crops can be identified and placated using this system.		
10	Lentils	Machine Vision	N/A	A Flatbed scanner was used as a hardware component with a pentium CPU. Various methods including K-NN, neural networks etc. were used for colour grading of lentil crops. Additionally an online neural classifier was used which gave almost 90% accuracy in grading of crops.	Cost effective and smaller scanner can be used instead of a large scanner which can give only required information required for lentil classification. Owing to the size of scanner, it gave variety of information which is less useful for the purpose of classification and grading.	Canada	<a href="#">(Shahin and Symons, 2001)</a>

### PROPOSED IDEA

Need of automation in the agriculture sector is must and there are many ways it can be implemented in practice. Irrigation is the foremost thing where automation is necessitate for optimal water usage. Soil moisture sensor helps to monitor the moisture level of the soil and starts watering the farm as the value get below the threshold level set by the farmer. The embedded system and Internet of Things help to develop a compact system which monitors the water level of the farm without human interaction.

There are many different techniques that we can implement as automation through different forms like using Machine learning, Artificial Intelligence, Deep learning, Neural network, Fuzzy logic. The idea is to use any of these extended methods to reduce human intervention and human efforts. All this methods have their own advantages and disadvantages, but the way they are used differentiate them from each other. The meagre research in the field of deep learning technique which analyses the dataset of images from the past data fed and

classifies the plants or flowers. Kamilaris and Prenafeta-Boldú (2018) discusses the Deep learning concepts in the agriculture and the efforts that apply to execute deep learning techniques, in various agricultural sectors. Deep learning application is required in this field as it provides major impact on the modern techniques, it extends the Machine learning by adding more depth into the model. The main feature of the deep learning is the raw data process to increase accuracy and classification. Plant recognition, fruit counting, predicting future crop yield are the main target where deep learning can be implemented. Large dataset of images are required to train the model, while some techniques use text data to train the model. Data source, Data pre-processing, Data Variation and Data augmentation techniques are necessary for the Deep learning to train the model. Future of deep learning in agriculture has many environments and it can proliferate agriculture sector. Ferentinos (2018) have worked with convo training the model with different images of healthy and diseased plants. Plant disease recognition has a high degree of complexity and so many agronomists fail to diagnose specific disease. The model represented perfectly identifies and gives accuracy upto 99.53%.

The idea is to train the model such a way that it identifies plants or flowers when in future any image is fed to the model. To train the model, VGG16 is used as it is the simplest model among all other convolutional networks. This network is characterized by its simplicity, using only  $3 \times 3$  convolutional layers stacked on top of each other in increasing depth. Reducing volume size is handled by max pooling. Two fully-connected layers, each with 4096 nodes are then followed by a softmax classifier. In VGG16, '16' stands for the number of weight layers in the network. Keras library in python includes VGG, ResNet, Inception, and Xception network architectures. A large image data of different plants and different flowers is used to train the model and check the accuracy. The model then accurately predicts the plant or flower when any random image is fed in the system.

This system is necessary in the agricultural sector as every plant has some particular need of environment. A fixed amount of water at regular time and favourable environmental gases around helps the plant to grow perfectly healthy. By classification through deep learning it becomes easy for the farmers or botanist to grow plant, as by identification of plant and its favourable conditions, farmers and botanist can provide such environment and proper irrigation.

### **FUTURE SCOPE**

The farmers who are young will make more investments in automation with much interest than the elder farmers. The technology which is new has to be introduced slowly with time. Slowly the agriculture sector is moving towards precision farming in which management will be done on the basis of individual plant. Deep learning and other extend methods are used to detect the plant or flower type, this will help farmers to provide favourable environment to the plant for sustainable growth. Eventually the production of more customised fruits and plants will grow, which leads to an increase in the diversity of products and production

method. Artificial intelligence techniques are growing at a rapid scale and it can be used to detect disease of plants or any unwanted weed in the farm by using CNN, RNN or any other computational network. Green house farming can provide a particular environment to the plants but it is not possible without human intervention. Here, wireless technology and IOT comes in the run and using the latest communication protocols and sensors we can implement weather monitoring and control without human presence in the farm. Harvesting of fruits and crops can also be incorporated by robots which are specialized in working round the clock for quick harvesting. Application of robotics are vast in farming such as the robots can be used in seeding and planting, fertilizing and irrigation, crop weeding and spraying, harvesting and shepherding. To complete the same work in many cases, it would take approximately 25 to 30 workers. Thermal Imaging can also be implemented by using drones and thermal camera in it. The drones monitor the farm and gives continuous real time data of the field so that the farmers could know in which area of the field the water quantity is less and can only start irrigation in that particular area. This will prevent water flooding or scarcity of water in the field and the crops get advent amount of water all the time. Many different integrated approaches can be used to provide a viable environment and increased growth.

### CONCLUSION

Agriculture monitoring is the much necessitate reducing human interventions in practice. Day by day demand for food is reaching its high peak and the without execution of the modern methods in agriculture it is very hard to achieve the increasing demand. Agriculture lution neural network models and used deep learning in the system by monitoring is the prime concern as it helps to reduce labour and increase the production. Artificial Intelligence has been implemented in crop selection and to help the farmer in the selection of the fertilizers. With the help of the database which the user has gathered and specified to the system, the machine communicates among themselves to decide which crop is suitable for harvesting and also the fertilizers which promote the maximum growth. Deep learning has wide reach and its application in industry has received tremendous advancement. Using deep learning is an added advantage over machine learning and it adds depth to machine learning. Many significant methods can ensure the farmers with better crops and proper field management. This in the end helps in overall growth of the country as food is the foremost need of any human being. IOT marked its significance to help in the real-time monitoring of the data. IOT is mainly used in an intelligent watering system. Because, effective use of the available fresh water is essential and with the advancement in the technology and application of automation water crisis can be solved. Traditional methods in agriculture have minor effects in this modern world. Water scarcity and flooding both are the major problems farmers are facing using the traditional approach. Many loop holes in this system and the alarming need to protect the agricultural land leads to the development of agriculture automation. This paper represents an idea to make a system with the use of sensors, IOT and machine learning to automate the traditional practices in agriculture.

# OBJECT DETECTION FOR CHILD EDUCATION USING AI

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## ABSTRACT

Today the use of technology is widespread. Everyone uses Smartphones. Working parents find it hard to focus on their child .If a child , on his or her own , want to know anything around them , this app can be used – written words , objects and even math equations .

The application in this study aims to make children education with the mobile device.

The application is developed for the Android platform. Image processing and machine learning technologies are used. Methods, design, and findings are discussed.

The application will be freely available in playstore. Application should use advanced techniques like machine learning and image processing

**KEYWORDS** : *Image Processing , Machine learning , Optical character recognition , YOU ONLYLOOK ONCE(YOLO) , Open CV*

## INTRODUCTION

Today's world technology is being almost spread everywhere ,most of every one have smart phones on their finger tips. In this busy life parents are too busy with their work they are focusing more in job having pressure of their own. The most of 60% parents are at job or busy with their day to day life .Almost many times parents are not with their child because of their job and some other reasons . If child wants to know any thing around them , if child wants to know what is written on any books or any object and how to pronounce the word written , Also in studies they need help to solve the mathematical problems ,etc. For this we developed this android application for child. This android application has a simple interface . If parents tell them how to use this application at once , child will understand and they can operate this application easily. In the application there are Three modules are build. This will

help the child for their basic knowledge. The 1<sup>st</sup> module they can use it for knowing the objects around them and application also has sound .so the application give the output in audio or written format also. 2<sup>nd</sup> module they can use it for reading the story books or any word they don't understand. 3<sup>rd</sup> module they can use it for their mathematical problems.Using this application child get much more information and also get educate. And learn many much things even if child's parent is not at home.

### OBJECTIVE

- The main Objective of the project is enhanced the basic knowledge of the child.
- Real time understanding of the object detection for child education.
- Future scope entirely a speech recognition assessment application.
- This application helps child to learn the spellings, solving the mathematical problem, etc.
- It will more useful when child is alone at home and they don't understand any object or anyword.
- This will mainly use for learning purpose, and child will understand quickly because ofdigital content with audio

### SURVEY OF TECHNOLOGY

In this we study, the technologies used in application are explained in detail, how the technologies available differ from the chosen technology and present the comparative study. It's used by people who are blind or partially sighted to help them read and now they in the current system Braille is a system that uses combinations of raised dots to spell letters and numbers can use of simple voice commands to read out books etc. How family member or someone needed to help to tell what is this, and now using this technology child will get to know what it is exactly and how to pronounce it even with spellings etc. Currently child get confuse of calculation after solving problems they need to recheck the calculation that keeps time consuming for child, now after solving any sum or problemthey can just detect and get answer quickly.

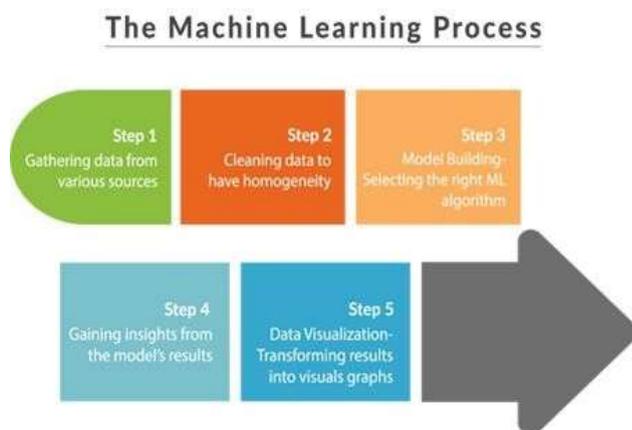
#### Machine Learning

Machine learning is an algorithm category that allows software applications to be more accurate than estimating results without being explicitly programmed. The main basis of machine learning is the use of statistical analysis to generate input data and to generate algorithms for updating output when new data are given. Machine learning processing cycleis shown in Figure 1. Machine learning algorithms can be categorized as supervised or unsupervised [1].

Supervised algorithms require a data scientist or data analyst with machine learningskills who train the algorithm by providing data to enhance the accuracy of the estimations. Data

scientists determine the variables or features the model will use for this process. The algorithm will use this learning to the new data afterwards [1].

Unsupervised algorithms do not need desired data for training. Rather, they utilize a iterative way which called deep learning to get results on the given data. These algorithms work fine if they have big data. They use neural networks which scan this massive amount of data and detect fine correlations automatically. The learned associations will be used to interpret new data. Unsupervised learning algorithms are used for complex processing tasks like image recognition, text-to-speech, and natural language processing [1].



*Figure 1 : ML Processing Chart [2].*

### **Image processing**

Image processing is the process of transforming a view into a digital form and performing some operations to obtain an enhanced image or to get useful information from it. An image, such as a video frame or photo and output, may be an image signal or an image or feature associated with the image. Generally, the Image Processing system involves processing images as two-dimensional signals while applying pre-set signal processing methods. Image processing usually formed of the following three steps [3]:

Importing the image to the system,

Analyzing and manipulating the image by data compression, image enhancement and spotting patterns,

Output as an altered image or image analysis report, the purpose of image processing maybe the following [3]:

Visualization to determine the objects that are not visible,

Image sharpening and restoration to get a better image, Image retrieval to reach the image of interest,

Pattern measurement to determine the measures of the various objects, Image Detection to mark the objects as different.

## YOU ONLY LOOK ONCE

Android Studio is preferred as a development platform as it is the official integrated development environment (IDE) designed specifically for Android development. Python programming language is preferred as it is suitable for Rapid Application Development, also can be used as a scripting or glue language to put the existing components together. Open Cv library is used for image processing. It has a wide range of libraries and is designed for computational efficiency and with a real-time application focus.

Tensor Flow is preferred for the machine learning process. It provides high performance numerical computation. It has a flexible architecture which makes easy deployment of computation across a variety of platforms possible.

The steps of the implementation can be summarized as follows:

1. The objects that are needed to be defined at the application are determined.
2. Positive and negative images of these objects are downloaded from the internet, resized and unnecessary images are cleaned with the written python script.
3. Camera of the smartphone is used and the objects in the data set were identified on Android Studio. Profiles were created according to the data set and the voice commands for the detected objects are defined.
4. A suitable chest strap for the experiment is designed to hold the phone is designed and printed with a 3D printer.
5. The created demo is used and tested by the targeted users.

### Dataset

In this project, data set is prepared by training it to recognize the images of that object. . YOLOv2 is a dataset trained to recognize specific objects [4]. YOLOv2 dataset with the GPU so it is faster and accurate than other algorithms while training our dataset.

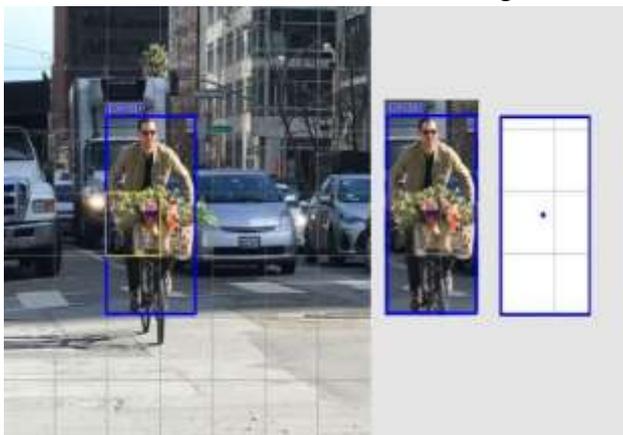
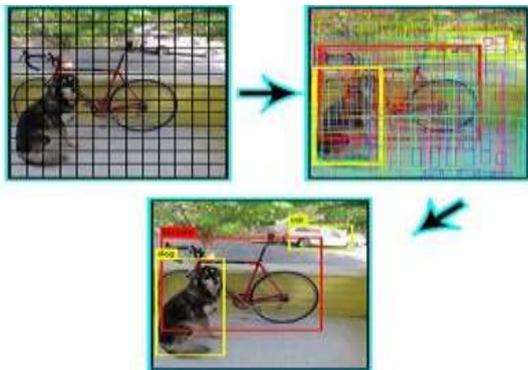


Figure 2 :Working logic of YOLOv2 [5].

Each grid cell of an image has a fixed number of boundary boxes. In Figure 6, the yellow grid cell generates two boundary box estimates (blue box) to find where the person is. Each grid cell detects only one object. In this study, high box confidence scores (greater than 0.25) is kept as our final predictions

Each boundary box contains 5 items:  $(x, y, w, h)$  and a box confidence score. The confidence score reflects an object of the box (objectness) and possibly how accurate the bounding box is. In operation, the bounding box width  $w$  and height  $h$  are normalized by the image width and height.  $x$  and  $y$  offset to the corresponding cell. Therefore  $x, y, w$  and  $h$  are all between 0 and 1. Each cell has 20 contingent class possibilities. The probability of a conditional class is the probability that the perceived object belongs to a particular class (one probability per category for each cell). So, YOLO's prediction has a shape of  $(S, S, B \times 5 + C) = (7, 7, 2 \times 5 + 20) = (7, 7, 30)$ [4].



YOLOv2 is faster and more accurate than prior detection methods. YOLOv2 dataset had 9,000 objects, it worked with low FPS even on the GPU processor. Image processing to be a process that requires high performance. So in order to run the dataset with the mobile phone processor, we had to work with a dataset with fewer objects. So in the study used the Tiny-YOLO dataset the next stage.

## IMPLEMENTATION

### Object detection:

The 1<sup>st</sup> module they can use it for knowing the objects around them and this application also has sound .so the application give the output in audio or written format also.

If child click on the object detection button, the camera will start and start detecting the objects in front of camera. when there are multiple objects in front camera, it will create the bounding boxes on object and it display the object name in the written and also provide the audio, so child can understand easily.

### Text to speech:

The 2<sup>nd</sup> module they can use it for reading the story books or any word they don't understand. If child children click on the text to speech button, the camera will open .child can capture the

image an after that Child have to crop the image according to child's requirements. After cropping image, it will start reading. so child can understand words, statements, spellings and pronunciation, etc.

Calculation:

3<sup>rd</sup> module they can use it for their mathematical problems.

If child click on the Calculation button, the camera will open, child can capture the required screen by cropping. so child will get calculated output on the screen.

### CONCLUSION AND FUTURE SCOPE

Android application for object detection is already exists but that doesn't have audio – In our application, It provides audio for a detected object. Calculation module is available on Google but we are integrating two modules in one application. Text-To-Speech is new idea that we are developed for reading the story book or any reading material – also we have feature to translate English language to Hindi and Marathi language.

By adding voice command in calculation module, it will more easy for child to get a answer. We can add a common story books in the application, so that no need to scan the book.

User Interface of Application

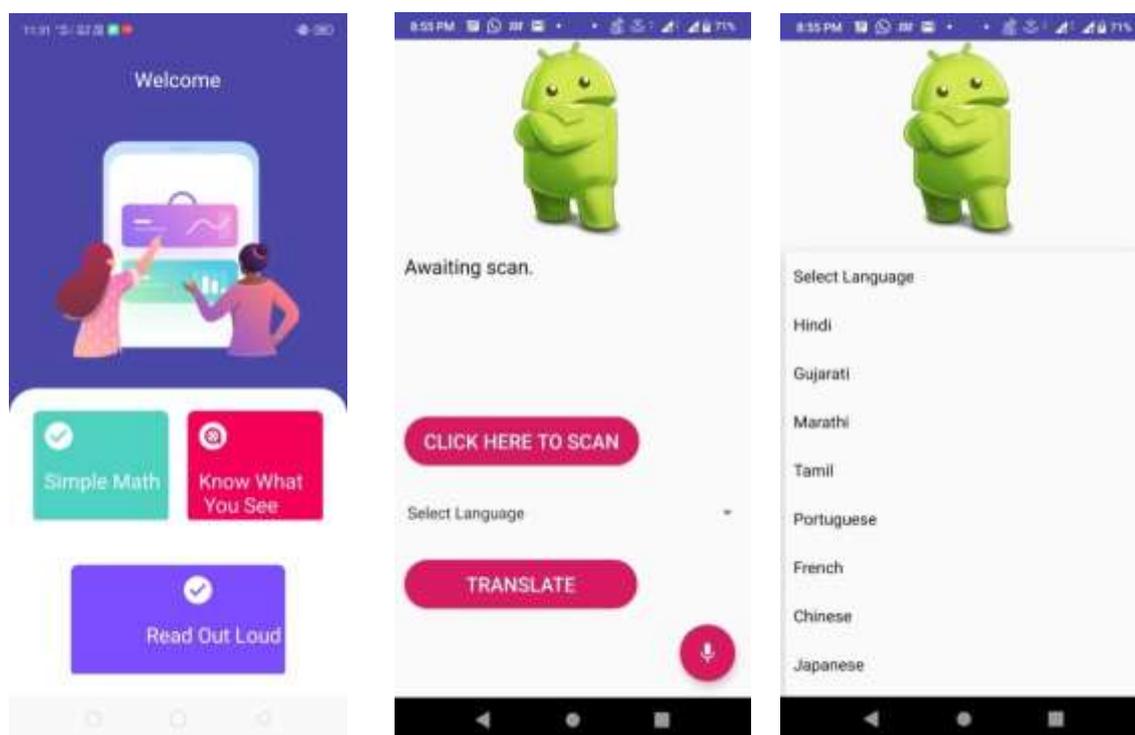


Fig 3: User Application Interface

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# A RESEARCH PAPER ON ROLE OF VIRTUALIZATION IN CLOUD COMPUTING

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## ABSTRACT

Virtualization and cloud computing are the technologies that go hand in hand. Cloud computing technology enable individuals and organizations to access a pool of computing resources in pay-as- you-use fashion. Cloud computing offers many service models such as Platform as a Service (PaaS), Infrastructure as a Service (IaaS) and Software as a Service (SaaS). However, cloud computing cannot become affordable solution without the technology virtualization.

Virtualization enables sharing resources of one system such as CPU, Memory and Storage to many users as per the requirement. Therefore, virtualization is the technology on top of it cloud computing is built. In this paper our main goal is to provide the basic knowledge about the virtualization technology in cloud computing and how it acts in the cloud computing environment. This paper presents an overview of Virtualization, types of virtualization and its benefits are being discussed in this paper.

## INTRODUCTION

Cloud computing is one of the most useful technology that is been widely used all over the world. It generally provides on demand IT services and products. Cloud computing is an internet based computing with the ability to share resources (hardware, software, storage, network) on-demand and dynamically. Virtualization plays a major role in cloud computing as it provides a virtual storage and computing services to the cloud clients which is only possible through virtualization. Virtualization is the abstraction of computer resources. Virtualization can be applied to a wide range such as operating system virtualization, hardware-level virtualization and server virtualization. Virtualization technology is hardware reducing, cost saving and energy saving technology that is which makes traditional computing more scalable, efficient and economical.

Most of the IT people do not pay attention to one point and it is the evolution of cloud computing could not be possible without existing of other technologies like virtualization

technology. In this article we attempt to understand what virtualization is, it is the relation between virtualization and cloud computing and at the end where virtualization can stand in cloud computing concept, its advantages and effects.

### **OBJECTIVE**

The main objective is to study importance and use of virtualization in cloud computing. Virtualization allows for massive scalability, giving clients virtually unlimited resources and provide only the resources that a specific user needs and they just need to pay for the use. In a traditional networking setup, the server is fixed in hardware and if you want to scale up to more users than the current hardware can support, you would have to spend more money for upgrades and need to pay for hardware plus installations.

Virtualization plays a major role in the cloud computing technology, normally in the cloud computing, users share the data present in the clouds like application etc. Cloud providers provide the applications with the standard versions to their cloud users, for suppose if the next version of that application is released, then cloud provider has to provide the latest version to their cloud users and practically it is possible but it is more cost expensive. To overcome this problem we use virtualization technology. By using virtualization, all servers and the software application which are required by other cloud providers are maintained by the third party people, and the cloud providers has to pay the money on monthly or annual basis.

### **Benefits of using virtualization in cloud computing:**

- a. Virtualization is one of the cost-saving, hardware-reducing and energy-saving technique.
- b. It helped to make cloud computing more efficient and eco-friendly.
- c. A big step towards new technology making life easier and better.
- d. Isolation: one user should be isolated from the other users so that he/she may not get information about the others user's data and usage and cannot even access other's data.
- e. Resource sharing: a big resource can be fragmented into multiple virtual resources so that it can be used by multiple users.
- f. Aggregation of resources: the small resources available can be increased at a large extent with the help of virtualization
- g. Dynamical resource: reallocation of resources such as storage and computational resources is very difficult but if they are virtualized then they can be easily re-allocated.

## METHODOLOGY & ANALYSIS

### **Virtualization in Cloud computing**

Cloud computing is an emerging technology which takes the advantage of using services from anywhere and any device. Cloud users can share the data, access the services as per their requirements. Users can pay for whatever the services they are offered. In internet cloud computing plays a major role in order to share the data and one of the important technology in the cloud computing is virtualization.

Virtualization is one of the major components of cloud computing that helps to emergence of cloud computing. Mainly it is used to maintain the collection of IT resources which are used by the cloud providers. The main aim of the virtualization is ability to run the multiple operating systems on a single machine buy sharing all the resources that belong to the hard ware as well as it enables on-demand dynamic allocation of resources. The resources have different forms such as network, server, storage, application and client.

The main power of cloud computing lies in the way data is stored, how it is transmitted and accessed. Well-designed cloud computing platform should have the characteristics of dynamic scalability, on-demand division of resources, high availability, high performance and load balancing. Through virtualization, Cloud computing manages the hardware in a distributed shared resource pool. All IT resources through virtualization can improve resource utilization and allocated dynamically.

A virtualized platform with management capabilities like availability, automated load balancing and fault tolerance reduces infrastructure cost and maintenance cost. Cloud service providers make use of virtualization technologies by the pay as use model through the internet. Virtualization is becoming popular as many users can share the resources and different operating systems can be run on the same physical machine. It is one of the best techniques to reduce the cost of investment in IT industry.

### **High availability concept of cloud**

We can achieve high availability in cloud computing with the help of virtualization. All the machines used are virtual, it means they are pieces of software that easily we can copy them whenever and anywhere we want. “A virtual machine (VM) is an abstraction layer or the environment between hardware components and the end-user [3].” Virtual machines have an ability to run any operating systems on them. The interaction between the guest operating systems and resources which are available for sharing between virtual machines can be provided by using hypervisors. Hypervisor also call as virtual machine monitors (VMM). They are able to share system hardware components such as CPUs, controllers, disk, memory, and I/O among virtual servers. So if any trouble happens to our physical servers or related

devices, we can easily move the virtual machines to a new location. Also servers which used for virtualized data centers, do not have any physical storage that directly attached to the servers and they just do the processing part of all jobs. So if one server failed, we can use the other servers to do processing jobs. With the help of this great ability of virtualization technology, down time of those servers which provides important services even in the case of, maintaining of the hardware which is a very important issue in data centers, become a zero time.

### **Scalability of cloud**

Scalability of cloud also is one of the achievements which its existence because of virtualization. The dynamic attribute of the virtualization is helping the cloud providers that offer such an environment that any request can respond on-demand. In cloud computation process, if any of virtual machines need to increase one of the resources, it can be increased by the cloud management system. Even if a user needed to increase any of the resources, as service level agreement, the cloud management system can manage these resources and user environment can be expanded. This expansion and shrinking the available resources for active virtual machines is ability of dynamic virtualization technology. But now a days, most of the people who are talking about cloud computing, just talks about the scalability of cloud without mentioning anything about virtualization. This way of reviewing the abilities without reviewing the background of it, make it more difficult to understand and discuss.

## **COMPONENTS OF VIRTUALIZATION IN CLOUD**

**Virtual Machine (VM):** In cloud computing environment, virtual machine is the abstraction of the physical computer hardware which is dedicated for the use of users as needed. It is an abstraction layer or the environment between hardware components and the end-user.

**Hypervisor:** Hypervisor is the software program to control all the operations of the virtual machines like launching of virtual machine, migration and shutting down when all the required tasks are finished. Hypervisor can be defined as a piece of computer software or hardware that can create and run Virtual Machines. Hypervisor controls the access of VMs.

**Cloud Provider:** Cloud provider is the third party involved in providing the services like infrastructure, platform or software to the users as per their requirement and demand.

**Cloud User:** Cloud user is one who needs the services from cloud environment and access the services by paying money through the internet.

**Operating System:** The operating system present in the host is known as host OS and the OS present in the virtual machines is called as the guest OS.

**Hardware Layer:** The hardware is shared among different virtual machines

## TYPES OF VIRTUALIZATION

### **Storage virtualization**

The storage available is virtualized to get large virtual storage access and it is further used for allocating memory to the cloud clients. One of the most popular protocols use for storage virtualization is a storage area network (SAN) and network attached storage (NAS). For the fast interaction they use fiber channel and TCP/IP protocol. They use TCP for reliable communication. The storage virtualization also relies on a Redundant Array of Independent Disk (RAID) technology to protect data from lost in any physical failure occurs. In new virtual storage systems, they use the latest technology which called as Redundant Array of Independent Node (RAIN) rather than RAID. This new technology helps availability of data even if several servers go down. The significant point of the storage virtualization is to hide geographical positions of the data over the cloud environment.

### **Network virtualization**

Network virtualization in cloud computing is a method of combining the available resources in a network by splitting up the available bandwidth into different channels, each being separate and distinguished. They can be either assigned to a particular server or device or stay unassigned completely — all in real time. The idea is that the technology disguises the true complexity of the network by separating it into parts that are easy to manage. Network virtualization also continues the term of scalability in a cloud environment. The important point also here is a dynamic scalability of network resources.

### **Memory virtualization**

This includes the sharing the physical system memory and dynamically allocating it to virtual machines. A contiguous address space is seen by applications that is not essentially tied to the underlying physical memory in the system. The operating system maps the virtual page numbers to physical page numbers that are stored in page tables.

### **Application virtualization**

Software virtualization in cloud computing abstracts the application layer, separating it from the operating system. This way the application can run in an encapsulated form without being dependent upon the operating system. In addition to providing level of isolation, an application created for one OS can run on a completely different operating system.

### **Server virtualization**

This is the process of making available the resources of physical servers to remote users. It is done by installing virtual machine software onto the server which then allows it to act as multiple servers on demand. This kind of virtualization is incredibly popular as it frees users from having to manage complex server systems. Server virtualization is one of the fastest growing areas of the cloud, it is used to provide immense resources to businesses that need the processing power but don't necessarily have the capital to invest in the appropriate server resources.

## **VIRTUALIZATION & CLOUD SERVICES**

With the help of virtualizing and creating user access policies, cloud computing services can be provided by cloud vendors. The virtualization model is consisting of cloud users, service models, virtualized models and its host software and as well as their hardware. Virtualization software makes it possible to run multiple operating systems and multiple applications on the same server at the same time. It is based on three service models that are SAAS (software as a service), PAAS (platform as a service) and IAAS (infrastructure as a service). SAAS provides applications to the cloud users to full fill their needs and demands. PAAS provides the cloud users a common platform on which they can execute their applications and IAAS provides the security and hardware to maintain the cloud resources. The basic idea is to share large pools of resources like compute cycles or virtual CPUs (VCPUs), storage, software services etc.

If a user needs a SaaS as service, vendors gave permission to the user to access to just software level and the rest of the layers, software based or hardware based, is supported and manages by cloud providers. Likewise, if you need PaaS or IaaS services, the provider gives the permission to access more layers involves in cloud computing systems. Because the power of virtualization technology it is easy to manage the different layers of the cloud model, virtual machines, virtual networks, and virtual storages.

## **CONCLUSION**

This paper studied the virtualization on which cloud computing is based. It throws light into both cloud computing and virtualization. Virtualization improves the efficiency of cloud computing. Virtualization is done with many resources like I/O, OS, network, storage and so on. Virtualization improves scalability besides making the cloud solutions cost effective. These two technologies go hand in hand in providing state of the art services to end users. Data loss, data security and inconvenience to access the data are some of the major problems that users face but with the use of cloud computing these problems can be resolved easily.

In future, we aim to develop new policies, framework and techniques to for major problems which can be faced by using this technology such as mass data loss, infected application and data integrity.

- a. Mass data loss: If some calamity hits the data centres then it might destroy the data stored in the data centres or might shutdown servers.
- b. Infected application: If a virus is infecting one file then it may corrupt whole system.
- c. Data integrity: The integrity of data can be affected as anyone can access it from anywhere.

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# PREVISIONING HARD DISK DRIVE FAILURES USING LOGISTIC REGRESSION

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## ABSTRACT

With reference to the numerous studies conducted on hard disk drives, we can say that the SMART (Self-Monitoring and Reporting Technology) attributes seem to play a major role in the prediction of the health of a Hard disk drive(HDD). We address the case of hard disk drive reliability with its health being the most important factor. It was a challenge for us to segregate the vast amount of data and therefore collectively rearrange the data for finding key relations between the SMART parameters linking it to HDD failure. We proposed a suitable machine learning model which selects the most critical SMART attributes and correlates it with HDDs health. We then applied Logistic Regression as the main algorithm for the model to accurately predict the health of the hard disk drive. We used the dataset provided by Kaggle<sup>[5]</sup> which has data of over more than 1 million hard disk drives. Our results show accuracy of 0.91666 (91.66%) and with a total failure prediction rate of 0.0844 (8.44%).

**KEYWORDS** : *Hard disk drive failure, SMART, Machine Learning, Logistic Regression*

## INTRODUCTION

In today's progressive world, hard disk drives (HDDs), are one of the most crucial components for data storage in any system. HDD manufacturers and vendors are constantly in the process to reduce the failure rate of their products. Currently, SMART (Self-Monitoring and Reporting Technology) attributes are used to predict failures in hard disk drives. SMART attributes differ for different drive manufacturers. In the event where we predict the failure of

one hard drive model with the help of a machine learning algorithm or model, there is no guarantee that the same model will be able to correctly predict failure for another hard drive model. The SMART attributes represent HDD health statistics such as the number of reallocation, scan errors and other parameters of a HDD. When a certain attribute considered critical to HDD health goes above the threshold value, the HDD is marked as likely to fail.

Our project focuses on:

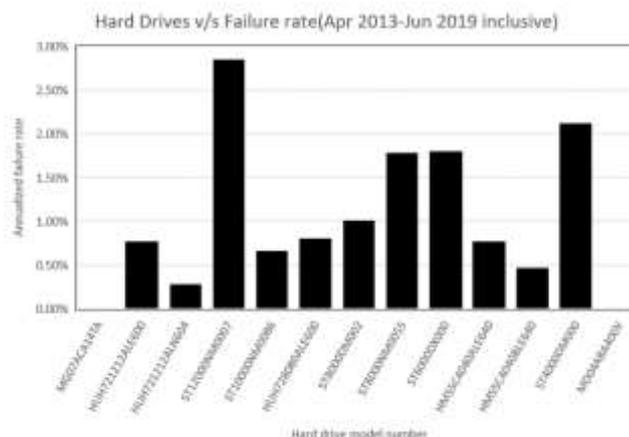
- 1) To analyse recall, precision and accuracy of our Logistic Regression model.
- 2) To infer from the data accurately whether the hard disk drives are healthy or likely to fail.

### Related Works

Several studies on the subject of hard drive failure prediction based on SMART data have already been carried out. The failure trends as per the research in <sup>[1]</sup>, contains the values of large HDDs of over 100,000 enterprise HDDs at data center. They found that specific SMART parameters had a large impact on probability of failure. Most importantly, a large section of failed drives showed no signs of failure in all of the monitored SMART attributes. This made it unlikely to achieve an accurate predictive failure model that can be built based on the SMART attributes alone [Pinheiro]. Similarly, BackBlaze analyzed the correlation rates between its HDD failures and SMART attributes and found that SMART 5, 187, 188, 197, and 198 had the highest rates of correlation to HDD failure

### Dataset

The main challenge of our project was handling a highly imbalanced dataset with a low rate of failed data points. Our work relies on the operational data provided by Kaggle and BackBlaze. Backblaze is an online backup and cloud storage provider that open sources public information on 86,529 of its enterprise hard disks <sup>[2]</sup>. The dataset we used for this project contains value of Hard disk drives tested in January 2019. It constitutes of daily measurements of SMART parameters of each operational hard disk drive. The datasets are updated quarterly. The fields of the daily reports are as follows: report date, serial number of drive, drive model, capacity of the drive, a failure label that is at 0 and 1 when the drive fails



and finally the SMART parameters <sup>[3]</sup>.

Fig. 1: Graph of Annualized failure rate from BackBlaze's dataset

Total Disks	Good Disks	Bad Disks	% Of Good Disks	% Of Bad Disks
110561	110555	6	99.99457	0.00543

Table 1: Table of training dataset January 2019

### Feature Selection

The data collection test is done on more than 80 parameters namely temperature, power on hours, detection of bad sectors, reallocated sectors and many more. This dataset also contains some drives that do not report every parameter resulting in many blank fields. The reason is that SMART values differ from manufacturers to manufacturers, since they are free to decide how to implement SMART parameters. Due to limitations on our personal computers, we limited our feature size to at most 7 SMART attributes. We chose to keep Back Blaze's original five attributes namely: SMART 5,187,188,197. Some of the preprocessing steps taken to improve the performance of our model are choose raw over normalized SMART values, filter out all HDD models besides Seagate models. Each attribute has a raw value, whose measurement is entirely up to the drive manufacturer (counts or a physical unit, such as degrees Celsius or seconds). Failure rates on Back Blaze HDDs are around 0.5%. The selected parameters are as follows

Smart parameter	Description	Value
Smart_5_raw	Reallocated Sector	Lower is Better
Smart_9_raw	Power on Hours	Lower is Better
Smart_187_raw	Reported Uncorrectable Errors	Lower is Better
Smart_188_raw	Command Time Out	Lower is Better
Smart_193_raw	Load Cycle Count	Lower is Better
Smart_197_raw	Current Pending Sector Count	Lower is Better
Smart_198_raw	Uncorrectable Sector Count	Lower is Better

Table 2: Abstract of the selected features

### Methods, Approach and Results

There are various methods to predict hard disk drive failure, one of them which we used was logistic regression. We found that our model gives the most accurate prediction, given a linear dataset. We developed a methodology to train, validate and score a disk failure prediction model by using a real-world dataset that includes disks from different

manufacturers. Our goal is therefore to predict the accuracy of a drive's health viz. if it is in a healthy condition or if it is likely to fail, using the critical SMART attributes.

**Logistic Regression:** One of the most basic algorithms for performing binary classification. The score we obtain from Logistic Regression is directly proportionally to any changes in the feature values in a linear format. Our model filters out data on the basis of 3 parameters namely: SMART 5,197,198. Due to limitations of our personal computer, we evaluated only a day's data to train and achieve an accurate prediction of the data. Our train data included a total of 1,10,561 disks and the test dataset included 80 hard drives which included healthy ones as well as ones which are likely to fail. The same parameters viz. SMART 5,197,198 used for training are also used for the test dataset. The final result is, our Logistic Regression model predicted with 0.916666 (91.6%) accuracy in classifying the good disks and bad disks from the test dataset.

#### EQUATIONS, FIGURES AND TABLES

The decision boundary can be expressed in the form of an equation. In Equation 1, the L.H.S viz.  $h_{\theta}(x)$  is the hypothesis function for logistic regression. The objective is to try and find the best values of each  $\theta$  by minimizing the cost function output.

$$h_{\theta}(x) = g(\theta^T x) \quad \text{Equation 1}$$

$$z = \theta^T x \quad \text{Equation 2}$$

$$g(z) = \frac{1}{1+e^{-z}} \quad \text{Equation 3}$$

Misclassification	Failures Predicted	Predicted good disks	False Alarms
8.333333333	33.33333333	58.33333333	0

Table 3: Summary of prediction done by the model (in %)

#### CONCLUSION

To conclude, machine learning algorithms are capable of providing more accurate predictions of HDD failures, with readily available data, to what is currently implemented in today's industry. For future work, we would plan on using more powerful computational resources on which we can run our machine learning models using a much larger training set. In addition to that, we would also add other features into the training set and evaluate its effects the accuracy and precision of the model. We understood the limitations of machine learning techniques to predict disk failures. We decided to select some key parameters that are most important and helps our model to provide the most accurate result possible. We also studied that using Raw parameters would help the model in prediction as values are more or less same for different hard drives from different manufacturers. One potential reason may be, when one of the feature values is 1 or greater, the HDD is now much more likely to fail.

Finally, Logistic regression gives different weights to different features, so seeing one non-zero value may not be enough to warrant a failure label.

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# WATER LEVEL DETECTION OF TANKS (IoT Based)

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## ABSTRACT

The aim of the project is to develop a multiple tanks management system which is easily accessible to any person and can manage their tasks related to water management very smoothly. During the past decade, water needs have increased unpredictably in India. Increasing demand of water supply has become a major challenge for the world. Wasteful usage of water, climatic changes and Urbanization has further depleted the resource. Conservation and management of the resource must be given utmost importance. In this project, we present an IOT based water monitoring system which supports internet-based data collection on real time bases. We are monitoring water consumption and accordingly managing multiple tanks on android app.

**KEYWORD:** *Internet-based data collection, Wasteful usage of water, multiple tanks, android app.*

## INTRODUCTION

“IOT based Water Tank Control system “for prevent water wastage. Making a control system to automatically control the water pump requires careful observation of what people do as their daily activity to make sure that the tank is full.

In almost all over India every state has a State Water Supply body that is responsible for the

development and regulation of water supply in state. Due to scarcity of water, the release of water is controlled and done at certain times in a day. So, this project aims to create an automatic water level controller using a Wi-Fi module for multiple tanks at the same time. Water may be a restricted resource and is crucial for agriculture, industry and for creature's existence on earth including human beings. Lots of individuals don't realize the importance of drinking enough water a day. More water is wasted in many uncontrolled ways. This drawback is quietly associated with poor water allocation, inefficient use, and lack of adequate and integrated water management. Therefore, efficient use and water monitoring are a potential constraint for a home or office water management system. Every living being on earth desires water to survive. Human bodies are made up of more than 60 percent of water.

### **PROBLEM DEFINITION**

Water is a limited resource and is essential for agriculture, industry and for creature's existence on earth including human beings. Lots of people don't realize the true importance of drinking enough water every day. More water is wasted by many uncontrolled ways. This problem is quietly related to poor water allocation, inefficient use, and lack of adequate and integrated water management. Therefore, efficient use and water monitoring are potential constraint for any residential water management system.

### **SURVEY OF TECHNOLOGIE**

For developing Front-end android application, we will be using Android Studio since it is easy to use, meets all the requirements and has the best emulator performance compared to other IDE's. ANDROID STUDIO: This is IDE created by community named "Intel JIDEA" used as a platform for developing Mobile Apps based on Android Technology. The Intel JIDEA, Android-based studio provides massive a amount of plugins created by different communities.

### **WHAT IS ANDROID SDK?**

Android provides a rich application framework that allows you to build innovative apps and games for mobile devices in a Java language environment. Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. This tutorial will teach you basic Android programming and will also take you through some advance concepts related to Android application development.

### **SOFTWARE REQUIREMENTS**

#### **Functional Requirements**

- Controller: Initiates the process and Reads data from the sensors to give output.
- Flow Sensor: Flow Sensor helps to check the amount of water coming from the tank.
- Ultrasonic sensor: Four ultrasonic sensor helps to measure the amount of water available in respective tanks.
- Wi-Fi module: Wi-Fi Module is needed to send the information to the App through Internet.

### **Non-Functional Requirements**

- Performance: response time Should be as soon less as possible.
- Availability: Flow Sensor and ultrasonic Sensor should be working 24/7.
- Reliability: Pump controlling should be accurate.

### **Why did you choose this Project?**

The Project “WATER LEVEL DETECTION OF TANK” is Internet of Things based project. It works as individual monitoring system for each home in the building. It generates the bill separately in the android app. Water is calculated in liters and user will be benefited because sometimes user must pay more, even though if they don't use. Main Aim of the project is to provide justify water.

### **What is the use in future?**

In future, proposed system can be made fully autonomous by embedding the artificial intelligence with some predefined set of rules and standard. With the use of Artificial intelligence, smart water distribution can be carried out automatically without human intervention. If any problem is detected in water quality, the system will automatically send a notification to remotely handled devices to carry out necessary steps by the authorized person or dedicated authorities.

### **What is the Purpose of this Project?**

Water wastage has been increased unpredictably in India. The Demand of water supply also has been increased due to urbanization. In this project we are presenting IOT based water monitoring system which supports internet-based data collection as per usage. we are handling multiple tanks at a time according to usage so that water wastage can be minimized.

## **FIGURES AND TABLES**

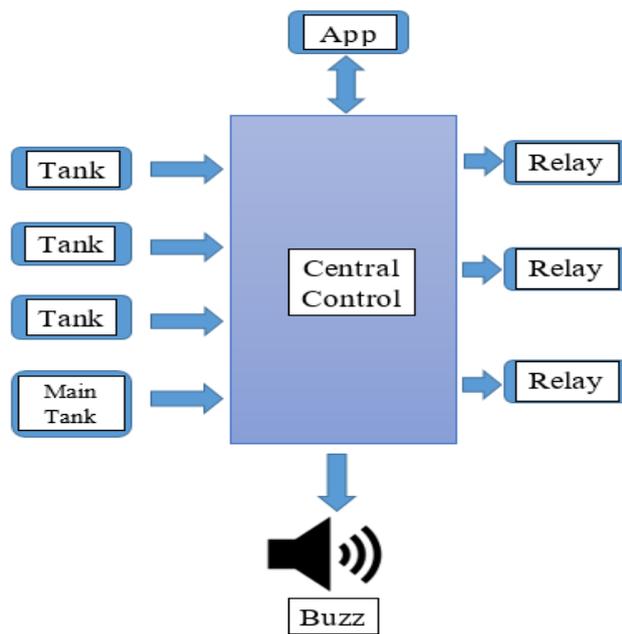


Figure: Block Diagram

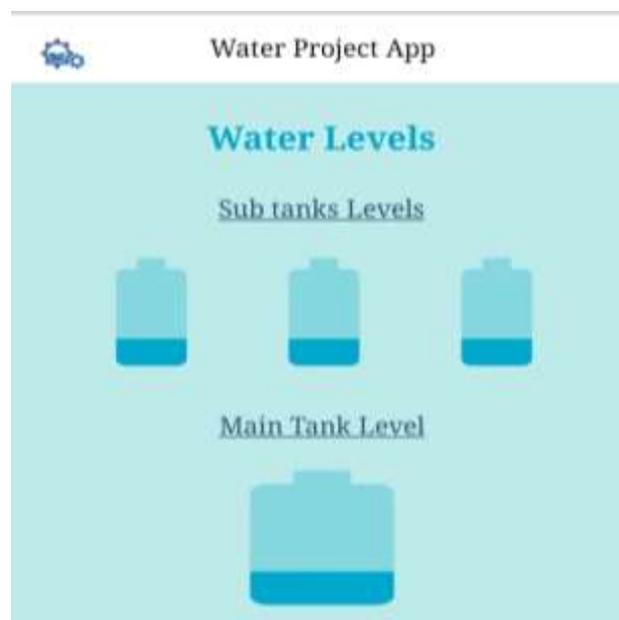


Figure : Water level detection android App

## CONCLUSION

It has been a great pleasure for me and my partner to work on this exciting and challenging project. This project proved good for us as it provided practical knowledge of not only programming in Android Studio, but also about all handling procedure related to Database. It also provided us knowledge about the latest technology used in developing an application and technology that will be great demand in future. Currently, we are combining these three tanks as a sample, but more no. of tanks can be added. This project can be used by any person who wants multiple tanks automated water handling system.

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# DATA MINING & DATA WAREHOUSING

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## ABSTRACT

Data mining is an important subfield of computer science which discovers patterns from large data set or meta data by using methods such as AI, machine learning, statistics, and database systems. Data warehouse is build by collecting data from multiple heterogeneous sources that support analytical reporting and decision making. This paper shows the importance of using data warehousing and data mining, and also the process how it can help decision makers to make better decisions. The first part of this paper tells about how data mining process is implemented and the benefits of using data mining. And the second part of the paper focuses on the data warehouse how it is implemented, its architecture, schemas and its benefits and problem faced by data warehouse\

**KEYWORDS** : *Data Mining, Retention, Data warehouse, OLAP, Schemas*

## INTRODUCTION

Nowadays we have huge chunks of data which lead to the necessity of using data warehousing and data mining. Data warehouse is used as a central store of a subject oriented, integrated, time-variant and non-volatile collection of data from different sources (operational databases). Data mining has become an important technique which can extract useful information from the huge amount of data we have nowadays. It also may help to extract information. It provides an intelligent way of analysing and querying data. It goes further by finding useful relationships in data even hidden relationships or designs. Web mining is one of the most common instance of data mining usage. It also helps in extraction useful information from the tons of information the internet. Various benefits and advantages are also discussed in this paper.

## HOW DATA MINING IS USEFUL?

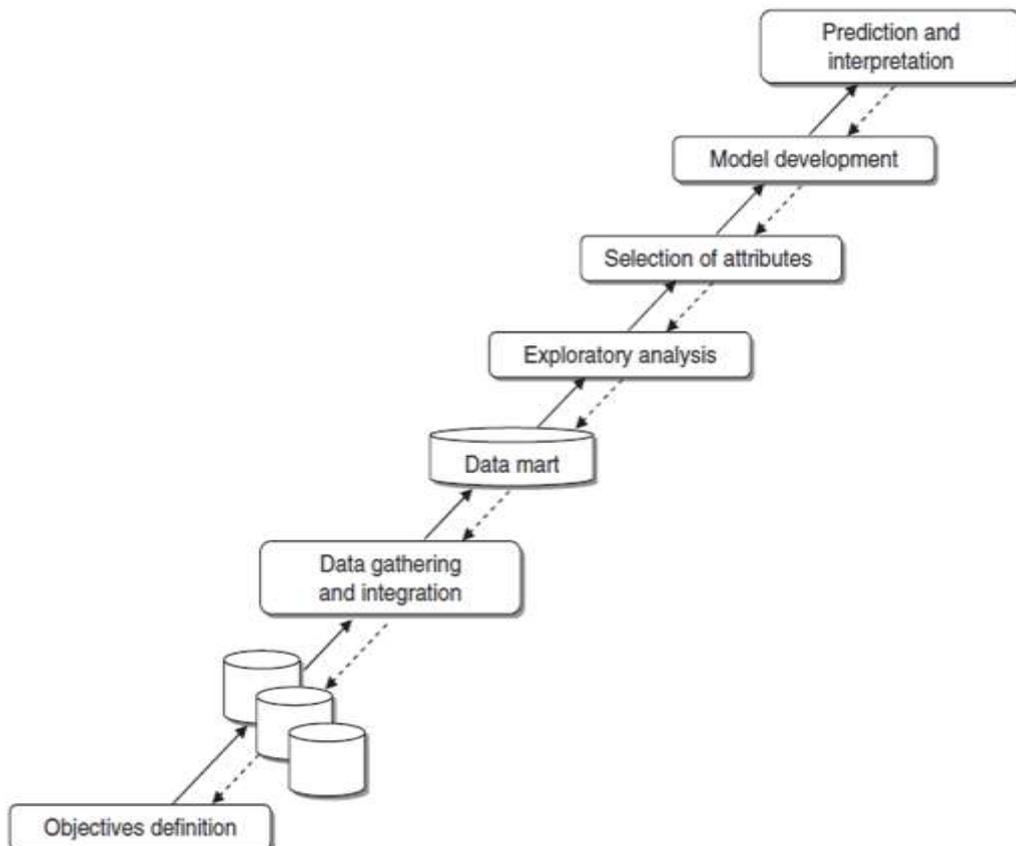
The term data mining indicates the method for exploring and analysing a dataset, usually of large size, so as to seek out regular patterns, and extract relevant knowledge and to obtain meaningful recurring rules. The purpose of a data mining analysis is to draw some conclusions starting from past observations and then generalize it in reference to the entire population, in such a way that they are accurate.

**Data mining is categories in two ways:**

**Interpretation:** It finds regular patterns within the data and to precise them through rules and criteria which will be easily understood by experts within the application domain.

**Prediction:** It helps to anticipate the worth that a variate will assume within the future or to estimate the likelihood of future events.

**Data Mining Process :**



## Analysis methodologies

Supervised learning. In a supervised learning analysis, a target attribute either represents the class to which each record belongs or expresses as a measurable quantity. Unsupervised learning. Unsupervised learning analyses are not guided by a target attribute. Therefore, in this data mining tasks are aimed toward discovering recurring patterns and affinities within the dataset.

### Example of how data mining is implemented:

#### Retention in the cell industry.

area	numin	timein	numout	Pothers	Pmob	Pland	numsms	numserv	numcall	diropt	churne
3	32	8093	45	0.14	0.75	0.12	18	1	0	0	0
3	277	157842	450	0.26	0.35	0.38	9	3	0	1	0
1	17	15023	20	0.37	0.23	0.40	1	1	0	0	0
1	46	22459	69	0.10	0.39	0.51	33	1	0	0	0
1	19	8640	9	0.00	0.00	1.00	0	0	0	0	0
2	17	7652	66	0.16	0.42	0.43	1	3	0	1	0
3	47	17768	11	0.45	0.00	0.55	0	0	0	0	0
3	19	9492	42	0.18	0.34	0.48	3	1	0	0	1
1	1	84	9	0.09	0.54	0.37	0	0	0	0	1
2	119	87605	126	0.84	0.02	0.14	12	1	0	0	0
4	24	6902	47	0.25	0.26	0.48	4	1	0	0	0
1	32	28072	43	0.28	0.66	0.06	0	1	0	0	0
3	103	112120	24	0.61	0.28	0.11	24	2	0	0	0
3	45	21921	94	0.34	0.47	0.19	45	2	0	1	0
1	8	25117	89	0.02	0.89	0.09	189	1	3	0	0
3	4	945	16	0.00	0.00	1.00	0	0	0	0	1
2	83	44263	83	0.00	0.00	0.67	0	0	0	0	1
2	22	15979	59	0.05	0.53	0.41	5	2	0	1	1
2	0	0	57	0.00	1.00	0.00	15	1	1	0	1
4	162	114108	273	0.18	0.15	0.41	2	3	0	1	1
4	21	4141	70	0.14	0.58	0.28	0	1	0	1	1
4	33	10066	45	0.12	0.21	0.67	0	0	0	0	1
4	5	965	40	0.41	0.27	0.32	64	1	0	0	1

Table 2.2 shows the two-dimensional structure of input data from an example of the analysis of customer loyalty.

attribute	meaning
area	residence area
numin	number of calls received in period $t - 2$
timein	duration in seconds of calls received in period $t - 2$
numout	number of calls placed in the period $t - 2$
Pothers	percentage of calls placed to other mobile telephone companies in period $t - 2$
Pmob	percentage of calls placed to the same mobile telephone company in period $t - 2$
Pland	percentage of calls placed to land numbers in period $t - 2$
numsms	number of messages sent in period $t - 2$
numserv	number of calls placed to special services in period $t - 2$
numcall	number of calls placed to the call center in period $t - 2$
diropt	binary variable indicating whether the customer corresponding to the record has subscribed to a special rate plan for calls placed to selected numbers
churner	binary variable indicating whether the customer corresponding to the record has left the service in period $t$

Table 2.3 Meaning of the attributes in Table 2.2

Suppose that a cell company carries out a data mining analysis (prediction and interpretation). On the one hand, the company wishes to assess the likelihood of future churning by each customer, so as to focus on marketing actions for retention purposes. The intent is to know the explanations why customers churn, with the aim of improving the service level and reducing future churning. Table 2.2 contains 23 observations and 12 attributes, whose meaning is indicated in Table 2.3.

The first 11 attributes are explanatory variables, while the last attribute is the target variable, expressing the category of every record in reference to the objectives of the data mining analysis.

The first explanatory variable gives personal demographic information while the remaining variable refer for the utilization of service. Observed values are relative to time period of index  $t - 2$  for the explanatory attributes, whereas for the target variable they refer to period  $t$ .

The difference in time placement is required so as to use the model for predictive purposes. Indeed, it's necessary to predict during the present period which customers will leave the service within 2 periods, supported the available information, so as to develop timely and effective retention actions.

The purpose here is to get an inductive model that's capable of learning from past available observations and identifying a plausible relationship between the target variable and therefore the explanatory attributes.

Once the model has been created supported past records, it's possible to use it to predict the target class of latest records or to know common characteristics of consumers who churn compared to those that remain loyal.

## APPLICATIONS OF DATA MINING

- **Relational marketing.**
- Identification of customer segments that are most likely to respond to targeted marketing campaigns, like cross-selling and up-selling;
- identification of target customer segments for retention campaigns;
- prediction of positive responses to marketing campaigns;
- interpreting and knowing the buying behaviour of the customers;
- analysis of the products purchased by customers jointly, known as market basket analysis.
- Fraud detection.
- Risk evaluation.
- Text mining.
- Image recognition.
- Web mining.

- Medical diagnosis

### WHY DATA WAREHOUSE IS IMPORTANT?

- Data warehouse is the repository of data available for developing business intelligence architectures and decision support systems.
- The term data warehousing indicates the entire set of interrelated activities involved in designing, implementing and employing a data warehouse.
- Data warehouse is storage of convenient, consistent, complete and consolidated data, which is collected for the purpose of making quick analysis for the end users who take place in Decision Support Systems (DSS).
- The primary goal of any data warehouse is to integrate data from disparate sources into a centralized store, where that data can be used across the enterprise for decision support.

### Data warehouse architecture -

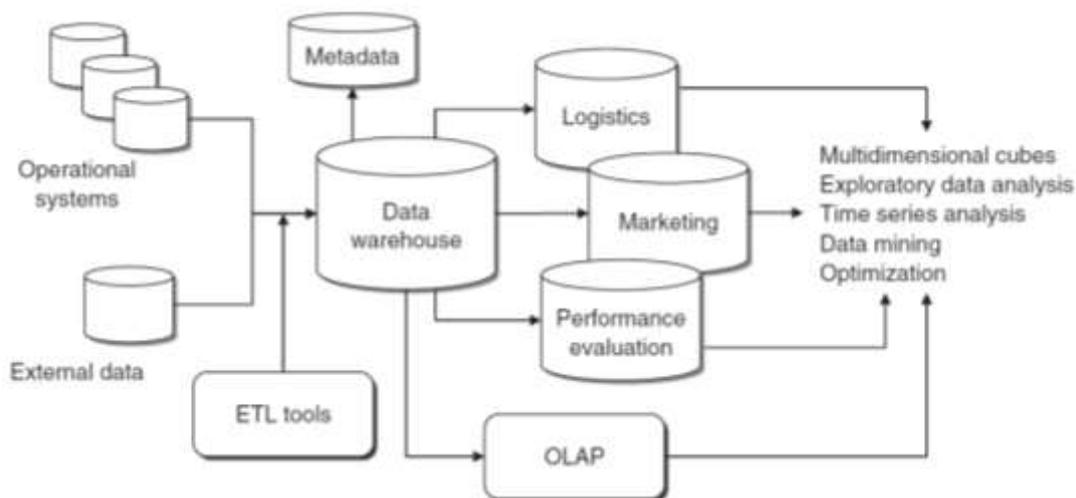


Figure 3.1 Architecture and Functions of a data warehouse

### ETL tools –

**Extraction:** In this phase, internal and external data are extracted from different sources. All past data are fed into the empty data warehouse, and the subsequent incremental extractions that update the data warehouse using new data that become available over time.

**Transformation:** In transformation phase the quality of the data extracted from the different sources are improve, through the correction of inconsistencies, inaccuracies and missing values. Some of the main shortcomings that are removed during the info cleansing stage are:

- Inconsistencies between values recorded in several attributes having an equivalent meaning;
- Data duplication;
- Missing data;
- Existence of inadmissible values.

**Loading:** In this phase, data are loaded in the data warehouse and make them available for analysts and decision support applications.

## OLAP

The major task of online operational database systems is to perform online transaction and query processing (OLTP). It covers most of the day-to-day operations of an organizations.

On the other hand, data warehouse systems use online analytical processing (OLAP) systems which can organize and present data in various formats in order to accommodate the diverse needs of different users. In this users or knowledge workers in the role of data analysis and decision making.

### Differences between OLTP & OLAP

**Users and System Orientation:** An OLTP system is employed for transaction and query processing by clerk, clients and professionals etc. An OLAP system is employed for data analysis by knowledge workers, analysts, managers and executives.

**Data Contents:** An OLTP system manages present data which are too detailed to be used easily for making decisions. Whereas large amounts of historic data are managed by an OLAP system, which provides facilities for summarization, aggregation, stores and manages information at different levels of granularity. These features make the data easier to use for making informed decision.

**Database Design:** An OLTP systems use the entity-relationship (ER) data model and an application-oriented database design. An OLAP systems use a star or snowflake model and subject-oriented database design.

**View:** An OLTP system focuses mainly on the present data within an enterprise or department, without pertaining to historic data or data in several organization. In contrast, due to the evolutionary process of an organization an OLAP system often spans multiple versions of a database schemas. OLAP systems also affect information that originates from different

organizations, integrating information from many data stores. Due to the large data size, OLAP data are stored on multiple storage media.

Access patterns: In OLTP system the access patterns include mainly of short, atomic transactions. Thus, it requires concurrency control and recovery mechanisms. However, accesses to OLAP systems are mostly-read only operations, although there might be complex queries.

**Different types of schemas -**

**Star Schema**

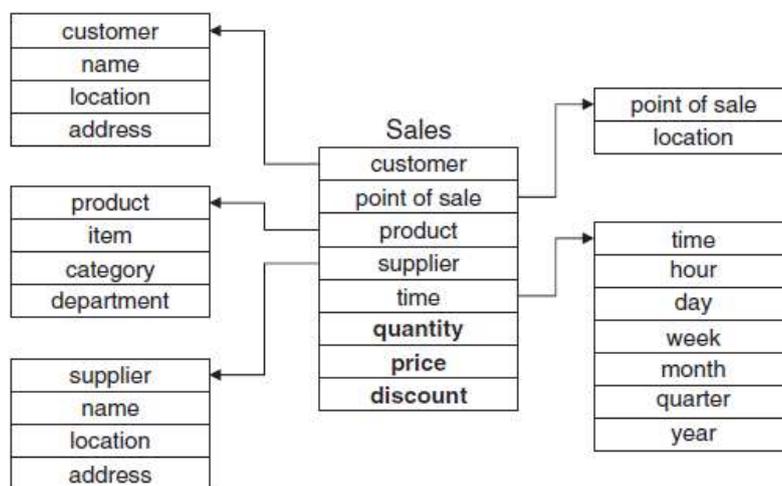


Figure 3.2 Example of Star Schema

The multidimensional representation is based on a star schema, it is associated with the fact table representing sales transactions. The fact table is placed in the center of the schema and is linked to the dimension tables through appropriate references. (Figure 3.2)

**Snowflake Schema**

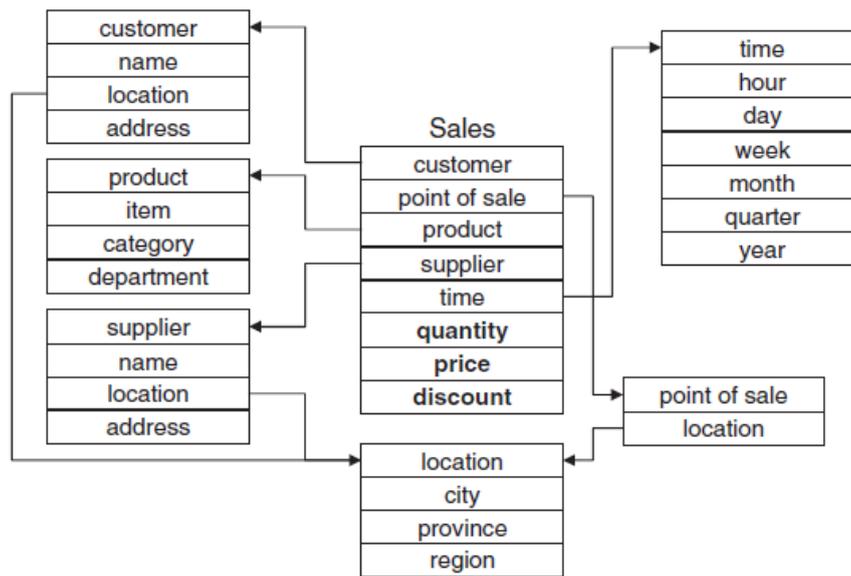


Figure 3.3 Example of Snowflake Schema

Snowflake schema where dimension tables are connected to other dimension tables, through partial data standardization, to reduce memory usage. (Figure 3.3)

### Galaxy Schema

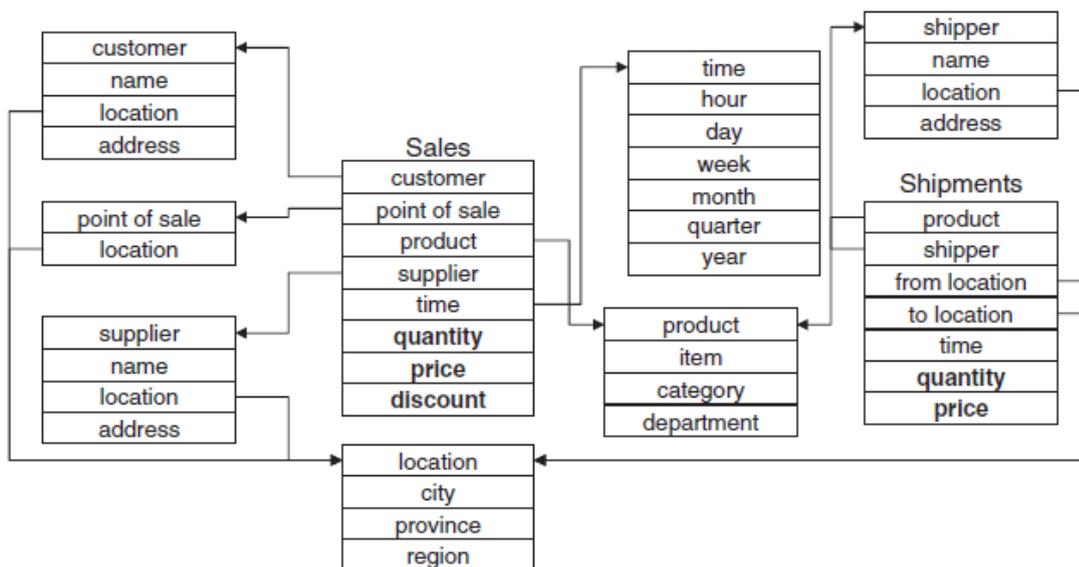


Figure 3.4 Example of Galaxy Schema

Galaxy schema in this, data warehouse includes several fact tables, which are interconnected with dimension tables, in turn linked with other dimension tables (Figure 3.4)

When a fact table is linked with n dimension tables it can be represented by an n-dimensional data cube where each axis corresponds to a dimension.

Based on hierarchies of concepts, OLAP analyses to consolidate the data and create logical views along the dimensions of a data warehouse

### **Benefits of a Data Warehouse -**

1. Delivers enhanced business intelligence
2. Saves times and money
3. Enhances data quality and consistency
4. Generates a high Return on Investment (ROI)
5. Provides competitive advantage
6. Improves the decision-making process
7. Enables organizations to forecast with confidence
8. Streamlines the flow of information

### **Problems of Data Warehousing**

1. Underestimation of resources of data loading
2. Hidden problems with source systems
3. Required data not captured
4. High maintenance and Increased end-user demand
5. High demand for resources and Data ownership
6. Data homogenization
7. Complexity of integration
8. Long-duration projects

## **CONCLUSION**

Nowadays we have huge chunks of data which lead to the necessity of using data warehousing and data mining. Data warehouse is used as a central store of a subject oriented, integrated, time-variant and non-volatile collection of data from different sources (operational databases. Different data warehouse (star schema, snowflake schema, or galaxy schema) are discussed. Data mining has become an important technique which can extract useful information from the huge amount of data we have nowadays. It also may help to extract

information from the Internet which becomes part of our life. Data Mining Process How Mining happens. Data mining provides an intelligent way of analysing and querying data. It goes further by finding useful relationships in data even hidden relationships or designs. Web mining is one of the most common instance of data mining usage. It helps us to extract useful information from the tons of information from data sources.

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# CLLOUD COMPUTING

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## ABSTRACT

Cloud computing is a developing innovation which could change conventional IT frameworks. Cloud computing makes it doable for an association IT to be progressively adaptable, spare expenses and procedure data and information quicker than with conventional IT. The issue however lies in the hazard of this new innovation. It is critical to realize whether worth can be included for associations through utilizing cloud registering. Cloud computing has as of late rose as another worldview for facilitating and conveying administrations over the Web Cloud figuring is alluring to entrepreneurs as it disposes of the prerequisite for clients to prepare for provisioning, and permits endeavors to begin from the little and increment assets as it were when there is an ascent in administration request. The improvement of cloud computing innovation is presently at its early stages, with numerous issues still to be tended to. Cloud computing is the utilization of the Internet for the errands performed on the PC and it is envisioned as the cutting edge design of IT Venture. The 'Cloud' speaks to the web and it identified with a few advancements and the assembly of different advances has developed to be called cloud computing. In contrast with ordinary ways Cloud Computing moves application programming and databases to the huge information focuses, where the information and administrations won't be completely dependable. Cloud computing is set of assets what's more, administrations offered through the Internet. Cloud administrations are conveyed from server farms found all through the world.

## INTRODUCTION

Like real clouds which are the collection of water molecules the term cloud in cloud computing is the collection of networks. The user can use the modalities of cloud computing boundlessly whenever demanded. Instead of setting up their own physical infrastructure, the users ordinarily prefer a mediator provider for the service of the internet in cloud computing.

The users have to pay only for the services they had used. The workload can be shifted to reduce the workload in cloud computing. A load of service is handled by the networks which forms the cloud that's why the load on local computers is not heavy while running an application. So the requisition of hardware and software at the user side is decreased. All we need to have a web browser to use cloud computing. All we need to have a web browser like chrome to use cloud computing. Following are the key features of cloud computing:

- I. Resource Pooling and Elasticity
- II. Self-Service and On-Demand Services
- III. Pricing
- IV. Quality of Service

### **TYPES OF CLOUD COMPUTING**

**Public Cloud** : The public cloud is a processing administration provided by the outsider suppliers on people in general web . These administrations are accessible for any client who needs to utilize them and they need to pay just for the administrations they devoured.

**Private Cloud**: The registering administrations gave over the web or private system go under the private cloud and these administrations are offered uniquely to the chose clients instead of average citizens. A higher security also, security is appointed by private mists through the firewall and inner facilitating

**Hybrid Cloud**: Hybrid cloud is the mix of open cloud and private cloud. In the cross breed cloud, each cloud can be overseen autonomously however information and applications can be shared among the mists in the half breed cloud

### **OBJECTIVE**

#### **Administrations concentrated on your business**

Understanding the significance of offering types of assistance custom-made to every business' specific needs, distributed storage suppliers are progressively concentrating on business ability and readiness. Pick a supplier that empowers versatility and has an adaptable foundation to enable your business to develop.

#### **Development of business dexterity**

Accomplishing this objective through arrangement will let you lessen your reliance on engineers and lead to quick developing business readiness.

#### **Fast time-to-showcase**

To guarantee that your cloud reception is prosperous and helpful for your business, focus on lessening time and expenses. One key target ought to be a quicker time-to-market, which you

can accomplish through big business systems like work process, devoted UI, and verification.

### **Cut the operational expenses**

A significant goal is decrease of operational costs, which you can accomplish by picking a low-upkeep stage. By relocating your information and asset to a distributed storage stage you profit by free help, decreasing the all out expenses.

### **Programmed security**

A significant worry for some business supervisors who are thinking about cloud selection is security and information burglary. As of late, much exertion has been placed into making programmed security frameworks and security programming refreshes.

### **Lessen advancement cost**

Cloud reception will assist you with diminishing expenses in numerous zones. Concentrate on decreasing the all out expense of proprietorship, yet in addition the costs remembered for support, application advancement, and new highlights improvement.

### **Improve representative profitability**

A related goal to remember is the way that the instruments and highlights you addition will build worker profitability. You can discover broad data about distributed storage suppliers and highlights on the web

### **Remain secure**

It's imperative to select or a supplier that can offer you a high security level so you won't need to stress over issues identified with your information put away in cloud.

### **Review of literature**

cloud computing has been referred to as 'the fifth utility' (alongside water, power, gas, and phone) whereby processing administrations are promptly accessible on request, as other utility administrations accessible in the present society [Buyya, Yeo, Venugopal, Broberg, and Brandic, 2009]. This vision isn't basically new. Going back to 1961, John McCarthy, resigned Stanford teacher and Turing Award victor, in his discourse at MIT's Centennial, anticipated that in the future registering would turn into an 'open utility'. In 1969, Leonard Kleinrock, one of the main researchers of the first Advanced Research Projects Agency Network (ARPANET) venture which seeded the Internet, stated: 'Starting at now, PC systems are still in their early stages, however as they grow up and turn into advanced, we will presumably observe the spread of "PC utilities" which, similar to exhibit electric and phone utilities, will serve singular homes and workplaces the nation over' [Kleinrock, 2005, p. 4]. It could be contended that cloud computing has started to satisfy

### **Research Methodology**

The subjective examination depends on the exploration where there are littler examples that establishes the depiction for the examination of cloud computing. Here, the adequacy depends on the way to deal with measure the aptitudes and the capacities to test the exploration with the results that are not seen to be solid. These primarily originate from the examination of the individual decisions where the outcomes are additionally mirroring the assessments of the more extensive populace. The focus on this is to characterize the highlights with the attention on working with definite depiction and social event of the information like in Australia how MYOB bookkeeping programming can utilize the cloud computing procedures. (Madhav et al, 2017). With this, the norms depend on coordinating the framework sets and design to improve the establishment of the information where the scientists additionally will in general be summed up with the emotional structures.

### **Propelling Factors And Challenges**

Cloud structures are not just one more kind of advantage provisioning establishment and in all honesty, have different open entryways from the models for cloud establishments that will engage further sorts of employments, diminished progression and provisioning time of different organizations. Dispersed figuring has explicit traits that remember it from conventional resource and organization provisioning conditions. Limitlessly (practically) Scalable Cost saving/less capital utilize Higher resource Utilization Business adroitness Disaster recovery and Back up Device and Location Independence While diminishing ahead of time IT cost or capital use is the one of basic reason behind the determination dispersed processing, there are in like manner some various components that stimulates the various relationship for the accepting the conveyed registering.. In static resource partition plans there certainly exists a trade off between limit sending and resource demand. Disseminated figuring shifts the region of resources for the cloud to diminish the costs related with over-provisioning (for instance having an unreasonable number of benefits), under-utilization (for instance not using resources adequately) and under-provisioning

### **Scope of Study**

cloud computing is increasing greater notoriety as of late and is as of now observed as a standard for most organizations. The entrance to the client turns out to be exceptionally rearranged and even the client gets genuine and reasonable space for capacity that the individual in question can utilize adequately without stressing over bigger system complexities

### **The requirement for cloud computing for a business emerges :**

#### **Cost Efficiency**

Cloud computing invalidates the requirement for an undertaking to make bigger speculations on servers and equipment stockpiles.

**Powerful spotlight on business**

By participating in cloud computing, an association is have confidence that every one of its administrations will get executed through the web and it need not get worried about the everyday specialized issues or some other issue

**Helps in Efficient Performance of a business**

An organization turning to cloud computing makes certain to get solid execution over any edge of the globe regardless to the topographical of the client. The greatest favorable position of cloud computing is its auto update of utilizations and administrations.

**Significant level of Data Security**

Giving most elevated security to ensure your information against unapproved openness, loss of information or any type of progress is the greatest advantage for an association utilizing cloud computing.

**Exceptionally Flexible**

Any specialized glitch, god restrict, if emerges and a halfway portion of the cloud computing quit working, there is no compelling reason to fear as different sections keep on working with no reason for protest till the issue gets settled.

**CONCLUSION**

cloud computing marks the start of another time in the field of data and correspondence innovation as it carries with a development worldview which can change the manner by which figuring was finished. Clients are as yet getting to know this innovation and a move from traditional registering to cloud computing will occur yet step by step. Inferable from this innovation, designers with clever thoughts regarding internet providers will never again need to consume huge pieces of cash in building their product and equipment infrastructural abilities but instead they could concentrate on powerful provisioning of utility administrations. For cloud suppliers, benefit lies in economies of scale with higher gainfulness as the client base develops and the capacity of the specialist organization to multiplex among a wide base of clients. As opposed to an assortment of advantages related with cloud computing, there are sure difficulties too. Clever, proficient and powerful arrangements so conceived to conquer difficulties related with cloud computing were enrolled right now a basic and thorough survey of applicable writing. Cloud computing as an ongoing innovation is still at an early phase of its improvement and there is still such a lot of potential which can be acknowledged inferable from progressing innovative work right now.

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# COMPUTER VISION & AI ENABLED AUTOATED AIRPORT GROUND OPERATIONS

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## ABSTRACT

How many people realize the actual work that goes into safely and efficiently handling an aircraft when it lands and docks at the airport, and takes off again? There is a plethora of ground handling operations that take place prior to a flight being commissioned to take off, and the majority of them are carried out by human effort. This paper talks about the automation of those ground operations to improve the efficiency and safety of the first stage in preparing for a flight. Automation can be achieved using computer vision and artificial intelligence, enabling computers to learn patterns of aircraft movement, images of aircraft wheels to follow pushback operations, fuel tank sizes of different aircraft models and the distance they would be travelling to intelligently re-fuel with minimal human effort, and many more ground related activities.

**KEYWORDS** : *Computer Vision, Artificial Intelligence, Automation, Airport Ground operations, Image Processing, Pattern Recognition*

## INTRODUCTION

Air transportation has become the most prominent and essential component of our competition driven world; after all, how can you travel between cities that are separated oceans apart in a matter of hours? The general passenger is satisfied with the current model of commercial aviation, but what lies beyond the oval shaped window - that can barely provide a view of the wing-tip – is much more. People often fail to realize that ground operations play a crucial role in any flight's routine; from deplaning all the passengers and their luggage, to emptying the sewage tanks, all these ground services primarily rely on a lot of human support. My study looks into the current models of these labour-intensive operations and applies a simple computer vision model – Computer vision is a field that uses techniques to help computers process information from photos and videos to gain a complex understanding of it, and to replicate a visual world to carry out tasks that usually require human visual

understanding. The model uses image processing and pattern recognition to automate tasks and make them faster without compromising safety and efficiency. The goal is to match and surpass human effort, and to reduce the overall time it takes for an aircraft to turn around – which directly relates with efficiency of ground operations. The conclusion provides an analysis of the efficiency, accuracy, and safety of an automated ground operations model, and the benefits that airports worldwide can potentially get by an automated model of operations.

### DEFINITION OF GROUND OPERATIONS

In aviation, aircraft ground handling defines the servicing of an aircraft while it is on the ground and (usually) parked at a terminal gate of an airport



source – citation <sup>[1]</sup>

- Ground services can broadly be divided into two types –
- Passenger and Terminal operations
- Check-in
- Baggage drop and screening
- Security screening
- Boarding checks
- Airport ramp/tarmac operations
- Bulk luggage transportation train from airport to aircraft



Source – alamy stock photos

### Re-fueling



### Sewage disposal

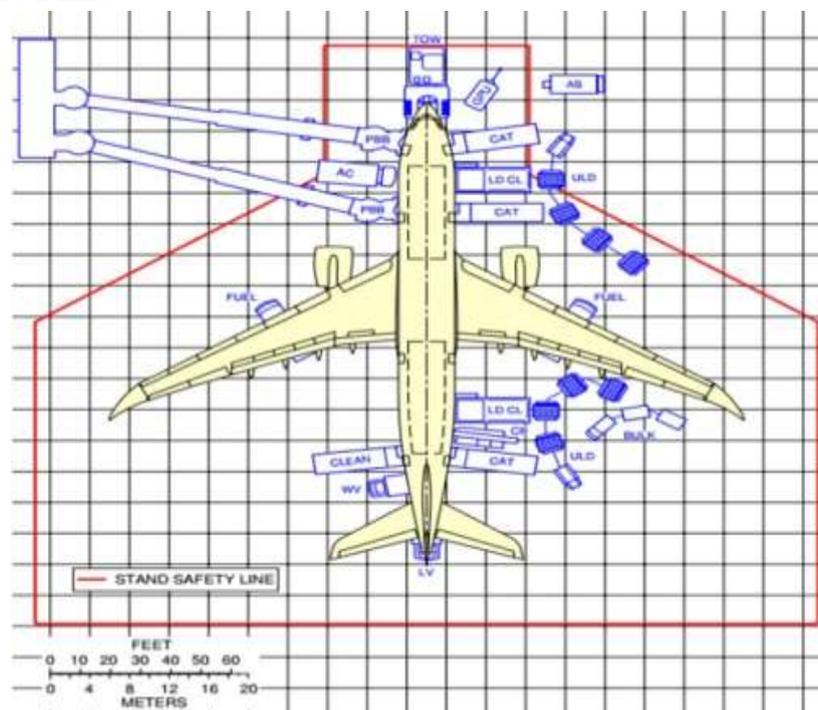
- Aircraft checks (outer body)
- Aerobridge/PBB – Passenger Boarding Bridge positioning and removal
- Galley (food, goods, merchandise, duty-free products) service transportation from airport to aircraft
- Supply of electrical power and conditional air
- Pushback operations



Source: ELAL airlines/Swissport Zurich

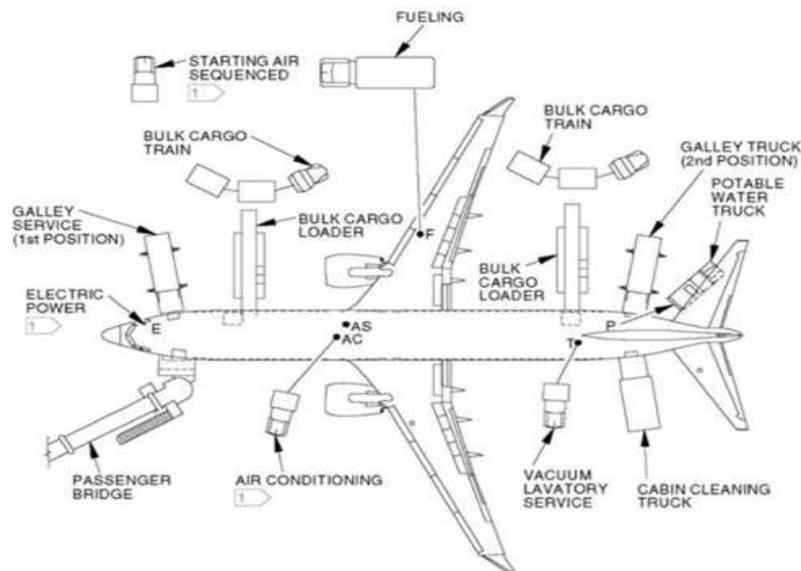
This study is limited only to ground operations carried out on the airport tarmac, commonly known as aircraft ramp handling, wherein the operations are directly related to the physical aircraft, having the need to use Ground Support Equipment (GSE). All ground operations related to passenger and terminal handling have been excluded, as there are a number of different automated solutions offered in that category.

**CURRENT MODELS**



Source - Aircraft typical ramp layout. Source: Airbus A330 AC manual<sup>[3]</sup>

The diagram above shows the general structure of placing aircraft ground handling vehicles and equipment. From the current displayed model, every single ground handling operation relies on human effort to control the vehicles and carry out the tasks, none of them have any automation technology. Applying computer vision and AI ML systems to these applications will benefit the scope of operating all of these operations simultaneously and significantly decrease the timetaken.



Source: Boeing 737, Airplane Characteristics for Airport Planning, D6-38A004

There are different layouts followed by different airports. Blueprints of these layouts like the ones above can be provided as test data for the system to learn the different aircraft that arrive at the airport and how ground handling vehicles handle operations, their positions, their timings etc.

## USING COMPUTER VISION

According to my model, a number of different computers will be connected to each other over a pan-airport network

### ***Baggage handling and ground vehicles (GSE – Groundsupport equipment)***

As passengers drop bags into the conveyer belt, they are screened by computers and sent to be loaded into the aircraft; here, multiple carriages are filled with the luggage that must be loaded into their respective flights; the main computer scans the flight number through a camera, and assigns the information of the aircraft and airline, including where it is parked, to an automatic fully driver independent mini tow vehicle, that will have an onboard computer system attached to a few different cameras placed at different angles. These cameras send real time photographic and video graphic content to an AI system – very similar to the tesla

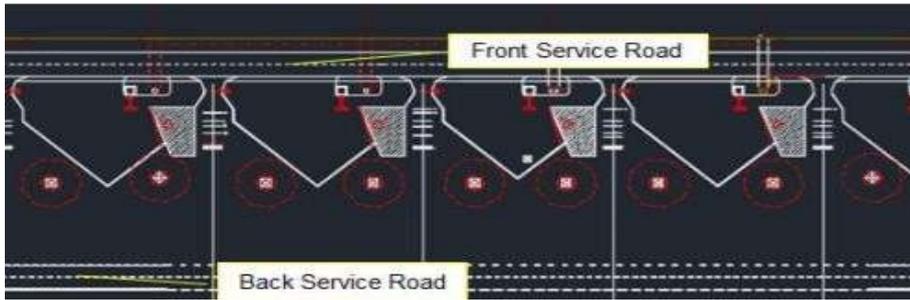
autopilot system, and other self-driven cars; a real time understanding of the airport tarmac is created and the baggage car can now navigate to the aircraft; having already received information about the aircraft and airline, the system can identify the flight within seconds using test data about various different aircraft models and airline logos/graphics. The main advantage to this is that self- driven, completely driver less cars can be remotely controlled if the machine has a problem, and reduces space drastically. A standard baggage tow vehicle takes up a lot of space as liability to the airport. Such vehicles can be replaced by automated towing systems to make way for more terminal area to service more passengers. This model is useful for airports situated in big cities with limited space to expand. Moreover, manual loading of bags and transportation take up a lot of time. With intelligent systems that can use real time data to carry out such tasks, the turn-around time of a flight decreases



Source – Attology.com<sup>[5]</sup>



An example of how a computer identifies aircraft (blue) and other ground vehicles (green). This system can also be used to avoid collision with other automated ground vehicles.



Source – citation<sup>[1]</sup>



The two diagrams above detail the typical parking space for aircraft at airports, and the speed limit at which Ground services equipment vehicles (GSE) can operate. Standardized layouts are best suited for automated systems as they improve accuracy with more and more rounds of operation they learn. GSE Vehicles are always driven by humans, hence speed limits are set to avoid any tarmac accidents; with the reaction time of humans being lower than that of computers, an automated system for GSEs can operate at higher speed limits and be safer since it better detects imminent threats, and the reaction time to initiate prevention of accidents on the tarmac would be much less. This directly contributes to the lowering of aircraft turn-around time.

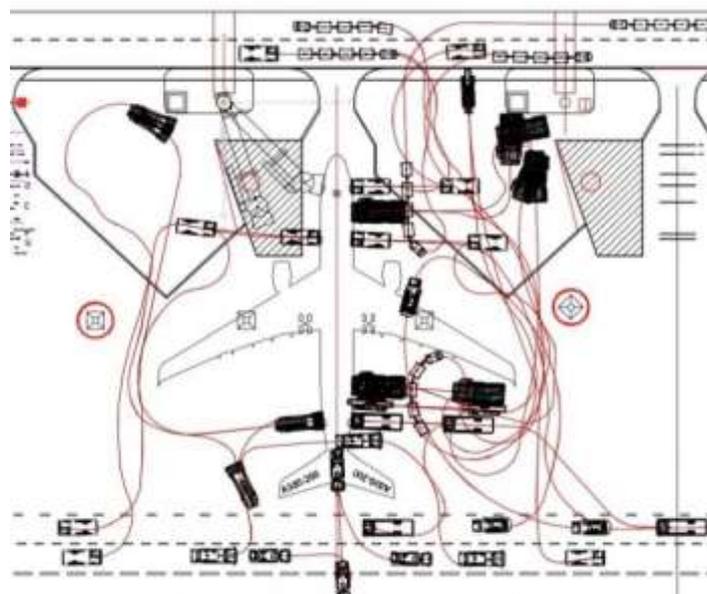
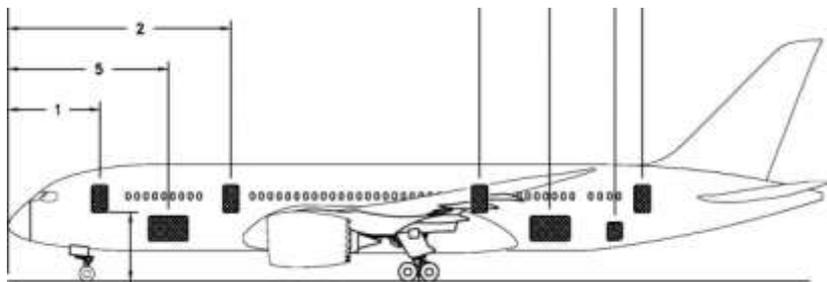


Figure : GSE trajectories for the full aircraft turnaround. Source: authors simulation

*Source – citation<sup>[1]</sup>*

This diagram shows the trajectories of all GSE Vehicles involved in a full flight turnaround. Such layouts can be used to create standardized paths for automated GSE vehicles to move around; moreover, standardized paths reduce chances of accidents, further adding to the safety that computer vision aided collision avoidance systems provide. These trajectories will be set into the computers that help map every parking apron of the airport to create a real-time positioning system, much like a GPS but limited only to the airport, providing faster speeds of location tracking and better reaction times to incorrect routes. Combining all these, a computer vision model can help GSE vehicles in accurately identifying source flights by mapping the parking space, and handling services at highly increased speeds with no compromise in accuracy. A LiDAR sensor can help this model even more by creating 3-D models of all obstacles, increasing reliability of the collision avoidance system onboard these vehicles.

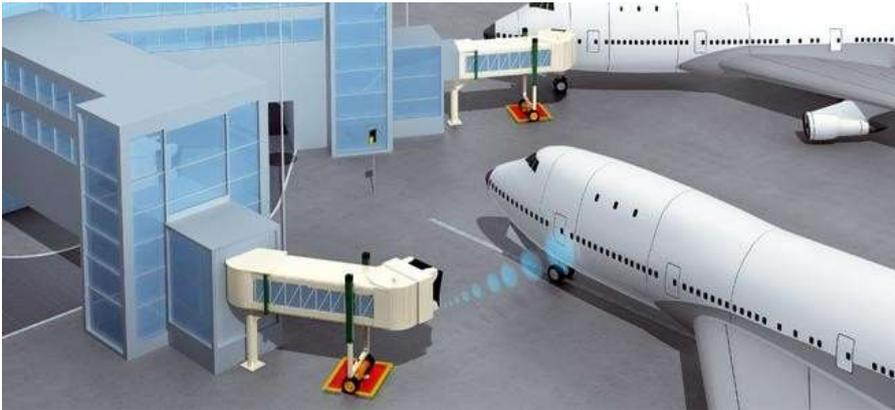


*An illustration showing all the various doors in a Boeing 787 aircraft, which can be learnt by the computer as per the model. Source – Boeing 787 airport planning manual<sup>[2]</sup>*

*Automation of passenger boarding bridge/re-fueling services*

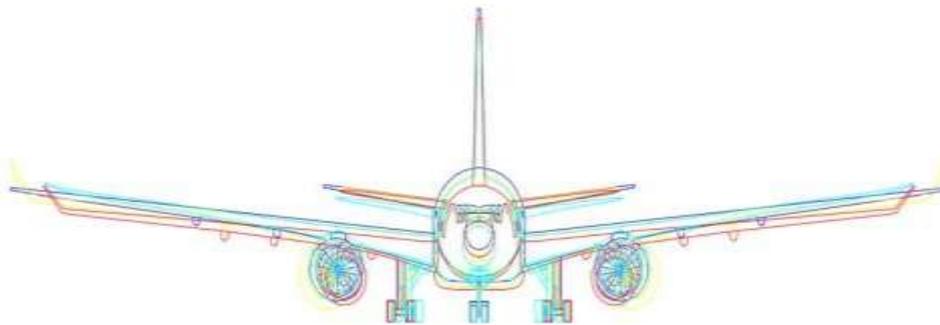
Passenger boarding bridges play a very crucial role in the most sensitive and lengthy process of a flight turn around. Treating passengers quickly and having them board the aircraft without any hassle is the top priority of any airline, side by side, using the least amount of time to pay lesser airport rates is also an important factor for airlines. The model we introduce here is a self-docking passenger boarding bridge, that requires zero human operation, and relies solely on a few cameras and an AI system to learn different types of aircraft doors and their shapes/structures to accurately and automatically dock the passenger boarding bridge once the aircraft has been parked.

These bridges are fixed from the airport and have a moving functionality so that it can service any aircraft by lowering its height and/or extending its length.



Source – sick.com <sup>[4]</sup>

The red portion in the image above are the moving parts, which include wheels to adjust the yaw, pitch, height, length. The blue path of circles is the required path to match and dock into the aircraft door to allow passenger boarding. Automation of this is carried out by feeding the learning model with images of different aircraft doors and size proportions. There are aircraft as small as cars while there are aircrafts as big as blue whales; the computer needs to learn



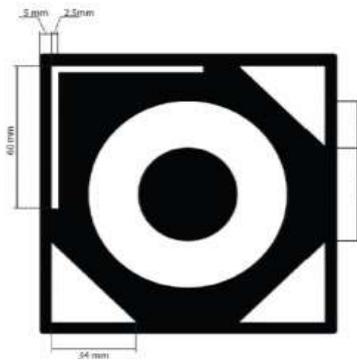
Source – Airbus, Boeing aircraft manuals. *Aircraft groundhandling: Analysis for automation* [3]

The above are intersecting front views of different aircraft skeletal frames - Airbus A350-900 in yellow, Airbus A330- 200 in red, Boeing 777-300ER in blue, Boeing 787-10 in cyan. One common thing about all these aircraft are that standardized boarding is followed, where passengers will always deplane from the right side (in a front view perspective). Standardized ground handling is also followed, where all GSE operations take place primarily to the left of the aircraft (front view). Therefore, all the computer needs to learn is the different sizes and designs of these aircraft in order to better carry out automation.

### APPLICATION OF LIDAR

LiDAR technology is widely used in land surveying; its recent common use in car auto piloting systems is a great example of how extremely accurate it is. Creating 3-D

representations of the world in front is a significant leap in computer vision technology, as this is both costlier than conventional camera data-learning model, and also is not



different sizes and proportions. Furthermore, doors can use visual markers along its borders like the diagram above. The computer will be able to identify the doors with these markers placed with much more accuracy than if it were to identify the doors simply by visual data. Docking takes a lot of precision, else the alignment of the door with the bridge might be uncomfortable to use; computers can carry out this task with much more accuracy as it simply has to identify the targets and the aircraft door efficient for all automated ground operations with a few exceptions like docking, where visual targets are used to identify the accurate location to dock the bridge; a LiDAR system in this scenario would never work as it is used to identify 3-D objects.

The best use LiDAR can be applied to is re-fueling of the aircraft. The fuel carrying vehicle is a high-risk, high-cost, high-priority GSE vehicle. A LiDAR system can significantly benefit re-fueling operations as it needs the most protection out of all ground services as aviation fuel is costly and highly flammable; LiDAR has already proven itself to be highly accurate in terms of mapping; the mapped data will be fed into the computer, learning different objects and models, and identifying threats long before an accident is prone to occur. Full automation of re-fueling services is not only inconvenient and un-trustworthy, but is also dangerous. LiDAR can be used to map the fuel inlet of an aircraft and automatically use robotic arms to re-fuel the tanks, however, any miss-alignment would lead to dangerous outcomes of jet fuel being mishandled, putting a threat to the entire airport.

### **TURN-AROUND-TIME (TRT)**

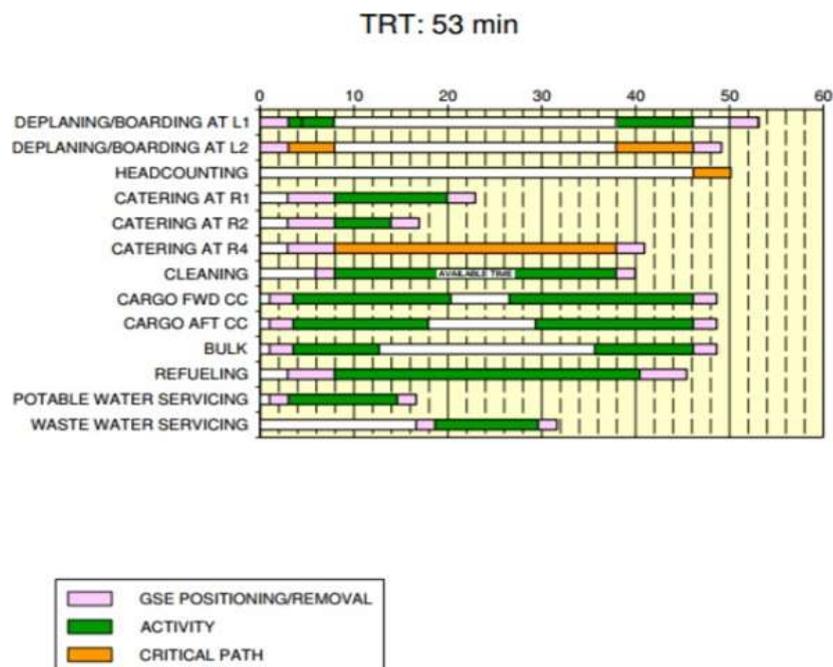
The turn-round/turn-around time of an aircraft is the total time it takes to turn back an aircraft, assign it a flight, and take-off again after it lands at the airport. Turnaround times vastly differ depending on the airline type; some airlines are Low-Cost carriers; as the name suggests, these airlines operate on low cost, hence maximize flights every day. More flights directly relate to more airtime of an aircraft, which means it spends a lot less time on airport tarmac; this means that budget low-cost airlines operate faster turn-around times, while premium full-service airlines usually take a higher TRT as they prepare for servicing the passengers. The TRT is greatly affected by ground operations and generally, the time taken by ground

operations is the same for the same aircraft.

The average turn-around time of an average flight has been calculated by various airlines across the world, including Boeing, Airbus as manufacturer aircraft types. Two such examples are displayed below <sup>[5]</sup>

Gate Turn Activity	Time (min)	10	20	30	40	50	60
Chock tires	0						
Position jet bridge	2						
Connect power supply	1						
Deplane passengers	12						
Unload aft compartment	11						
Unload forward compartment	7						
Service cabin	18						
Service aft galley	7						
Service forward galley	8						
Service lavatories	5						
Service potable water	5						
Fuel airplane	14						
Board passengers	18						
Load forward compartment	11						
Load aft compartment	17						
Start engines	3						
Remove power supply	1						
Remove jet bridge	1						
Pushback	2						

As seen in this TRT analysis, about 50 minutes is the average TRT of an aircraft. Another study that gives a similar analysis <sup>[1]</sup>



Both these models can be seen depicting TRTs of 50 minutes or more. 50 minutes can actually be considered as a really good TRT with respect to TRTs from a decade ago, but this is not where it is supposed to reach saturation. With the help of automation technologies, these TRTs can be reduced further, possibly into the 30-minute range. This model focuses on reducing the TRT by automating most of all ground operations using computer vision and artificial intelligence, and gives an unapplied model about ground services automation. Since this is a research paper, an actual analysis of a real-world TRT that used automated services is not possible as airports currently do not implement them. A speculation can be formed by analysing the transformation of the manufacturing industry with the introduction of automated assembly lines and manufacturing plants. Handmade products were already accurate enough as they were produced with human inspection, however, automated manufacturing increased the accuracy level to the higher 90s (98-99% accuracy) depending on the industry. Following the model, on average, at least a 30% reduction in operating time is likely to be reduced. This will greatly benefit airlines that follow the Low-cost model, as they get more time in air.

## **ADVANTAGES AND LIMITATIONS**

### **ADVANTAGES**

1. Automation massively increases efficiency and accuracy of certain ground operations
2. Drastically reduces the space required by airports to maintain Ground Service Equipment vehicles; this is certainly beneficial for airports in major metropolitan cities that have voiced their intention for second airports to combat increasing demands at airports that have less space to expand.
3. Examples include – Mumbai – As Navi Mumbai International Airport is set under construction, the main airport has been increasing demand every year; with limited space to expand, certain areas which are dedicated to ground vehicles can be deconstructed and used as additional terminal space by automating ground services.
4. Improves Turn-around time (TRT) for all flights by providing fast, accurate, and efficient GSE vehicles, some of which use proven technologies like LiDAR for accurate mapping of surrounding aircraft and GSE vehicles
5. Increases jobs for skilled IT, Computer and hardware engineers, to maintain automated systems. Increases potential remote location jobs, an example being remote resource monitoring, where professionals monitor automated systems and check their efficiency; responsible for shutting down and/or correcting any faulty behavior by any system.
6. Reduces fuel consumption and cost of operation.

## LIMITATIONS

1. This model does not fit within the guidelines of the IATA – International Air Transport Association and ICAO – International Civil Aviation Organization. There are certain rules regarding the GSE vehicles and what kind of systems are allowed on airport tarmac, however, guidelines can always be amended if new technology offers better solutions
2. Certain ground operations still prove to be inefficient if using automation, like re-fuelling; it is rendered dangerous and a potential threat if any system malfunctions

## CONCLUSION

Automation of airport ground operations will prove to be a beneficial model for airports to follow worldwide. The usage of computer vision and AI to learn operation cycles of GSE vehicles will significantly benefit operation costs and times. The removal of conventional GSE vehicles will increase overall airport space, providing opportunities to construct more passenger terminal space. Automation has already increased the efficiency and raw costs in many industries like manufacturing and automobiles; implementing it in the aviation sector will only improve the accuracy of aircraft handling, reduce the turn-round time of a flight hence attracting more passengers to fly and helping airlines maximize utilization of their aircraft and profit from it. Computer systems attached to vehicles can use both visual images and information as well as 3-D modelling (LiDAR) to accurately recognize airport traversing paths, aircraft doors, aircraft dimensions and proportions, and carry out their respective tasks without any need for human operation, and minimal human supervision. In the current model of ground handling, for every ground operation, at least one or more than one staff employee is involved; in an automated model, only one supervision staff will be required for 2-3 GSE vehicles, thereby reducing human resource costs significantly. Computer vision enabled systems have better reaction times to incidents and can predict accidents and collisions before they happen; since most accidents are human errors, automated systems will improve the safety in these operations, further reducing expensive costs of damage. Computer vision is an incredibly powerful technology, capable of understanding the world as strongly as humans do. Replicating computers with humans might sound inefficient at first, but computers are unarguably faster than humans at decision making based on data and evidence; they have much quicker reaction time, and, if attached a high performing machine, they can improve the time taken on several processes. This model opens up new possibilities of redesigning the airport operations guidelines set by the IATA and ICAO bodies, and future airports will be able to benefit from newer technologies and trends in computer vision enabled systems.

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# CRACKING THE DARKWEB SECRET

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## ABSTRACT

In the past few years, the Darknet is now one of the most discussed topics in cyber protection circles. Present scholastic studies and news reports tend to emphasize the way the nature that is anonymous of Darknet can be used to facilitate unlawful tasks. This paper explains the recent trends for Darknet forums that reveals an alternate facet of the Darknet. Drawing on our findings which are qualitative we declare that numerous users for the Darknet may well not perceive it as intrinsically criminogenic, despite their acknowledgement of varied forms of unlawful task in this community. Further, our research individuals emphasised regarding the accomplishment of constructive values being sociopolitical making use of the Darknet. This success is enabled by different faculties which can be rooted into the Darknet's framework that is technical such as for instance privacy, privacy, as well as the utilization of cryptocurrencies. These faculties supply a range that is wide of once and for all along with for evil.

**KEYWORDS** : *Darknet · Criminogenic · Anonymity · Privacy · Cryptocurrencies*

## INTRODUCTION

The Darknet is, within the last years which are few perhaps one of the most discussed topics in cyber protection circles. These companies are only new outlets to state their criminogenic desires with a, the concealed sites on the web certainly are a way to attain freedom; while to other people. As a whole, the Darknet is often portrayed by different press being an environment wherein tasks which can be unlawful obviously, also to your level to be criminogenic. Numerous press outlets highlight that the Darknet as well as its Tor web

browser are overwhelmingly utilized for unlawful tasks. Two instance magazines headlines are ‘Dark internet may pose danger that is disruptive to internet sector’ (Samson 2017) and ‘Dark web browser Tor is overwhelmingly useful for criminal activity, states research’ (McGoo- gan 2016). This perception that is negative of Darknet normally taken by governments and ordinary residents most importantly, which might drive unneeded ethical panics and misguided policies. The top that is past of British GCHQ, for instance, has likened the black internet to your crazy West, claiming so it has to be managed (Omand 2016).

In scholastic groups, past research that is criminological to possess height-ened the perception that the Darknet drives criminality—depicting it as being a haven that is safe crooks to attempt a variety of unlawful tasks, like the anonymous trading of unlawful items (age.g. medications) via cryptocurrencies (age.g. Bitcoin) (Buxton and Bingham 2015; UNODC 2014). The trading of unlawful medications, in reality, is considered the most activity that is predominant the Darknet. In January 2016 alone, the medication that is total, excluding prescription medications, regarding the Darknet crypto-drug markets had been expected become between \$12 and \$21.1 million. These crypto-drug areas are of severe concern to police agencies across the worldwide world. Other unlawful deals on these areas consist of the trad- ing of tools, charge card as well as other information that is individual and exotic pets. The development of the areas which can be darknet enabled by different technical traits for the system, such as privacy, privacy, as well as the utilization of cryptocurrencies. for example, claims that the type that is anonymous of Darknet amplifies threat of identification theft. Further, basic danger and threats through the Darknet haven't been completely examined either. Many research tasks in the Darknet were focused on unlawful tasks and their aspects being technical. Just a few extremely pro- which are current attempted to measure the sociological and emotional proportions associated with Darknet.

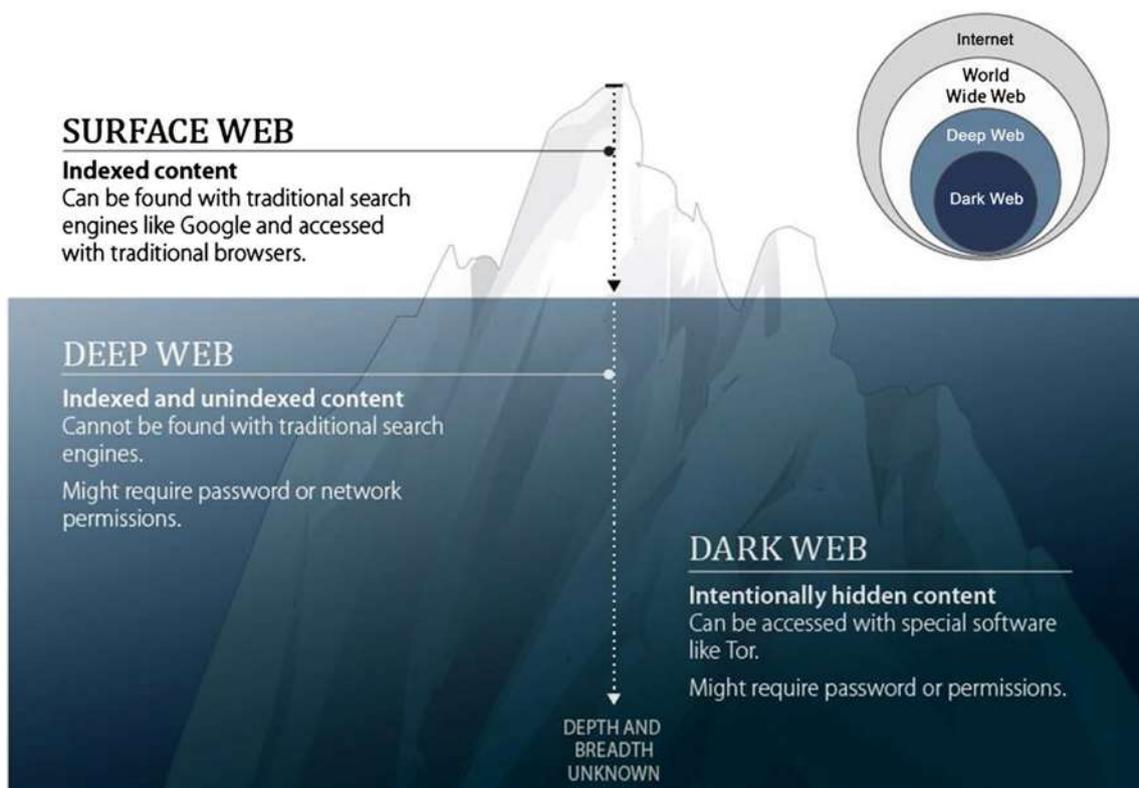
This paper states for a research that is small-scale that has been performed in the Darknet. The entire purpose of the investigation would be to recognize if the Darknet is inherently criminogenic, and so is really a danger that is fundamental people, organisations, and communities. Predicated on an investigation that is qualitative in four Darknet discussion boards, we had been in a position to determine five primary themes from our findings, which together provide a view that is alternative of Darknet. The Darknet may not be intrinsically criminogenic—it will not obviously increase unlawful tasks; instead it could you need to be another device which is used by a lot of people to handle tasks which are illicit. Some key faculties for the Darknet, including its nature that is anonymous areas, and cryptocurrencies have actually, needless to say, just managed to make it easier of these tasks become completed.

### **Technical framework**

Even though the term Darknet was created into the 1970s, to reference companies separated

through the ARPANET, just recently has got the public become conscious of it. To put it simply, it's the only work that is net the web (a couple of interconnected companies), wherein all community traffic is concealed. Therefore, anybody can carry any activity out without leaving traces that would be tracked by prevalent technical tools—a destination where perfect privacy might, because of this, be feasible.

The Darknet or black online is just a subset regarding the Deep internet, that is about 400 times bigger than the outer lining online also referred to as the net that we usually usage (Rudesill et al. 2015). Sites that live at first glance Web/Internet are saved on servers waiting become retrieved. These internet sites are mostly HTML files with fixed content for sale in the structure that is exact same whoever makes needs. Unlike the top internet, connections within the Deep Web are merely made between trusted peers being necessary to engage in the system that is concealed. Therefore, web sites are powerful and mostly in a consistent modification of servers, and thus one website link could trigger some- thing at the same time that is specific and also at another time it could induce something different or nothing (Moore and Rid 2016). Those sites which are concealed live on these private net- works can just only be accessed by particular pc software, designs, or authorizations, such as for example



Freenet, I2P, and Tor (Byrne and Kimball 2017). As an example, Tor is definitely a web browser that is favoured by a projected over 4,000,000 users in January 2018, Several thousand volunteers across the international globe run relays and nodes that help the running of anonymous community traffic. Then individual can easily see the traffic that operates

through it but cannot see where it comes down from and where it would go to next if anybody gains use of a node. The type that is anonymous of Darknet as well as its digital marketplace is protected utilizing cryptocurrencies, e.g. Bitcoin

The Darknet is employed for the range that is wide of tasks (Moore and Rid 2016). These vary from being plainly morally appropriate, across to being regarded as illicit by many people, or even to being demonstrably unlawful considering national and/or inter- national frameworks which can be legislative. These tasks might be grouped into three primary groups:

- a. Activism, journalism, and whistle-blowing;
- b. Unlawful tasks in digital areas; and
- c. Cyber safety threats including botnets, spyware, and ransomware.

First, online anonymity supplied by the Darknet can be used for social and political purposes (Moore and Rid 2016). People can freely share their social and governmental opinions; and their disagreements with, or objectives of, their governments without concern with retribution. This sharing is particularly necessary in nations with strong state surveillance and censorship giant governmental activist, freedom fighters, and reporters (Jardine 2015). Reporters, activists, and whistle-blowers in these nations might use the Darknet to keep in touch with the planet that is outside encourage social modification, and governmental reform, without disclosing their identities. Almost all forms of organisations want to keep their data which can be electronic exchange in safe places. This is certainly additionally the total instance with reporters, activists, and whistle-blowers.

In reality, the utilization of Tor is advised by ‘Reports Without boundaries’ as you of its kits which are survival for reporters and activist employed in repressive nations. Throughout the riots which are Egyptian as an example, journalists and activists from all over the world bypassed federal government censorship through Tor. They thus successfully informed the worldwide globe by what ended up being occurring in Egypt. Whistleblowing could be the work of leaking governments’ or organizations’ personal information to your public. Irrespective of that in certain nations, dripping information that is personal government files is recognized as become reasonable.

e.g. the United Kingdom. Moreover, dripping information from businesses is unlawful in certain nations, e.g. the USA Edward Snowden, the absolute most infamous whistle-blower, has released delicate information through the united states of America federal government, nearly all of these records included the NSA and also the US military and ended up being charged beneath the 1917 Espionage Act. He's got presumably utilized the Tor system to deliver information that is key the surveillance system PRISM up to an amount of journalist

(Paganini 2013).



Secondly, big areas in the Darknet specialise into the trading of unlawful medications. Stolen identities, charge card information, weapons, and contract killing are also goods which can be popular solutions with this community. Very famous Dark-net markets—the Silk Road—was believed to market decentralisation of governments and socio-political motions against police agencies. Since 2011 as soon as the Silk Road dominated the marketplace that is darknet's spot, its anonymous ecosystem has developed somewhat. The business enterprise model is comparable with all the market that is online e-bay. Because of its much talked about, police force agencies quickly began to just take the silk Road down.

Following the Silk that is initial Road turn off in October 2013, the next version—Silk Road 2.0—came online under different managements. Later on, a version—Silk that is third Reloaded—was created following the closing of Silk path 2.0 (BBC 2015; Olson 2013).

Quickly, other areas including 'Black MMarket' that is reloaded 'Sheep Marketplace'—with web sites, discussion boards, and even discovery services—emerged to simply take Silk Road's. The increase for the Darknet areas shows the amount of resilience of the anonymous ecosystems being online. It concerns whether police agencies can manage these areas effortlessly.

Third, the Darknet is really a sleep that is hot cyber safety threat and dangers. Malware writers were utilizing the Darknet to communicate and trade some ideas. The Mevade Botnet saw a growth to 5 million user which are daily including a Tor anonymity network. Ransomware installs viruses on contaminated computer systems, scramble and encrypt all information these may then access, and need repayments in the shape of Bitcoin release the data. The Tor system is indispensable towards the prevalence of ransomware application. Definitely, the Darknet, combined with the innovation of Bitcoins has supplied organizations which are lucrative crooks.

## TECHNIQUES

Scientists mainly utilized technical abilities, such as for example traffic analysis and web-crawling to know those sites which are concealed. Into the research that is biggest pertaining

to Tor concealed services, during the time of the study, as an example, built-up approximately 80,000 concealed solutions, making use of 40 onion relays over a length of half a year. These approaches had been utilized to spot the type and faculties regarding the sites and their users' tasks in the Darknet. They might maybe not, but, offer any understandings of perceptions and ideas of users regarding the Darknet. As our study meant to examine the sociological measurements associated with the Darknet, we took an approach that is significantly different.

Right here, we explore the 2 research that is overarching below:

- Is the Darknet an environment that is normal which criminal task can thrive?
- if that's the case, could the Darknet be described, in reality, as criminogenic?

Even though Darknet is just a vast spot, with an increase of and more search that is experimental machines developed daily, the discussion boards which were utilized to conduct this substantial research are not simple to find. First, there's absolutely no unique database that is general public stores all of the Darknet sites. The method to look for suitable discussion boards could be a task that is dangerous as some databases (both in the Surface and Deep Web) that contain Darknet web sites are recognized to publish links that trigger harmful sites. Next, for different reasons which can be ethical only a few discussion boards in the Darknet might be utilized to conduct this research. Each forum regarding the Darknet has its laws which can be interior e.g. Prohibiting any considerable research activities. Conquering these problems, we were able to recognize four discussion boards which can be suitable permitted for the research to happen.

Ease sampling is our plumped for sampling technique for just two reason why is primary. Those are i) to allow for towards the tradition that is anonymous the constantly changing member- ship for the Darknet; and ii) to secure a sensible approximation of ordinary users' views regarding the Darknet. Additionally, to respect the tradition of this Darknet, we guaranteed total privacy and didn't request any information that is individual. To prevent being accused of spamming, we just posted the invite note in these four discussion boards when. We analysed 17 finished reactions, to your 10 concerns, from 17 users among these four discussion boards. These reactions offered information that is valuable the character associated with Darknet, plus some possible safety threats it may create. This process had been appropriate since the Darknet had been an occurrence that is current therefore its users are not well grasped.

We wanted to attain an awareness of subjective experience by gaining insights into people' motivations and actions. Needless to say, these people' views had been determined by way of an array of facets, including the discussion boards, by which they resided. These discussion boards had been platforms for basic talks being every day. They could additionally be people who had always been focused on the image that is prevalent of Darknet being truly a normal ground of criminal activity, and therefore, had for ages been desperate to show their views. Consequently, our scientific studies are just built to provide a view that is alternative of Darknet.

## PRINCIPAL FINDINGS

Findings from our empirical research are presented and analysed under five primary themes that have been identified throughout the analysis that is thematic.

### **Darknet is perhaps not underground**

First, the individuals had been expected where they found out about the Darknet. Whenever individuals speak about the Darknet, they frequently portray the medial side that is dark of online. The Darknet can be viewed as having an ‘under- ground’ element, and so its normal to assume that people whom put it to use have discovered it in other surroundings which are underground. Nevertheless, a number of our participants demonstrably claimed they discovered the Darknet from old-fashioned available sources, including schools, press, along with other internet that is area conversation. Today, a Bing that is straightforward search many web sites with tutorials on what to obtain regarding the Darknet. Each and every day although the remaining participants (4 away from over three quarter of our individuals (13 from 17) stated they utilize the Darknet pointed out that the Darknet is checked out by them periodically. The individuals don't think about the Darknet being a trend that is underground.

## CONCLUSION

To conclude, this scientific study is a workout that is small-scale. To accomplish an under- which can be holistic for the Darknet, much bigger studies that focus on its sociological proportions would have to be undertaken. Our findings, nevertheless, have actually supplied an alternate view regarding the Darknet in contrast to its present ‘dark’ image, that is constructed by the literary works that is current.

The Darknet can be seen by some whilst the part that is dark of online for legitimate reasons, such as its anonymous nature, digital areas, and cryptocurrency .Nevertheless, nearly all of our individuals learned all about it from mainstream sources being available. When they begin to use the Darknet, freedom of phrase becomes the attraction that is primary their regular utilization of this system for a lot of each and everyday tasks. In spite of the usage that is regular they cannot but think about this system being a culture. With no solid and stable infrastructure that is physical enables a feeling of belonging, the Darknet is, and can constantly stay, something.

Despite the fact that numerous tasks being unlawful put on this community, the Darknet just isn't criminogenic. A majority of these tasks can occur outside of and yes it. Thinking about the areas which can be digital the Darknet, the majority of our individuals think that the absolute most famous one—the Silk Road—was employed by governments and police agencies as being a propaganda device to discredit the freedom that the Darknet could possibly offer. Certainly, we can't reject that the unlawful trading of medications is really a task that is prevalent numerous Darknet areas. But there are several positives connected with this such as for instance better-quality medications much less anxiety and

physical violence.

We can't, of course, reject that the Darknet presents a risk of security that is severe. A variety of unlawful tasks might be done in this community with simplicity due to its unique traits, such as for instance privacy, digital areas, additionally the usage of cryptocurrencies. The Darknet should really be examined more really because of this. Yet, it ought to be noted that its function that is inherent would be to damage individuals, organisations, and communities. Rather than labelling a host as criminogenic and its particular users as 'deviant others', a far more holistic understanding that is sociological of Darknet's social faculties and technical infrastructures happens to be required. Findings from such research would assist in improving protection technologies and practices to raised one with a few regarding the more unique traits for the Darknet identified above. The Darknet isn't, eventually, a culture where criminal activity could be the norm. In reality, it's a platform that is technical can be used by various people for the number of purposes.

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5. (BBC 2015; Olson 2013)

# SMART SEWAGE CLEANING SYSTEM

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## ABSTRACT

Cleaning sewage from manhole is a tedious task, carried on by sewers actually getting down in manhole and cleaning it manually which causes chronic diseases and leads then to death. Citizens living in a nearby locality face problem due to overflowing sewage from manhole which needs to be taken action on.

Smart sewage cleaning system acts as a key to overcome these problems, it detects the level of sewage before it can overflow with a sensor which then passes a notification from that sensor to truck driver who holds an app containing address of the same manhole, which when clicked to accept the request opens a map that guides the driver to locality where the manhole is, if the driver is suffering with any issue can disable his availability and notification of sewage raised won't be sent to driver's. The truck has a user friendly robotic arm with suction system which sucks the waste and stores in tank. A net is situated at the rim of tank which helps separating solid waste and the water in tank itself and buzzer which buzzes when the tank reaches its maximum capacity.

Keywords: Chronic Diseases, Manhole, Sensor, Notification, App, Robotic Arm, Suction, System, Net, Buzzer.

## INTRODUCTION

### Background:

A manhole at various localities get clogged and sometimes overflows due to various forms of wastes flowing through sewage pipes which includes plastic waste, metal waste, thermoses,

radioactive waste, domestic waste and many more. These wastes when mixed with each other and if stayed for long time forms harmful gases which can cause chronic diseases to a person who comes in contact with it. Sewage cleaners themselves have to get down in these manholes and clean clogged waste from that manhole. This whole concept deals with life taking tasks and leads one to death.

The latest survey has so far identified 20,596 manual scavengers across states of Uttar Pradesh followed by Maharashtra with 5,269 said a senior official from the National Safai Karmacharis Finance & Development Corporation (NSKFDC) <sup>[1]</sup> A latest incident was of Anil, a sewage worker from Delhi, who died of Asphyxiation (state of deprived of oxygen) on 17 September, while working in a 20-foot-deep sewer. <sup>[2]</sup> Over the last 25 years, India has passed many laws to end the practice of manual scavenging. UDHR (Universal Declaration of Human Rights) article 23 - says about the workers' rights for working under favorable conditions. <sup>[3]</sup> Along with this the overflowing of sewage from manhole also causes complications to the citizens living in nearby localities and the passer by. As a result, according to India's Central Pollution Control Board, fewer than half of them work effectively. What's more, India's smaller towns cannot afford to build such systems. The good news is that a handful of organizations are developing sewage systems that are less expensive and more effective. Prominent among them is the [Consortium for Decentralized Wastewater Treatment System Dissemination Society](#) (CDD), a nonprofit organization that has been developing and promoting technologies for decentralized wastewater management since 2002.<sup>[7]</sup> No more than 56.4% of India's urban homes – where 377 million people live – are connected to sewer lines while only 36.7% of rural areas – where 833 million people live – have drainage, according to a 2017 [report](#) of the [National Sample Survey Office](#), the latest data available. Further, India has the capacity to treat only [37%](#) of the sewage generated in urban areas.<sup>[8]</sup> Hydrogen sulfide is dangerous even at low levels. Prolonged exposure to sewer gas can cause irritability, headaches, fatigue, sinus infections, bronchitis, pneumonia, loss of appetite, poor memory and dizziness.<sup>[9]</sup>



Fig 1: Sewage overflowing from manholes floods

One of such incident at Flowers Road faced the ordeal of sewage overflow on the main road, which caused a great degree of discomfort to residents, motorists and pedestrians. [4]

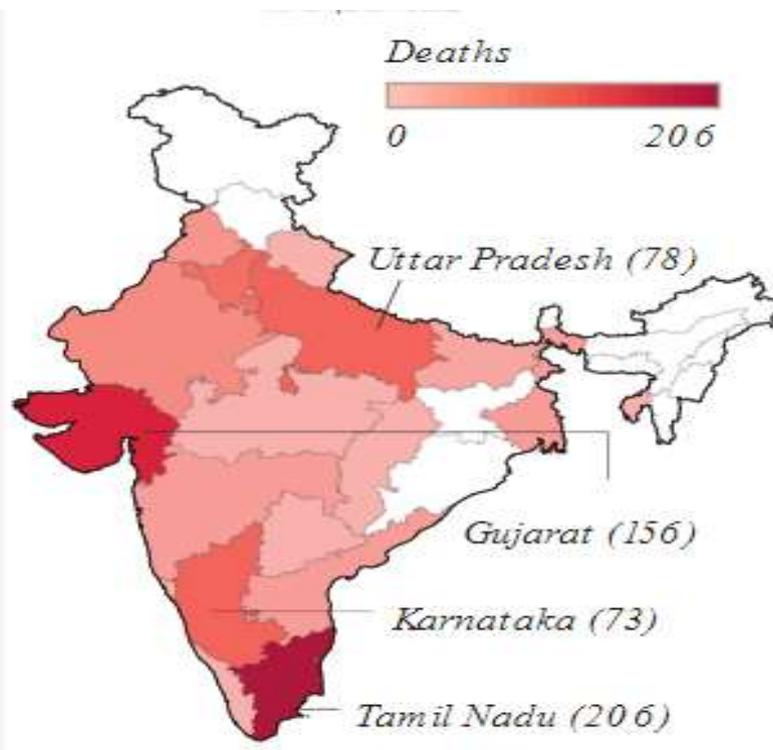


Fig 2: State wise split of sewer deaths in year 2013 the 550-foot-long road

The chart plots the share of families of victims (who died cleaning sewers between 2014 and 18) who received compensation against those whose claims are pending. [5]

### Proposed Method:

In order to upgrade the traditional method of sewage cleaning and to save lives of sewage cleaning labours and to deal with the situations faced by citizens when waste overflows from manhole, smart sewage cleaning system can act as efficient way to overcome such issues. It acts as a helping hand towards the civilians by detecting the rise of waste in a manhole at some threshold parameter, if the rise of sewage inside a manhole passes certain threshold value it sends a message to authority about the sewage that can overflow after sometime. The authority at this platform is the sewage cleaning truck driver holding an app which will get the notification of sewage which can overflow from a particular manhole. This notification when clicked by the driver will open up to a page where the driver has to accept the request or can reject it if any issue arises at the mechanical end. On accepting the request, the app will open another window with map activity which guides the driver of the sewage cleaning truck to the locale where the manhole can overflow in future. The truck here can arrive and clean

the waste from manhole before it causes issue or complications for inhabitants. The sewage cleaning truck is user friendly and is built to reduce manpower needed to clean manholes, it is also a solution to reduce the count of deaths caused due to sewers getting down in manholes and dies because of Asphyxiation or Chronic diseases after coming in contact with gases emitted by wastes in manhole. It contains a robotic arm to handle and can be moved in 360-degree direction following with upwards and downwards rotation with suction unit attached, having power to suck the sewage under a manhole and remove clogs. A tank for collecting sewage which has net situated at the rim of it, helps in separating solid waste and polluted water which can be dumped later separately. A buzzer at the top of tank is used to signal when the tank reaches its maximum capacity with sewage inside it.

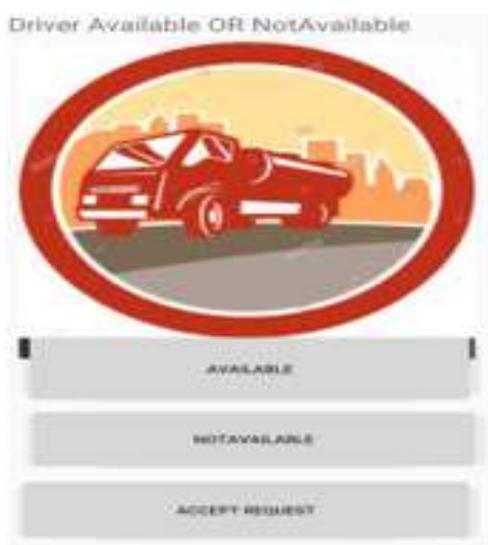


Fig 3.1: Proposed Model (App Interface)

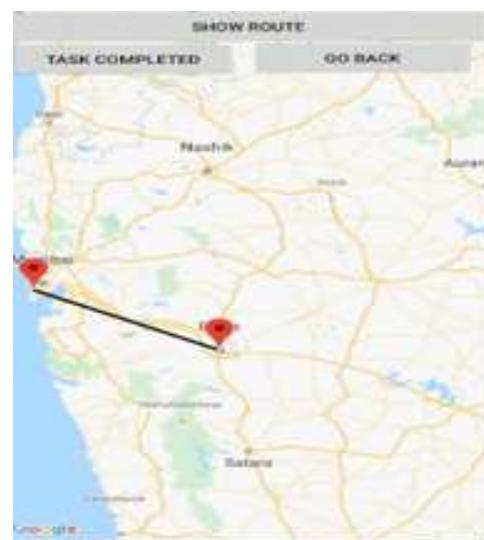


Fig 3.2: ProposeModel (Map Activity)



Fig 4: Proposed model

### OBJECTIVES

- a. Objectives of Smart Sewage Cleaning System are:
- b. To reduce number of deaths of sewers caused by the current approach or traditional for cleaning.
- c. To reduce manpower needed for cleaning manhole sewage.
- d. To deal with handling of sewage overflow before it comes into action and causes complications to citizens and sewage cleaners.

### APPLICABILITY

#### **Applicability for smart sewage cleaning system is:**

The traditional method of cleaning sewage was depended on the sewers appointed for the task with the workers actually stepping down into manholes and cleaning it manually. Currently the situation is changed and made a bit efficient for the sewers. Instead of informing about the sewage overflow manually a message can be sent directly on sensing some measures by following an automatic process throughout the whole task. A track of all these changes automatically taking place can be recorded in a database at the back end and used more for making predictions for improvement in the process.

### SCOPE

- a. Scope for Smart Sewage Cleaning System is:
- b. Sensor attached at the lid of manhole senses the rise of sewage inside manhole if exceeding a threshold parameter.
- c. Wi-Fi microcontroller signals the sewage cleaning truck driver by sending notification.
- d. Notification includes co-ordinates (latitude & longitude) of the location where the sewage raise has been detected.
- e. Truck contains tank (to store sewage), suction unit (power to suck the waste), robotic arm (to suck the waste), buzzer (to signal when the tank gets full).
- f. This helps the proposed work to have scope over the currently practiced approach or the traditional approach.

### CONCLUSION

Cleaning of sewage from manholes is carried out on daily basis when waste in it gets clogged and stops the flow of sewage through drainage pipes. Sewers die coming in contact with the gasses emitted by wastes in manholes causing them chronic diseases and also due to getting

deprived in situations where sewers do not get enough oxygen to breadth under manholes. The overflow of sewage should be taken action upon before it flows over the manholes and cause complications to the residents, motorists and pedestrians.

*A smart way of cleaning sewage from manholes is carried out in the above study, an automatic process along with database for storing the information is carried on the back end of the process followed with sensor sensing the rise of waste in manhole and sends notification to an app which is held by the sewage cleaning truck driver. The notification received by the truck driver contains the location of the manhole from where the rise of sewage is detected. The sewage cleaning truck has functionalities such as a robotic arm attached with a suction unit, a tank to collect sewage, a net at the rim of tank for separation of waste and polluted water and a buzzer to signal if the tank has reach its maximum capacity.*

*50 manual scavenger deaths in 2019 & Complications of sewage overflow from manhole: This can be reduced if cleaning sewage in manholes is carried out in smart way using method of Smart Sewage Cleaning System.*



Fig 5: Sewage overflowing from manhole

Sewage is overflowing on to School Street, Koyambedu, from a manhole. The street has become a breeding ground for mosquitoes.[<sup>6</sup>]



Fig 6:Overflow of river bank road

Sewage water has been overflowing from manholes on the Vaigai river Bank Road in Alwarpuram for the last two days .As a result, commuters have been finding it very difficult to use the road as it is inundated with water. Residents said they have taken the issue to the notice of the Madurai corporation several times, but to no avail.[<sup>10</sup>]

### LIMITATIONS

- The proposed project is said to be online which can be made offline yet fast at delivering messages.
- The app does not contain a customer side service for informing about issues faced by them due to sewage of manholes.

### FUTURE SCOPE

- The app activities can be made more user friendly by changing interfaces as needed.
- App can be made more reliable for the users (sewage cleaning truck drivers).
- An activity could be made for customer's end too for complains and notifying the authority about the issues they face regarding manhole and sewage inside it.

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# AGRI-FARMING

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## ABSTRACT

The farming sector agrees that the industry is heading in the direction of having more technological advancements on the farm, which includes robots. There are already several investors and scientists that have made significant attempts in creating robotic systems. Robots are changing agriculture beyond recognition, they developed and evolved our methods to develop agricultural tools and equipment, from which are robot-assisted milking to cow-herding drones, the food industry is being revolutionized by robotics and automation. We introduce you to the world of robot and technology involved agri-farming. In this research paper, we focus on specific applications in the agricultural industry. There are real problems in modern agriculture. Old farming methods struggle to maintain efficiency required in the market. Farmers in developed countries are suffering from a lack of workforce.

## INTRODUCTION

### History of Agricultural Robotics

Agri-farming was influenced due to introduction of machines in the late 1900s. The first machine was Eli Whitney's cotton gin, this was the first machine that was introduced in 1794 by Eli Whitney on 14<sup>th</sup> March . The cotton gin machine is the first machine that started several other agricultural machine development.

For Decades agricultural robots have been used for indoor as well as outdoor industries. They've always been deemed to be incorporated as they are very difficult to design and produce.

## TYPES OF AGRICULTURAL ROBOTS

**Precision:** In precision robot, the concepts and technologies developed in the framework and designing, including automation and robotics, make it possible to produce with a least environmental impact and at the same time all treatments and handling are recorded and can be uploaded in the different data bases that are used for tracing the product origin and for verifying compliance with GAP criteria.

**Monitoring the pollution:** Both plants and animals can get affected by the pollution caused by burning fuels and air contamination. Hence we use robots to manage pollution and monitor amount of emission that have taken place in a given period of time.

**Livestock ranching:** Livestock ranching is a field oriented grazing of livestock such as cattle and herds of sheep, goats, etc. Hence we can use crop remains to feed our livestock as well as grass feeding to ensure minimal overgrazing of grasslands occur through machine monitoring.

**Control of weeds:** Agriculture is one of the fastest-growing markets in the commercial drone industry today. And drones are becoming an unformidable tool to help you become more efficient in the field, and make more informed crop management decisions, like plucking and detecting weeds.

**Automation of nursery:** Simple and easy to install and configure. Saving resource as well as energy, so that it can be utilized in proper way and amount. Farmers would be able to apply the right amount of water at the right time by automated farms or nurseries. Overwatering saturated soils which will improve crop performance.

**Harvesting of crops:** There are several types of harvesting machines which are generally classified by crop. Scythes are used for cutting threshers and cereal grains separating seeds from the crop, But maize, commonly known as corn, harvesting is performed by employing a specially designed mechanical corn pickers.

**Harvesting of fruits:** There are manages suitable for use both at scattered fruit trees and on plantations. Picking up of fruits and nuts is much easier with the machine even under the most difficult conditions possible, for example in the wet mulch grass, tall grass and foliage.

**Seeding and planting:** A device known as a “Seed Drill” which sows the seeds for crops by positioning them in the soil and burying them to a depth. This ensures that seeds will be distributed evenly. The “Seed drill” at the proper seeding rate and depth sows the seeds, ensuring that the seeds are covered by soil.

## APPLICATIONS OF AGRICULTURAL ROBOTS

**Nursery Planting:** Nurseries are where seeds are grown into young plants, which are later planted outside. Nursery plants are sold direct to consumers and landscape gardeners, but they are also the start of the food journey for some crops. There is a rising need for nursery automation. Company like HETO Agrotechnics and Harvest Automation provide automation solutions for seeding, potting and warehousing living plants in greenhouses.



**Crop Seeding:** The traditional method for sowing seeds is to scatter them using a "broadcast spreader" attached to a tractor. This throws many number of seeds around the field while the tractor drives at a steady pace. It is not an efficient method of planting as it can waste seeds. Autonomous precision seeding combines robotics with geomapping. A map is generated which shows the soil properties at every point in the field. The tractor, with robotic seeding attachment, then places the seeds at specific locations and depths so that each has the best chance of growing.



**Crop Monitoring and Analysis:** Monitoring huge fields of crop is a big job. New sensors and geomapping technologies are allowing farmers to get a much higher level of data about their

crops than they have in the past. Ground robots and drones provide a way to collect this data autonomously. Ground based robots, like BoniRob, provide even more detailed monitoring as they are able to get closer to the crops. Some of them can also be used for other tasks like weeding and fertilizing



**Fertilizing and Irrigation:** Irrigating and fertilizing crops has traditionally used a lot of water was quite inefficient. Robot-Assisted Precision Irrigation could reduce wasted water by targeting specific plants. Ground robots autonomously navigate between rows of crop and pour water directly at the base of each plant.



**Crop Weeding and Spraying:** Spraying pesticides and weed killers onto fields is not only wasteful but it can severely harm the environment. Robots provide more efficient method. The concept of micro-spraying can significantly reduce the amount of herbicide used in crop growing. Micro-spraying robots use computer vision technology to find out weeds and then spray a targeted drop of herbicide onto them. AG BOT II is a solar powered robot which uses this technique.



**Thinning and Pruning:** Thinning consists of reducing the density of plants so that each has a better chance of growing. Pruning involves cutting back parts of plants to improve their growth. Pruning is a big task and the most notable attempts to automate it have come in the wine industry.



#### **ADVANTAGES:**

1. The robots are not getting sick or tired, and the time off is not needed.
2. With higher speeds and closer tolerances, they can operate with fewer errors.
3. They make fewer errors and operate at higher velocities and higher quality.
4. The robots can reduce the use of pesticides by up to 80% of the farm..
5. For technicians, the robots can create jobs that can fix the robots.
6. The robots can deliver products of high quality and lower the cost of production.
7. Robots gantry can function as both fertilizer and liquid sprays and, most importantly, as an automatic self-control system that meets weather conditions.
8. They can be small in size, allowing to accumulate near-crop data and perform mechanical weeding, mowing, spraying, and fertilizing.
9. Robotic cameras and sensors are capable of detecting weeds, identifying pests,

parasites or diseases, and other stress. Usually, the sensors are selective and are only used to spray on the affected area.

#### **DISADVANTAGES:**

1. Robots require a lot of capital to purchase and invest on.
2. They need maintenance to keep them running.
3. The farmers can lose their jobs.
4. Energy cost and maintenance.
5. The high cost of research and development.
6. Lack of access to poor farmers.
7. They can result in greater pollution in the long run.

#### **CONCLUSION**

This review is proposed to supports agricultural-robotic management for the agricultural land, livestock, food crops and commercial crops as well as fruits. Machine systems promise about increase in production of crops as well as management of those crops by reducing the power consumption resulting in optimum solutions. Automated irrigation system have a great demand and future too. It is the least time consuming and hence leads to removal of human error in adjusting available soil moisture levels and to maximize their total profits in accordance to factors like quality, sales and growth of their product.

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# RESEARCH PAPER ON FACTUAL OBJECT DETECTION FOR VISUALLY IMPAIRED PEOPLE BASED ON MORPHOLOGICAL ALGORITHM

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## ABSTRACT

Blind people are just like seeing people in the dark. The loss of sight does not impair the qualities of mind & heart. Visual world has to be transformed into the audio world with the potential to inform visual impaired people about objects and their spatial locations. Objects detected from the scene are represented by their names and converted to speech. The blind people's spatial locations are encoded into 2-channel audio with the help of 3D binaural sound simulation. Video is captured with a portable camera device on the client side, and is streamed to the server for real-time image recognition with existing object detection models. The 3D location of the objects is estimated from the location and the size of the boundary boxes from the detection algorithm. Then, a 3D sound generation application based on unity game engine renders the binaural sound with locations encoded.

**KEYWORDS:** *Morphological algorithm, Computer vision technique, Webcam, Object tracking.*

## INTRODUCTION

There is no better way to thank god for your sight than by helping to someone in the dark. Blindness is an unfortunate handicap but true vision does not require the eyes. Although they can develop alternative approaches to deal with daily routines, they suffer from certain navigation difficulties as well as social awkwardness. For example, it is very difficult for

them to find a particular room in an unfamiliar environment. In addition, blind and visually impaired people find it difficult to know whether a person is talking to them or someone else during a conversation.

Computer vision technologies, especially the deep convolution neural network, have been rapidly developed in recent years. It is promising to use the state-of-art computer vision techniques to help people with vision loss. This paper aims at exploring the possibility of using the hearing sense to understand visual objects. The sense of sight and hearing sense share a striking similarity: both visual object and audio sound can be spatially localized. It is not often realized by many people that we are capable at identifying the spatial location of a sound source just by hearing it with two ears. The aim of the work is to guide the visually impaired people through the output of processor or controller by voice to navigate them. The methodology of this work includes Object Extraction, Feature Extraction, and Object Comparison



There exists multiple tools to use computer vision technologies to assist blind people. The mobile app “TapTapSee” uses computer vision and crowd sourcing to describe a picture captured by blind users in about 10 seconds. The Blind sight offers a mobile app Text Detective featuring optical character recognition (OCR) technology to detect and read text from pictures captured from the camera. However, these products were not focusing on enabling general visual sense for blind people and did not use the spatial sound techniques to further enhance the user experience.

### OBJECTIVE

- To develop a blind visualization system that helps blind people to explore the surrounding environment.
- To navigate the blind people to detect the obstacles in front of them.
- To find the instances of real world object for visually impaired people.
- Image identification.

- To improve the image quality, to detect moving object, based on color of the moving object in frame.

## **REVIEW OF LITERATURE**

The idea to extract the prominent feature points from each target object is obtained and then uses a particle filter based approach to track the feature points in image sequences based on various attributes such as location, velocity and other descriptors. It is used rectangular bounding box for object representation. However, this algorithm may not successfully track feature points with different velocities. Hence, this algorithm needs more flexible object representation and they used static camera for capturing the video.

A unified framework for both single and cross camera tracking with affinity constraints using graph matching was proposed.

In this method, they mainly dealt with the problem of existence occlusion in single camera scenario & the occurrence of transition in cross camera scenario and they consider the data association method in handling occlusion.

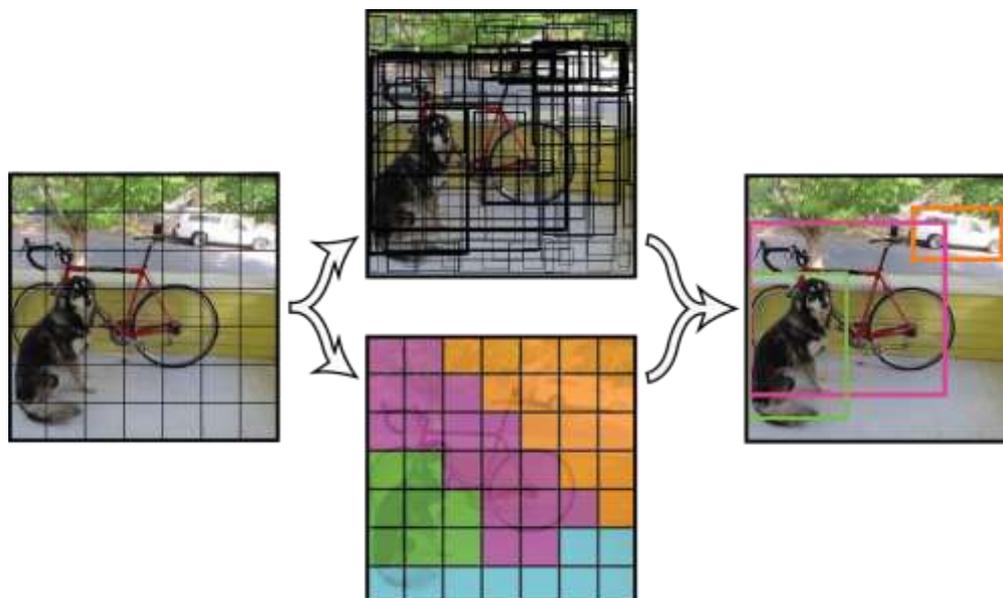
It is considering the tracklet association problem as graph matching with affinity constraints and leverage both person wise and part wise attribute for similarity measurement between tracklets to overcome the uncertainty and noise.

The crucial problem caused by cross camera tracking lies in the drastically increasing the data. After detecting the type of objects in a video frame, the next step is to obtain the depth or distance of the detected object from the user.

## **EXISTING METHOD**

- **YOLO MODEL**

YOLO can correctly detect objects, such as chair, within a range about 2-5 m away but the objects that are outside this range is either unrecognized or misclassified. The second issue reported by the blind user is the blocking of ambient sound by using ear buds. The third issue reported by the blind user is “information overload” when the system is trying to notify user of multiple objects at the same time. This can be solved by delayed notifications

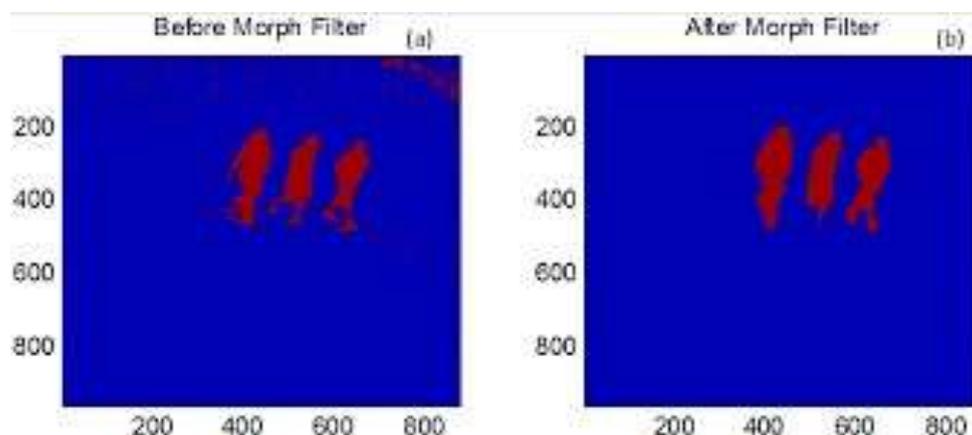


## RESEARCH METHODOLOGY

This paper gives a criterion for designing a time-efficient cascade that explicitly takes into account the time complexity of tests (as evaluated by computer run time) including the time for pre-processing. We design a greedy algorithm to minimize this criterion. Finally, we illustrate our method on the task of image detection in snap. This gives a detection algorithm that runs at 0.025 seconds per  $320 \times 240$  image. It gives a real time system, which can be used for applications to help the blind and visually impaired. Among all 20 classes of the existing model, we choose the following classes to inform the user: “chair”, “table”, “laptop”, “TV monitor”.

## MORPHOLOGICAL FILTERING

Morphological image processing is a collection of non-linear operations related to the shape or morphology of features in an image. Morphological operations rely only on the relative ordering of pixel values, not on their numerical values, and therefore are especially suited to the processing of binary images. Morphological operations can also be applied to grayscale images such that their light transfer functions are unknown and therefore their absolute pixel values are of no or minor interest. Morphological techniques probe an image with a small shape or template called a structuring element. The structuring element is positioned at all possible locations in the image and it is compared with the corresponding neighborhood of pixels.



## RESULT

To present the results to the user in a reasonable manner, the algorithm also has to decide whether to speak out a detected object and at what time. Obviously, it is undesirable to keep speaking out the same object to the user even if the detection result is correct. It is also undesirable if two object names are spoken overlapping or very closely that, the user will not be able to distinguish. The cool-down-time is assumed five seconds for each class. For example, if a person is detected in the first frame and is spoken out, the program will not speak out “person” again until after five seconds. This is only a sub-optimal solution since it does not deal with multiple objects of the same class. Ideally, if there are two persons in the frame, the user should be informed about the two person, but he does not need to be informed about the same person continuously. One possible improvement is to track the object using overlapping bounding box between frames.

## SCOPE OF STUDY

- First order differential features calculated in blocks.
- Histogram features of intensity and gradient.
- Edge linking features.
- DATA STREAMING – The work is based on a platform that is capable of processing real-time image.

- Object tracking based on colored object.
- Object detection using background subtraction.
- Identification of object.
- Object Extraction, video to frame conversion and preprocessing.

### **BACKGROUND FRAME INITIALIZATION**

The main purpose of foreground/background segmentation, a basic process of a computer vision application system, is to extract some interesting objects (the foreground) from the rest (the background) of each video frame in a video sequence background subtraction, which detects the foreground by thresholding the difference between the current video frame and the modeled background in a pixel-by-pixel manner. The correctness of the modeled background is usually affected by three factors:

- 1) Illumination changes
- 2) Dynamic backgrounds Shadows

### **CONCLUSION**

In this prototype, It is investigated the need from blind and visually impaired people. Based on the impetus of the CNN, it is developed a blind visualization system that helps blind people better explore the surrounding environment. A portable and real time solution is provided in the work. Presenting a platform that utilizes portable cameras, powerful server to generate 3D sounds and fast HD video link.

By using morphological algorithm, the solution could perform accurate real time objective detection with 1080P resolution.

A prototype for sensory substitution (vision to hearing) is established in the work. Through this work, in order to demonstrate the possibility of using computer vision techniques as a type of assistive technology. The training time for the time-efficient cascade was more than ten times longer than the previous method. However, this computation is off-line and so is not significant. This will definitely navigate the blind people to detect the obstacles in front of them. Even there are plenty of techniques are available to guide them but this work efficiently helps the blind people to guide and navigate them.

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Track-  
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# “A Study On Awareness And Perception Towards Euthanasia Amongst Youth”

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## ABSTRACT-

Euthanasia and physician assisted-suicide are terms used to describe the process in which a doctor of a sick or disabled individual engages in an activity which directly or indirectly leads to their death. Right to life is one of the basic Human Rights. The debate on legalizing euthanasia and assisted suicide has a broad range of participants including physicians, scholars in ethics and health law, politicians, and the general public. The risks and harms of legalizing euthanasia outweigh any benefits. It would be interesting to understand the perception towards Euthanasia amongst youth. Hence this topic of Research. Data was collected from Gen Z to understand their perception and awareness of the most debated topic over the world-Euthanasia. Also, after the case of Aruna Shanbaug an interest in this topic was generated with furore. The sample size was 80 which was analysed, and findings was arrived at.

**KEYWORDS:** Assisted dying, Gen Z, Euthanasia, Legal framework, Healthcare ethics

## INTRODUCTION-

Euthanasia refers to deliberately ending someone's life, usually to relieve suffering. Doctors sometimes perform euthanasia when it's requested by people who have a terminal illness and are in a lot of pain. It's a complex process and involves weighing many factors. Local laws, someone's physical and mental health, and their personal beliefs and wishes all play a role. A person who undergoes euthanasia usually has an incurable condition. But there are other instances where some people want their life to be ended. In many cases, it is carried out at the person's request but there are times when they may be too ill and the decision is made by relatives, medics or, in some instances, the courts. The term is derived from the Greek word *euthanatos* which means easy death. Euthanasia is against the law in the UK where it is illegal to help anyone kill themselves. Voluntary euthanasia or assisted suicide can lead to imprisonment of up to 14 years. The issue has been at the centre of very heated debates for many years and is surrounded by religious, ethical and practical considerations. Euthanasia raises a number of agonizing moral dilemmas: is it ever right to end the life of a terminally ill patient who is undergoing severe pain and suffering? Under what circumstances can euthanasia be justifiable, if at all? is there a moral difference between killing someone and letting them die? At the heart of these arguments are the different ideas that people have about the meaning and value of human existence.

Should human beings have the right to decide on issues of life and death? There are also a number of arguments based on practical issues. Some people think that euthanasia shouldn't be allowed, even if it was morally right, because it could be abused and used as a cover for murder.

### **Killing or letting die**

Euthanasia can be carried out either by **taking actions**, including giving a lethal injection, or by **not doing** what is necessary to keep a person alive (such as failing to keep their feeding tube going).

### **Why people want euthanasia?**

Most people think unbearable pain is the main reason people seek euthanasia, but some surveys in the USA and the Netherlands showed that less than a third of requests for euthanasia were because of severe pain. Terminally ill people can have their quality of life severely damaged by physical conditions such as incontinence, nausea and vomiting, breathlessness, paralysis and difficulty in swallowing.

Psychological factors that cause people to think of euthanasia include depression, fearing loss of control or dignity, feeling a burden, or dislike of being dependent.

### **CURRENT STATUS**

Is euthanasia legal?

People have debated over the ethics and legality of euthanasia and PAS for centuries. Today, laws about euthanasia and PAS are different across states and countries.

In the United States, PAS is legal in Washington, Oregon, California, Colorado, Vermont, Washington, D.C., and Hawaii (beginning in 2019)

Each of these states and Washington, D.C. have different legal requirements. Not every case of PAS is legal. In addition, many states currently have PAS measures on legislative ballots, so this list may grow.

Outside the United States, PAS is legal in: Switzerland, Germany, and Japan

Euthanasia, including PAS, is legal in several countries, including; Netherlands, Belgium, Luxembourg, Colombia, Canada

### **Opinions**

A 2013 poll in the New England Journal of Medicine found that 65 percent of people in 74 countries were against PAS. In the United States, 67 percent of people were against it.

However, a majority in 11 of the 74 countries voted in favor of PAS. Plus, a majority of voters in 18 U.S. states expressed support for PAS. Washington and Oregon, which had legalized PAS at the time of the poll, weren't among those 18 states. This suggests that opinions about euthanasia and PAS are rapidly changing.

By 2017, a Gallup poll found a large shift in attitudes in the United States. Almost three-quarters of people surveyed supported euthanasia. Another 67 percent said doctors should be allowed to assist patients with suicide.

Interestingly, a study in the United Kingdom found that the majority of doctors weren't in favor of voluntary euthanasia and PAS. Their main objection was based on religious issues.

### **Prevalence**

In countries where it's legal, a 2016 review Trusted Source found euthanasia accounts for 0.3 to 4.6 percent of deaths. More than 70 percent of those deaths were related to cancer.

The review also found that in Washington and Oregon, doctors write less than 1 percent of prescriptions for assisted suicide.

Assisted dying is a highly controversial moral issue incorporating both physician-assisted dying (PAD) and voluntary active euthanasia. End-of-life practices are debated in many countries, with assisted dying receiving different consideration across various jurisdictions. Assisted dying proponents focus on the regarding the interpretation of the constitutional right to life and balancing this with the premise of assisted dying, alongside the impacts of assisted dying on the doctor-patient relationship, which is fundamentally based on trust, mutual respect and the premise of 'first do no harm'. Review is underpinning the interpretation of constitutional rights and the Hippocratic Oath with the premise of assisted dying, alongside the impacts of assisted dying on the doctor-patient relationship. Most clinicians remain untrained in such decision making, with fears against crossing key ethical divides. Due to the increasing number of cases of assisted dying and lack of consensus, our review enables the integration of ethical and legal aspects and facilitates decision making.

## **OBJECTIVES**

- 1) To understand the concept of Euthanasia.
- 2) To study the status of Euthanasia in India.
- 3) To study the awareness level of Euthanasia amongst youth.
- 4) To study the perception of youth towards Euthanasia.
- 5) To suggest the effective ways to tackle the issues and challenges as regards awareness towards Euthanasia.

## **REVIEW OF LITERATURE**

### **1) DR. KEVORKIAN (2010)**

Is an example of why physician assisted suicide needs to be regulated as a legitimate medical practice? Without proper legislation, Kevorkian practiced on his own terms. While working around the law and avoiding jail time, Kevorkian developed a bit of a god complex. His arrogance grew with every suicide he assisted with. He felt that he was completely in the right and the law could not touch him. This gave him the confidence to perform euthanasia on television without fear of facing any repercussions. If Michigan had solid laws on physician assisted suicide, Kevorkian may not have done what he did. He practiced the way he did because he was testing the law, trying to push things to the limit.

### **2) COLES AND EATON (2009)**

Surveys that were completed by the general population have revealed that euthanasia is a highly supported issue. A Canada wide poll indicated that 79% of the population favoured assisted suicide. The most support originated from Québec at 87%, and least amount from Alberta at 66%. Nevertheless, Alberta's numbers were still relatively high. (Coles and Eaton, 2009).

### **3) LUNAU (2013)**

In 2008, three doctors resigned from a Winnipeg hospital after refusing to continue treating Samuel Volchok; an old man with minimal brain function. They wanted to help him die by removing the elderly man from life

support, but his family refused. Complaints like this have placed pressure on Ontario's Consent and Capacity Board to resolve end of life cases since 2009.

## **CASE STUDY**

- On the evening of 27th November, 1973, Aruna Ramchandra Shanbaug, a Junior Nurse at King Edward Memorial Hospital, was attacked by a ward boy, Sohanlal B Walmiki, in the hospital who wrapped a dog chain around her neck and yanked her back with it. He tried to rape her
- On 24 January 2011, Pinky Virani, a journalist, claiming to be her friend, approached the Supreme Court with a plea that Aruna be allowed to end her life, as she was in that state for more than 36 years.
- In her writ petition, Ms Pinki alleged that since the incident 36 years have passed and, on that day, Aruna Shanbaug was about 60 years of age.
- Aruna was in a persistent vegetative state (P.V.S.) and virtually a dead person, without any state of awareness, and her brain virtually dead.
- The Supreme Court on March 9 ruled that individuals had a right to die with dignity, allowing passive euthanasia with guidelines. The need to change euthanasia laws was triggered by the famous Aruna Shanbaug case.

## **LIMITATION OF THE STUDY**

- Difficulty in getting responses from the respondents.
- The sample size is limited.

## **RELEVANCE**

Euthanasia involves a clash of two important values: respect for individual autonomy and respect for life. Pro-euthanasia advocates give priority to autonomy; anti-euthanasia proponents to respect for life. Respect for life is not just a religious value as pro-euthanasia advocates argue.

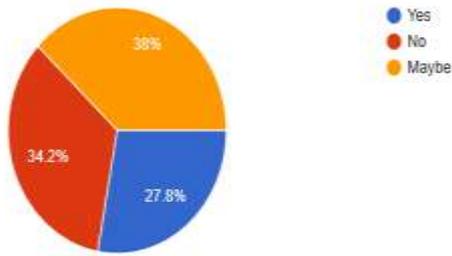
## **RESEARCH METHODOLOGY**

- Nature of the study – Descriptive and Analytical.
- Method of data collection –
  - Primary data through – Questionnaire and Survey
  - Secondary data - Journals, Articles, Website
  - Sample size – 80

## **ANALYSIS OF DATA (Most important Findings)**

6. If faced with a difficult terminal illness would you consider euthanasia or physician assisted suicide ?

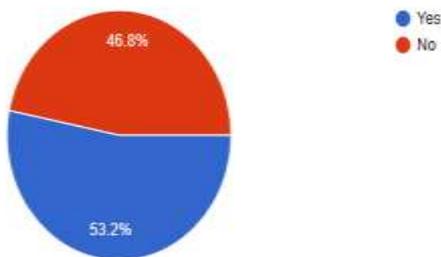
79 responses



- 38% are not sure whether they will consider euthanasia in case of terminal illness

10. Doctors should be able to help patient to die if they wish to die ?

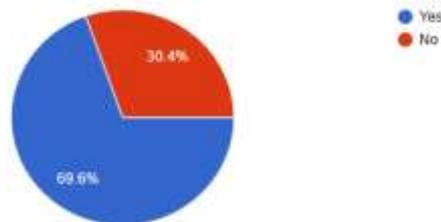
79 responses



- 53.2% people are agree that doctor should be able to help patient to die if they wish to die.

13. Do you think that euthanasia should be legalized in India ?

79 responses



- 69.6% people are agree that euthanasia should be legalized in India.

### FINDINGS

SR. NO	QUESTIONS	YES	NO	MAYBE
2)	Do you know what the term euthanasia means?	42.5%	23.8%	33.8%
3)	Do you think people should have the right to choose how and when they want to die?	28.7%	28.7%	42.5%
4)	Do you have any awareness about law of euthanasia in India?	21.3%	58.8%	20%
5)	Do you think test should be carried out to determine physical capabilities of patient wanting to die?	87.3%	12.7%	-
6)	If face with difficult terminal illness would you consider euthanasia or physician assisted suicide?	27.8%	34.2%	38%
7)	Do you agree that people are travelling abroad in order to die legally?	17.5%	46.3%	36.3%

8)	If loved one was suffering due to terminal illness and they preferred to just end their life would you let them?	18.8%	47.5%	33.8%
9)	Do you think that people should be allowed to make a living will?	55.7%	7.6%	36.7%
10)	Doctors should be able to help patient to die if they wish to die ?	53.2%	46.8%	-
11)	If euthanasia was legalized would you trust doctor to give you the best possible care and respect your personal wishes?	46.8%	11.4%	41.8%
12)	Wouldn't euthanasia and assisted suicide only be at patient's request?	35.4%	20.3%	44.3%
13)	Do you think that euthanasia should be legalized in India?	69.6%	30.4%	-

### **CONCLUSION**

Medical science is progressing in India as in the rest of the world, and hence currently we are having devices that can prolong life by artificial means. This may indirectly prolong terminal suffering and may also prove to be very costly for the families of the subject in question. Hence, end-of-life issues are becoming major ethical considerations in the modern-day medical science in India. The proponents and the opponents of euthanasia and PAS are as active in India as in the rest of the world. However, the Indian legislature does not seem to be sensitive to these. The landmark Supreme Court judgment has provided a major boost to pro-euthanasia activists though it is a long way to go before it becomes a law in the parliament. Moreover, concerns for its misuse remain a major issue which ought to be addressed before it becomes a law in our country.

### **SUGGESTION**

- 1) Life has intrinsic importance; however, it is suggested that sanctity of life at least in case of terminally ill patients should not prevail over the quality of life. The quality of life should be upheld in order to protect the dignity of terminally ill patients.
- 2) Law for dignified death in India should be passed at the earliest.
- 3) Special implementation of ethical behavior as regards Euthanasia to be strictly followed along with the law.
- 4) A Zero tolerance policy towards those who indulge in unethical means being adopted regarding Euthanasia.
- 5) Quality of life should also be maintained not only in the clinical decisions but also in the legal perspective. Life should be protected, but the protection should not result as a forced burden for terminally ill patients. In exceptional situations terminally ill patients should be allowed to die with dignity.
- 6) The best interests of the patient should be considered not only for protection of life but also for allowing dying peacefully when the patient is in a hopeless health condition.
- 7) Physician assisted suicide should be conceptually differentiated from the other forms of euthanasia, for legalizing euthanasia in India. Suicide and mercy killing should not be confused with physician assisted suicide.

- 8) While drafting the legislation the policy makers should include the specific definition of euthanasia and strict safeguards should be incorporated in order to avoid misuse of law.

**To conclude - “The quality of life & dignified death is more important than mere life”**

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# “TO STUDY THE JOB SATISFACTION OF EMPLOYEE IN FIRE BRIGADE”.

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### **Abstract:**

The purpose of this research project was to identify the issues and challenges that face the employee of the fire brigade and how that issues and challenges discourage them.

A survey was conducted with in Mumbai fire brigade in order to elicit objectives. Focusing on broad based of job satisfaction of employee in fire brigade. And to find out what are the current levels of job satisfaction among fire brigade employees

The procedures used to complete this research included a literature review and internet search that examined the current discussions on job satisfaction and motivation of employee in fire brigade. The results indicated that there are a variety of factors that long term fire service employees see as obstacles to their satisfaction, motivation and to their success in the fire department. The methodology adopted was primary as well as secondary collection. The sample size was 50.

This paper tries to find out the issues & challenges of job satisfaction and tries to come up with suggestion for improving the same.

**Keywords:** job satisfaction, issues, fire-fighters

### **Introduction:**

The Mumbai Fire Brigade is the fire brigade serving the city of Mumbai, Maharashtra. It is responsible for the provision of fire protection as well as responding to building collapses, drowning, gas leakage, oil spillage, road and rail accidents, bird and animal rescues, fallen trees and taking appropriate action during natural disasters.

Job satisfaction is defined as the extent to which an employee feels self-motivated, content & satisfied with his/her job. Job satisfaction happens when an employee feels he or she is having job stability, career growth and a comfortable work life balance. This implies that the employee is having satisfaction at job as the work meets the expectations of the individual.

Job satisfaction or employee satisfaction is a measure of workers' contentedness with their job, whether or not they like the job or individual aspects or facets of jobs, such as nature of work or supervision. Job satisfaction can be measured in cognitive evaluative, affective or emotional, and behavioural components. Researchers

have also noted that job satisfaction measures vary in the extent to which they measure feelings about the job affective job satisfaction or cognitions about the job cognitive job satisfaction.

They focusing of public safety and to meet the needs of the changing community they also adopt comprehensive internal process that prepares employees for the challenges ahead. Tomorrow's fire service executives have a difficult task before them. They must balance the needs of their customer group by determining the types and levels of services the community requires, support the employees with the necessary training, development and equipment to complete the mission, vision and objectives of an organization

## **Problems**

- Securing Funding and Retention.
- Enhancing Fire Department Communication.
- Ensuring Fire-fighter Safety.
- Coordinating Agency Resources.
- Rising Expectations for Fire Services.

## **Objectives:**

- i) To study the concept of job satisfaction.
  - ii) To study the work condition of employees in fire brigade.
  - iii) To study the factors that lead to job satisfaction.
  - iv) To study the impact on job satisfaction on work performance.
  - v) To suggest ways to improve job satisfaction in fire brigade.
1. **Relevance of study:** As the employees in fire brigade are overstressed with the responsibilities many a times it creates a lot of problems. Hence this topic to understand the issues & challenges faced by them.
  2. **Limitation:**
    - i. Difficulty in getting responses from the respondents.
    - ii. The sample size is limited.

## **Literature Review**

### **a) LAURICH (1995)**

**Lau rich** further discovered through a survey that 70% of the respondents might accept a promotion that required a staff assignment, but 49% would not accept a lateral transfer to a staff assignment. Staff interviews revealed that administrative assignments have a much greater workload than field assignments (laurich 1995). Free time is severely restricted and the 40-hour week in reality is more like 60 hours.

### **b) COLEMAN (1997)**

Coleman does make mention that the promotion to the chief position is not like any other in the fire service because it has no inherent support mechanism like those found in fire stations. "The day a person becomes a fire chief, he or she gets a brand-spanking-new expiration date that's got a very definite limit to it.

### **c) DIPOLI (1994)**

Chief cipoli conducted a survey that revealed a very disturbing trend. Former fire chiefs enjoyed an average tenure of 12 years, while fire chief newer to their positions averaged 5.4 years (dipoli 1994) finding fact surveys to hear from members their thoughts on the challenges facing fire chiefs that ultimately end their careers.

d) **GRAHAM (1997)**

If the trend continues two more decades, school projects, the average person will work 60 hours a week, up from 47 hours a week now. Many management employees feel that a significant source of workplace stress is the result of long work hours and the organization's failure to recognize that employees are human and that they will make mistakes.

e) **MOSKOWITZ (1995)**

The issues of balancing work and family time is of for more concern than many will admit. At least a third of the respondents to recent surveys said they would change jobs to get a better work/family balance and that finding a good balance is a high priority in their selection of jobs.

### **Research methodology**

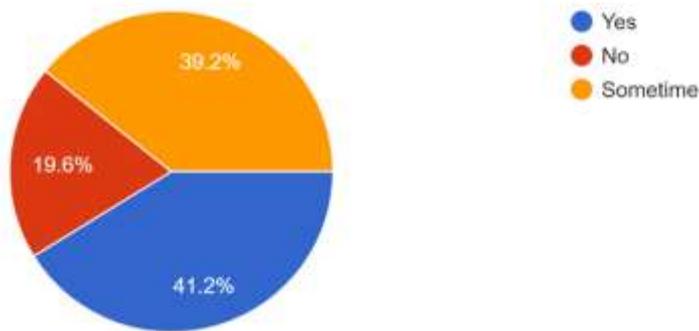
- a) Nature of study- Descriptive & Analytical
- b) Method of data collection-
  - Primary Data through- Google form questionnaire
  - Secondary data- Journals, Articles, website
- c) **Sample size- 50**

### **Finding and analysis**

- In my survey there are 64 % people are working in Fire brigade more than 10 years and 25 % people are working in between 0 to 5 years and 10 % people are working in between 5 to 10 years.
- In Fire brigade there is 94 % people think their work is meaningful and 2 % people think their work is not meaningful and 3% people are not sure about their work is meaningful or not.
- In my survey there is 98 % people are think their job makes positive difference in others life and 2% people think their job not make any positive difference in others life.
- According to pie chart there is 52 % people think they have enough training to solve customer issues and 23 % people think they don't have enough training to solve customer issues and 23 % people are not so sure about their training.
- According to pie chart 62% people received feedback from their senior officer and 23% people did not receive any feedback from their seniors and 13 % people get feedback sometimes or maybe not.
- According to pie chart 76% people get praised by their senior officer and 23% people did not receive.

## Dose your job cause an unreasonable amount of stress to you ?

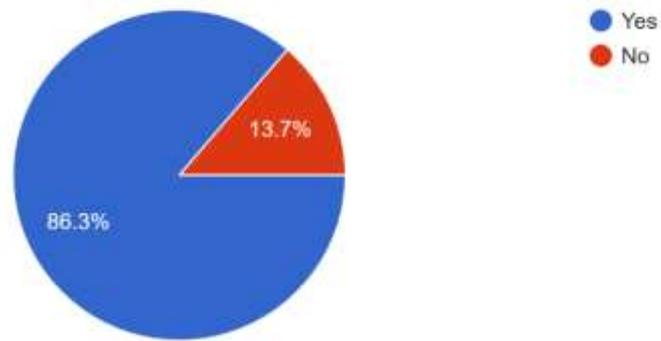
51 responses



- In fire brigade 41% people get unreasonable amount of stress and 19 % people did not get any stress and 39% people get stressed some times.
- 51% people think their senior officer treats all the team members equally and 49% people do not think their senior officer treats all the team members equally.
- 96% people feel connected to their Co-workers and the remaining 4% don't feel the same.
- 84% people think their senior encourage them to give their best efforts and 15% people do not think their senior encourage them.
- 52% people think they rewarded for their work and 23% people they don't get rewarded and other 23 % people are not sure.
- 70 % people think there is scope for personal growth and 30 % think there is no personal growth.
- 96% people find their work meaningful and 4% are not finding their work meaningful.
- 74% people think there is scope for personal skill enhancement such as time management, stress management, etc. and 26 % people think there is no scope in skill enhancement.
- 58% people think they have enough time for their family and 42% people don't have enough time for their family.
- 78% people think there job is stressful and 22 % people think there job is not stressful.
- 41% People feel that they have bad impact on their work because of stress and dissatisfaction and 35% people did not feel that they have bad impact on their work and 22% people are not sure.
- 51% People feel that they have bad impact on their personal life because of stress and dissatisfaction from work and 21% people did not feel that they have bad impact on their personal life because of work and 25% people are not sure.
- 58% people are satisfied overall working condition in their department and 42% people are not satisfied.

Are you satisfied with your job ?

51 responses



- 86% people are satisfied with their job and 13% people are not satisfied.

#### **Conclusion:**

Due to the nature of work & responsibility the employees of the Fire Brigade are stressed out. But they have job security & all the benefits of a Government Employee. If there is stress management they would be more satisfied in the job. Stress management would also lead to better performance at the work place.

#### **Suggestions**

- (1) They need to do more focus on training of employees.
- (2) Rewards for the employee's dedication and commitment towards job.
- (3) Appreciation & awards for their commitment
- (4) A proper feedback system to be in place.
- (5) Department should try to help their employees to manage their stress through various programs.

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# **A study on Agriculture tourism and Rural Entrepreneurship for Rural Shahpur District**

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## **ABSTRACT:**

Agri-tourism is the latest concept in the Indian tourism industry, which normally occurs on farms. Agri-tourism is a form of agricultural multi-functionality it gives you the opportunity to experience the real, diverse and authentic contact with the village life, taste the local popular food and get familiar with the many farming tasks during the visit. It provides you the welcome break free from the daily busy and hectic life in the peaceful village environment. It gives you the chance to relax and refresh in the pure natural environment, surrounded by splendid setting. It gives you the chance to see the real India and have the experience on the farm stay holidays. Many Indian farmers especially from rural Maharashtra currently involved in or are considering the use of agri-tourism as a mode of diversifying their farm operations. How they will achieve this is the challenge. The overall potential for agri-tourism can only be achieved if strategies to address and overcome their challenges are developed and implemented. This paper is an attempt to identifying the potential of agri-tourism in India by highlights major challenges in this issue with some useful recommendations.

Keywords: *Agri-tourism, Agriculture, Employment, Rural development, Tourism*

## **INDRODUCTION**

Pressures due to globalization and industrialization are threatening the existence of agriculture. This is forcing farmers to look for additional income via job or business to sustain their household income. Farmers across Maharashtra have a good opportunity to diversify their agriculture business into Agritourism. In today's era of liberalization and globalization travel and tourism is extensively recognized as an important civil industry worldwide which provides major potential for economic growth and development.

(India's 12th Five Year Plan Report, 2011) In India, total contribution of travel and tourism to GDP was INR 5,651.0 bn (6.4% of GDP) in 2011 and is forecasted to rise by 7.8% p.a. to INR12,891.2 bn in 2022.

Agriculture is an integral part of Indian culture. Almost 80 percent of the people depend on agriculture business. 'Agriculture Tourism' is a project that brings together the business of connecting farm business. 'Agriculture Tourism' has its unique importance in today's scientific world. The concept of tourism in many countries is changing. Till now, there was an economic potential and could think about tourism and this concept is now changing and has got a new look and Maharashtra State Agricultural and Rural Tourism Co-operative Federation Limited (MART) has taken an initiative for this. Agricultural tourism is a farm tour, identity of our culture, clean joy. To reduce the daily stresses of urban life, many citizens prefer agriculture tourism. Keeping mind both education and entertainment, they are attracted to agricultural tourism.

Tourism is now well recognized as an engine of growth in the various economies in the world. Agro-tourism is an innovative agricultural activity related to tourism and agriculture both. Maharashtra is one of the major tourist centers in the India and there is large scope and great potential to develop agro-tourism.

## REVIEW OF THE LITERATURE

### *Agritourism Definitions:*

Worldwide many terms have been used to convey the idea of Agritourism. It is multifaceted and may entail agricultural tourism, agro tourism, farm tourism, farm vacation tourism, wine tourism, agritourism, as well as some related terms that are used interchangeably with Agritourism or that are complementary to Agritourism include nature tourism, rural tourism, alternative farming, wildlife enterprises, ecotourism, heritage tourism, Agri education and value-added agriculture (Brant and Rhoades, 2007).

The dictionary meaning of Agritourism is tourism in which tourist's board at farms or in rural villages and experience farming at close hand (Dictionary of the English Language,2000).

Barbieri and Mshenga (2008) define Agritourism as “any practice developed on a working farm with the purpose of attracting visitors.”

McGehee, Kim, and Jennings (2007) explain Agritourism as “rural enterprises which incorporate both a working farm environment and a commercial tourism component.”

Sharpley and Sharpley (1997) “tourism products which are directly connected with the agrarian environment, agrarian products or agrarian stays.”

**World Tourism Organization** (1998) involves accommodation being offered in the farmhouse or in a separate guesthouse, providing meals and organising guests ‘activities in the observation and participation in the farming operations.

**Agritourism for farmers** is considered as “A range of activities, services and amenities provided by farmers and rural people to attract tourist to their area in order to generate extra income for their businesses”.

**Agritourism for tourists** is considered as “anything that connects tourists with the heritage, natural resource or culinary experiences unique to the agricultural industry or a specific region of the country’s rural areas.”

## RESEARCH METHODOLOGY

### **PURPOSE OF RESEARCH:**

Purpose of research is to study the agriculture tourism and rural entrepreneurship development.

### **METHOD OF DATA COLLECTION**

PRIMARY DATA as well as SECONDARY DATA was used in this research, PRIMARY DATA was collected by physical distribution of questionnaire in rural areas ( later converted into online form) and online form was distributed among various people in Mumbai city and Mumbai suburb, and customers of Dirghayu Farms Agri Resort Pvt. Ltd, which played a major role in collection of data of agri-tourism

### **RESEARCH DESIGN**

The research design developed was Descriptive research design and it was Explorative in nature

### **OBJECTIVES OF RESEARCH:**

The objectives of this paper are follows:

1. To examine the importance of agro-tourism development in Maharashtra.
2. To identify the problems of the agro-tourism and make suggestions to establishment and operations of agro-tourism.
3. To identify factors are necessary for Agri-tourism development.
4. To study the Challenges and Recommended strategies of Agri-tourism industry.
5. To identify the types of Agritourism businesses that currently exist in the region by location, size, gross income, and type of product or service offered.
6. To study the extent of additional income from Agritourism centres as a supplementary income source for Maharashtra farmer.
7. To find out Tourist's expectations, perception, and satisfaction level from a few ATC's (Agri Tourism Centres) visited by them.
- 8.

#### **ADVANTAGES OF AGRI TOURISM:**

1. It brings major primary sector Agriculture closer to major service sector tourism expected to create win – win situation for both the sectors.
2. Tourism sector has the potential to enlarge.
3. Agriculture sector has the capacity to absorb expansion in Tourism sector.
4. An inexpensive gateway the cost of food, accommodation, recreation and travel and tourism is low, widening the scope of tourism.
5. Curiosity for the urban about farming industry and life style; Agri tourism, which involves villages and agriculture, has the capacity to satisfy the curiosity of the urban segment by providing scope for re-discovering the rural life, which is rich in diversity.
6. Strong family oriented recreational activities through rural games, festivals, food, dress.
7. Finding solace with nature friendly life style, peace and tranquility are in built in agri tourism.
8. Nostalgia for their roots on the farm. For tourists it is like returning back to their roots.
9. Educational value of agri tourism spreading knowledge about agriculture science where urban students are moving with the pace of technology.

#### **CHALLENGES FACED:**

- 1) Lack of Irrigation
- 2) Climatic Conditions
- 3) Financial Problems of Farmers
- 4) Educational Profile of Farmers and Lack of Orientation in Marketing and Customer Communications
- 5) Unawareness about the Concept of Agritourism
- 6) Less Cultivable Land and Fragmented Land
- 7) Lack of Government Support

#### **Efforts taken by Maharashtra Government**

- 75 to 85 % of Indian Population lives in rural villages.
- The ATDC has been concentrating its efforts all along for the overall upliftment of the farmers in rural villages.
- 90% of the rural community earns its livelihood from agriculture directly or indirectly.
- To improve the standard of living of the rural people there is need to improve and increased the per capita income from farmer's land. For this new approach beyond traditional farming will have to implement in their farms. Agri-Tourism is one of them.
- The rural youth particularly the school dropouts and educational backward neglected rural women constitute more than 50% of our rural population.
- An allocation of Rs.50 lakhs per village for village tourism has been proposed.
- The states are encouraging private public partnership in tourism sector.

## RESEARCH LIMITATIONS

- Some parameters can remain untouched as it is practically impossible to cover all the aspects for such vast subject of research in a go.
- Agritourism concept is not yet well known among many people in the region and some concerned people alike.
- Maharashtra being a huge state and Shahapur district having many places to cover, this study is related to a few agritourism centers in and around "Dirghayu Farms Agri Resort Pvt. Ltd."
- The time period for such a wide exploratory research seems to be very less and the field itself demands loads of time.

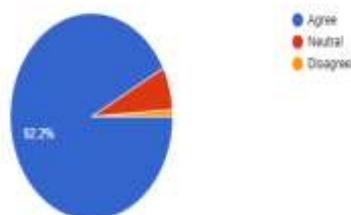
## SCOPE OF AGRI – TOURISM:

Agri-Tourism has great scope in the present context for the following reasons:

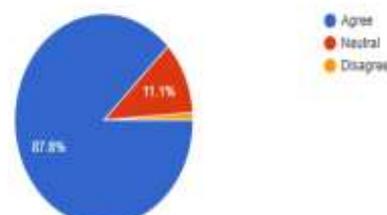
1. **An inexpensive gateway** - The cost of food, accommodation, recreation and travel is least in Agri-Tourism. This widens the tourist base. Present concept of travel and tourism is limited to urban and rich class which constitutes only a small portion of the population.
2. **Curiosity about the farming industry and lifestyle** - The urban population having roots in villages always have had the curiosity to learn about sources of food, plants, animals, raw materials like wood, handicrafts, languages, culture, tradition, dresses and rural lifestyle.
3. **Strong demand for wholesome family oriented recreational activities** - Villages provide recreational opportunities to all age groups i.e., children young, middle and old age, male, female, in total to the whole family at a cheaper cost. Rural games, festivals, food, dress and the nature provide variety of entertainment to the entire family.
4. **Health consciousness of urban population and finding solace with nature friendly means** - Modern lifestyle has made life stressful and average life span has come down. Hence, people are in constant search of pro-nature means to make life more peaceful. Ayurveda which is a pro-nature medical approach has roots in villages. Indigenous medical knowledge of villagers is respected.

5. **Desire for peace and tranquillity** - peace is always out of his system. Tourism is a means for searching peaceful location. Peace and tranquillity are inbuilt in Agri-Tourism as it is away from urban areas and close to nature.
6. **Interest in natural environment** - Busy urban population is leaning towards nature. Because natural environment is always away from busy life. Birds, animals, crops, mountains, water bodies, villages provide totally different atmosphere to urban population in which they can forget their busy urban life.
7. **Setback with overcrowded resorts and cities** - In resorts and cities, overcrowded peace seekers disturb each other's peace. Hence, peace is beyond cities and resorts. Even though efforts are made to create village atmosphere in the sub urban areas through resorts, farmhouses, it looks like a distant replica of the original.
8. **Nostalgia for their roots on the farm** - Cities are growing at the cost of villages. Villagers are migrating to cities in search of jobs and to seek the comforts of modern life. Hence, yesterday's villagers are today's urbanites.
9. **Rural recreation** - Villages provide variety of recreation to urbanites through festivals and handicrafts. Villagers (farmers) lifestyle, dress, languages, culture / traditions which always add value to the entertainment. Agricultural products like farm gate fresh market, processed foods, organic food could lure the urban tourists. As result of this agri – atmosphere in the villages, there is scope to develop Agri – Tourism products like Agri shopping, culinary tourism, pick and own your tree / plot, bed and breakfast, pick and pay, bullock cart riding, camel riding, boating, fishing, herbal walk, rural games and health (ayurvedic) tourism.
10. **Educational value of Agri-Tourism** – Agri-Tourism could create awareness about rural life and knowledge about agriculture science among urban school children. It provides a best alternative for school picnics which are urban based. It provides opportunity for hands on experience for urban college students in agriculture.. This provides unique opportunity for education through recreation where learning is fun effective and easy. Seeing is believing, doing is learning. This experience-based concept is the USP of Agri- Tourism.

Do you think agritourism is a kind of environmental-friendly and sustainability tourism style?  
90 responses

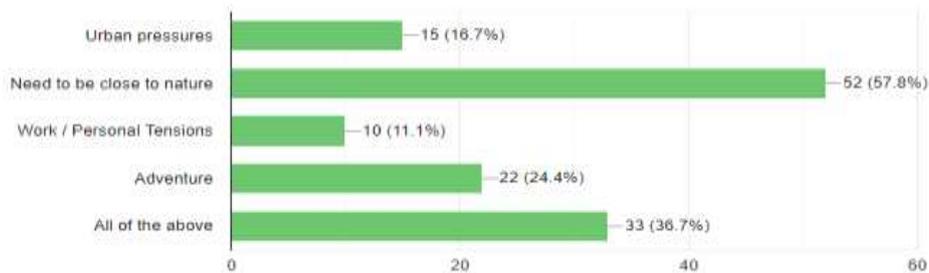


What do you think about developing agritourism industry to help local economy and society?  
90 responses



What made you specially decide to attend agritourism centre?

90 responses



## FINDINGS

The overall response of the research is mostly positive and people are favouring the idea of visiting an Agritourism Centre for recreational purpose and they also agree that developing and agritourism centre on a farm and rural regions of Maharashtra is favourable and adds to an additional source of income to the farmers.

Almost all the responses agree that such a tourism concept allows them to get close to the agriculture and other farming techniques as well as the local culture of that village. Most of the respondents also had a favourable response towards agritourism being an fresh and innovative idea and urban respondents wanted to visit such places for a change and mostly for agricultural education. Attending an agritourism was favoured for a need to be close to the nature and adventure involved in such places.

Most of the responses about 87% agreed that the cost to an agritourism centre were lower than other tourism options available. Respondents favoured to stay for at most two nights stay at the agritourism centre. This research consisted of responses from urban, suburban and rural areas.

Questionnaires used in rural areas used physical form to gather information and then added to online forms.

## CONCLUSION

Agri-tourism is a supportive system to the agricultural activities in India. It is an Innovative practice which can be utilized by the farmer and farm owners to harvest this opportunity, through a diversified approach. It will be beneficial Model for both farmer and the tourist, as farmers have an extra edge for earning and employments whereas the tourist gets an privilege to relive a fresh and rejuvenating atmosphere and culture of our agricultural heritage.

Although is a long way on go as the development and acknowledgement of the Agri-tourisms is potential seen and cultivated by only Maharashtra government and its supporting agencies. Rest on the nation is yet to understand its worth and move ahead on it. Thus, the government must provide a full fledged policy support system for the rooting and strengthen of the Agri-tourism in India. More than 45 percent of population live in the urban areas and they want enjoy rural life and to know about the rural life. It is a good opportunity to develop an agro-tourism business in Maharashtra. But there is a problem of low awareness about this business in the farmer and problem of the finance and proper view in the farmers of the Maharashtra. Hence, the agriculture departments of the districts, Agriculture Universities should try to give orientation about it and provide some innovative ideas regarding to the AgroTourism. The government should try to provide optimum financial aids to the agrotourism activities in Maharashtra by the grants and institutional finance. Bank should provide optimum financial help for the agro-tourism activities in the Maharashtra. Union of the agro-tourism

service providers is also another need of these farmers which helps the agricultural tourism network in the India including Maharashtra.

## **SUGGESTIONS**

- Agro-Tourism is a one of the business activities. So, farmers must have commercial mindset and some marketing techniques for the success. For the better success in the agro-tourism farmers should follow the following things
- Give a wide publicity of your tourism centre by new papers, television, digital marketing etc Use all possible advertisement means.
- Develop contacts with the schools, colleges, NGOs, clubs, unions, organisations etc.
- Train your staff or family members for reception and hospitality or at least teach basic required skills to understand about the customers wants and their expectations and serve them with available resources.
- Charge optimum rent and charges for the facilities/services on the commercial base.
- Develop your website and digital platforms like social media and update time to time for attract national or foreign tourist.
- Take their feedback and comments about the service and suggestions to more development and modification.
- Develop a good relationship with the tourist for future business and chain publicity.
- Preserve an address book and comments of the visited tourists for future tourism business.
- Develop different agro-tour packages of for different type of tourist and their expectations.
- Behave sincerely with the tourists and participate with them and provide them with their requirements within the reach.
- Small farmers can develop their agro-tourism centres based on cooperative business pattern and farmers having funds at disposal should invest wisely in infrastructure and related work like deciding for food.

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# A STUDY FACTORS INFLUENCING PERCEPTION OF STUDENTS TOWARDS SELECTION OF UNDERGRADUATE COLLEGES IN MUMBAI

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## ABSTRACT

Decision of students for their higher education plays an important role for their career. There is very tough competition between education institutions at a global level. Hence it is necessary to find out the factors that influence the choice of students for their higher education. A present study is focused on the influencing factors of selection of undergraduate colleges in Mumbai. Exploratory factor analysis is used. A sample of 99 respondents from various colleges are taken under research. After data collection from all respondents, researcher done Exploratory Factor Analysis (EFA), on collected data using SPSS version 21 and SPSS Amos. Researcher used 17 item scale to identify factors that influence the choice of students for undergraduate colleges. After Exploratory Factor Analysis researcher identified only 11 items that contribute to influencing the decision of students.

**Keywords:** Choice of college, Higher Education, Undergraduate College

## Introduction

There is tough competition between education institutions at a global level. Hence it is necessary to find the factors influencing the decision of students which can impact the institution also. Students play a vital role in the education institutions. A present study focuses on the factors which influence the decision of students in Mumbai. Exploratory factor analysis is used. A sample of 99 respondents from various colleges are taken under research. Researcher used 17 item scale to identify factors that influence the choice of students for undergraduate colleges. After data collection from all respondents, researcher done Exploratory Factor Analysis (EFA), on collected data, only 11 factors are identified to be influencing that change the decision of students.

## LITERATURE REVIEW

Norbahiah Misrana, b. S.(2012) on “The influence of Social – Economic Status among Matriculation students in selecting University & undergraduate program”, the research concludes that the SES is not an influencing factor for students for selection of colleges. It is also found that the environment and the staff are capable of influencing the students' development & achievement. Concha Allen<sup>1</sup>, P. K. (2014) “Factors Influencing Undergraduate Business Students' Decision to Pursue Sales Education” the choice of sales education is derived from the students' appreciation for creativity, the skill and their own interest in the field & ability, but the advisor has the ability to influence the mind of the students. Joseph Sia Kee Ming (2014) “Institutional Factors Influencing Students' College Choice Decision in Malaysia: A Conceptual Framework” say that there are various independent variables which have been identified which affect the students' choice for selecting colleges which are fees, financial capacity, location, Reputation of college, placement opportunities, To the study the following dependent variables to be influence decision's residency status quality and other environmental characteristics of Academy work related concerned spouse consideration financial year and

campus social environment. Andriani Kusumawati (2013) say the choice of selecting undergraduate colleges is a crucial part as the future of the student is depended on it and the factors which affect the decision are cost, reputation, proximity, job prospect and parents.

**OPERATIONAL DEFINITION**

- 1) Students:
  - i. Students who have cleared higher secondary and going to enter in undergraduate college.
  - ii. students who are in undergraduate college.
- 2) Undergraduate college : which is Affiliated to Mumbai University

**OBJECTIVE**

- 1. To identify relationship between gender and factors for selecting for UG college.
- 2. To identify relationship between Parents Income and factors for selecting for UG college.
- 3. To identify factors influencing while selecting under-graduate college for education.

**HYPOYHESIS**

- 1. There is significant relationship between gender and factors for selecting for UG college.
- 2. There is significant relationship between Parents Income and factors for selecting for UG college.

**RESEARCH DESIGN**

Primary data is collected through structured questionnaire. Focused scale on factors influencing student’s decision is used to collect data from students in Mumbai. The sample size of 99 is considered under current research.

**TESTING OF HYPOTHESIS (DISCRIPTIVE )**

Hypothesis Testing for H<sub>01</sub>: There is significant relationship between gender and factors for selecting for UG college.

Table 1: Test of Normality of data

<b>Descriptive Statistics</b>						
	Skewness		Kurtosis		Cal Value of Skewness	Cal Value of Kurtosis
	Statistic	Std. Error	Statistic	Std. Error		
Gender	.441	.243	-1.843	.481	1.814	3.831
Parents Income	1.032	.243	.113	.481	4.246	0.234
Cumulative Factors	-.185	.243	-.093	.481	0.761	0.193

Table 1 explains the value of Skewness & Kurtosis which is more than 1.96. Both the values are more than 1.96 which indicates that the data is not normally divided and non parametric test i.e Mann-Whitney Test can be applied for further analysis

## Reliability

Cronbach's Alpha	N of Items
.883	17

Table 2 indicates that Cronbach's Alpha value of all the collected responses are greater than 0.60, which indicates consistency in the response collected through structured questionnaire are reliable in nature.

## Mann-Whitney Test

	Cumulative_Factors
Mann-Whitney U	1039.000
Wilcoxon W	2869.000
Z	-.939
Asymp. Sig. (2-tailed)	.348

H<sub>1</sub> : There is significant relationship between gender and factors for selecting for UG college.

i.e The value 0.348 which is more than 0.05, hence we accept Null hypothesis

There is no significant relationship between gender and factors for selecting for UG college.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	69.968	3	23.323	.205	.893
Within Groups	10821.385	95	113.909		
Total	10891.354	98			

Table 4 indicates that there is no significant relationship between gender and factors for selecting for UG college and hence we reject the alternate hypothesis and accept null hypothesis.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.828
Bartlett's Test of Sphericity	Approx. Chi-Square	733.297
	Df	136
	Sig.	.000

Table 5 indicates that Kaiser-Meyer-Olkin (KMO) & Bartlett's Test which show the sampling adequacy. As the KMO Measure of Sampling Adequacy is more than 0.05 and the value of Bartlett's Test which is less than 0.05. Hence this test indicates that the sample is adequate to carry further analysis.

Table 6: Exploratory Factors Analysis

Factors		Factors of Loading	Eigen Values	% of Variance
Influencing factor	Opportunities	.843	6.313	37.132
	Teaching	.803		
	Extra curriculum activities	.785		
	Quality of education	.777		
	Motivation	.712		
	Financial capacity	.830	1.749	10.286
	Fees	.803		
	Cut-off	.574		
	Word of mouth publicity	.752	1.276	7.509
	Accessibility	.618		
	Grades	.861	1.114	6.555

Table 6 indicates the statistical analysis done through SPSS . The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test is 0.828 and 0.00. Initially 17 statement were asked to the respondent to know the factors influencing the decision after exploratory factor analysis on 11 factors are identify for the further analysis.

<b>Table 7 :Correlations</b>					
		A-R factor score 1 for analysis 1	A-R factor score 2 for analysis 1	A-R factor score 3 for analysis 1	A-R factor score 4 for analysis 1
A-R factor score 1 for analysis 1	Pearson Correlation	1	.000	.000	.000
	Sig. (2-tailed)		1.000	1.000	1.000
	N	99	99	99	99
A-R factor score 2 for analysis 1	Pearson Correlation	.000	1	.000	.000
	Sig. (2-tailed)	1.000		1.000	1.000
	N	99	99	99	99

SS	Pearson Correlation	.000	.000	1	.000
	Sig. (2-tailed)	1.000	1.000		1.000
	N	99	99	99	99
A-R factor score 4 for analysis 1	Pearson Correlation	.000	.000	.000	1
	Sig. (2-tailed)	1.000	1.000	1.000	
	N	99	99	99	99

Table 7 states that the correlation between 4 identified factors. As the value of all 4 factors is less than 0.05, researcher concludes that there is correlation between all 4 factors.

### CONCLUSION

Researcher concludes that there is no significance relationship gender and selection of undergraduate's colleges. The researcher has used 17 scale to identify factors influencing student's choice but after exploratory analysis it is found that only 11 factors are lead to influencing the decision of students. The factors like fees, grades, opportunities, Teaching, Extra, curriculum activities ,Quality of education ,Motivation, Financial capacity, Word of mouth publicity, Accessibility plays an important role in factors influencing students choices for selection of undergraduate colleges.

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# A study on the Impact of GST on Banking Sector

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## Abstract

The banking sector is one of the biggest and revenue generating sector in our economy. India is a country with impressively splendid banks with sufficient capital and well-regulated rules and regulations. One of the biggest transformations that this sector faced during this period is GST i.e. Goods and Service Tax, a new tax regime introduced in the midnight of 1<sup>st</sup> July, 2017. Now this new tax regime has become 2 years old and there are so many changes which happened in the Banking sector during these 2 year periods. Introduction of GST to Banking sector was one of the highly risky and challenging role for the Government. GST is a replacement to the Value Added Tax (VAT) which was implied on goods and services. It is a self-regulated tax system with a simplified tax regime which reduces multiplicity of tax. The purpose of this study is to know the challenges faced by the Banking sector and its effects on customers after the implementation of GST. Now all the bank branches have to register under GST in each state for the smooth functioning. The tax rate has created an impression in the banking sector that the sector is contributing much towards the economic growth of the country. Tax slabs is another important and critical thing discussed in this paper. Data for this paper has been collected from Primary as well as Secondary data such as journals, internet, and news articles.

**Keywords:** *GST, Banking sector, Economic stability.*

## Introduction

The Goods and Service Tax (GST), introduced by France in 1954 and now adopted by 140 countries, is a wide concept that simplifies the big tax structure to support and enhance economic growth. It is an indirect tax applicable throughout the country and in India it has replaced multiple taxes levied by Central and State Government. This reform process of tax regime had started in the 90's. A single or common tax was proposed in 1999 which was headed by the then Finance Minister of West Bengal Shri Asim Das Gupta to design a model for GST. This proposal has witnessed so many years of discussions and disagreements among the ruling and non-ruling parties and finally it was launched at midnight on 30<sup>th</sup> June 2017 by the Prime Minister of India, Shri Narendra Modi.

The paper reflects on the impact of implementation of GST on the banking sector. It also put light on how the tax rates imposed on different products and services of banks and how it affects the customers.

GST is playing a vital role in all sectors of the economy and the day to day life of the people. It has been discussed in newspapers from past one year about the changes in the price of the products and tax slabs of GST but still, people are in chaos. The introduction of GST (Goods and Service Tax) made a large change in the entire tax system of the country which is affected on 1121 items as from the newspaper source. GST is a replacement to the Value-added Tax (VAT) which was imposed on goods and services [1]. GST is an indirect tax which was introduced in India on July 1st of 2017 and was applicable throughout India which replaced multiple and compound taxes imposed by the central and state governments on a large number of goods and services. Under the GST tax system, goods and services are imposed with rates of 0%, 5%, 12%, 18% and 28%. There is a unique rate of 0.25% on rough semi-precious and precious stones and also 3%

of tax on gold. In addition to that, there is a cess of 22% or other rates on top of 28% GST applies on a few items like luxury cars, tobacco products.

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- Reduction in cascading of taxes.
- Overall reduction in price.
- Self-regulating tax system.
- Non-intrusive electronic tax system.
- Simplified tax regime

Financial sector or financial institutions like Banks and NBFCs are the backbone of any economy. They are the drivers of the economy and contribute around 6% of indirect taxes. Thus they play a vital role in the economic development of a country. Banking sector has always been a huge pillar of the Indian economy. Implementation of GST is much challenging specifically in this sector due to the higher rates of service tax as compared to current rate of service tax. Earlier Financial/ Banking sector had a service tax of 14.5%, but after the implementation of GST the service charge has hiked to 18%, hence it has become expensive for the customer. Apart from hike in service charges, there are many formalities that the banks and customers need to follow.

GST replaced the following taxes and levies:

- Excise Duty: It is a tax levied on those goods which are manufactured within the country.
- Service Tax: Service tax is a tax which is levied on the services provided by any entity, firm or any organization.
- Octroi: It is a tax levied by some state government like Gujarat and Maharashtra when the purchase enters their state.
- Entertainment tax: It is levied on every financial transaction that is related to entertainment like amusement parks, stage shows, arcades, cinemas, exhibitions, sports activities etc.

- **Entry Tax:** It is a tax levied on the movement of goods from one state to another imposed by the state governments in India
- **Custom Duties:** It is a tax which is levied on the goods that are imported in to the country.
- **VAT:** It stands for Value Added tax and it is levied on the movable goods in the country. The term value addition means the increase in value of goods and services at each stage of production or transfer of goods.
- **Commercial Tax:** It is a type of tax that is levied in contingency with the inherent value, earnings, profit, costs, and withholdings with regard to the commercial provision of a product or service.

### **Review of Literature**

Under the GST tax system, goods and services are imposed with rates of 0%, 5%, 12 %, 18% and 28%. There is a unique rate of 0.25% on rough semi-precious and precious stones and also 3% of tax on gold. In addition to that, there is a cess of 22% or other rates on top of 28% GST applies products and services have a high tax rate compared to the previous one [1], [2], [5], [6]. An important advantage of GST is that it avoids the double taxation on goods and services.

Some of the advantages of GST are:

- ♣ Reduction in cascading of taxes
- ♣ Overall reduction in price
- ♣ Self-regulating tax system
- ♣ Non-intrusive electronic tax system
- ♣ Simplified tax reg

Under the GST tax system, goods and services are imposed with rates of 0%, 5%, 12 %, 18% and 28%. There is a unique rate of 0.25% on rough semi-precious and precious stones and 3% of tax on gold. In addition to that, there is a rise of 22% or other rates on top of 28% GST applied. Introduction of GST in India would rationalize the tax content in Product Price; enhance the ability of Business Entities to compete globally. GST is applicable in almost all industries like Technology, Consumer Durable Goods, Entertainment, Chemical, Pharmaceuticals, Construction, Agriculture, Banking and Financial Institutions and so on. Undoubtedly all the industries will get affected by the GST. With a standard tax of 18% being implemented, there will be some benefits and some damages. This paper mainly focuses on the Banking and Financial Sector as it is one of the crucial sectors in our country.

### **Review of Literature**

- ❖ According to Agogo Mawuli (May 2014) in his study on “Goods and Service Tax – An Appraisal” he found that GST is not good for low-income countries and does not provide broad based growth to poor countries. If still these countries want to implement GST, then the rate of GST should be less than 10% for growth.
- ❖ According to Dr. R Vasanthagopal (2011) in his study on “GST in India: A Big Leap in the Indirect taxation System” concluded that switching to seamless GST from current complicated indirect tax system in India will be a positive step in booming Indian Economy. Success of GST will lead to its acceptance by more than 130 countries in world and a new preferred form of indirect tax system in Asia also.

- ❖ According to Nitin Kumar (2014) in his study on “Goods and Service Tax- A way Forward” concluded that implementation of GST in India help to remove economic distortion by current indirect tax system and expected to encourage unbiased tax structure which is indifferent to geographical locations.
- ❖ According to Pinki, Supriya Kammav and Richa Varma (July 2014) in their study on “Goods and Service tax- Panacea for Indirect Tax system in India” concluded that the new NDA Government in India is positive towards implementation of GST and it is beneficial for the Central Government, State Government as well as for consumers in the long run if its implementation is backed by strong IT infrastructure.
- ❖ According to Monika Sherawat and Upasana Dhanda (December 2015) in their study on “GST in India: A key tax reform”, concluded that there are various challenges in way of GST implementation, and it need more analytical research to resolve the battling interest of various stake holders and accomplish the commitment for a cardinal reform of tax structure in India.

### **Objectives**

- 1) To understand the concept of GST.
- 2) To study the effect of GST on Banking and financial services.
- 3) To study the effect of GST on bank rates.
- 4) To analyze the customer’s perceptions towards GST on Banking sector.

### **Limitations of the Study**

This research is limited to 50 people above the age of 18 only, residing in Mumbai area. The results therefore may vary elsewhere.

### **Research Methodology**

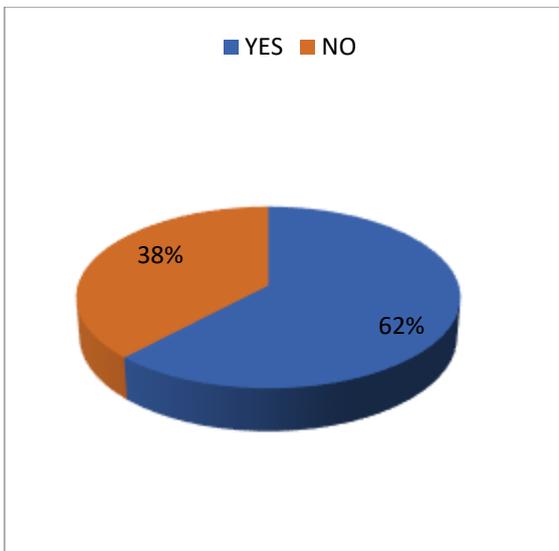
All the data in this paper has been collected through Primary as well as Secondary soruces. Primary data is collected with the help of Questionnaires and Secondary data is collected through journals, various websites, and publications.

### **Findings:**

From this study, we analyze that most of the respondents were females we could find that majority of the customers faced difficulty post GST. The respondents however agreed to GST being suitable for a stable economy but prefer some changes in the rates of GST. Quite a few of them denied the fact of GST being beneficial to them and as per them GST has affected the Banking system.

- **HAS GST AFFECTED BANKING SYSTEM:**

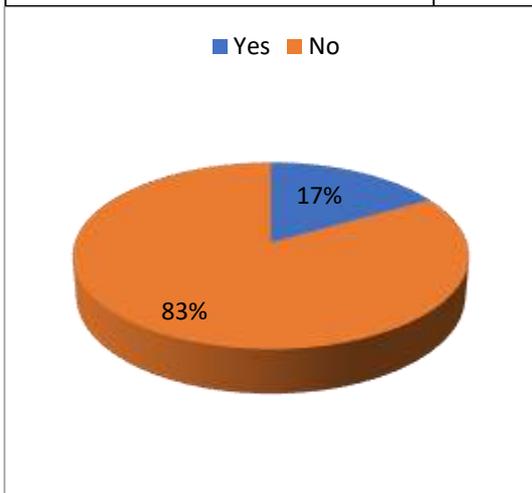
<b>Affected Banking system</b>	<b>Number of people</b>	<b>Percentage of people</b>
Yes	31	62%
No	19	38%



Interpretation: We can observe that majority of the people agree that GST has affected the Banking sector. Quite a few of them (38%) have denied it.

- IS GST SUITABLE FOR A STABLE ECONOMY:**

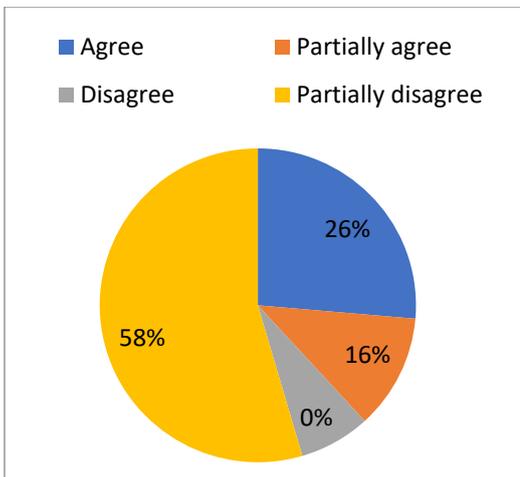
Suitability	Number of people	Percentage of people (%)
Yes	32	64%
No	18	36%



Interpretation: We can observe that majority of our respondents have agreed that GST is suitable for a stable economy.

- AGREE/DISAGREE IF GST IS A BURDEN ON ITS CUSTOMERS**

If agree/disagree	Number of people	Percentage of people (%)
Agree	29	58%
Partially agree	13	26%
Disagree	8	16%
Partially disagree	0	0%



Interpretation: Majority of the respondents have agreed that GST is a burden on its customers. 26% of them partially agree to it. 16% of them disagree to it.

### **Suggestions:**

1. There should be some changes in GST rates in the banking sector.
2. After the implementation of GST, banking sector is affected highly.
3. The interest rates of the loans should decrease.
4. Interest on ATM should be decreased so that more people use of it.

### **Conclusion**

The GST regime is a halfhearted attempt to rationalize indirect tax structure. The government of India has implemented GST to simplify the indirect tax system and to help in removing the inefficiencies created by the then prevailing heterogeneous tax system in the country. The launch of GST has created many problems for the banking sector as customers will be charged 3% more under GST and it is creating a lot of confusion on the charges levied by banks to its customers. GST is a simple tax system and people are aware of the terms of GST. Customers feel that GST has changed bank rates, hence customers are not happy with the changes in GST in banking sector. People availing for loans have increased after GST. Increase in Bank rates have led to the customers being unhappy about it. Respondents feel that GST is suitable for the economy but on the other hand it has also become a burden on its customers. Hence most of the people have face difficulty post GST. Proving the fact that GST is suitable for a stable economy.

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# A Study on Legalization of Marijuana in India

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## Abstract

Marijuana, Ganja, weed has been used since ancients' times and prehistoric period and deliberately related to the all the history known till now of the ancient civilizations. In India the marijuana is associated with the mythologies according to its pros and cons and the customs made by gods and goddesses. The legalization of marijuana has always been a sensitive topic since everyone is having negative perceptions about it despite of knowing it has been used for medical purpose. Tough it has been banned by the Narcotic Drugs and Psychotropic Substances Act; 1985 we are trying to find out what exactly can be cultivated such that people took a look on the brighter side. This research paper will be showing the negative aspect of people about marijuana and the bigger picture towards the agricultural sector leading to rise in the Indian economy.

**Keyword:** Legalization Marijuana, Weed and Narcotic Act

## Introduction

People are being negatively affected by the illegal marijuana laws in the schools and development level. The autocrat's parental procedures are forcing the young generation not to look at the bigger picture. Consumption of marijuana and other cannabis derivatives such as bhang dates back hundreds of years with strong roots in Indian culture. From being the indulgence of singers of Bengal to the festival of Holi, marijuana use has rarely been seen as deviant social behavior in Indian society. Clearing the misconceptions about cannabis will be resulting in the positive aspects and will be encouraging a change benefit in the country both mentally and economically. Marijuana also known as cannabis it's basically a natural plant containing the THC (delta-9-tetrahydrocannabinol) which are used in medical anesthesia as the main sedative and the component. Before 1960, Indian farmers use to cultivate the marijuana because of its cheap caring properties and can be grown in the less fertilized land.

- World history of cannabis:

Asia: Chinese herbalists used the cannabis to cure malaria, stomach aches, menstrual cramps etc. The lord Shiva in Indian mythology specifically used the plant for the joyful past time and for meditation purposes. The marijuana was migrated for east to middle east and furthermore.

- Europe: The plant was brought in North Africa and Spain by Arab traders. King Napoleon introduces marijuana to Europe after conquest in Egypt- 1804 further traveled to London for recreation and medicine insomnia, pain, tuberculosis, and lowering fevers.

- America: From Europe to New York in early 19th century Prohibition caused an increase in popularity (Cheap and legal) Marijuana was linked to violence and crime caused by illegal bootlegging- scape goat ,15 states voted to ban non-medical distribution in 1924 Drug also banned in south due to prejudice nature during the depression.

### Statement of problem

- Political issue and certain immigration issues, marijuana became a. Banning of marijuana leads to black economy and a monopoly in the black-market People buying it has to face judicial charges even if they have health conditions The constitution stood in the way of making a federal law against cannabis until a loophole was found (National Fire Arms Act) 1950s- Marijuana was illegal, methamphetamine was the most prescribed drug.
- Why marijuana should be legalized in India despite of its illegal practices happening in every state leading to huge disparity and monopoly in the black market hence fertilizing the black economy, the benefits on the economy and rise in GDP and the agricultural sectors throughout the entire nation increasing the employment and consumption function
- According to the data collected most of the farmers are lacking survival just because they can't afford to produce good crops in the semi fertilized soil and this study shows than marijuana can be grown well in such soil. Before 1960 farmers use to cultivate the marijuana but due to Narcotic act it has been stopped, the taxes which are upon the agricultural goods can be brought same upon marijuana if cultivated and legalized the farmers will be generating income and will decrease the attrition rate. Overlooking the suicide numbers happened in the previous stages this technique will definitely reduce these numbers and due to specific amount of tax that can be putted on marijuana under agricultural goods the GDP can be gained up to certain rate. Before 1980 the agriculture sector was participating 70% contribution to Indian GDP but now the figures have been brought down to 11-15%. The Illegal marijuana has been affecting certain points and especially the black economy, according to the date collected the south Mumbai has the turnover of Rs. 90 Crore per month and government is not even getting a single penny out of it leading to monopoly.

### Review of Literature

- **The book named Marijuana is Safer: So Why Are We Driving People to Drink? 2nd Edition "Paul Armentano"** has explain why people need not to be prejudice about this topic since it can be benefited. The book clearly explained the world history and how it got traded to other countries, also mentioning the cultivation of marijuana in different countries.
- **The economic times** clearly explain the Indian acts accordingly with the decriminalization of marijuana with respect to its positive effects on the growing sectors and in the farming. The harmful effects and the contributions of tobacco products on the growing economy has been explained in a very keen manner about the revenues and the taxation which are charged by the government economic times stated.
- The revenue and the contribution to the GDP is explained in the online website with the emerging rise in GDP and its growing concepts.

- **Shayan Dasgupta** A research paper written by him on legalization of marijuana in India to study the laws of Indian judicial system and the Narcotics concluding that according to the increasing productivity it should be legalized.

### **Limitations & Delimitations:**

- It was not affordable to talk every person about this topic and the autocratic behavior by certain samples couldn't give the clear gist and due to Indian Penal Code, we had the limitations of research area and samples.
- The primary data is collected through the citizens of Mumbai especially those who were clearly aware about the pros. And cons. of the term marijuana, the conclusions were based on the previous events occurred in the society.

### **Objectives**

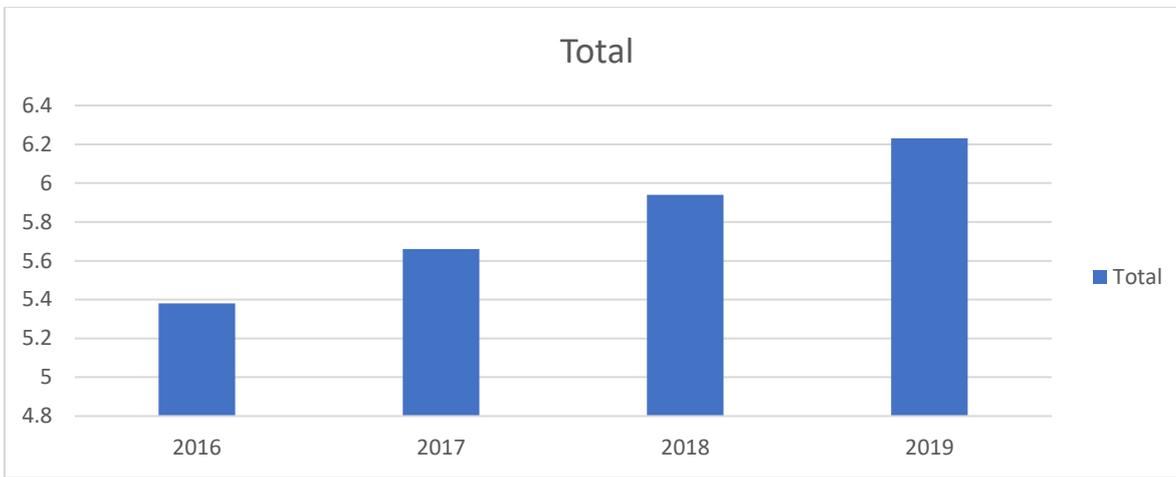
- To know the impact of legalizing marijuana in India
- To understand the problems and misbeliefs and misconceptions of the people
- To analyze the countries who legalized marijuana and the rise in the GDP and economy

### **Methods of research**

- The data collected by the detailed analysis by questionnaire which stated that 68% of the people had a prejudice mind about the term marijuana
- Secondary data collected through the external statistics and the previous data recorded

### **Research Findings**

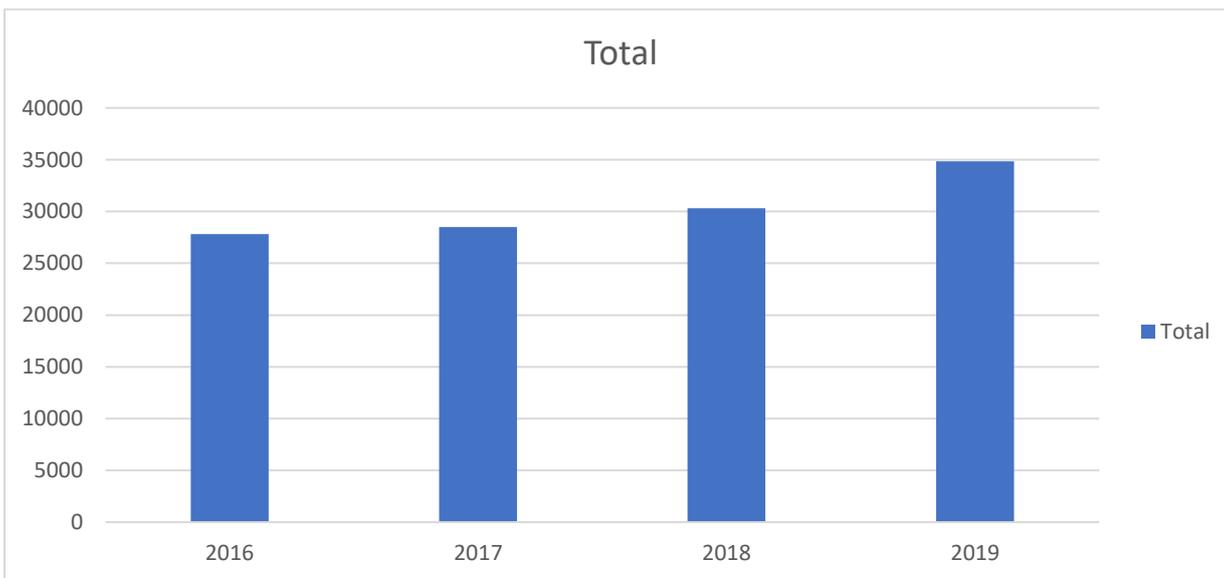
- The comparison: Alcohol
- Marijuana is far less addictive than alcohol (scale 1-6: marijuana=1 and alcohol=3) Deaths from alcohol are far higher: 331 deaths from alcohol in 2001, 0 from marijuana. Alcohol is one of the most toxic drugs, marijuana is one of the least: Alcohol: using 10 times what one would drink to become intoxicated leads to death Marijuana: one must use 1000 times the intoxicating amount to over dose. Alcohol contributes to the likelihood of sexual assault and domestic violence, marijuana does not, about 3 million violent crimes occur each year, 3 out of 4 incidents were reported to have involved an offender who had been drinking. Alcohol is involved in nearly 50% of all domestic violence cases and the predominant factor in fatal cases. Marijuana is not mentioned as a correlating or causal factor in cases of domestic violence. The following graph shows previous years consumptions in billion liters



- **TOBBACCO:**

- Like marijuana, tobacco is harmful to the lungs and can cause cancer but is still legal. Nicotine is far more addictive than marijuana (scale 1-6: Marijuana=1, Nicotine=6, Heroine=5). There has never been a documented case of lung cancer in a marijuana.

The following graph explains the tax collection in crores in the specific years.



- **Taxation:**

- If India increases its tax rate on bidis from Rs 14 to Rs 98 per 1000 sticks (from 9% to 40% of retail price) and on cigarettes from Rs 659 to Rs 3691 per 1000 sticks (from 38% to 78% of retail price), just to save 18.9 Million lives it's better to legalize marijuana which is beneficial to health.
- The alcohol industry and consumers of alcohol have reason to cheer as Alcohol is exempt under GST. While alcohol is exempt from GST, the raw materials required for production are charged with tax at 18% and 28%.
- The above mentioning helps to understand the taxes which the government apply on the harmful consumptions of these products, the legalizing an herb will deliberately reduce the consumptions of these products and the taxes can be applied under the Drugs and NARCOSIS.

## **Benefits to the economy**

- Marijuana being one of the America's largest cash crop with the revenue up to \$2 billion.
- 2/3 economy marijuana related and since it's not legalized henceforth facilitating black economy.
- Law enforcement spent more than \$10 million to resist marijuana trade in this country.

If legalized in India:

- Availability: It will be easily available for all purposes. Jobs and satisfied communities: Before the NDPS act of 1985, a lot of farmers used to grow cannabis/marijuana
- 7.5.2 Huge taxes: Government will be able to regulate the harvest, sale, and use of marijuana, making sure it's taxed.
- Lesser Consumption of alcohol and cigarettes, as cannabis will be a much cheaper option to buy
- Regulation: Regulated cannabis means, not all can consume
- Treatments: Our country will also be a part of the global research on marijuana
- Taxes revenues from other substances: Might facilitate cannabis consumption
- The crime rate will be decreased precisely

## **• Legal Status**

- Marijuana is recognized by the 14 states in the America adding Columbia, Canada, Mexico etc. The legal status does allow the country to get the profits and a significant rise in the economy. America is being a part of global research which carrying the experimentation with marijuana with the solution of finding cure to cancer as its properties makes the body numb such that patients can reduce the pain of illness.
- The purest form of marijuana is made in India especially in Himachal Pradesh and henceforth exported to different countries with illegal practices leading a growth in ransom black economy.
- Most of the Indians who migrate to countries likely Canada starts a business of selling weed edibles which is making quite a profit and increasing the consumption function in the economy.

## **Conclusion**

- Marijuana has been an affective medicine from ancient times.
- Cannabis was prohibited through demonization and propaganda- scape goat for minority crime.
- Illegal as a schedule is substance (high potential for abuse, unsafe, no medical application) all these allegations had been proven false.
- Now is the time for marijuana to be legalized to benefit of the country and leading to the increase in the economy with less harmful factors.
- Decriminalized (no criminal penalties for possessing, using, or transferring marijuana without profit) in Canada and England.

- The governments can make profit off legal marijuana through taxes and through medical field as well.
- legitimizing weed will result into the development of GDP in Indian Economy. It will be a guide to additional pay for as of authorized wholesalers and merchants. Tax revenue from alcoholic beverages was \$9.9 billion in 2017 i.e. 12 percent of total excise receipts. The Indian alcohol market is growing at a CAGR of 8.8% and it is about to reach 16.8 billion liters of consumption by the year 2022. The per capita consumption of alcohol each week for the year 2016 was estimated at 147.3 ml and it is likely to grow at a CAGR of 7.5% to 227.1 ml according to estimates, tobacco sector major contributor to Indian economy. A recent statistic has shown that the tobacco sector is one of the highest contributors to the Indian economy with a total economic value generation of Rs 11,79,498 crore hence legalizing marijuana will result in same pace or maybe even more than alcohol and tobacco and due to the cheap nature, the consumption of these harmful substances can be reduced and a new rise in the drugs especially in the medical sector.

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- <https://m.economictimes.com/industry/cons-products/tobacco/is-india-losing-out-on-a-ready-to-boom-cannabis-market-by-not-legalising-its-use/articleshow/66101561.cms>
- The revenue and the contributions to the GDP is explained in the link below <https://www.tiionline.org/facts-sheets/revenue/>

# **An evaluation of knowledge and inclination of people about basic life support techniques, and to increase its awareness in the population of Mumbai.**

*Drishiti KB, KV Siddharth.*

## **Abstract**

Early initiation of cardiopulmonary resuscitation (CPR) by witnesses increases survival after cardiac arrest. In our country, it is rare that basic life support (BLS) is initiated by a layperson. In our study, we aimed to use a survey to research awareness, level of knowledge and attitudes of the public to CPR and BLS. And provide with basic information to increase the awareness. A pre-test was administered to people in Mumbai, India, using the inclusion and exclusion criteria. Videos on CPR were shared with the participants, and a post-test was administered. Of the 150 participants, only 54.7% respondents had good awareness about medical emergency situations, 48% had average willingness to learn and perform BLS; only 34% had good awareness about BLS while only 12% had good knowledge about BLS. Only 28.7% have been exposed to the knowledge of BLS. When pre and post-test knowledge was compared; while majority i.e., 52% respondents had average knowledge in the pre-test, almost all i.e. 95.3% had good knowledge in the post-test. There is willingness among laypeople to learn and perform BLS but just because of lack of knowledge and awareness they are unable to provide immediate bystander assistance.

## **Introduction**

As this article is being written, thousands of Indians are dying due to a cardiac arrest or a severe haemorrhage despite of being surrounded by bystanders. Heart disease is the world's largest killer, claiming 17.5 million lives every year. About every 29 seconds, an Indian dies of heart problem. As many as 20,000 new heart patients develop every day. In India 9 core Indian suffer from heart disease and 30% more are at high risk <sup>[1]</sup>. Early assistance to these patients can prove to be useful. <sup>[2]</sup>.Also, there is evidence of mortality reduction in cardiac arrest victims that were assisted by CPR performed by volunteers, showing that cardiac and cerebral functions were preserved <sup>[3]</sup>.The bystanders are expected to help these patients by using Basic life support techniques till professional medical help arrives. But seldom does this happen. The reasons for bystander reluctance might be many, like fear of getting involved in legalities, further worsening the condition or harming the patient while trying to help <sup>[4]</sup>, hesitance due to socio-ethical reasons while performing mouth to mouth ventilation <sup>[4]</sup>,etc but the most prevalent cause is the lack of awareness about common medical emergencies among general public <sup>[5,6]</sup>.

Common people in developed countries have received popular education of cardiopulmonary resuscitation programme of Basic life support training but the same isn't true for India. <sup>[7, 8,9,10,11]</sup>.

Basic Life Support (BLS)/Cardiopulmonary Resuscitation (CPR) is an important part of emergency medical care. Basic life support has been found to be lifesaving in common medical emergencies. The level of awareness about emergency care in general population and the approach of the common people with regards to common medical emergencies is an important determinant of positive outcome. Early basic life support (BLS) is recognized as an effective lifesaving technique in out of hospital cardiac arrest (OHCA). Early response with initiation of care is very important and hence onus of providing this care is being shifted from health care professionals to community members who actually witness the emergencies. <sup>[1,2,3,4,5]</sup>. This is more important in developing and underdeveloped regions where response time may be prolonged due to less developed emergency medical services (EMS).

## **Review of literature:**

### ***Need for basic life support training.***

According to a study by Rao BH, Sastry BK, et al (2012); sudden cardiac arrest contributed to 10.3% of overall mortality in the population of southern India [12]. This highlights the need for BLS training among the Laypeople.

Prafulla A.Salunkhe in 2016, carried out a study titled „Effectiveness of Demonstration Regarding Cardiopulmonary Resuscitation on Knowledge and Practice among Policemen“ [13]. A quantitative research approach and one group pre-test and post-test design was used. Non-probability convenient sampling method was used to select 50 policemen as a study subject. It was concluded that there is equal positive response to the demonstration and teaching and that it was useful to them, which will help them to take prompt decisions, perform cardiopulmonary resuscitation and save many lives of out-of-hospitals cardiac arrest victims.

### ***Knowledge, Awareness and methods to increase awareness about basic life support.***

Khaled Abdallah Khader, et al in 2016 carried out a cross-sectional survey for assessing the awareness and knowledge of health-college students about cardiopulmonary resuscitation at Taif University, Saudi Arabia [14]. A 20 items questionnaire developed by the researchers was used to collect data about awareness of participants about CPR. Most participants scored less than 50%. The study revealed that there was lack of awareness about CPR in most health-college students. It was realized that the reason for low scores of CPR survey is lack of theoretical and clinical training of up-to-date CPR in health colleges' curricula. This study recommended giving adequate BLS knowledge and training for all health professionals and included a BLS course in the curricula of health colleges.

Abdullah Alanazi, et al in 2013, conducted study on community awareness about cardiopulmonary resuscitation among secondary school students in Riyadh [15]. It stated that there is a lack of research studies related to community awareness about CPR. A cross-sectional study was conducted by assessing the responses to self-administered developed questionnaire As a conclusion it was found that the overall attitude is positive towards CPR. The positive attitude towards CPR was like previous findings indicating the important role of CPR in saving patients life. However, the knowledge regarding CPR is insufficient. Since CPR plays vital role in saving people life more studies are needed to examine the CPR information among people who live in the community and suggest strategies to introduce CPR training.

P.Seenivasan,R.Tamilarasi, et al in 2016 conducted a cross sectional study to study the awareness about Basic Life Support among medical students in Chennai and to compare the knowledge about BLS among second year, pre-final year, final year MBBS students, CRRI and Post Graduates [25]. 456 medical students were randomly selected, and pre-tested semi-structured questionnaire was used to collect data. The results revealed that among the total responders' pre-clinical students (second and third years) 20.9% have lesser knowledge than the clinical students 42.5% (final year and CRRI). This study found that there is lack of adequate knowledge about BLS among undergraduate medical students. The authors concluded that the major lack of knowledge is due to lack of training. But the students are interested in learning BLS if it is made as a part of curriculum. Hence it was recommended that it is essential to train the students from undergraduate level to make them competent.

A.Y.Kshirsagar, Sangeeta Biradar in 2016 carried out a cross-sectional Observational study among nursing staff and students of the Krishna institute of nursing science, Karad, Maharashtra to evaluate the CPR awareness among nursing staff and students and to screen the knowledge regarding accurate, effective CPR

procedural techniques and various barriers of CPR failure in clinical practice from a student perspective [26]. It was found out that no one (0%) has complete knowledge of BLS. Only 3% of total students have 80% knowledge about BLS. 81% of the students have less than 50% of knowledge. The authors concluded that not only the nursing staff and students be trained in Basic Life Support, but also it has to be reinforced from time to time, since the skills of CPR are difficult to teach and once taught difficult to retain. As these are the persons, who are near the patient for 24 hrs easily approachable with in no time till the resident or the CMO attends the patient in the hospital. Also, it was suggested that this should be incorporated into the academic curriculum.

Madavan Nambiar, Nisanth Menon Nedungalaparambil, Ottapura Prabhakaran Aslesh in 2016, conducted a cross-sectional study to evaluate the current practices and knowledge of BLS/ACLS principles among healthcare professionals of North-Kerala using pretested self-administered structured questionnaire [27]. It was realized that the mean score amongst all healthcare professionals was  $8.9 \pm 4.7$ . The majority (51.4%) of healthcare professionals scored less than or equal to 50%, 44.3% scored between 51% and 80% while 4.34% scored more than 80%. Nurses who underwent BLS/ACLS training previously had significantly higher mean scores ( $10.2 \pm 3.4$ ) than untrained ( $8.2 \pm 3.6$ ,  $P=0.001$ ). 35.3% healthcare professionals knew the correct airway opening maneuvers. The majority (77.2%) of healthcare professionals suggested that BLS/ACLS be included in academic curriculum. It was concluded that inadequate knowledge of BLS/ACLS principles amongst healthcare professionals, especially physicians, illuminate lacunae in existing training systems and merit urgent redressal.

Many other references cited later in this article were also studied carefully, and the following conclusions were drawn:

1. There is lack of awareness about medical emergency situations among common people.
2. There is a lack of awareness about BLS among health personnel as well as common people.
3. Studies for evaluating awareness and knowledge have been conducted for people from medical and paramedical professions but only few such studies have been carried out for common people.
4. There is an urgent need to increase awareness about BLS among common people to increase the chances of survival in medical emergency situations by providing immediate bystander assistance.

### Objectives

- To evaluate the knowledge about basic life support among the subjects.
- To know the attitude of the subjects towards basic life support.
- To deliver the knowledge about basic life support to willing subjects.
- To spread awareness about basic life support among general public.
- To know the willingness of the subjects towards basic life support

### Methodology

**Data collection and analysis:** A questionnaire-based study was done. It consisted of a pre-test and a post-test. The subjects were given a pre-test questionnaire. Then they were shown videos about BLS and CPR, after which they were given a post-test to answer. Information brochures (made by Indian Academy of Pediatrics) were distributed for further reference. The pre-test questionnaires were evaluated based on four parameters viz. awareness about emergency conditions, general willingness to perform and learn awareness about basic

life support techniques and knowledge about basic life support techniques by using appropriate statistical tests. Also, many other factors were assessed. The post-test questionnaires were scored, and the results were compared with the pre-test. Conclusions were drawn based on the results.

**Statement of problem:** There is an urgent need to increase awareness about BLS among common people to increase the chances of survival in medical emergency situations by providing immediate bystander assistance.

**Study Technique:** snowball technique.

**Study site:** Mumbai, India. **Sample Size:** 150

**Inclusion criteria:** Above 18 years of age and must be willing to participate in the study.

**Exclusion criteria:** Doctor, paramedic, nurse, or any health personnel were excluded. Fire brigade professionals and Individuals below 18 years of age are excluded.

**Delimitation:** study is confined to the city of Mumbai.

**Limitation:** there was not enough time to conduct Extensive research.

**The questionnaire:**

Group	Question number	Significance.
A	2	Awareness about emergency conditions
B	3,6,21	General Willingness to perform and learn
C	1,5,7,8,9,17	Awareness about BLS techniques
D	4,10,11,15,16	Knowledge about BLS techniques
E	13,14	Approach towards known and unknown people
F	18,19	Training and source of knowledge
G	20	Opinion

It consisted of a pre-test and a post-test. The pre-test consisted of questions which would assess various parameters in the population. The post-test consisted of questions which would test the knowledge of the subjects regarding basic life support. These questions were framed such, to compare them to the pre-test for evaluating the progress of the subjects.

### Data analysis

Scoring for each question was done. As the questions were objective type of questions having right or wrong answers only, the total score of each group of questions was calculated. It was expressed in the percentage form by using the following formula (for every individual group).

$$\text{Score of a group (\%)} = \frac{\text{Individual's score}}{\text{Maximum possible score for that particular group}} \times 100$$

Then for every group, the scores were categorized as:

Category	Score range (%)
Poor	0% to 33.3%
Average	33.4% to 66.6%
Good	66.7% to 100%

Then the percentage of people which fall in a particular category was calculated as follows:

$$\begin{aligned} \text{Individuals in a particular category for each group (\%)} \\ = \frac{\text{Number of individuals in a category}}{150} \times 100 \end{aligned}$$

Thus, four parameters (group A, B, C and D) and individual questions were assessed in this way.

### Results

The sample consisted of 150 subjects, all of which are essentially the residents of Mumbai. The average age of all the subjects was calculated to be 37.3. Majority of the subjects were females, their percentage being 58.6% (n=88), whereas the percentage of males was 41.4% (n=62).

As far as Awareness about medical emergency conditions (group A) is concerned, 43.3% participants (n=65) considered choking as an emergency situation. 70% participants (n=105) considered unconsciousness a medical emergency situation. Pain in the left side of the chest was considered as an emergency condition by 80.6% (n=121) participants. Sudden drooping or paralysis was agreed to be an emergency by 50.6% (n=76) respondents. Breathlessness was considered an emergency by 80% (n=120) of participants. Whereas drowning was considered as an emergency condition by 51.3% (n=133) of participants and heavy bleeding or haemorrhage was considered to be a medical emergency situation by 88.6% (n=133) of participants.

Awareness about BLS was assessed by asking the subjects if they were aware/ever heard of certain terms. Of the people who answered, 79.7% (n=110) of them said they are aware of the term mouth-to-mouth ventilation while 20.3% (n=28) said that they don't know what it is. 12 subjects did not answer this question and were excluded. Awareness about measuring the pulse was relatively good. 83.3% (n=125) knew it while 16.7% (n=25) did not. When asked whether they knew what CPR is, 54% (n=81) said they have heard of it while 46% (n=69) hadn't. The awareness about cardiac massage was poor. Only 14.3% (n=21) were aware of it and 85.7% (n=126) weren't, while 3 subjects did not answer this question and were excluded. When asked whether or not they have heard what BLS is, 40.1% (n=59) said they have heard of it and 59.9% (n=88) didn't, while 3 of the subjects did not prefer to answer this question and they were excluded.

The Willingness of the people of Mumbai regarding helping people, performing BLS and learning BLS was assessed. When asked whether the subjects would help a victim when he/she witnesses one, 93.3% (n=140) subjects said that they would help but 6.7% (n=6.7) would deny to help.

Performing mouth-to-mouth ventilation (MTMV) without protection equipments is something one would hesitate to do. When asked about the same, 32 participants did not answer the question (they included 9 participants who were aware of MTMV, 12 who were not aware of MTMV and 11 who had not answered whether they were aware of MTMV or not) and they were excluded. Of the remaining participants, 44.1% (n=52) were such that they knew what MTMV is and would perform it without any protection. 41.5% (n=49) knew what MTMV is but wouldn't perform it without protection equipment's. 5.1% (n=6) didn't know what MTMV is but would still perform it without protection. 9.3% (n=11) didn't know what MTMV is and also wouldn't perform it without protection.

It occurred that 91.3% (n=137) respondents are willing to learn about BLS by attending a workshop for the same, while 8.7% (n=13) were not interested.

The Knowledge of the laypeople regarding BLS was assessed before teaching them the basic skills and also after it. When asked what would they do to help, half of the subjects (n=75, percentage= 50%) said that they would only call the ambulance, 20% (n=30) subjects said that they try to use some techniques to save the victim (whether or not they know exactly what to do wasn't asked), 8.6% (n=13) subjects said that they would ask other bystanders to help, same number of subjects (n=13, percentage=8.6%) would try to use some techniques and also call the ambulance, 5.3% (n=8) of subjects said that they would call the ambulance and also ask other bystanders to help, the remaining 7.3% (n=11) said that they would ignore and leave.

The respondents were asked what their reaction would be when they see a person lying unconscious on the road. Majority i.e. 54.7% (n=82) said they would only call the ambulance. 19.3% (n=29) said they would try to wake that person up. 10% (n=15) said they would call the ambulance, try to wake that person up and also ask other bystanders to help. 6% (n=9) respondents said they would ask other bystanders to help. 5.4% (n=8) respondents said they would ignore and leave. Whereas 4.6% (n=7) participants said they would call the police.

Responses of the participants when they witness a person choke while eating was asked. 3 respondents did not answer the question and they were excluded. Majority of the respondents (n=66, percentage= 44.9%) would offer water to a person who chokes while eating. 27.9% (n=41) participants said they would slap on the back of the victim. 6.1% (n=9) said they would offer water and also try to slap on the back. Equal number of participants (n=9, percentage= 6.1%) said they would encourage the victim to cough, slap on his/her back and also try abdominal thrusts. 4.8% (n=7) said they would tell the victim to cough. While same number of participants (n=7, percentage=4.8%) would offer water to drink and also ask the victim to cough. 3.4% (n=5) would straight away call the ambulance. About 2% (n=3) respondents said they would give abdominal thrusts only. When asked how they would check if a person is conscious, 35.4% (n=51) respondents said they would declare a person unconscious when there is no response when called or when talked to that person. 31.2% (n=45) participants would check for movements. 29.2% (n=42) respondents said they would check whether the person responds when touched. While 4.2% (n=6) would check movements, see whether the person responds when touched, talked or called. 6 participants did not answer this question and were excluded.

Similarly it was asked how they would check if the person is breathing. 25% (n=36) respondents said they would feel the breath/air coming out of the nose or mouth. 8.3% (n=12) respondents said they would observe the movement of the chest. 4.2% (n=6) said they would try to listen to the breath sounds only. Majority of respondents (n=87, percentage= 60.4%) said they would try all of the above options i.e. observe movement of

chest, listen to breath sounds and feel the breath. While 2.1% (n=3) respondents said that they don't know how to check if the person is breathing. 6 subjects did not answer this question and were excluded.

Approach of the participants towards known (family and friends) and unknown (strangers) for helping them was assessed. 82.6% (n=124) respondents said they would treat both known and unknown victims in the same manner, while 17.4% (n=26) said that they would prefer family and friends over strangers.

As far as BLS Training is concerned, only 28.7% (n=42) respondents have had BLS Training or were exposed to BLS knowledge by other sources. Majority of them i.e. 71.3% (n=104) were not exposed to the knowledge of BLS by any source. 4 subjects didn't answer this question and were excluded. Out of the ones who were exposed to the knowledge of BLS, the source of their knowledge was enquired.

Now, the questions were grouped according to the parameter they assessed and were evaluated. The results were put into three categories viz. poor, average and good. It is illustrated below in Figure 1,

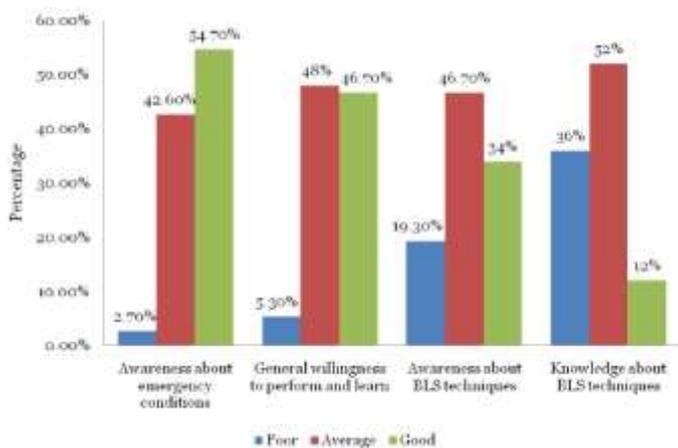


Fig. 1– Parameters

The post-test score (in percent) was also calculated. 4.6% (n=7) participants scored 66.6% (6 out of 9 questions were correct). 7.3% (n=11) participants scored 77.7% (7 out of 9 questions were correct) in the test. Majority of the respondents (n=122, percentage= 81.3%) scored 88.8% (8 out of 9 questions were correct) and 6.6% (n=10) respondents got a score of 100% (all of the 9 questions were correct). The post test knowledge was also categorized as poor, average and good and the pre-test knowledge and post-test knowledge was compared. The following results were obtained which are well illustrated in Figure 2,

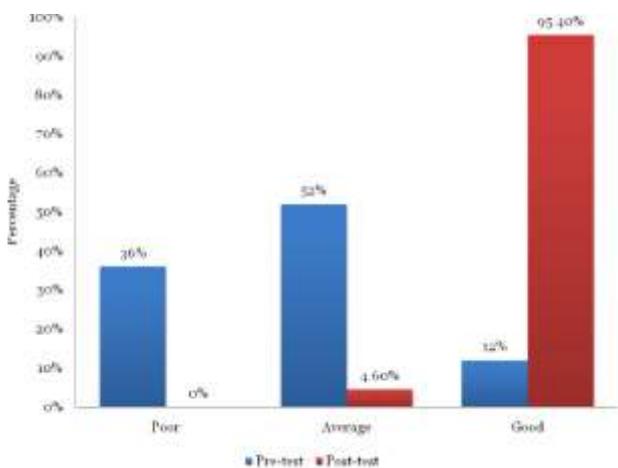


Fig. 2 – Pre and Post test knowledge comparison

## **Conclusion**

It can be concluded that the emergency situations which are witnessed by the laypeople in day to day life have relatively higher awareness; such as unconsciousness, breathlessness, haemorrhage and pain in left side of chest. But this also means that there is lack of other ways through which the laypeople can gain knowledge about emergency situations. Even the responses for most of the questions assessing awareness and knowledge of the respondents about BLS are not completely correct. This highlights the insufficient knowledge and awareness about BLS among lay people, still majority of them showed good willingness of helping people, learning BLS techniques and performing BLS, if he/she comes across one.

Increased knowledge, awareness, attitude and perception towards BLS techniques among patients, friends, family members and their neighbours and other Community members, is needed to further spread the awareness about BLS in population and through & along with them among the whole country as well. It is very important for every person in the community to know about BLS to save lives and improve the overall quality of community health. The significant gap between the lack of knowledge and awareness of BLS technique skills can be reduced by educating people properly. Thus promoting willingness to perform the correct BLS techniques with enough confidence, independently in an emergency situation and to an extent that no attempt goes waste and no needy person should fall short of the emergency medical need.

Any attempt of a person at resuscitation is better than no attempt. A significant portion of trainees do not acquire adequate knowledge in a single session of training. So the repeated training, hands-on practice and practical demonstrations are equally necessary for acquiring practical knowledge. The importance of knowing BLS must be imbibed on the minds of the layman so that they could try saving a life by using their knowledge of BLS and awareness of BLS should be spread to such an extent that every bystander would become a saviour.

## **Recommendations**

1. The BLS workshops must be held for the laypeople by BLS workshop teams of all medical colleges in India at regular intervals in OPDs or medical college premises. The BLS team working at District, Taluka and Village level should organize such training programs frequently wherever it is possible.
2. BLS training must be included in the schools and colleges curriculum.
3. Police officers especially traffic police officers must be given regular BLS training as they are the ones who are likely to witness an emergency.
4. It must be made compulsory for the individuals who apply for a driving license to attend a BLS workshop.
5. School teachers must also be provided with regular BLS training.
6. There needs to be increased awareness and accessibility to BLS knowledge training programs repeatedly. Policemen, license holders, drivers, and even Schools, colleges, clubs, bus depots, offices, unions all must be made hubs where the general population would have access to BLS knowledge. The increase in awareness will wipe out the reluctance to help and perform BLS confidently with consolidated memory.
7. Common people should be motivated by their role models or celebrity stars (as they can be highly influential for their fans) through television and radio to attend and perform BLS techniques and spread further awareness about BLS.. Such training programs also should be broadcasted on television frequently to increase the public awareness & knowledge to know the importance of BLS in life saving emergency situation.

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# **A STUDY ON IMPACT OF WORK ENGAGEMENT ON JOB PERFORMANCE AND TURNOVER INTENTIONS AMONG NURSES WORKING IN GOVERNMENT HOSPITALS IN MUMBAI.**

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## **ABSTRACT**

Nursing is the profession that aims at the protection, promotion and health of the people suffering through treatment. In the research researcher studied job performance, work engagement and turnover intentions among the sample of nurses in the validate scales. Validated scale on work engagement; validated scale on job performance; turnover intentions is used to collect the data from respondents. Regression and correlation analysis is performed to identify relationship between work engagement and job performance, work engagement and turnover intention were researcher found that there is no significant relationship between work engagement and job performance and there is no significant relationship between work engagement and turnover intentions.

**KEYWORDS:** Work engagement, job performance, turnover intentions.

## **INTRODUCTION**

Many a times work engagement and job performance is used reciprocally. Among all professions nursing is one of the largest and reputed health care profession, which focuses on 24 hours dedication, protection and health of the people without any discrimination. present research analysis the impact of work engagement on job performance and turnover intentions of nurses. To identify the job performance and turnover among the nurses, researchers have used samples of nurses working in government hospitals in Mumbai. Various tests were used to identify the level of job performance, engagement and the turnover intentions. Under the present study many Indian and foreign literatures were reviewed.

## **LITERATURE REVIEW**

**(Jesty Sunny, 2016)**Conducted a study to identify a factor that leads to Job Satisfaction and work life of nurses in government hospitals. Researcher found that job satisfaction is extent of match between workers expectations and rewards the job provides and the value it creates. **(Chacko, 2018)** carried out study on numerous problems faced by nurses in government hospitals. Researchers found that the problems face by nurses is staff shortage which leads to work pressure, mistreatments, domination by senior nurses etc.**(Iver Ramajanaki**

**Doraiswamy, (Jul. - Aug. 2015)** examined the factors that leads to stress. The researchers found that the role stressor leads to negative consequences that are physiological as well as psychological. Physiological problems such as heart rate, high blood pressure, weight gain, indigestion. And a psychological effect includes uneasiness, exhaustion, fatigue & burnout. **(Dasgupta P. , 2005)** the present study was conducted to analyse the influence of different factors on turnover intentions of nurses. The researchers also found the organisational support, nursing role stress. **(Nemeru, 2018)** operated a research on job related stress and its predictors among nurse working in government hospitals of west Shoe , which found that the work overload, uncooperative patients, negligent colleagues, lack of support from superiors & problems with the physicians caused stress to hospitals nurses. **(Bagrecha, Roshani, & Chava, 2017)** in a study conducted on structural equation model for work life balance of women nursing professionals of government and private hospitals in Bangalore revealed that work place support have a adverse impact on work interference with personal life. **(RAINA, 2018)** conducted a research study on stress among Nurses and coping strategies which found that major workplace stressors for the nurses are workload and conflict among Nurses.

**OPERATIONAL DEFINITION:**

- Work Engagement: A feeling of being passionate towards their job and are committed to their work.
- Job performance: Task performance, citizenship behaviour and counterproductive behaviour.
- Turnover Intentions: Employees intention to leave a job or workplace plans to dismiss them.

**OBJECTIVES**

- To study the impact of work engagement on job performance among nurses working in government hospitals in Mumbai.
- To study the impact of work engagement and turnover intention among the nurses.

**HYPOTHESIS:**

- There is significant relationship between work engagement and job performance.
- There is significant relationship between work engagement and turnover intentions.

**RESEARCH METHODOLOGY**

Primary data is collected through structured questionnaire. Validated scale on work engagement, validated scale on job performance and validated scale on turnover intention is used to collect responses from the respondent. Convenient sampling is used to collect responses. 39 nurses working in government hospitals considered under the current research. Correlation analysis is performed to identify relationship between work engagement and job performance, work engagement and turnover intention.

**DATA ANALYSIS:**

**Reliability**

Scale	No. of Items	Cronbach’s Alpha
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Work Engagement	17	0.768
Job Performance	19	0.882
Turnover Intention	6	0.886

Above table indicate the Cronbach's Alpha value of all the variable studied under current research. The Cronbach's Alpha value of all variables is more than 0.60 which indicate there is high internal consistency among the no items studied under each variable.

<b>Correlations</b>			
		Work Engagement	Job Performance
Work Engagement	Pearson Correlation	1	.132
	Sig. (2-tailed)		.423
	N	39	39
Job Performance	Pearson Correlation	.132	1
	Sig. (2-tailed)	.423	
	N	39	39

Above table indicate correlation analysis between work engagement and job performance. There is 13.2% correlation between work engagement and job performance which is low. The significant value 0.423 is more than 0.05. Hence researcher accept null hypothesis and concludes that there no significant relationship between work engagement and job performance among nurses working in government hospitals.

<b>Correlations</b>			
		Work Engagement	Turnover Intention
Work Engagement	Pearson Correlation	1	.103
	Sig. (2-tailed)		.532
	N	39	39
Turnover Intention	Pearson Correlation	.103	1
	Sig. (2-tailed)	.532	
	N	39	39

Above table indicate correlation analysis between work engagement and Turnover Intention. There is 10.3% correlation between work engagement and job performance which is low. The

significant value 0.532 is more than 0.05. Hence researcher accept null hypothesis and concludes that there no significant relationship between work engagement and turnover intention among nurses working in government hospitals.

### CONCLUSION:

In the current research, researcher found that no relationship between work engagement and job performance. Work engagement is not a perfect indicator to determine the job performance among nurses working in government hospitals. Researchers also found no significant relationship between work engagement and turnover ratio which means work engagement is not a perfect indicator to predict turnover intentions among the nurses working in government hospitals.

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# **An Analytical Study of the Awareness Level of Corporate Bond Market in Mumbai Among Individuals**

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## **ABSTRACT**

Bond markets rarely fulfil the alternate role to bank financing in India. The benefits of bond markets include diversifying credit risks across the economy by providing an alternative to conventional bank lending. Bond markets supply long-term funds for the growth of the infrastructure or other sectors to fulfil long-term investment needs. Increasing the Liquidity in Corporate Bond Market has been a major agenda for the Government and for the Capital market authorities for long now. Various efforts in the forms of reforms, change in guidelines and making availability of the required infrastructure has been made in the direction but still the efforts does not seem to give the expected results when it comes to the participation retails investors in Corporate Bond Market India. This paper tries to measure the awareness level about the Corporate Bonds and also the reasons for the non-participation of the retail investors in the Primary and Secondary Markets of Corporate Bond Market, with the help of data collected and its statistical analysis.

**Keywords:** Awareness level, Capital market, Corporate Bond Market, Primary Corporate Bond Market, Retail Investors, Secondary Corporate Bond Market

## **Introduction**

Corporate, governments and individuals rely on various sources of funding to meet their capital requirements. Specifically, corporate use either internal accruals or external sources of capital to finance their business. Funds are raised from external sources either in the form of equity or debt or hybrid instruments that combine the features of both debt and equity. The capital raised by companies through debt instruments is broadly referred to as corporate debt.

Corporate debt consists of broadly two types broadly the bank borrowings and bonds. Corporate borrow from banks and other financial institutions for various business purposes and for varying durations through non-standardized and negotiated bank loans. Bank finance takes the form of project loans, syndicated loans, working capital, trade finance, etc.

Corporate bonds are transferable debt instruments issued by a company to a broad base of investors .We distinguish between a) public debt (debt issued by central and state governments,

municipal authorities) and b) private debt (bonds issued by private issuers: financial and non-financial corporate). We focus our study on private debt.

Corporate Debt can be raised through **public issues or private placement routes**. Private Placement is defined as ‘any offer of securities or invitation to subscribe securities to a select group of persons (less than 200) by a company (other than by way of public offer) through issue of private placement offer letter. While a Public Issue is an offer made to the public in general to subscribe to the debentures/bonds

Corporate bond markets are further defined as the segment of capital markets in the economy that deals with corporate bonds. There are three main pillars that make up the corporate bond market ecosystem – the institutions, participants and the instruments.

The institutions comprise of the securities market regulator, the banking regulator, the credit rating agencies, clearing houses, stock exchanges and the regulations and governance norms prescribed by these institutions.

The participants comprise of the market players – investors on the demand side and issuers on the supply side.

The term ‘instruments’ is used to indicate the form and features of securities issued in the corporate bond market. Further, certain securities and derivatives, such as interest rate and currency derivatives and government securities, even though, not a part of the corporate bond market, play a significant role in ensuring its vibrancy and smooth functioning.

### **Types of Bonds:**

- **Fixed rate bonds** have a coupon that remains constant throughout the life of the bond.
- **Floating rate bonds** have a variable coupon that is linked to a reference rate of interest, such as REPO rate.
- **Zero-coupon bonds** pay no regular interest. They are issued at a substantial discount to par value, so that the interest is effectively rolled up to maturity. The bondholder receives the full principal amount on the redemption date.
- **High-yield bonds** are bonds that are rated below investment grade by the credit rating agencies. As these bonds are more risky than investment grade bonds, investors expect to earn a higher yield.
- **Convertible bonds** enable a bondholder to convert a bond to a number of shares of the issuer's common stock.
- **Inflation-indexed bond** is an arrangement wherein the principal amount and the interest payments are indexed to inflation. The interest rate is normally lower than the fixed rate bonds with a comparable maturity.

### **Indian Corporate Bond Market – an overview**

The Corporate debt market is primarily regulated by three institutions namely the **Reserve Bank of India, the Securities and Exchange Board of India and the IRDA**. It is important to understand the context associated with each of the regulatory institutions.

Now, India's GDP stands at about \$2.6 trillion out of global total of approximately \$81 trillion. India's equity market capitalisation is \$2.2 trillion out of a world total of approximately \$78 trillion. At the same time, the size of India's fixed income market is \$1.9 trillion out of a world total of \$82 trillion. There has been a development in the field of Corporate Bond Markets of India though various reforms and policy changes, but it has been very slow and the Corporate Bond Market Still remains underdeveloped. Though finance and infrastructure companies dominate the corporate Bond market, Mutual funds are playing an important role in diversifying the issuance Base of the Market.

Funds raised through corporate bonds increased from around Rs 3.7 Lakh crore in 2012-13 increased to Rs 6.5 Lakh crore in 2018-19. The corporate bond market has gained significant traction over these years.

The size of corporate bond in India as of January 2019 is Rs 39.6 Lakh crore.

Outstanding amount of various fixed-income securities

Type of security	Amount outstanding as on March 31, 2018 (Rs crores)
<b>Corporate bonds</b>	27,42,259
<b>Government securities</b>	53,23,091
<b>SDLs</b>	24,30,333
<b>T-bills</b>	3,85,283
<b>CDs</b>	1,85,732
<b>CPs</b>	3,72,577
<b>Total</b>	1,14,39,276

Source: RBI, SEBI, CCIL (Table1)

The issuances in the Corporate Bond segment have grown many folds during the last decade. However the issuances are dominated by high rated, financial institutions & Quasi sovereign bond, maturity up to five year and private placement basis. The amount raise in FY 18 through public placements **4,953 (Rs crore)** where amount raise through private placement is **655,799 (Rs crore)** such a significant differences. Private placements constitute of more than **90%** of the total issuances, clearly indicating a low participation of retail investors.

Where the amount raised from G sec Bond is **588,000 (Rs crore)** and average daily trading is **40,739 (Rs crore)** where the average daily trading of corporate bond is **6,907 (Rs crore)**.

Column1	FY18
<b>Non-private sector</b>	3,42,134
<b>Private sector</b>	3,13,665
<b>Total</b>	6,55,799

<b>Percentage of private sector</b>	<b>48 %</b>
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Source: Crisil Report on Indian Debt Market 2018 (Table2)

When it comes to issues Size it is of **Rs. 100cr & above size about 93.6 %** for FY 18.

The major bond issuer is **Banking/term lending Financial services Housing/ civil construction/ real estate, Power generation & supply and Housing finance all these have raise about 78.6 %** of Corporate Bond Issues in FY 18. There are currently six agencies registered with the country's financial regulator SEBI (the Securities and Exchange Board of India). These are CRISIL, ICRA, CARE, India Ratings and Research, Brickwork Ratings and SMERA

**The amount raised by the AAA and AA+ is 76.44 of total issued bond in FY 18.**

<b>Countries</b>	<b>Corporate Bond to GDP Ratio</b>
US	123.47
China	18.86
South Korea	14.57
Singapore	34.02
Malaysia	44.50
India	99.50

Source: Crisil Report on Indian Debt Market 2018 (Table3)

### **Recent proposal**

- Also, a Credit Guarantee Enhancement Corporation, for which regulations have been notified by the RBI, will be set up in 2019-20.
- Since 2016, the RBI has been emphasising on the importance of corporate bond market.
- It had asked bigger companies to raise part of their long-term borrowings from the corporate bonds market rather than from banks.
- New norms since then make it mandatory for companies with large exposures to raise 25% of their incremental or fresh borrowings from the bond market.
- Regulatory rules also make it necessary for any company that plans to raise debt funds of over Rs 200 crore to execute it on an electronic platform.

### **REVIEW OF LITERATURE**

- 1. In the study "Broad basing and Deepening the Bond Market in India", (2001), Dr. Patil opines that Indian financial system is not well-developed and diversified. He finds that one major element that is absent in this system is a liquid, active and large debt market and the Indian debt market is overwhelmingly occupied by the debt instruments issued by government sectors (including PSUs and financial institutions)

- Raju, Bhutáni, and Sahay, 2004, in their study “Corporate Debt market in India: Key Issues and Policy Recommendations”, emphasis on the issues such as poor quality paper in terms of timely payment of interest and principal, inadequate liquidity of the market, limited investor base, regulatory arbitrage, lack of sufficient, timely and reliable information on bonds, existence of skewed interest rate structure etc.
- Chakrabarti, 2013, in his study “Corporate Bond Market in India: An Empirical Study”, analyses the development and growth of corporate bond market in India as compared to other developed and Asian countries and finds that a major part of corporate funding in India is done through banking, retained earnings and capital through equity offerings contrary to other countries.

### **OBJECTIVES OF THE STUDY**

1. To study the Corporate Bond market in India
2. To study the awareness about the Corporate Bonds in small Investors
3. To study the factors playing important role in increasing the awareness
4. To study the factors playing important role in decision making for corporate bond

### **METHODOLOGY**

To address the key research objectives, this research used both qualitative and quantitative methods and combination of primary and secondary sources.

Questionnaire was prepared keeping in mind the various outcomes possible. Care was taken that the wrong interpretations and biased view do not affect the research. Using percentages, graphical analysis, Rank scales, etc with aid of EXCEL.

#### **Characteristics of the sample**

	<b>Category</b>	<b>Frequency</b>
<b>Gender</b>	Male	23
	Female	19
	Total	42
<b>Age</b>	below 25 years	29
	25 - 35 years	4
	36 - 50 years	8
	Above 50 years	1
	Total	42
<b>Education Qualification</b>	12th pass	0
	Undergraduate	27
	Graduated	1

<b>Annual income</b>	Post graduated	9
	Professional course	5
	Total	42
	Less than 1 laths	15
	1 laths -2.5 laths	5
	2.5 laths - 5 laths	8
	5 laths - 10 laths	10
	More than 10 lakhs	4
	Total	42

(Table4)

### Data Analysis and Findings

1. 88.1% respondents claimed of doing investment and saving.
2. Capital Market awareness about 88.1% respondents claimed to know about the existence of Capital Markets.
3. Primary objective of the investment as per the % respondents is below the and Growth rank first, followed by Fixed Income and So on.

Choice	No. Of responses	Percentage	Rank
<b>Fixed income</b>	10	23.81	2
<b>Preservation of principal</b>	6	14.29	4
<b>Growth</b>	18	42.86	1
<b>Tax benefits</b>	8	19.05	3

(Table5)

4. Bank deposits and fix deposits were the most opted investment vehicle followed by Equity shares and Mutual Funds. These three accounted for most of the share of the data. A lesser knowledge of commodities and bond markets probably led to the lower number there. Post office savings and Retirement Plans also got a lower share, maybe because the respondents were youngsters and such schemes do not have much hold on them.

Choice	Responses
<b>Bank saving Deposits</b>	9
<b>Fixed deposits</b>	10
<b>Stock / equity</b>	12
<b>Mutual fund</b>	8
<b>Bonds</b>	1

<b>NPS</b>	1
<b>Post saving scheme</b>	1

(Table6)

5. Majority of investors (71.43%) are aware about Corporate Bonds as an investment Instrument but the investment by investor (66.67%) is very low in Bond market.
6. The investor are aware about the Corporate Bond through various sources but majorly through Educational Institute (33.33%) followed by ads or Newspaper and Friends or Peer groups or Family .
7. Out of the respondents, who were aware about Corporate Bonds around 14 respondents out of 42 respondents (33.33%) have invested in Corporate Bonds.
8. From the 14 respondents invested in Bond market 10 respondents prefer Govt bond and where 4 respondents prefer corporate bond.
9. The time horizon prefer as given below of 14 respondents , more prefer time frame was 1-3 years

<b>Time horizon</b>	<b>Reponses</b>
<b>Less than1 year</b>	4
<b>1-3 year</b>	9
<b>More than 3 year</b>	1

(Table7)

10. 13 respondents out of the 14 respondents have hold bond till maturity.
11. The major Reason for investment decision in Corporate Bond as given in below table

<b>Choice</b>	<b>Responses</b>
<b>Liquidity</b>	1
<b>Tax efficiency</b>	3
<b>Time Horizon</b>	3
<b>Transparency</b>	0
<b>Better yield</b>	4
<b>Safe and secure</b>	3

(Table8)

The major reason being Tax efficiency, Time Horizon, Better yield and Safe and secure.

12. Corporate BOND market is a safe investment is claimed that it is safe investment
13. The way through which Respondents invest in Corporate Bond is given below in table; majorly buy it from the issuing company.

Choices	Respondents	Rank
<b>Stockbroker</b>	2	3.5
<b>Financial planner</b>	1	5
<b>Directly From the company issuing</b>	6	1
<b>BOND ETF (Exchange Trade Fund )</b>	3	2
<b>DEBT MUTUAL FUND</b>	2	3.5

(Table9)

14. Reason for no investment in bond market by the respondents claimed no investment in corporate bond (28 respondents ) is given below

Choice	Responses
<b>Lack of knowledge</b>	11
<b>Risky</b>	2
<b>Does not have appropriate performance</b>	2
<b>Liquidity problem</b>	3
<b>Never thought about it</b>	7
<b>Not aware of its</b>	3
<b>Total</b>	28

(Table10)

**6. Conclusion:** The economy is growing; the Crisil estimates bonds outstanding to grow Rs 55-60 Lakh cores in the next five year (FY 18).

Individual are aware of capital market but still the most prefer investment is traditional saving options like post office schemes and fixed deposits but Equity and Mutual Fund are Becoming one of fast growing investment Avenue one of the most preferred one, as the individual objective for investment is majorly growth .

Individual are of aware corporate majorly, through educational institute highly so educational institute should be the major platform for spreading the awareness about Corporate bond. The major problem individual very less investment is claimed by individual in Bond market.

The one who are investing preferred toward the GOVT BOND the individual are Holding Bond till maturity due to which the market liquidity decreases. Majorly individual prefer the 1-3 year the time horizon where the Issues is low as compared to more than 3 year. If liquidity increases it enables companies to raise funds across different maturities including for infrastructure projects with long gestation periods.

Further the investor also gets attracted towards corporate bonds if tax savings are associated with the same. Reforms in such direction will help the government increase the participation by the retail investor in Corporate Bond Market in India.

The burden of financing infrastructure projects such as roads, ports, and airports is more on banks and the general government. This, in turn, puts lenders such as the banks under pressure as reflected in the rise of bad loans. E.g., in banks, such investments create an asset-liability mismatch. In other words; they are buying into long-term assets, such as a highway, with short-term liabilities i.e. deposits of 3-5 years maturities. Eventually, this results in inefficient resource allocation. Besides, it also weakens the bank balance sheets.

Many initiatives have been taken by the government for increasing the liquidity in corporate bond markets. Such as Credit Guarantee Enhancement Corporation, increasing the FPI holding in debt securities.

## 7. Recommendations:

- **Regulating private placement:** Private placement of the corporate bonds to be regulated by fixing a cap on the percentage of issuances so as to improve the public placement of the corporate bonds for better price discovery and investment prospects by the retail Investors and also improves the transparency in the corporate sector.
- **Corporate Bond Index:** A corporate bond Index to be formulated to educate the investors on the performance of the corporate bonds for increased retail investments.
- **Credit enhancement:** The proposed new corporation will help companies boost their credit rating. This, in turn, will enable them to raise funds at cheaper rates. By allowing repurchase agreements or repos in AA rated bonds or securities, volumes could go up in the corporate bond market. More importantly, it can help improve liquidity especially if the RBI, like many other central banks, uses it for its repo operations.

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# “A STUDY ON DRUG AND ALCOHOL ABUSE AMONG THE STUDENTS”

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## ABSTRACT

Drug abuse is a more intense and often wilful misuse of drugs often to the point of addiction. In the eastern world the incidence shows a decline or a static pattern, but the number of drug addicts is still enormous. The major drug of abuse are heroin and marijuana, but designer drugs are shown to be on the increase. The aim of the study is to determine the ratio of the drug abuse in student. For this purpose, we selected “VIDYALANKAR SCHOOL OF INFORMATION AND TECHNOLOGY” (private sector) conducted survey in 50 students. High proportion of students was found abusing drugs. From this study, we came across multiple factors which are the main cause of drug abuse in medical student including depression, anxiety, schizophrenia, as well as personality disorder like antisocial personality disorder. The most abused drugs include stimulants, opioids, and benzodiazepines, antihistamines. Although survey have indicated high rate of illicit and prescription drugs misuse among college students, few have assessed the negative consequences, personal concerns, or interest in intervention for drugs use. Drug abuse although regarded as a personality disorder, may also be seen as worldwide epidemic with evolutionary genetic, physiology and environmental influences Controlling and affecting human behaviour. Globally, the use has reached all-time high. The study showed males are more drug abusers as compared to females.

**Keywords:** *Drug Abuse, addiction, stress*

## INTRODUCTION

No one who tries a drug plans to become addicted. Teens may try alcohol because they saw their parents drinking, or they may experiment with marijuana because their friends offered it to them. Some people can have one drink or one hit and stop. It's not as easy for others — especially those who have a family history of addiction. Addiction is a chronic disease of the brain that causes people to repeatedly seek and use drugs despite serious negative consequences. Because the brains of teens are still developing, their risk for addiction is higher than that of adults. When teens become addicted to drugs or alcohol, the disease can slow brain development or trigger a variety of mental health disorders, including depression.

Most middle schoolers have never tried alcohol, marijuana or illicit drugs. As expected, teens in high school are more likely to try the substances as they get older.

### **How Do Drugs and Alcohol Affect a Teen’s Brain?**

Drugs have a more drastic effect on children and teens than on adults because the brain continues to develop until about age 25. As children grow older, the brain develops unevenly. The parts of the brain in charge of coordination, emotion and motivation develop much more quickly than the parts that control reasoning and impulse. That is why teens seem to respond emotionally much more often than adults. It’s also why they’re more prone to risk-taking behaviour. In addition, a developing brain is more easily damaged than a fully matured brain.

Alcohol and other drugs disrupt brain development. They negatively affect a person’s memory and ability to respond to stimuli and stressful situations. That’s why people who abuse drugs at a young age often suffer mental health problems — including depression, personality disorders or suicidal thoughts — later in life.

### **Signs of Teen Drug and Alcohol Abuse**

The immediate sensations associated with drinking or using drugs include relief, silliness, euphoria, and happiness. Those side effects are short-lived, though. The happy feelings are often followed by headaches, drowsiness, nausea, dehydration, exhaustion, and fever.

### **When Do Teens Try Drugs?**

People start using drugs at different times in their lives. Research shows that some children begin using substances such as amphetamines and cigarettes in elementary school, while others may experiment with drugs such as heroin as high school seniors.

### **Where Do Teens Get Drugs?**

Teens can access drugs in a variety of ways, from classmates at school to illegal pharmacies on the internet. In some cases, your child may find alcohol and other drugs at their friends’ homes or even purchase them at retail stores.

### **Why Do Teens Use Drugs and Alcohol?**

Teens abuse drugs for different reasons. Most teens say they take drugs to get high. Others use drugs to escape stress related to school or family. They may start drinking or using drugs because they are curious, because they want to fit in with others or because they don’t think drugs are risky.

### **How Drug Use Can Affect Your Teen’s Life?**

Drug abuse can cause a variety of long-term problems for teens. The most severe consequence is death — whether it’s by overdose, traffic accidents, crime-related activity or other causes. When left untreated, drug or alcohol addiction can cause potentially fatal health issues, including stroke, heart disease and liver failure. Teens who abuse drugs get into accidents at a high rate. They die from suicide, accidents and illness much more often than teens who avoid drugs.

## OBJECTIVES

- i. To study the concept of drug abuse.
- ii. To determine the ratio of the drug abuse in students.
- iii. To determine the reason for drug abuse.
- iv. To give awareness to students about drug abuse.
- v. To determine a plan for treatment.

## LIMITATIONS OF THE STUDY

1. Difficulty in getting responses from the respondents.
2. The sample size is limited.

## LITERATURE REVIEW

**1. Madan (1969)** has stated that alcoholism and drug addiction are harmful not only for the individual but also for his family and the society at large. There is a well-known proverb “Once a drinker always a drinker”. The truth is that all hard drinkers start with moderate drinking and gradually increase the quantity to become addicts.

**2. Hiramani and Sharma (1988)** has given three interpretations for the use of drugs: One school interprets it as ‘anti-social behaviour’ calling for suppressive measures against the users branded as ‘deviants’; the other school views the issue as one of ‘personal maladjustment of troubled individuals’ requiring medical or psychiatric treatment; and the third school considers the use of drugs as the end-product of functioning of social and cultural sub-systems that produce status problems and interest conflicts.

**3. Macionis (2001)** states that re-socialization means radically changing an inmate’s personality through carefully controlling the environment. Re socialization is a two-part process. First, the staff breaks down the new inmate’s existing identity, using what Goffman describes as “abasements, degradations, humiliations, and profanations of self.” In the second part of the re-socialization process, the staff tries to build a new self in the inmate through a system of reward and punishments. Re-socialization can bring about considerable change in an inmate, but total institutions affect different people in different ways. While some inmates are considered ‘rehabilitated’ or recovered, other may change little.

**4. Rao (2004)** views socialization as a process whereby an individual becomes a functioning member of the society. The individual becomes socialised by learning the rules and practices of social groups. By this process the individual develops a personality of his own. Peter Worsley explains socialization as the process of “transmission of culture, the process whereby men learn the rules and practices of social groups”.

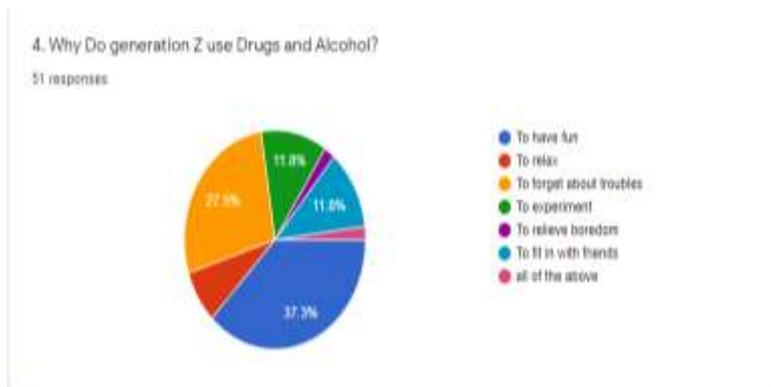
## RESEARCH METHODOLOGY

It was a cross - sectional study among the undergraduate students of Vidyalankar School of Information and Technology. 51 students were selected and information was collected by the

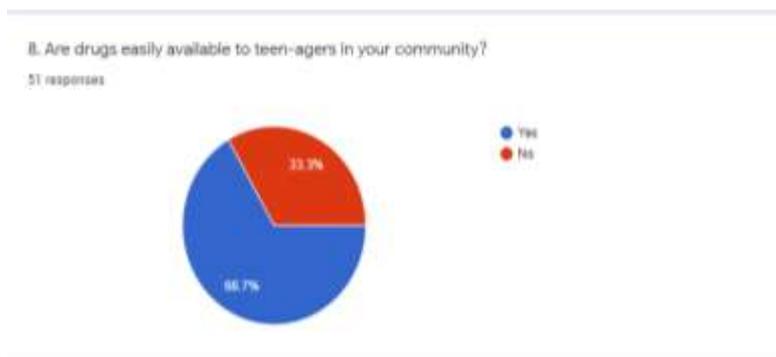
help of questionnaire method with the duration of 5 days. The questionnaire was developed on the basis of through literature reviews. Students of age between 12 to 20 years were selected. The students with the age group below than 12 years were excluded from the study. The collected data was entered and analysed.

1. Nature of study- Descriptive & Analytical
2. Method of data collection:
  - Primary data through – questionnaire & survey.
  - Secondary data- journals, articles, web site
3. Sample size-51

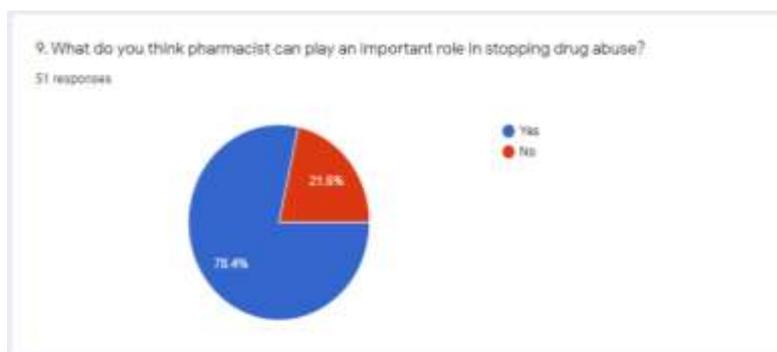
### IMPORTANT FINDINGS & ANALYSIS



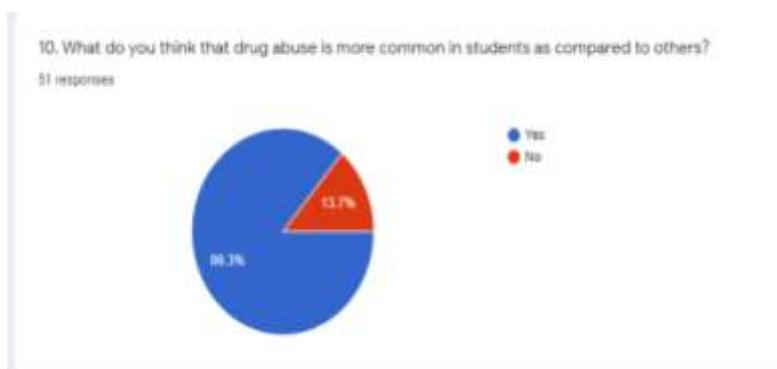
**37.3% Z Generation youth use drugs and alcohol to have fun.**



**66.7% of youth agree that drugs are easily available in community.**



**78.4% youth think that pharmacist can play important role in stopping drug abuse.**



**85.3% of youth think that drug abuse is more common in student as compared to others.**

### SUMMARY OF FINDINGS

Our exploratory survey about the drug abuse from different Vidyalankar School of Information And Technology has given various acceptable results. According to this survey out of 51 students,

- 68.6% of student has admitted that drug abuse seriously affected their socioeconomic status.
  - The percentage of drug abuse is greater in males as compared to females.
  - About 57% students take performance enhancer.
  - The use of performance enhancer is greater in males as compared to females.
  - The percentage of excessive use of drug is 86.3%. About 80% of the drugs are abuse by the age group of 12-25 years.
1. Students consume some form of drug or alcohol in their student life.
  2. 8% tried drugs or alcohol as young as 12 -15 years, 26% tried at the age of 16-19, 30% tried between age of 20-25 years.
  3. 52% tried to quit the addiction.
  4. The major reason for use of drugs and alcohol is – 37% to have fun, 27.5% to forget about troubles, about 12% to fit it with friends and 11.8 % to experiment.

5. 76.5% know drugs or alcohol edicts in their circle.
6. 66.7% confirm that drugs are easily available.
7. 86.3% are of the opinion that drug abuse is more common in students.
8. 88% are aware of ill effects but still consume it.
9. 86% confirm that drug abuse is increasing day by day.

The above statistics are alarming. In spite of knowing about the dangers - drug & alcohol abuse is increasing at an alarming rate for which measures will have to be taken.

### **CONCLUSION**

The results concluded that abuse of drug was more common in students due to various reasons. It is a major issue that is being faced not only by the Gen Z but the impact is felt on the value system of the society. It is necessary to take a holistic approach to tackle this universal issue which is encountered worldwide. This addiction not only affects the physical aspects but also the mental status and has an influence on the socio economics and culture of the society at large. It leads to the rise in criminal activities too; many a times to the extent of losing a valuable life.

### **SUGGESTIONS**

- Substance abuse and use of alcohol are the basic dilemma of today's health issues among younger population. A serious note to be taken off by way of an Holistic approach.
- Stringent laws to be made to curb the free availability of banned drugs.
- A Zero tolerance policy towards sale of alcohol below the prescribed age. The basic reason of the drug abuse that we have interpreted from the above survey is the easy access and availability of drug among the community.
- More focus on creating awareness about the ill effects of drug & alcohol abuse in schools & colleges from a very young age.
- More counselling & mentoring for drug abuse to be an integral part of the academic circle.
- Taking a 360 degree approach to tackle various stress parameters to avoid addiction with the involvement of Government, Legislation, Parents, Teachers , Counsellors & professionals.
- A conscious effort needs to be made in alleviating this pressure as much as possible without unduly decreasing the need felt by the students to study.
- A supportive environment to treat the addicts & bring them back to a normal drug free life without treating them as culprits.

- An optimistic view to be the approach – **“Your best days are ahead of you. The movie starts when you get sober and try to put life together; it doesn’t end there.”** Believe you can & you are halfway there.

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# A STUDY ON THE PROBLEMS FACED BY FISHERMEN IN WORLI AREA

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## ABSTRACT

Mumbai is known for its long coastline. Mumbai is also known as the financial capital of the country. Having 167km of continuous coastline, the major occupation practiced here is fishing. The people involved in such occupation are known as 'koli's'. They are the worshippers of sea since they earn their livelihood through it. They are known as the most hardworking community after farmers.

**KEY WORDS:** Worli area, Fishermen and Koli Community.

## INTRODUCTION

The Kolis of Mumbai have thrived in the hidden quarters of the city, the 'koliwadas', which essentially means "a home that opens to the sea." Originally, the community belonged to the ethnic Marathi. The onset of a new fishing season is celebrated in a grand manner. This day is called Narali Punav. The government of India has classified them under the list of Scheduled Caste for the states of Madhya Pradesh, Gujarat and Rajasthan in the 2001.

## REVIEW OF LITERATURE

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Comparison of economic status in two marine villages in state of Orissa.  
Measurement of economic status and mean score from respondents.  
favourable attitude towards motorization of fishing craft.

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Technological Change and Development of Marine Fishing Industry in India. A case study of Kerla. New Delhi: Daya Publishing House. In this book author discuss about technological Change and Development of Marine Fishing Industry in India.

### **Sathiadas R. and Kumar Narayana R. (1994)**

studied “Price Policy and Fish Marketing System in India.” The authors strongly feel that the growth of fish production and development of fishery sector is highly dependent on an efficient fish marketing system.

**Sehara et al; (1992):**

Monsoon fisheries in India during June to August.  
10% and 25% decrease in mechanized and non-mechanized fishing operations.  
Decrease in household income and fishermen become permanent debtors.  
Suggestion to public agencies to purchase fish at minimum price and provide adequate finance.

## **RESEARCH METHODOLOGY**

### **3.1 PURPOSE OF THE RESEARCH**

The standard of living of the people, financial problems, and lack of Education of fishermen in worli area.

### **3.2 OBJECTIVE OF THE RESARCH**

- To know the problems faced by traditional fishermen.
- To study financial problem faced by fishermen.
- To understand the impact of climate change on the fishermen.
- To know the facilities provided by the government to fishermen.

### **3.3 METHOD OF DATA COLLECTION**

Primary data collection through survey and questionnaire.

### **3.4 RESEARCH DESIGN**

The research design deployed was exploratory research design. It was descriptive in nature.

### **3.5 DELIMITATIONS OF THE RESEARCH**

The area of research is restricted to worli area, Mumbai. The sample size is limited to 50 fishermen in the area.

### **3.6 LIMITATIONS OF THE RESEARCH**

The respondents hesitate to fill the questionnaire, language barrier and lack of basic education.

### **3.7 DATA ANALYSIS METHOD**

Data is collected from Koli people in Worli Koliwada Area and from various websites.

## **FINDINGS OF THE RESEARCH**

- In the research we find that 19% prefer fishing in daytime,45% at mid-day time and 36% at evening time.
- 26.2% face problem during fishing,47.6% face problem and 26.2% maybe face some problems.
- Out of 100% ,59.5% know about the storage facility provided by the government.
- 47.5% say that the are provided with financial help by the government,30% are not provided and 22.5% feel maybe they are provided with financial help.
  - 50% use rental boats, 42.9% use personal boats and 7.1% do not go for fishing.

### **CONCLUSION**

- Fishermen of worli koliwada area are mostly illiterate the lack basic education and face language barrier.
- They are unaware of the new fishing techniques and proper methods of fishing.
- They are financially weak and also unaware of the government facilities provided to them.
- They lack proper storage and preservation facilities.

### **SUGGESTIONS**

- Give them proper training of the new fishing techniques.
- Educate them by providing seminars and talking about the subsidies provided to them by the government.
- Making them aware of the facilities provided by FSI (Fisheries Survey of India)

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# **To Study the Investment Planning in Stock Exchange for Young People**

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## **Abstract**

The research on this topic is conducted because as we all know India is having most of the population of youth. Moreover, it is the biggest advantage for any country to grow. The main aim of my research is that the youth is not having the knowledge about the way to plan and execute into the stock market. The objectives of this research are to study the scenario of investment in the stock market among the youth and suggest the investment strategies to youth for investment into the stock market. The data collection is done from Mumbai, and the youth who invest into the stock market. The investment helps to achieve the big goals or so of today's youth who want to be wealthy. Bank FD'S and other accounts do not give high returns as Stock market does, so with the help of stock market the youth can try to fulfil their dreams and achieve their goals. For this before investing a proper base is required which my research can help to the youth. In future there is a lot of scope into the stock market, the most important thing before investing is to have at least some knowledge and the way of planning for investment.

**KEYWORDS:** Stock market, Youth, Growth, Investment

## **INTRODUCTION**

**Investment is using money to purchase assets in the hope that the asset will generate income over time or appreciate over time.**

The stock market is where investors connect to buy and sell investments — most commonly, stocks, which are shares of ownership in a public company

The concept behind the working of stock market is simple. Operating much like an auction house, the stock market enables buyers and sellers to negotiate prices and make trades. An investment strategy is what guides an investor's decisions based on various factors.

There are two types:

IPO and FPO. The first and the most significant difference between both of them is that IPO is always offered for the very first time whereas an FPO will never be offered for the first time. If we talk about the FPO specifically, then it is always offered after an initial public offering is completed.

There are various types of financial market: derivative market, commodity market and so on.

## **LITERATURE REVIEW**

- Barber and Odeon (2001) studied that internet is the major source of information for young investors while investing. Young investors also started investing through online trading.
- Yartey (2008) in his study for the emerging economies found that macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of stock market development in emerging market countries. He also found that political risk, law and order, and bureaucratic quality are important determinants of stock market development because they enhance the viability of external finance.
- Joshi (2013) in his study found factors responsible for up-down movement in Indian stock market. He found that factors like Flow of Foreign Institutional Investors, Political Stability, Growth of Gross Domestic Product, Inflation, Liquidity and different interest rate and Global level factors are major factors responsible to create movement in Indian Stock Market.

### Research Gap:

- Population.
- Sample size.

## **SIGNIFICANCE OF THE STUDY**

This research will help the youth to understand the importance of planning before investment and the strategies available for investment. The youth should know that it is their hard earned money so they should not put that money by getting influenced, they should use the strategies and planning available. The youth wants to earn money but they don't know a lot about the stock market even the people from this same background are not having proper knowledge.

### **Objectives**

- To study the scenario of investment in stock market among youth.
- To study the behaviour of youth towards the stock market investments.
- To suggest the investment strategies in stock market which will develop the young investor's base.

## **HYPOTHESIS**

H0 Young investors are not aware about data are Google forms the investment strategies in stock market.

H1 Young Investors are ready to take risk while investing into the stock market.

H0 Young Investors are not ready to take risk in stock market.

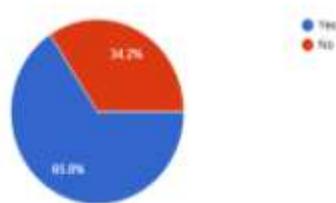
H1 Young investors are aware about investment.

## Research Methodology:

The nature of my study is quantitative. The period taken for the research is from Nov to Feb. The population, which focuses, are youth in investment and the sample size of this research is 75 youth investors who are investing into the stock market. My research is sampling type and the technique used is convection. In addition, the types of tools used to collect the strategies in stock market.

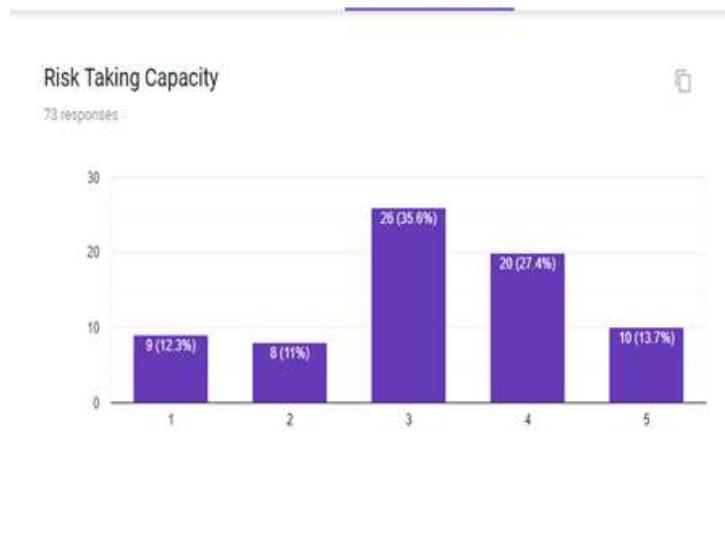
## Result and discussion

According to You is Insurance An Investment Or Not.  
73 responses



So before investing into the stock market does the youth know about investment so the above survey was conducted. In addition, I came to know that the youth is not clear with the meaning of investment as they think insurance is an investment, but it is not.

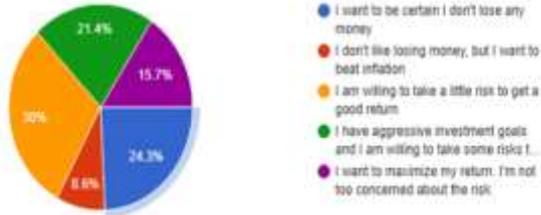
QUESTIONS RESPONSES 73



In the above graph, it is shown that what is the risk taking capacity of the youth investors. So most of the people are ready to take middle level risk and even some youth are ready to take high amount of risk.

What statement best described you

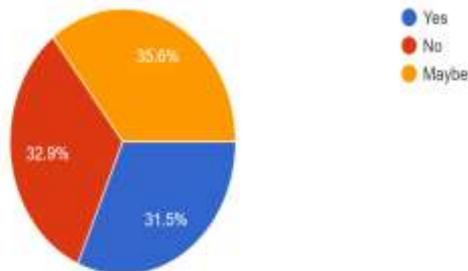
73 responses



This survey will help to know the main motive due to which the youth wants to invest into the stock market. Therefore, 30 percent of the total is willing to take some risk to earn good returns from the stock market.

Will You Invest Even if You Suffer Losses

73 responses



The motive behind this survey was that in stock market everyone does suffer losses sometimes but earns more than that. So, if the youth had some losses once or twice they should not get demotivated.

**Findings:**

- Young investors have the risk-taking capacity and are willing to take risk, and some are willing to take high risk for good returns.
- There are a lot of young people who aren't aware about the stock market and how it works, so these people can opt for SIP as a beginner and then go into the market.
- There are HNI clients so they can opt for PMS.
- Some of us are ready to invest into the market even after making losses, they will consider the factors and then will invest even if they have made losses.

➤ The reason behind people not investing into the market is that they are not investing into the market are

1. Made loss in the Past.
2. Lack of knowledge.
3. Monetary issues.
4. Negative thinking about the market.

High Risk High Return.

### **Suggestion**

- The youth who are trading can go for the Technical Analysis.
- In addition, the youth who are investing for a long period can go for Fundamental Analysis. And in the fundamental analysis there is management analysis
- So, if the company has survived in the bad times so it reflects the Management efforts and management analysis should be done.
- Only 2 percent of Indian population is into the stock market, so there is need of some strategy to increase the no of investors.

### **Conclusion**

I would like to conclude that the youth should themselves do the analysis required according to the stocks. If the youth is getting influenced that is required as motivation is required, but just by that investing the hard-earned money is not a right decision. Sometimes the youth can make profits but by this most of the time they made losses and due to which they start thinking that stock market is gambling, negative and so on. The stock market is having a very good returns as compared to the time when stock market was started.

### **Implications**

- With this research, it will help for the economic development.
- The GDP growth of our country will also increase.
- The young investors will get a proper strategy so that they can maybe minimize their losses.

### **Limitations of the study**

- The sample size is small according to the population of the country.
- The data is collected only from the youth of Mumbai.

### **Scope for further study**

This research was done for stock market so there is further scope for the other financial markets.

Only 2 per cent population is into the stock market so how to bring the remaining into the stock market for investment.

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# A Study on The Awareness of Online Healthcare Delivery Platforms in VSIT Region of Wadala

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## ABSTRACT

Healthcare as of late, like every other commodity in today's world, has made its way to the internet in India and now multiple online healthcare delivery platforms exist for the boon of customers who like to shop online and want to save time on travelling to physical stores. In this research, the researchers have attempted to gauge the awareness of these online healthcare delivery sites in the Mumbai region.

**KEYWORDS:** *Awareness, Online healthcare delivery platforms, Mumbai region.*

## INTRODUCTION

Healthcare is one of the essentials of life. Healthcare is that bare necessity in life, probably equal if not more important than education and some of the other commodities available in life. According to the Cambridge dictionary, healthcare is defined as “the set of services provided by a country or an organization for the treatment of the physically and the mentally ill”. Under healthcare, the various institutions that come are:

- Hospitals
- Pharmacies
- Pathology Labs
- Imaging Centres
- Blood Banks
- Nursing homes
- Mental health institutions, and so many more.

As the world has started to move online, all the commodities once found in stores have now started to move online too. Many large multimillion dollar companies like Amazon, eBay and in India, Flipkart, Snapdeal, etc. have managed to

build successful and popular online stores for a multitude of commodities. In India however, for a large time, even though these online platforms existed, one of the main commodities not found were healthcare products, more specifically, medicines and prescription drugs. People who were avid online shoppers still had to go to their local drug stores to purchase their medication and drugs, while they could acquire pretty much everything else online.

Companies like Flipkart and Snapdeal, both were in the years 2007 and 2010 respectively and they were known to sell all commodities from electronics to sofas to cutlery. Soon in 2013, Amazon also started in India and was an instant competitor to the Indian companies due to its international brand name. So, from the year 2007 onwards Indians were able to enjoy the convenience of online shopping and cash on delivery but medicines weren't available on them for many years. The most popular online medicine platforms as of 2020 in India are PharmEasy, NetMeds and Medlife. None of these online platforms had started before the year 2014 (PharmEasy and Medlife) with NetMeds starting the year after in 2015. This shows that there was a minimum 5-year gap from when online stores became popular in India to when an online medicine platform was started in India.

As it is for buying any commodity online, buying medicines online also is a way of ease of convenience for people to purchase medicines easily without leaving their homes. These online medicine delivery platforms only make it easier for people, especially the senior citizens or children of senior citizens to make sure that the medicines are delivered to those who aren't active enough to commute to a pharmacy, or even those working families who do not have the time to travel to the pharmacy.

As these online platforms are relatively new in comparison to the online stores like Flipkart and Amazon, many Indian citizens still do not know of the existence of such platforms, or they just do not choose to buy medicines online due to the fear of some tampering or bad quality goods from online as they cannot physically confirm the quality of the goods they purchase online. Many Indian households also have good relations with the pharmacy around their blocks so they don't see the need of trying online stores and buying medicines from there as they would rather stick to their comfort and purchase medicines from the stores like people have for generations in this country.

## **REVIEW OF LITERATURE**

“Online Pharmacy in India: A study on Digital Marketing perspective”

Prabal Chakraborty and Prof (Dr) Alok Satsangi (2019) spoke about the scope of the Indian pharmaceutical market and said that while the overall market is to be estimated at 1.2 lakh crore rupees, the online market is only a fraction of that at 700-800 crore rupees, showing the stark difference between offline and online buyers of medicines and healthcare.

“Online Medicines and Medical Products Shopping – A Brief Study” by Kapil Sharma and Rinku Sharma (2016) spoke about the rise in growth of online medicine delivery platforms and why they are advantageous to people in India.

## **RESEARCH METHODOLOGY**

### **PURPOSE OF RESEARCH**

Healthcare and medicines are one of the basic commodities needed in life and having a medium to purchase them online is a boon to the people but as they are still new many Indians do not know of them and do not avail the benefits of buying medicines online and save themselves some valuable and precious time.

## RESEARCH DESIGN

Research done on online medicine delivery platforms, especially those doing a brief or exploratory study have involved a quantitative and qualitative approach. With quantitative approach, researchers were able to identify a numerical value on how many people in their sample use these platforms and how many know of their existence. With a qualitative approach, researchers derived why people chose to buy or not to buy from these online platforms.

### OBJECTIVE OF RESEARCH

- To gain information about the awareness of these online platforms within Mumbaikars.
- To understand the psychology of Mumbaikars towards buying medicines online.
- To gauge what it would take for online platforms to be used more often and what they can do to improve their usage.

## METHOD OF DATA COLLECTION

The study involved the educational institution called Vidyalankar School of Information Technology in Wadala. The link to the online version of the survey was passed to the students of this institution so that they and their families could respond to them. After the survey, the people were provided with contact information if they needed to contact the researchers over any queries or so that they could acquire a copy of the final findings.

## SAMPLING TECHNIQUE

Simple Random Sampling.

## LIMITATION OF THE RESEARCH

- This study is limited to Vidyalankar Institute and the families of the students who study there.
- Some students were unwilling to contribute to the research and fill in the survey forwarded to them.
- Limited to only this region due to financial and time constraints of the researchers.

## DATA ANALYSIS

After getting results from the survey, the analysis of the data is as follows:

- When asked if they shop online, 94% stated that they have purchased items from online stores before.
- When asked if they have knowledge of online healthcare delivery platforms, 71% answered that they have heard of such stores.
- When asked to name companies of the same, the most popular answers were NetMeds and PharmEasy.
- When the sample was asked if they had purchased medicines from online stores, only 24% responded saying that at some point they have purchased medicines from these online stores.
- While 71% of the sample has awareness of these platforms, only 21% have acted on the awareness and utilized these platforms.

## CONCLUSION

This research was simply a research done to identify how much Mumbaikars know about online healthcare delivery platforms and how much do they actually use it. The conclusion was made that while almost every individual of all age's shops online, only about 2/3<sup>rd</sup> of them actually know of such sites and an even fewer ratio actually purchase medicines online, which shows while there is awareness, few act on it.

### **SUGGESTIONS**

- Online stores should advertise even more frequently and sponsor events like most online stores do increase their awareness.
- Indian customers also should try and test the various options of online stores for medicines, especially for their grandparents or old parents, or even if they are a working family with both parents working, online stores will save time.
- Online Delivery platforms must do something and give memberships and further discounts to counter the discounts given by physical stores to some of its oldest customers.
- Stigma by older citizens and heads of family surrounding the purchase of medicines online should be overcome and taken care of.

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# Evaluation of Academic Stress level among BAF students of VSIT - A Case Study

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## Abstract

Today's Era witness competition in every sphere of life. In world full of achievements and accomplishments, Students find it difficult to embark their name. Students from all age group face lots of trouble in accomplishment of their goals. Right from KG to PG students face stress relating to academic pursuits, sports, co-curricular activities. This study aims to find out the stress levels relating to academic of BAF students of VSIT by using 40 item rating scale which was originally developed by Kim (1970). The scale was adopted to Indian conditions by Rajendran and Kaliappan (1990) to assess the efficiency of behavioural programmes in managing academic stress in improving academic performance.

**Keywords-** BAF students, academic stress

## Introduction

United News of India (UNI) has published the survey report conducted by Cigna's 360 wellbeing survey 2019 mentioning that India's 82% of population suffers from high stress level. Stress is the body's reaction to any change that requires an adjustment or response. The body reacts to these changes with physical, mental, and emotional responses. One can experience stress from the environment, body, and thoughts.

The human body is designed to experience stress and react to it. Stress can be positive, keeping us alert, motivated, and ready to avoid danger. Stress becomes negative when a person faces continuous challenges without relief or relaxation between stressors. As a result, the person becomes overworked, and stress-related tension builds. The body's autonomic nervous system has a built-in stress response that causes physiological changes to allow the body to combat stressful situations.

Academic stress is mental distress with respect to some anticipated frustration associated with academic failure. Or even unawareness to the possibility of such failure. Students have to face many academic demands, for example, college examination, answering questions in the class, showing progress in college subjects.

It is also associated with parental pressure on high performances; tough class load; worry over grade competitions; sports etc. Consequently, it puts an enormous amount of stress on students which may lead to wrong decisions or lead to use of suitable copying strategies like alcohol, drug etc. and it could be too late to recover.

In every step of their academic career students are stressed and depressed by success-obsession.

Academic Stress can arise due to too much home-works, pressure of exams, poor academic performance, grade competition with friends, poor interpersonal relationship with teachers and friends, heavy contents to master in a limited time, unscientific academic evaluation procedure, imbalanced curriculum and extra-curricular activities, high student-teacher ratio, non-conducive physical environment of classrooms, unhealthy teacher-student interaction, irrational rules of discipline, ineffective teaching methodology, indifferent attitude of teachers, over emphasis on

weaknesses rather than strength of students, poor reading habits and time management of students, lack of the student's interest in a particular subject, the teacher's corporal punishments and high expectations of teachers, parents and student himself/herself are agonies for students.

### **Research methodology**

Type of study: - Observational study drawing inferences from a sample(BAF students) to a population from students at VSIT.

Sample size: -The sample size was 155 students which was classified into Third year BAF students, Second year BAF students and First year BAF students. There were 23 students from TYBAF, 66 students from SYBAF AND FYBAF.

Collection of data: - We have adopted primary method of data collection. A questionnaire consisting of 5 sections was used for data collection. The questionnaire comprises of a. Personal Inadequacy b. fear of failurec. Interpersonal difficulties with teacher'sd. Teacher-pupil relationship / Teaching methods e. Inadequate study facilities. Under five sections we have posted 8 question so, total questionnaire was consisting of 40 questions.

### **Review of literature**

(Altmaier, 1983, p. 3) "The concept of stress has been gaining more and more attention in the popular press as well as in professional literature in almost every field"

(Ross, Neibling, Heckert, 1999) A review of literature has shown that there is a strong relationship between stress and college students.

(Ross et al., 1999) One important factor to consider when researching stress is to explore which sources of stress are beneficial and which sources are detrimental.

According to Lazarus & Folkman (1984), stress is a mental or physical phenomenon formed through one's cognitive appraisal of the stimulation and is a result of one's interaction with the environment.

Schafer (1996) observed that the most irritating daily hassles were usually school-related stressors such as constant pressure of studying, too little time, writing term papers, taking tests, future plans, and boring instructors. Stress associated with academic activities has been linked to various negative outcomes, such as poor health.

Lesko and Summerfield (1989) found a significant positive correlation between the incidence of illness and the number of exams and assignments.

Aldwin and Greenberger (1987) observed that perceived academic stress was related to anxiety and depression in college students.

(Clark & Rieker, 1986; Linn & Zeppa, 1984; Struthers, Perry & Menec, 2000) A number of studies have explored a relationship between stress and poor academic performance.

### **Data analysis**

For the study purpose BAF students of VSIT are taken. As per 40 item rating scale which was originally developed by Kim (1970),we have taken their scores as per the assessment of Kim(1970)

Score	Range
0 – 40	No stress
41 – 80	Slightly stress
81 – 120	Moderate stress
121 - 160	Highly stress
161 - 200	Extreme stresses

We have divided the stress into different parameters, following are the different parameters:

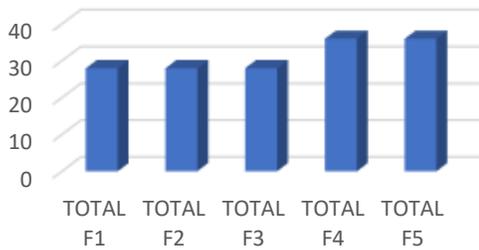
Nos	Parameters
F1	Personal Inadequacy
F2	Fear of Failure
F3	Interpersonal difficulties with teachers
F4	Teacher-pupil relationship / Teaching methods
F5	Inadequate study facilities

### TYBAF SCORE SHEET - TOTAL STUDENTS 23

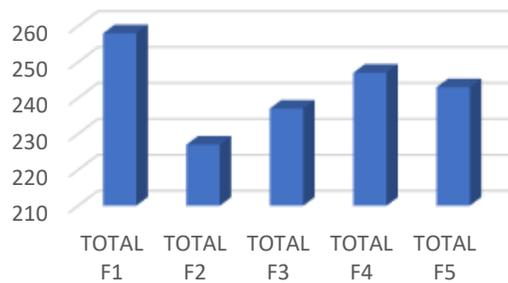
TOTAL F1	TOTAL F2	TOTAL F3	TOTAL F4	TOTAL F5	FINAL TOTAL
					SLIGHT STRESS = 2
17	20	16	12	12	77
11	8	12	24	24	79
<b>28</b>	<b>28</b>	<b>28</b>	<b>36</b>	<b>36</b>	<b>156</b>
					MODERATE STRESS = 12
30	11	12	13	15	81
28	19	19	12	12	90
20	11	13	23	23	90
26	24	22	9	12	93
22	25	22	12	14	95

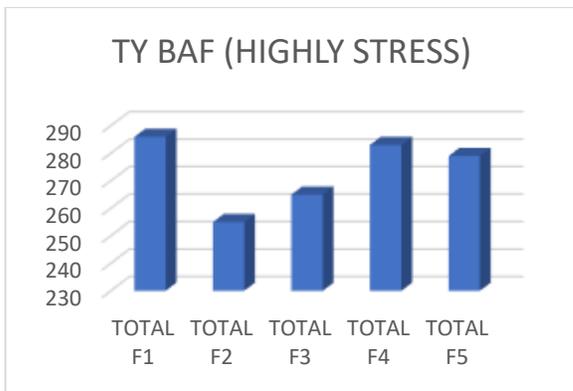
13	20	21	24	19	97
24	16	18	24	22	104
16	15	29	26	21	107
20	20	22	22	23	107
13	18	13	37	32	113
26	25	24	19	22	116
20	23	22	26	28	119
<b>258</b>	<b>227</b>	<b>237</b>	<b>247</b>	<b>243</b>	<b>1212</b>
					HIGH STRESS = 9
27	29	25	23	21	125
28	22	23	29	26	128
28	27	18	28	28	129
29	27	28	25	21	130
28	24	27	25	27	131
32	33	28	20	21	134
25	25	27	35	22	134
36	33	38	20	23	150
37	37	33	21	24	152
<b>270</b>	<b>257</b>	<b>247</b>	<b>226</b>	<b>213</b>	<b>1213</b>

TY BAF (SLIGHTLY STRESS)



TY BAF(MODERATE STRESS)





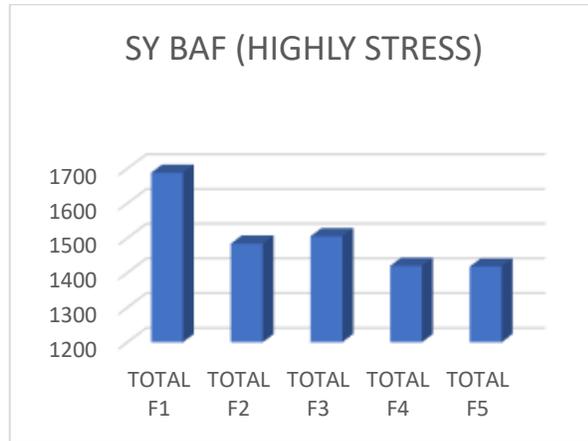
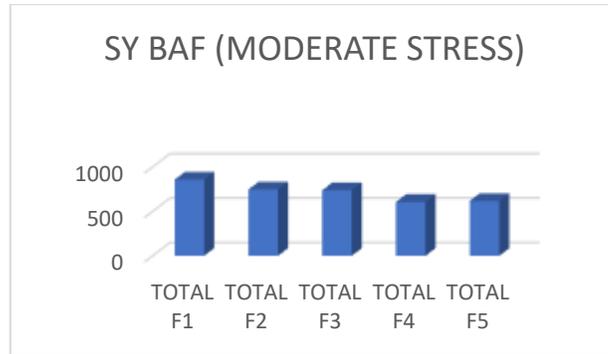
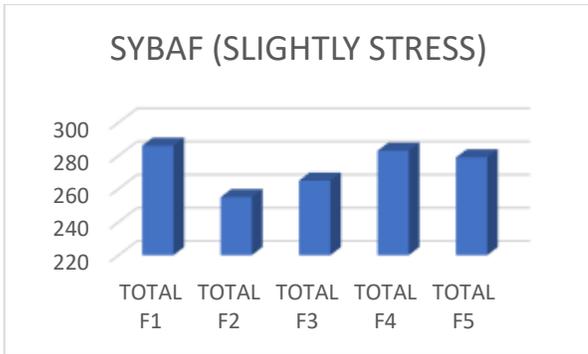
It is seen that, out of total TYBAF students there are 2 students who feel slight stress in every parameter and there are 12 students who feel moderate stress in every parameter and 9 students feel high stress in every parameter. In slight stress most of the people feel stress in F4 & F5 parameter. In moderate stress students feel stress in F1. In high stress students feel stress in F1.

**SYBAF SCORE SHEET – TOTAL 66 STUDENTS**

TOTAL F1	TOTAL F2	TOTAL F3	TOTAL F4	TOTAL F5	FINAL TOTAL
					SLIGHT STRESS = 9
9	8	8	9	8	42
13	12	13	12	16	66
22	13	12	13	10	70
16	11	19	15	10	71
21	15	16	11	11	74
16	13	11	19	16	75
19	22	21	8	8	78
14	10	12	21	22	79
23	16	18	12	11	80
<b>153</b>	<b>120</b>	<b>130</b>	<b>120</b>	<b>112</b>	<b>635</b>
					MODERATE STRESS = 36
26	13	21	10	11	81
13	10	11	25	24	83
22	14	17	14	16	83
22	13	11	12	26	84
15	27	12	14	16	84

26	25	18	9	9	87
19	18	13	20	19	89
21	19	18	16	15	89
23	18	28	10	11	90
24	26	23	8	9	90
27	15	22	11	16	91
32	21	23	8	8	92
16	11	16	25	26	94
23	19	18	14	21	95
15	17	18	23	23	96
25	29	24	10	8	96
20	21	23	17	17	98
32	25	25	8	8	98
30	18	17	18	17	100
25	17	18	20	21	101
22	14	13	27	25	101
25	26	22	17	13	103
24	16	15	25	24	104
27	25	21	19	13	105
21	26	28	14	16	105
27	30	28	10	11	106
30	33	27	8	9	107
22	23	22	22	18	107
29	18	27	17	19	110
14	12	16	33	36	111
32	25	22	17	15	111
20	20	26	25	21	112
26	21	22	24	21	114
24	23	20	24	24	115
30	32	30	14	11	117

29	27	23	19	20	118
<b>858</b>	<b>747</b>	<b>738</b>	<b>607</b>	<b>617</b>	<b>3567</b>
					HIGH STRESS = 21
25	19	18	30	30	122
29	30	23	21	19	122
19	23	22	32	27	123
28	22	24	27	22	123
28	23	24	26	24	125
30	26	24	23	24	127
27	24	24	26	26	127
28	30	31	24	18	131
26	21	29	28	27	131
31	25	28	26	25	135
32	29	31	19	24	135
33	29	31	25	17	135
27	26	22	34	29	138
21	26	32	28	31	138
26	21	19	35	37	138
29	28	25	27	32	141
23	24	22	33	40	142
36	36	38	18	15	143
32	29	21	31	30	143
30	31	36	31	26	154
28	30	26	34	38	156
<b>588</b>	<b>552</b>	<b>550</b>	<b>578</b>	<b>561</b>	<b>2829</b>



It is seen that, out of total SYBAF students there are 9 students who feel slight stress in every parameter, 36 students who feel moderate stress in every parameter and 21 students feel high stress in every parameter. In slight stress most of the people feel stress in F1 parameter. In moderate stress students feel stress in F1. In high stress students feel stress in F1.

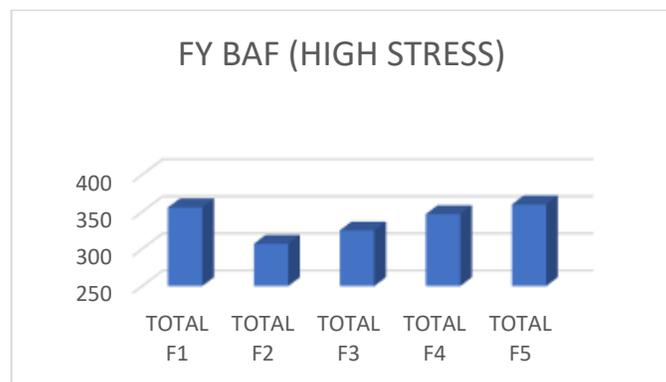
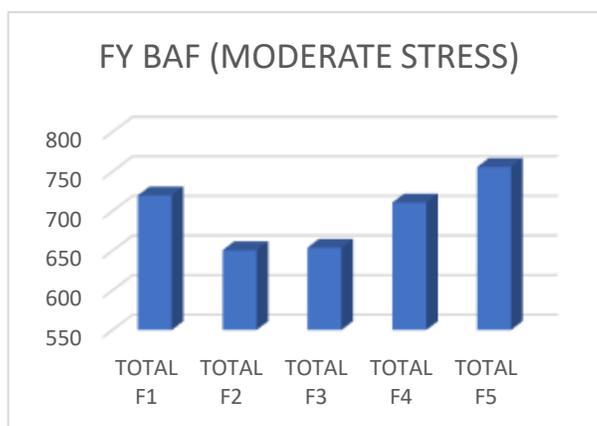
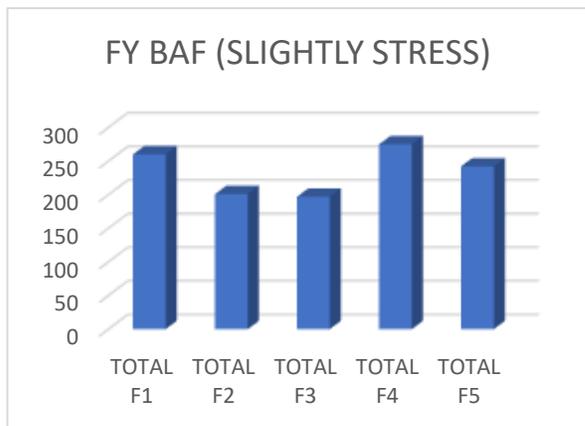
#### **FYBAF SCORE SHEET - TOTAL 66 STUDENTS**

TOTAL F1	TOTAL F2	TOTAL F3	TOTAL F4	TOTAL F5	FINAL TOTAL
					SLIGHT STRESS = 17
8	8	8	12	9	45
12	8	9	17	15	61
8	8	11	21	15	63
14	10	12	15	12	63
11	12	10	14	17	64
19	11	11	13	12	66
13	11	12	16	15	67
18	12	12	14	13	69
16	14	13	15	11	69

24	13	11	10	14	72
17	18	18	10	11	74
22	15	9	15	14	75
16	12	10	20	18	76
16	15	15	15	15	76
14	9	12	25	18	78
8	9	11	27	23	78
24	16	13	16	10	79
<b>260</b>	<b>201</b>	<b>197</b>	<b>275</b>	<b>242</b>	<b>1175</b>
					MODERATE STRESS = 36
16	12	15	21	17	81
24	12	14	13	18	81
15	11	14	16	25	81
24	15	18	9	16	82
17	13	13	21	20	84
23	16	15	13	17	84
17	21	19	17	13	87
23	18	19	11	16	87
19	18	16	20	15	88
20	18	23	15	13	89
23	24	23	10	9	89
12	16	16	23	22	89
16	14	15	22	23	90
15	12	18	20	25	90
22	21	16	16	16	91
17	17	14	21	23	92
25	17	17	13	20	92
16	11	16	24	26	93
23	27	26	10	9	95
23	29	19	12	13	96

23	16	15	19	24	97
15	14	9	27	32	97
11	11	11	38	27	98
17	16	13	31	23	100
23	20	21	10	31	105
22	17	21	23	22	105
12	11	20	27	35	105
24	24	23	14	22	107
28	20	21	20	20	109
16	20	24	22	29	111
31	26	27	14	15	113
12	10	13	39	40	114
23	21	21	26	24	115
25	26	18	29	18	116
23	32	23	23	18	119
25	25	28	22	20	120
<b>720</b>	<b>651</b>	<b>654</b>	<b>711</b>	<b>756</b>	<b>3492</b>
					HIGH STRESS = 13
31	13	13	33	31	121
27	24	25	21	26	123
26	18	21	28	31	124
18	20	21	30	35	124
27	22	27	25	23	124
28	25	22	26	25	126
30	27	34	17	19	127
25	21	23	27	32	128
31	23	26	26	24	130
25	24	26	28	31	134
27	32	26	27	23	135
25	26	26	33	39	149

36	32	35	26	21	150
<b>356</b>	<b>307</b>	<b>325</b>	<b>347</b>	<b>360</b>	<b>1695</b>



It is seen that, out of total FYBAF students there are 17 students who feel slight stress in every parameter and there are 36 students who feel moderate stress in every parameter and 13 students feel high stress in every parameter. In slight stress most of the people feel stress in F4 parameter. In moderate stress students feel stress in F5. In high stress students feel stress in F5.

### Conclusion

- There are total 5 parameters i.e. F1, F2, F3, F4 & F5
- For TYBAF Students score of F1 i.e. **Personal Inadequacy** is more.
- In TYBAF out of 23 Students 2 students suffer from slight stress, 12 students suffer from moderate stress and 9 students suffer from high stress.
- For SYBAF students score of F1 i.e. **Personal Inadequacy** is more.
- In SYBAF out of 66 students 9 students suffer from slight stress, 36 students suffer from moderate stress and 21 students suffer from high stress.
- For FYBAF students score of F5 i.e. **Inadequate study facilities** is more.

- In FYBAF out of 66 students 17 students suffer from slight stress, 36 students suffer from moderate stress and 13 students suffer from high stress.
- So it is seen that F1 i.e. Personal Inadequacy is more among the all students and in scaling of stress moderate stress show high result.

### **Recommendation**

- 1) To overcome personal inadequacy, Students should build up confidence level, do meditation to increase concentration and reduce anxiety.
- 2) Students should not hesitate to ask the teacher for detailed explanation of the topics.
- 3) To overcome lack of communication between teachers and students
- 4) Students should discuss Academic failures with parents.
- 5) Eleventh hour preparation for the examinations should be avoided.
- 6) Students should take mutual help among classmates

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# A Study on Impact of E-Cycle in Seawoods

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## Abstract

This paper is about survey in the area of Seawoods on E-cycle and E-Bikes. In this survey we have identified some important facts on E-Cycle. Firstly, E-cycles and E-Bikes are frequently used from the moment of introduction of this project. This research includes the objectives and purpose of doing the survey.

**Keywords:** E-cycle, Seawoods, affordability

## Introduction

- This facility was first **introduced in Navi Mumbai eight months ago in 2019** and the new stands were inaugurated at jogging track at Sector 15 of Airoli and Nature garden in Kopar Khairane at Users have to pay **₹10 for the first 30 minutes and thereafter ₹5 for next 30 minutes**.
- The municipal corporation has got **35 e-bikes — seven locations at Belapur and Nerul will get five each**.
- Mayor Jaywant Sutar said, **“Along with a clean city, Navi Mumbai should also be recognised as pollution free”**.

## Review of literature

### 1. Mitesh M Trivedi, November 2017

#### Urban Electric bike:

In this paper, some of the authors are considering some of the important and in the easiest vehicle mobility. To make it easier for the sliding of the arms, a bolt is provided. In order to provide rigidity a guide is provided to the bike on the main frame. At initial stage there was a component known as hub motor which regulates electric motors which utilises the mechanically gadget known as commutator.

## **2. Manish K. Budhvani, November 2017**

### **Electric bicycle**

This paper research presents the various outcomes and results of the study containing visions into schemes. There was a survey in a semi open contract done by the Nanyang technological campus in Singapore.

According to this survey E-bicycle is a famous and helpful project with a few models of electric bike and few models of cycle.

## **3. Kuldeep M. Sapovadiya, November 2017**

### **Design and fabrication of dual chargeable bicycle:**

In the previous surveys the customers have been complaining about the battery charging problem. So now there is a new facility in E-bicycle which has the new facility of dual chargeable e-bicycle to make it more convenient for the customers, as the problem have been solved the customers are happy with the dual chargeable E-bicycle.

### **Research methodology**

#### **Purpose of the research:**

The purpose of this research is to check the impact of E-Cycle in Seawoods and how the E-Cycle reduced the parking problem. Also, to check whether the air pollution got decreased in Seawoods area after E-Cycle got launched.

#### **Needs**

E-Cycle is convenient to use by children, adults, and youth. It even contributes to the health factor of the people. It is convenient to use by children, adults and adults. It also contributes to the health factor of the people using E-Cycle. It is time saving since it can go through traffic. It is affordable as compared to a car or a bike because we must pay very less amount of money. It also helps in solving parking problem because it requires less space, and approximately 35 bikes can be parked in a parking slot.

#### **Objectives**

- To know and study the satisfaction level of the people using E-Cycle in Seawoods residence.
- To analyse the pollution level of Seawood area after introduction of the E-Cycle project
- Affordable to all the users
- Convenient to use

#### **Method of data collection**

- Primary data:

We have collected the primary data by using the questionnaire that we had created through Google.

- Secondary data:

We have used certain websites.

#### **Delimitation**

- This research was conducted in seawoods as E-cycle started in Navi Mumbai area so we have taken sample from seawoods area.

### **Findings**

- Majority of the people live in Seawoods
- Yes, it is convenient for short people.
- 60% of the people reverted back saying that we should change the mode of payment.
- No it is not suitable for long distance
- No it is not suitable to use in rainy season because it is risky and difficult to manage
- It was quite good according to majority of the people since they liked the E-cycle concept as it is affordable and time saving
- According to the survey we get to know that the pollution has been reduced after using the E-Cycle as compared to bikes and cars

### **Conclusion**

From this research we came to know about different sorts of problems faced by the people of seawoods, there are certain sectors in seawoods where the auto drivers either don't want to go or charge extra about the fare, so currently people are more self-sufficient they can easily unlock an E-Cycle and ride to their respective areas, it also provides them with good health after a tiring job in office. It is environment friendly, and government of India tried to implement this type of technology in various places.

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# **TO STUDY THE PROBLEMS FACED BY SHARED TAXIS DUE TO AC BUSES IN THE VICINITY OF SANGAM NAGAR AND WADALA STATION.**

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## **ABSTRACT**

In Mumbai City, Taxis has been one of the easiest and comfortable way of transport but after the fare cut of BEST Buses there has been a slightly Downfall in their Business. The paper Provides an Insight of how the introduction of AC Buses Has Impact the Buses of Shared Taxis in the Vicinity route of Sangam Nagar and Wadala Station.

**Keywords:** Wadala, Sangam Nagar, AC Buses, Share Taxis.

## **INTRODUCTION**

The Mumbai city Bus Users Travels Over half (55%) that is Less Than 5 Km. The Average Speed of a Mumbai Bus is Between 10 to 12 Km. In the past, it used to be 18 to 20 Km. By 2019 Mumbai BEST had an Accumulated loss of Rs 2,300 crore. BEST plans to increase its Fleet of Mumbai Buses to 6000. It hopes to transport 50 lakh passengers daily. With a view to Providing better service to the people of Mumbai, BEST has placed orders for 1,530 Air-Conditioned (AC) Buses. Keeping with the central government's Electrical Vehicle thrust, BEST plans to induct 500 electric buses. There has been increase in the number of passengers from 17 lakhs to 30 lakhs per day after the fare reduction.

Mumbai Bus Ticket Fare for Air-Conditioned (AC) Bus from Distance 0-5 Km is Rs. 6, 5-10 Km is Rs 13, 10-15 Km is Rs 19, and Over 15 Km is Rs 25.

## **REVIEW OF LITERATURE**

- Manoj Varhade, BEST spokesperson

“Just over a month since their launch, BEST's mini-AC buses running between Andheri and Versova are already doing a roaring business. each of the seven 21-seater buses is carrying more than 475 passengers a day. daily earning from all seven cross Rs 20000.”

- Kailash Korde, Hindustan Times

“With a drop-in fare, the number of daily passengers has gone up from 22 lakh to 32 lakhs now. These AC buses charge mere Rs 6. Coincidentally these buses begin from railway stations giving competition to share taxis who charge anywhere between Rs 10-15 per seat. People are seen flocking to the buses than wait in queues for these share-taxis whose wait period during peak hours goes up to 7-10 minutes.”

- BEST Officials

“We are connecting the railway stations so that office goer can travel with ease. Once more such buses are added then automatically, we shall run more services.”

## **RESEARCH METHODOLOGY**

### **3.1. PURPOSE OF THE RESEARCH:**

The Purpose of our Research is to understand the problems faced by taxi drivers due to the introduction of AC busses. How can they overcome this problem?

### **3.2. OBJECTIVES OF THE RESEARCH:**

- To know the effect occurred by AC Buses on the share taxi business.
- To understand the problems faced by taxi drivers due to the introduction of AC busses.
- To find out the ways by which the share taxi drivers can survive the business

### **3.3. METHODS OF DATA COLLECTION:**

- Primary Data was conducted through questionnaire and Google Form.
- Secondary Data was collected through various websites.

### **3.4. RESEARCH DESIGN:**

The research design is explanatory and descriptive in Nature.

### **3.5. DELIMITATION OF RESEARCH:**

Sangam Nagar Area, Wadala in Mumbai.

### **3.6. LIMITATION OF RESEARCH:**

The participants hesitated to fill the questionnaire.

### **3.7. DATA ANALYSIS METHODS:**

Data is collected from Taxi Driver and Passengers who travel from Sangam agar and Wadala station.

#### **FINDINGS OF THE RESEARCH**

- In this research, we have found out that due to the introduction of AC Buses there has been certain decline in the business of Taxi Drivers.
- About 77.1% of the respondents agree that the fare cut of buses has affected their mindset.
- About 74.30% of the passengers agree that the frequency of the buses has increased.
- About 75% of the passengers agree that the infrastructure of the buses is up to the mark.

#### **CONCLUSION**

The main source of earning of the taxi drivers is only driving the taxis from sangam nagar to Wadala Station. After AC Buses were introduced in the same route where the taxi drivers are, there was a huge loss for them as the AC buses were providing affordable price and good comfort as compared to them. Most of the passengers were choosing AC buses instead of shared taxi and that affected the business of taxi driver as their earning has been affected by shifting of customers from shared taxi to AC buses. As driving taxi is their only source of income, they can't afford to face so much loss as they are not educated, and they are also not eligible for any government scheme or incentives. So, they have to find a way through which they can survive in the market.

#### **SUGGESTION**

- Lowering the fares from Rs 10 to Rs 8-6.
- They can alter the route of transport from Wadala Station to Guru Nanak Khalsa College.
- A/C can be installed in the share taxis.

### **7. WEBLIOGRAPHY**

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# STRESS MANAGEMENT AND THE EFFECTS OF STRESS ON THE POLICE FORCE

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## ABSTRACT

Occupational stress is more in police organisations as well as any defence force in the country. In urban and semi urban areas like Mumbai Metro Region, the level of stress is more due to the increase in population, growing slum areas, unemployed youth, migration, industries, pressure of work, travelling time etc. In this research, the researchers have tried to identify and understand the reasons of such stress, coping strategies and compare the stress among Mumbai police force.

**KEYWORDS:** *Stress, Police Force, Mumbai region.*

## INTRODUCTION

Stress is generally described as a multi-casual, complicated psychological phenomenon, often created by insidious, long range continuous pressures, threats and demands on individuals which is beyond their tolerance limits resulting in psychological, emotional as well as physical exhaustion. Stress is one of the consequences of socio-economic complexity in the society. Stress in simple term is applied to the pressures people feel in their regular life. The presence of stress at work is almost bound to happen in many jobs. Police jobs are supposedly more stressful due to the nature and pattern of their work as well as the desired role and expectations of stakeholders in the society. Occupational stress is an extremely difficult concept to define in words. Obviously, it is the kind of stress that one faces on the job that occurs in person. Some sources of stress are also related to the employee's role within the organization, some to career development, some to the relationships at work and some to the structure and climate of the organization.

It is stated that according to the Mumbai Police Force study conducted in 2004, on festive days of the year, police force is on the streets rather than celebrating festivals with their loved ones instead. This means that police officers and other ranks in the Commissionerate can't avail such holidays or leave due to such specific reasons. For various reasons speculated, police force clocks in 12-hour shifts while the labour law provides for only an 8-hour shift. In view of the shortage of man power, heavy crime job and uncertain law and order tasks, policemen have to put in 16 hours at a stretch.

They also cannot avail weekly holidays, casual leave, earned leave and the other gazetted holidays without prior permissions. As a result, over-worked policemen suffer from stress related diseases like diabetes, high blood pressure, ulcer, heart problems and so on. Another research is a study conducted by Upadhyaya S.P. (Nagpur rural) revealed that the suicide rate in Maharashtra Police force was 17 per 1 lakh, while the national average was 10.5 per 1 lakh population. This increases the stress among police force in Maharashtra.

The Maharashtra - state police stated following major problems contributing to the stress:

- Atmosphere of mistrust at all levels.
- Negative public image.
- Negative self-image.
- Increased incidence of stressful events and daily hassles
- Incretion of several ideation and depressive problems
- Dissatisfaction due to non-grant of leave.
- Inadequate housing / security of the family
- Staying away from the family and children
- Dismissal / removal / suspension from services
- Severe injury / loss of limb
- Departmental enquiry

It is identified that some important chronic police stressors are neglecting family life, job boredom, quantitative overload of documentation, noxious physical environment of work, poor communication channels, inadequate praise and rewards for job well done, procedural injustice, role ambiguity and role conflict. Neglecting family life is building up to be one of the main causes of stress among Mumbai police force. It was a common guilt among the police staff at all levels that they are unable to spend even a little qualitative and quantitative time with their spouse and children. The reasons are as common as long hours of duty without breaks, absence of leaves, no planning of holidays whatsoever, cancellation of leaves at any moment. This also generates stress among the family members. Some of them are under more stress when family members are unable to understand their problems, or they misunderstand them. Job boredom refers to long periods of physical inactivity and repetitive work which induces the boredom to the person. This is more applicable to police constables having bandobast duty on the road for VIP with long hours of waiting. Quantitative work overload is one of the reasons. It is a known fact that as compared to the developed countries in the world, the police work force in India carries a burden heavier than they are trained or expected to do. Noxious physical environment, high level of air pollution and dangerous equipment are also responsible for the rise in the stress. Relationship with the top level, if not amicable can create further problems for the individual involved. Policies which are framed for work assignments, procedures and personal conduct can also be listed as one of the major stress concerns among the police work force in the metro region of Mumbai.

## **REVIEW OF LITERATURE**

Transactional Theory of Stress and Coping by Lazarus and Folkman (1984) do provide a solid foundation to understand stress based on their own thesis and their research.

A study of police stressors and attitudes towards seeking psychological help by Arthur Wlodyka concluded that many officers experienced significant amounts of stress while being subjected to overload of paper works. The qualitative study also illuminated some of the horrific trauma police officers are exposed to on a regular basis. Males and females in this study did reported similar levels of stress among them, with no significant difference at all. Paperwork was also seen as an organizational constraint much in the same way as computer work is classified as an organizational stressor. Staff shortages were identified as the top organizational stressor.

A report by US Department of Health and Human Services brought to the notice in their report of stress among police officers that job uncertainty and role ambiguity was major reasons for their stress. Lenient court ruling and negativity among the community led to decrease in the morale of the police personnel.

## **SIGNIFICANCE OF STUDY**

The primary reason of this study was to gain information about on field and organizational stressors identified in the police work force. Simultaneously, the goal included to understand the attitudes of officers towards mental health issues and help the police department to take the required steps to improve it accordingly. To help the police department to undertake certain measures for the betterment of their police force physically as well as mentally.

## **RESEARCH METHODOLOGY**

### **PURPOSE OF RESEARCH**

Police work is an all-time demanding profession and is frequently cited as a high stress occupation. Yet previous studies have only focused on organizational stressors and safety risks associated with the job only, often overlooking the effects of secondary traumatization as well.

### **RESEARCH DESIGN**

Recent research on police work force stress levels and coping has involved both the qualitative and quantitative approach. A quantitative approach was selected as this approach allowed us as the researchers to reach a wider range of participants, use standardized questions and responses, while providing a high degree of anonymity. Not only it provided greater anonymity but also the survey method allows for ease of coding information. The closed-ended questions with pre-categorized proposed answers greatly reduces the potential of interviewer's misinterpretation of responses at all levels.

## OBJECTIVE OF RESEARCH

- To identify stress levels among police work force
- To understand the cause of job-related stress among police personnel

## METHOD OF DATA COLLECTION

The study involved three medium sized police departments in the Mumbai metro region.

The link to the electronic version of the research survey was distributed among them. After completing the research survey, a debriefing statement was also presented, which included contact information to reach the researchers with any questions, or to request a copy of the findings as well.

## LIMITATIONS OF THE RESEARCH

- Limited to only the police force in Mumbai city.
- Inadequate amount of time.
- Police officers unwilling to contribute to the research and voice their opinions.

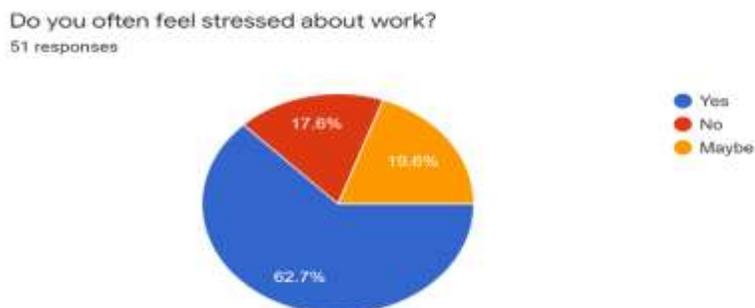
## DATA ANALYSIS

Research was conducted using secure online questionnaire prepared by the researchers and analysed with online tools. Descriptive analysis identified the most frequently mentioned stressors, which was further subcategorized by length of service groups. Qualitative data was analysed and reported.

## FINDINGS:

### MEAN:

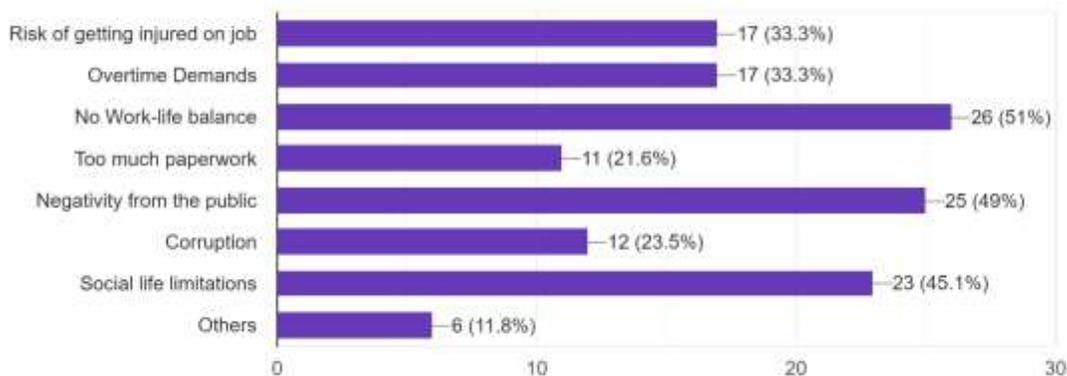
According to the questionnaire,



We can infer that on an average 62.7% of personnel have reported that they are under stress in the current police work force. Almost 2/3<sup>rd</sup> of the police force in metro region of Mumbai is under stress of various types.

What are some "work related" stress that you have?

51 responses



In accordance to the next question we can understand that the most responses (26 personnel) for work related stress was:

- No work life balance

### RECOMMENDATIONS

- Police Departments should consider to reduce work hours.
- Mandatory counselling sessions every month.
- Provision for group therapy
- Stigma around mental health issues should be tackled and taken care of.

### CONCLUSION

This research deals with the occupational stress among police officials. The researchers have made an attempt to know about the related stress levels and stressors among police constables and police officers. The conclusion was drawn that there is significant number of stressors in police officer's day to day life. In case of police work force, it was found that they have more stress to deal with both on and off the field. Nonetheless, organizational stressors were a major significant source of police stress in the sample we collected.

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# “A Study related to motivity challenges faced by Divyang’s in Mumbai”.

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## ABSTRACT

Indian is grappling with a lack of infrastructure for the disabled. Most of the time the country is unable to reach a large fraction of affected people. Even though the government is consistently trying to bridge this gap, the infrastructure is not enough to support the affected divyang. Hence a research came into being related to the Divyang People in Mumbai. It estimates a vary about 25 million people in India were found to have disability as per the official statistics. Discussing this important aspect was a crucial one for this research. The objectives are basically to study the problems faced by them also to find a solution for the DIVYANG in Mumbai. After a vivid research by visiting certain places across Mumbai, came down to a conclusion that most of the services for the DIVYANG was present only in hospitals. Which got a striking thinking in mind for better infrastructural development across Mumbai for the better well-being Adding to this people with disability are further disabled through unequal treatment and denial of basic rights by society in general. This research revolves around the functioning improvement for the DIVYANG specifically.

**KEYWORDS-** *Divyang, Locomotive Disability, Mumbai*

## INTRODUCTION

The word Divyang is a Hindi word meaning the one with a divine body. This term was introduced by our current Prime Minister Narendra Modi in his In Mann Ki Baat radio program, on 27 December 2015. What does Locomotive disability mean its means Loco – From a place and Motor – Causing Motion. AS per the facts we came to know that according to 2011 Census India: 2.68Cr Person i.e. 2.21% out of which Movement Disability – 5,48,418. In current status we came to know that No Separate tracks for disabled people to travel independently

There are only schemes that is -Accessible India Campaign

- Government of India Ministry School Justice and Empowerment

## SIGNIFICANCE

- To advocate the rights, freedoms and interests of persons with disabilities
- To encourage responsible authorities and society to help solve problems and emerging issues relating to persons with disabilities
- To disseminate information about the organization's activities, projects, and their results.
- The most important factor about the DIVYANG is their accessibility throughout the city

- Thinking critically and carefully about disability is a crucial part of helping our students understand their society, their relationships, their families, and their own experiences and to making the world more accessible and accepting.

## **OBJECTIVES**

- To study about the problems faced by Divyang people.
- To understand if there are any special provision made for locomotive disable people for travelling.
- To find out a solution for a Divyang people to be independent

## **HYPOTHESIS**

**H<sub>01</sub>:** there are no problems faced by Divyang people to travel independently.

**H<sub>11</sub>:** there is a problem faced by Divyang people to travel independently.

**H<sub>02</sub>:** There is no significance difference in the perception about the special service provided for travelling.

**H<sub>12</sub>:** There is a significance difference in the perception about the special service provided for travelling.

## **LITERATURE REVIEW**

May 12, 2012 Department of empowerment of persons with disabilities: meaningful trust to the activities aimed at welfare and empowerment of the Persons with Disabilities, a separate Department of Disability Affairs was carved out of the Ministry of Social Justice and Empowerment. In the Times of India (2017), it stated that, a survey of 53 public utility buildings conducted under the union government's Accessible India Campaign showed that the Mumbai is not a friendly place for disabled people. Eight out of 10 buildings don't have ramps as an alternative to stairs for wheelchair-bound people. Scheme of Assistance to disabled persons for purchase/fitting of aids- the main objective of the Scheme is to assist the needy disabled persons in procuring durable, sophisticated, and scientifically manufactured, modern, standard aids and appliances that can promote their physical, social and psychological rehabilitation, by reducing the effects of disabilities and enhance their economic potential.

Unique Disability ID: The UDID project initiated by Department of Empowerment of Persons with Disabilities aims at building a holistic end-to-end integrated system for Issuance of Universal ID & Disability Certificates for Person with Disabilities with their identification and disability details.

## **SOURCES OF DATA COLLECTION**

Primary data-Data collected through a Google form and informal talks with handicap people

Sample size – 60

Respondents- physically handicapped people

Secondary data-Data collected through

Article and websites.

Literature review, newspaper, magazines

### DATA COLLECTION

A questionnaire was prepared and the data was collected from

1. KEM hospital
2. TATA hospital
3. All India Institute of Physical medicine and Rehabilitation

Questionnaire was sent as a Google form across relatives to collect data

[https://docs.google.com/forms/d/e/1FAIpQLSf9hgFXlcxjviSx3bI86l\\_14w6xviCF0iEQQu9VM0IMcySx4A/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf9hgFXlcxjviSx3bI86l_14w6xviCF0iEQQu9VM0IMcySx4A/viewform?usp=sf_link)

### RESEARCH FINDING

#### DATA ANALYSIS

- **Frequency Distribution-**

53% (Age group 21-40)

88% respondents feel sad when they cannot travel.

- **One sample test-**

$P=0.000$  less than  $\alpha/2= 0.025$  (**reject Null Hypothesis**)

- **One Sample Statistic -**

Mean Value =1.10(Agree)

### HYPOTHESIS TESTING

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Special Services	-48.647	59	.000	-1.900	-1.98	-1.82

#### Data Interpretation:

The Significance value is 0.000 which is less than 0.025. Hence we reject the Null Hypothesis and accept the alternative hypothesis there is a significant relationship between the Divyang people and the problems faced by them to travel independently

#### One Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Special Services	60	1.10	.303	.039

#### Data Interpretation:

- The Significance value is 0.000 which is less than 0.025. Hence we reject the Null Hypothesis and accept the alternative hypothesis There is a significance difference in the perception about the special service provided for travelling. Since the mean value of one sample statistic is 0.01 i.e as per our likert scale 1 stands for extremely satisfied. Thus this means that if special service are provided they will be extremely satisfied

#### SUMMARY FINDINGS

- From the above research we have found out that 53% of people who are locomotive disabled is in the age group of below 40.
- When question asked whether they like travelling 98% responded yes\
- Around **80% of the responders require someone** to assist them.
- There is a huge emotional imbalance with the physically challenged, as according to the research **88% of them feel sad** as they are not able to travel.
- **85% of the responders are dissatisfied** with the public transport.
- **60% of the respondents have agreed** when questioned about the special arrangement made for them **58% of the special arrangement** are found only in **hospitals** which explains that rest of the places in the city are not disabled friendly.
- When asked whether they would feel happy if special arrangements were constructed for them, they were extremely delighted. This urged us more to signify the research for them.
- **41%** of the respondents stay quite distant from their workplace

#### CONCLUSION

- The research entirely summarizes on making the city a disabled friendly one.

- To make a difference about in the city by constructing special tracks and ramp walk for locomotives.
- **Words** play an **important role**.

### **RECOMMENDATION**

- There should be an extensive change in infrastructure throughout the city
  - Special ramps
  - Pavements for the disabled people
- The public transportation for i.e. Buses needs to have a lower stepper.
- Better policies need to be framed for the locomotors.

The municipal corporations needs to abide by certain standards provided by the government for making the city a disable-friendly

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# **A study of education and employment opportunities for Kinner in Mumbai.**

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## **Abstract:**

This study will help the society to understand the vision of the Kinner community in Mumbai. This will change the perception of an individual towards them. Apart from this, it will open the gates of the educational institutions and the corporate world. While doing the research we've observed that if any amendments are made, it will be accepted. As far as we have come across, we have seen that most of the kinner are self-employed. The corporates are not willingly to accept them. They fear the society as to not accepting them as they are. The society should not look at them as a different community and should be given equal rights. People should be aware of the existence of this community. Due to the stereotypical mindset, it has become difficult for them to survive unlike a normal human being. We conclude by saying that kinner are no different but just human being having special qualities in them. They should be treated equally and also given the rights of a citizen. E3 is our recommendation of the whole study.

**Keywords:** - Kinner, Education, Employment, Mumbai

## **Introduction**

Kinner's are also known as Hijras or Third gender. Hijras are physiological males who have a feminine gender identity, adopt feminine gender role, and wear women's clothing. They do not conform to conventional notions of male or female gender but combine or move between the two. Hijra is an Indian word. In English it is also known as "eunuch" or "hermaphrodite." They use a specific secret language named as Hijra Farsi. They are known by different names in different parts of the country, i.e. Jankha in Punjab, Khadra in Sindhi, Mangalmukhi in Karnataka, Maada in Tamilnadu, etc.

## **Objective**

- To understand the perception regarding the acceptance of education by Kinner community.
- To recognize the employment opportunities available for Kinner community in Mumbai.
- To understand the sociocultural exclusion and their consequence plights in Indian society.

## **Significance**

- The importance of our study is to understand the employment and education opportunities currently existing for the Kinner Community in Mumbai.
- This will help the society to change the mindset of the society and accept them like a normal human being.

## **Research methodology**

PRIMARY DATA: Sample size(N)= 70,

Target audience = Kinner's of Mumbai (Haji Ali, Local trains, Antop Hill)

SECONDARY DATA: Articles, Magazines, Research papers.

### **Hypothesis**

- H<sub>01</sub> - There is no significant difference regarding the perception about getting educated.
- H<sub>11</sub> - There is a significant difference regarding the perception about getting educated.
- H<sub>02</sub> - There is no significance difference regarding the perception of employment opportunities and reservations for the Hijra community.
- H<sub>12</sub> - There is a significance difference regarding the perception of employment opportunities and reservations for the Hijra community.

### **Review of Literature**

Think Change India (21<sup>st</sup> March, 2018) stated A transgender from West Bengal, Manabai Bandopadhyay, made history on June 9, 2015, when she was made the college principal at Krishnagar Women's College in Nadia district. She is the first transgender to have achieved this feat. Manabai started a magazine, Ob-Manab, especially made for transgenders, in the year 1995. She was also briefly married to a man who soon started feeling uncomfortable because of the nosiness of neighbors, and they eventually separated. She has an adopted son.

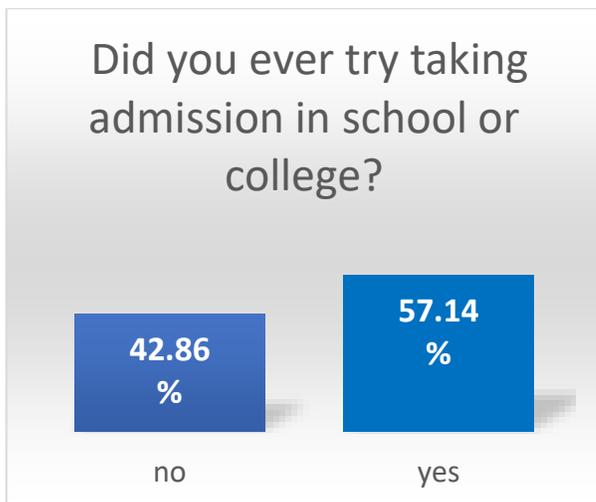
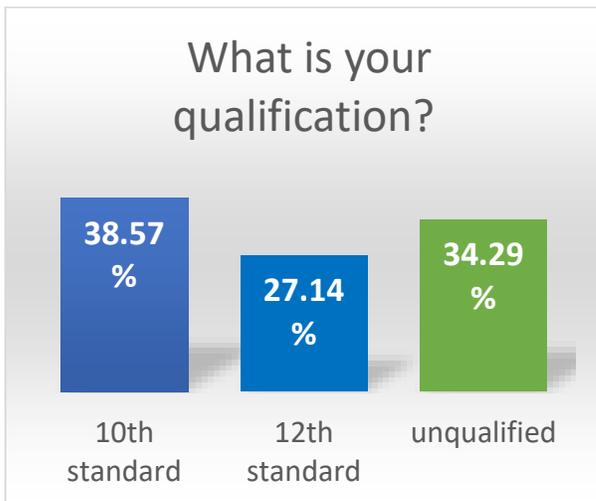
International journal of culture and mental health (Volume 5- Issue 2, 2011) stated Indian society has been tolerant of diverse sexual identities and sexual behaviors as is evident from its mythologies and ancient scripts like the Kamasutra. The transgendered hijra community has evolved to form a unique subculture within Indian society, existing alongside the ubiquitous heterosexual family. This subculture has been clandestine about its customs and lifestyle, but the scene is changing. Although awareness about HIV-AIDS issues in this community is increasing both among the community members and the health professionals, the same cannot be said about mental health issues.

The Economic Times (20 July, 2019) stated for the first time, the Bill has defined transgenders and has ensured family life for transgender children, made provisions for sex reassignment surgeries, psychological counselling and protection against any form of discrimination against transgender people. If passed, the Act will provide for major education, social security and health facilities for transgender people. The government has decided to pay for medical care facility including sex reassignment surgery and hormonal therapy for transgender people through a health insurance scheme. The government has ensured that a person does not have to appear before a screening committee to be declared a transgender. It has recognized a person's "right to self-perceived gender identity".

### **Research findings**

- 38.57% have completed their 10<sup>th</sup> standard (SSC), 34.29% of the total respondents are unqualified and 27.14% have completed their 12<sup>th</sup> standard (HSC).
- 57.14% of respondents tried taking admission into colleges, whereas 42.86% respondents did not try taking admission.

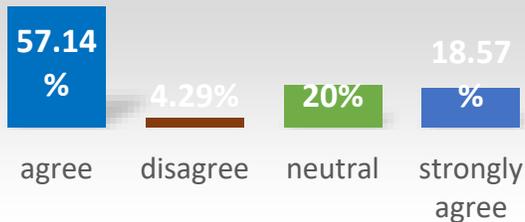
- 55.71% of the total respondents agree for accepting the amendments regarding the education, where as 34.29% strongly agreed and 10% of the total respondents are neutral.
- 57.14% of the respondents of the total sample size agree for accepting the amendments will be made regarding job reservations, while 20% are neutral, 18.57% strongly agree and 4.29% of the respondents disagree.
- If given an option, 40% of the kinnners would like to take beautician as a profession, 30% would opt for teaching, 15% would like to start a business and 15% have yet not decided.



If any Amendments are Implemented regarding education, will you accept it?



If any Amendments are Implemented regarding job reservation, will you accept it ?



**Testing hypothesis**

ONE-SAMPLE TEST						
	Test Value = 3					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Education	-16.663	69	.000	-1.243	-1.39	-1.09
Job Reservation	-10.107	69	.000	-.900	-1.08	-.72

ONE-SAMPLE STATISTICS

	N	Mean	Std. Deviation	Std. Error Mean
Education	70	1.76	.624	.075
Job Reservation	70	2.10	.745	.089

### Data Interpretation

FD = 38.57% (Age 31 to 35 years).

One pair test  $P = 0.000$ .  $\alpha/2 = 0.025$  ( $H_{11} \mu \neq 3$ ). One Sample statistic = Mean 1.76 (Agree). Therefore, we reject the null hypothesis ( $H_{01}$ ) and accept the alternate hypothesis ( $H_{11}$ ). There is a significant difference regarding the perception about getting educated. As per one one sample statistics mean value is 1.76, which means majority of them agree based on Likert scale.

One pair test  $P = 0.000$ .  $\alpha/2 = 0.025$  ( $H_{12} \mu \neq 3$ ). One Sample statistic = Mean 2.10 (Agree). Therefore, we reject the null hypothesis ( $H_{11}$ ) and accept the alternate hypothesis ( $H_{12}$ ). There is a significance difference regarding the perception of employment opportunities and reservations for the Hijra community. As per one sample statistics, mean value is 2.10, which means majority of them agree based on Likert scale.

### Conclusion

Every human being in this world is unique, so rather than discriminating them- we should accept the whole heartedly. Change in perception is the only constant. It would thus be wrong to judge and discriminate people who may be different from the stereotype, which again is man-made. It is time that we should realize that every individual in this country has equal rights and privileges, and follow the policy of "live and let live." In today's era, opportunities for the Kinner community in Mumbai has increased comparatively but still has not been completely there. The standard of living is being evolved but at a diminishing rate. Until and unless, the society and our culture doesn't accept them, we cannot make their existence to be valued.

We can try and not to discriminate them from a normal male or a female, by giving them the similar respect and importance. It's been years since they have been discriminated, so now we can change the legacy and get them counted as a normal Indian citizen in every possible way.

### Recommendation

Our recommendation for this research is E<sup>3</sup>.

- Existence: - The existence of the Kinner community should be valued.
- Education: - Proper education opportunities should be provided them, irrespective of what gender they belong to.

- Employment: - Employment should be offered to them without any gender biasness.

### ***Practical approach***

Creating awareness through social media as it is one such platform which has the maximum reach. This will help us to change the stereotypical mindset existing in the society. Special reservation for the Kinner community is already existing, but they is no implication in practical life. Therefore, we mainly focus on the rights and reservations which they can utilize for the betterment of their future.

### **Further scope: -**

In future if we get a chance, we would understand the corporate perspective, which will help us to know the stand of Kinners in the corporate world. As the world is evolving and so is the corporate community.

Just like how we approached the Kinner community in Mumbai, we have framed a questionnaire for the corporate companies and would have included questions which would give us the answers about what their perception is regarding the employment given to the Kinner community. Would the corporates accept them as they are? would they give the Kinners the opportunity and the facilities needed? etc. Also, we would like to raise a voice regarding the complete implementation of the government policies which are existing. It would be our pleasure to be the voice of the Kinner to the world out there.

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# To Study About the Cyber Crime in Wadala Area

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## ABSTRACT

This study has all the things included in it which shows the effects of cyber crime. All the problems faced by people in their locality due to cyber crime or any other Internet scam. Some primary data is used in this research for getting the review from the people of what problems they have faced and in which crime they were caught of. Also, the research has the suggestion for people also the limitations and effectiveness of the research is there.

**KEYWORDS-** Cyber Crime, Wadala Area.

## INTRODUCTION

The Cyber Crime is a criminal activity that involves computers, most fake website also any network or networking site. In this research all the information, cases of before how the Cyber crime was happened. With the primary data and secondary data. Stating all the problems faced by the people also with the suggestions or solutions. By conducting this research people will be more aware as primary data is used in it. All the main analysis is included in it with the research methodology, objectives, etc. It also concludes why the crime is increasing or the people are aware of it. The information extracted from the people but primary ways and its phases.

## REVIEW OF LITERATURE-

1. **Shadow Cyber Threat intelligence** that is obtained in an unstructured and ad-hoc manner from publicly available cyber security information sources such as security expert blogs or mailing lists. Although these information sources are used by employees as input for critical information security and risk management processes, they often have not received any formal IT department approval or assessment which raises issues in analogy to phenomenon of shadow IT. The Study revealed that many heterogeneous and overlapping cyber security information sources serve as input for information security and risk management processes and that the obtained shadow threat intelligence is shared internally in a largely unstructured and informal manner.

**2.Cyber Security for Our Digital Life** Vairaprakash Gurusamy, Bhargav Hirani Student, Department of Computer Applications, Marwadi University, Rajkot, India, this paper focuses on cyber security emerging trends while adopting

new technologies such as mobile computing, cloud computing, e-commerce, and social networking. The paper also describes the challenges due to lack of coordination between security agencies and the critical IT infrastructure

**3. A Survey Report On Cybercrime Awareness Among Graduate and Postgraduate Students of Government Institutions In Chikmagalur, Karnataka, India** D A Prathima Mathias Assistant Professor, Department of Chemistry, I.D.S.G. Government College, Chikmagalur- 577102, Karnataka, India. These research mainly covered three aspects like 1. Basic purpose of using the internet and related aspects 2. Level of understanding about cybercrime and 3. Type of education needed on cyber security and cybercrime. Students 250 in number with age groups between 17-21 years were randomly picked for the survey. 95% of students use mobile for internet surfing, 29.6% of them use it for downloading pictures/video and 36.6 % use it for music. There are 77.5 % who use the internet for Social Networking. On an average 50% and more of them have no ideas about the types of cybercrime.

## **RESEARCH METHODOLOGY**

### **3.1. PURPOSE OF RESEARCH-**

The main purpose is that the people should be aware about the Crimes happening from the Internet, via SMS, Networking sites, etc. Daily people use and get trapped with all these scams then they get charged, their Bank details the hackers have by this they remove the amount from the people's accounts. People who download some software's and blindly trust these software's and indirectly they also collect the data from the peoples phone. All these are the problems faced by the people by these Crimes.

### **3.2. OBJECTIVES OF THE RESEARCH-**

- i. To know about the law related to the Cybercrime.
- ii. To understand about the awareness about the Cyber Crime happening around them.

### **3.3. METHODS OF DATA COLLECTION-**

- PRIMARY DATA- Questionnaire survey.
- SECONDARY DATA- Some of the data in this Research is collected. by the Reputed Journals, Newspaper, and from various Websites.

### **3.4. RESEARCH DESIGN-**

This Research is Descriptive in nature

### **3.5. DELIMITATIONS OF THE RESEARCH-**

Only in Wadala Area

### **3.6. LIMITATIONS OF RESEARCH-**

The researcher had physical time and money constraints.

### **3.7. DATA ANALYSIS METHODS-**

The Data is collected from the online survey and the answers i.e. findings are as follows

## **FINDINGS OF THE RESEARCH**

1. 50% of wadala, people are aware about cybercrime,13.33% still need more awareness about cybercrime.
2. 51.72% of wadala, people feels that their information is safe and rest of them does not feel that it is safe
3. 86.12% of Wadala people agreed that all transactions online should be safe.
4. Most of the people in wadala,have lost their money due to cybercrime, almost 30% of wadala, people have been trapped by cybercrime via fraud by mercantile, money got deducted from bank a/c etc.
5. 30% of the wadala , people have stopped online shopping due to the issue of cybercrime.
6. 30% of the wadala, people have been victims of cybercrime.
7. 45% of the wadala ,people agreed that laws regarding cybercrime are able to control it.

## **CONCLUSION**

Most of the people in Wadala Area are aware about the Cyber Crime but also some of them have been trapped via Mercantile,etc and because of this it has been the result that people stop their online transactions on a daily basis in their life. And they think the laws regarding crime are able to stop it. And it should be known to everyone. To get aware about these things.

## **SUGGESTIONS**

- Use a full service Inter
- net security site.
- Use strong passwords
- Keep your software updated.
- Manage your social media settings
- Take measure to help protect yourself against theft and identify them
- Strengthen your home network

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# A study on problems faced by commuters in the vicinity area of Dadar Station

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## ABSTRACT

Dadar is the first planned area of Mumbai. It is also an important center for rail and bus services with local and national connectivity. Dadar station is the only railway station common to the central and western lines. This makes the station a transit point for thousands of passengers using the Mumbai Suburban Railway and one of the busiest stations on the network. Thus it creates various problems and the commuters and local people are facing problems like sanitization, illegal hawkers, implementation of policies etc. This research also provides certain solutions for its betterment.

**KEY WORDS:** *Dadar Station, Railway Commuters, and Indian Railway*

## INTRODUCTION

Mumbai is the financial and commercial capital of India. Mumbai would not have been successful without the city's lifeline - its local trains. Dadar is a densely populated residential and commercial area. Dadar is also a hub of Marathi culture. It is also an important center for rail and bus services with local and national connectivity. Dadar station is the only railway station common to the central and western lines. This makes the station a transit point for thousands of passengers using the Mumbai Suburban Railway and one of the busiest stations on the network. Dadar station has total 15 platforms (8 for central and 7 for western) It receives approximately **5.77 Lakh passengers** per day. Its stations codes are **DR(CENTRAL LINE), D (WESTERN LINE), DDR (MAINLINE)**. It was always the only place to change lanes and people came and went for several kilometers because the trains were better than the roads in Mumbai.

## REVIEW OF LITERATURE

**Shikha Agarwal (2013)** the purpose of this observational study is to document human behavior - activities and environmental relationships, as it questions the safety and usability encountered by train commuters, and uses general conclusions to further research through experimental research and interviews. Based on person-environment

interaction, research focuses on various users differentiated by health, language, gender, economy and age to learn more about the issues that affect the larger masses.

**MRVC and SIR JJCOA Consultancy cell (2012)** out of a total of 116 stations on the central, west and port lines of Mumbai, we tackled 11 stations. Trespassing is a huge problem that occurs in almost every station in the Mumbai rail corridor. The studies carried out by Sir J.J. The advisory body of the College of Architecture in fact addresses the most intrusive places on the west and central lines of Mumbai.

**Aishwarya Narayanmurthy (2012)** Mumbaikars, that is, the people of Mumbai face a number of difficulties daily journey by local train. The main problem is that of overcrowding. Due to overcrowding, commuters travel in jam compartments with no chance of having a place to sit and have to cover the distance all the time standing in the compartment. Sometimes they come in first, second or any compartment due to lack of space. Since around 22 million passengers travel daily, becomes very difficult to get hold of ticketless travelers and Indian railways and the government loses a large part of their revenues because of this. In stations, a sufficient number of counters, washing rooms, especially for Ladies and Travelers, there is a lack of sufficient provisions to eat and rest and, therefore, on days of heavy rain, waterlogging, late trains, accidents, commuters suffer a lot. Overcrowding, illegally crossing railway tracks, standing on the steps of the doors the compartments, leads to many accidents during rush hour.

## **RESEARCH METHODOLOGY**

### **3.1. PURPOSE OF THE RESEARCH:**

The purpose behind the research is to identify the problems faced by commuters in the vicinity area of Dadar Station. The problems like CROWDED AREA,

ABSENSE OF SANITIZATION,

PARKING PROBLEMS etc.

The study has been taken place in dadar station and 500 meters area around it.

### **OBJECTIVES OF THE RESEARCH:**

- To identify the reasons behind the problem.
- To study problem faced by people from different age groups.
- To examines the policies of BMC regarding nearby area of Dadar station.
- To suggest measures regarding to it.

### **METHOD OF DATA COLLECTION:**

- Primary data through questionnaire & survey.

- Secondary data through web, articles.

### **RESEARCH DESIGN:**

The research design deployed was exploratory research design. It was descriptive in nature.

### **LIMITATIONS OF RESEARCH:**

- Some of the respondents left some questions blank without answering. So; we couldn't get the accurate result of our data analysis.
- Some of respondent were not very willing to answer the questions.

Delimitation of our study is that we make boundaries as the research is limited to Dadar station only not other such station in Mumbai which also have similar kinds of problem.

### **DATA ANALYSIS METHOD:**

Data is collected at Dadar station and various websites to generalize the findings and draw conclusion of the research study.

### **FINDINGS OF THE RESEARCH**

- Relatively younger people are more comfortable to prefer to travel through Dadar station.
- Most of the people are daily travellers.
- Most of the boards and indicators are in english language which is difficult to understand for people who are not comfortable with it, location of toilets are difficult to find
- People travel via Dadar station are approximately **5.77 Lakh passengers** per day, but as per our sample size approx. 78% of people are facing various problems.
- Due to vendors bridge get crowded, which connect Dadar East to West
- People of age between 30 to 40 are more seen travelling through Dadar station, as above 40 years of age are mostly well settled so they mostly prefer two or four wheelers.
- As research found that the certain **bridges or nearby place** are comes under **BMC** but they are not implementing the policies regarding it effectively.

### **CONCLUSION**

Dadar is the first planned area of Mumbai. Dadar station is the only railway station common to the central and western lines. This makes the station a transit point for thousands of passengers using the Mumbai Suburban Railway and one of the busiest stations on the network. It has been concluded that passengers or commuters are facing various kinds of problems like problems due to hawkers, sanitization, parking problem, navigation boards in local language, rush during

peak hours etc. so the responsible railway department also not implementing their policies properly and in effective manner.

### **SUGGESTIONS**

- At railway station theirs should be multi lingual boards
- Police should make sure that hawkers should be atleast 100m away from station
- The railway department should provide parking facilities with reasonable charges
- There should be proper direction board

People responsible for such kind of problems need to have a look in problem and also by addressing the problem obtain solution for it by implementing the policies of the railway department and BMC.

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# **STUDY OF INVESTOR BEHAVIOUR WITH REGARDS TO EQUITY SHARES**

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## **Abstract:-**

It is the data which researcher collects for the purpose of his/her study and is original in nature. The primary data was collected in Mumbai through a questionnaire and survey method. A structured questionnaire was considered comprising of closed ended questions. Data was collected with the help of Google forms as well as with personal meeting with the respondents. This chapter present statement of problem, objectives of the study, scope of the study, limitation of the study, collection of data, sample size, technique and tools to be used. Research methodology is the specific procedures or techniques used to identify, select, process, and analyze the information about the topic. In a research paper, methodology section allows the reader to critically evaluate a study's overall validity and reliability. The methodology section answers two main questions: How was the data collected or generated? How was it analyzed?

## **Introduction:-**

Over the last few decades, the average person's interest in the equity market has grown exponentially. This demand coupled with advances in trading technology has opened up the markets so that nowadays nearly anybody can own equity. Despite their popularity, however, most people don't fully understand equity. Chances are you've already heard people say things like "Watch out with equity--you can lose your share in a matter of days!". Equity can (and do) create massive amounts of wealth, but they aren't without risks.

## **The Definition of Equity**

Plain and simple, equity is a share in the ownership of a company. Equity represents a claim on the company's assets and earnings. As you acquire more equity, your ownership stake in the company becomes greater. Whether you say shares, equity, it all means the same thing.

Holding a company's equity means that you are one of the many owners (shareholders) of a company and, as such, you have a claim (albeit usually very small) to everything the company owns. Yes, this means that technically you own a tiny sliver of every piece of furniture, every trademark, and every contract of the company. As an owner, you are entitled to your share of the company's earnings as well as any voting rights attached to the equity.

## **Limitations**

**Following are the limitations of the study:**

- The capital market includes primary market, secondary market, term- lending institutions, banks and investors. But the stock market which constitute the major portion of capital market have been significantly studied. However, the other institutions involved in the market have been relatively given lesser attention and coverage.
- The study is confined to Mumbai district only. Hence the finding may not be generalized for the other parts of the country.
- As the analysis is based on primary as well as secondary data, possibility of unauthorized information cannot be avoided.
- Since the study is mainly concerned with the primary data obtained from the sample respondents, their preference could change from time-to-time.

## **Review of literature**

- 1 Deepa Mangala and R.K.Mittal(2005) “Anomalous price behaviour-An evidence of monthly effect in Indian stock mark”

Concluded that the mean return for the first half of a trading month is significantly higher than the mean returns for the second half. The increased liquidity might induce the demand for equities resulting in the monthly effect.

- 2 Joseph Anbarasu D,Clifford Paul S and Amette B(2011)

“An empirical study on some demographic characteristics of investors and its impact on pattern of their savings and risk coverage through insurance schemes”

Their study reveals that the people are aware about the importance of saving, but the awareness about investment opportunities is low.

- 3 Mittal M and A.Dhade (2008) “Personality type and investment choice :an empirical study”

Observed that risk-taking involves the selection of options that might result in negative outcomes. While present is certain, future is uncertain. Hence, all investment involves risk.

- 4 Dhananjay Rakshit (2008) “Capital market in India and abroad –a comparative analysis”Concluded that Indian Market is being continuously preferred by the foreign investors and the only cause of concern is its high analyzed volatility.

## **Objective:-**

### **Following are the objectives of the present study**

- To study what factors affects the investment decision of the people
- To study whether people will prefer to invest in private or government sector
- To understand the investment objectives of people.
- To make people aware about taxation benefits from various investment opportunities

## **Methodology:-**

## **PRIMARY DATA**

It is the data which researcher collects for the purpose of his/her study and is original in nature. The primary data would be collected in Mumbai through a questionnaire and survey method. A structured questionnaire comprising of closed ended questions. Data would be collected with the help of Google forms as well as with personal meeting with the respondents.

## **SECONDARY DATA**

Secondary data would be collected through internet on Wikipedia and various other websites. Also, various magazines, books research paper related to equity and investor behaviours would be referred.

## **Findings:-**

- 21 respondents were male and 34 were female. Hence, it is concluded that female have shown more interest in the study.
- Most of the respondent belongs to the age group of 20-30. They showed more interest towards investing in equity shares. On the second is the age group of 50-60 i.e 10.9% , third space is occupied by the age group of 30-40 i.e 9.1 %. In the present study the least respondent is of the age group 40-50 i.e 5.5.
- Most of the respondents belong to income group below 2.5 lakhs. Followed by that is the respondent of income group between 2.5 lakhs – 4 lakhs i.e 16.4 % and then income group above 8 lakhs i.e 7.3% . The least is of the income group from 4 lakhs- 8 lakhs i.e 7.2 %. Therefore, the least respondent is of the income group 4 lakhs to 8 lakhs.
- 27.3 % respondent have shown interest to invest in equity shares and 72.7 % respondents says they do not invest in equity shares.
- People prefer Mutual fund as their best option for investing whereas 25.5 % people prefer to invest in share market. 21.8 % people feel that investing in gold is best option for their investment Only 14.5 % respondent choose banking institution for investment.
- The factor that that is considered mostly is returns followed by safety of investment and at last tax benefit.
- Majority of the respondents which accounts for 58.2% of the total is more likely to invest for the short term followed by 41.8% respondents who are likely to invest for long term.
- As per the study the people prefer equity share over preference share as their investment option.
- 34.5% respondent were aware about the share market and 65.5% respondent were not aware.
- 87.3 % people want to do market research before investment while 12.7% people do not prefer market research.
- 25.5 % of the respondents contribute towards the occupation of service sector which secured the second place and at the first place is the sector of student i.e.60 %. At the third place is the business sector which is 14.5 % .
- 36.4% thinks that investment in equity is very risky compared to other investment avenues followed up by security of capital i.e 20%. 31.2% believes that there is no guarantee of getting back capital they have invested and last but not the least is fluctuating rate of return i.e. 25.5%.

- 47.3% of the respondents believes that higher return is the most important benefit aspect followed up by 32.7% profit aspect. 20% respondent believes dividend aspect is the benefit of investing in equity shares.

### **SUGGESTIONS: -**

I would suggest that people or investor in India should invest their money in equity shares for long term financing and long-term growth. The people who are ready to take risk must invest their money or savings into equity shares which earn them more returns. The basic rule i.e. higher risk is equal to higher returns.

### **Conclusion:-**

It was concluded from this study that more than half of the respondents prefer to invest in equity shares. It was also found that 56% of the respondents agree to invest their money for a short term period .In India most of the people still feel like investment in equity shares is very risky. Most of the investor considers market research before investment in equity shares due to various factors which affects the minds of the investor.

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# A COMPARATIVE STUDY ON INVESTMENT OF REAL ESTATE VS. STOCK MARKET

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## ABSTRACT:

An investment refers to the commitment of funds at present, in anticipation of some positive rate of return in future. Today the spectrum of investment is indeed wide. An investment is confronted with array of investment avenues. It is the investment objective and investment pattern which also guides the investor in choosing the right avenue for his investment purpose.

Whether it's planning for retirement, saving for a college fund, or earning residual income, you need an investment strategy that fits your budget and your needs. Many individuals first consider turning to the stock market when they think of investing. While the market is a common investment option, there is another investment vehicle that could be more effective. Real estate investments offer an alternative to the stock market. Under the right circumstances, they may be low risk, may yield better returns, and generally offer greater diversification.

This research examines the effects of diversification on the reduction of total portfolio risk in real estate investment trusts and mixed-asset portfolios. In addition, overall performance measures are calculated and compared among REIT, common stock, and mixed-asset portfolios.

The study has been undertaken to do a comparative study between real estate and stock market. Both real estate and stock market have unique characteristics. The study has revealed significant information on what would be the best form of investment between property and shares to investors just starting. This project contains the investor's preferences and as well as the different factors that affect investors decision on the different investment avenues.

**Keywords:** *stock market, real estate, comparison, investment*

## INTRODUCTION

An investment is an asset or item acquired with the goal of generating income or appreciation. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or will later be sold at a higher price for a profit. The term "investment" can refer to any mechanism used for generating future income. In the financial sense, this includes the purchase of bonds, stocks or real estate property.

Additionally, a constructed building or other facility used to produce goods can be seen as an investment. The production of goods required to produce other goods may also be seen as investing.

Real estate is property made up of land and the buildings on it, as well as the natural resources of the land, including uncultivated flora and fauna, farmed crops and livestock, water and mineral deposits. Although media often refers to the "real estate market," from the perspective of residential living, real estate can be grouped into three broad categories based on its use: residential, commercial and industrial.

Examples of residential real estate include undeveloped land, houses, condominiums and town houses; examples of commercial real estate are office buildings, warehouses and retail store buildings; and examples of industrial real estate include factories, mines and farms.

Trade in stock markets means the transfer (in exchange for money) of a stock or security from a seller to a buyer. This requires these two parties to agree on a price. Equities (stocks or shares) confer an ownership interest in a particular company. Participants in the stock market range from small individual stock investors to larger investors, who can be based anywhere in the world, and may include banks, insurance companies, pension funds and hedge funds. Their buy or sell orders may be executed on their behalf by a stock exchange trader.

### **LIMITATION OF STUDY**

- The area of the study is limited to the investors in the city of Mumbai only.
- Hence the results may not be true for other geographical locations.
- Validity and reliability of the data depends on the truthfulness of the responses from the public.
- Chances of bias were more since the sample size of the study was just 100 respondents.
- Time at the disposal of the researcher is limited.

### **OBJECTIVES**

- To analyze the attitude of the investors towards real estate.
- To analyze the attitude of the investors towards stock market.
- To study the factors which influence the investment decisions of investors.
- To find out the risk profile of the investor.
- To find out the various factors that investors consider before investing.

### **REVIEW OF LITERATURE**

Newell Graeme and Kamineni Rajeev, (2007) This paper reviews the real estate markets in India and assesses the risk-adjusted performance and portfolio diversification benefits for the real estate markets (office, retail and residential) of New Delhi and Mumbai (two largest cities in India) over the 1998: Q2–2005: Q4 period. The real estate markets were found to under-perform the stock market in India over 1998–2005, with most markets improving their performance in more recent years, although there was some loss of portfolio diversification benefits for office and residential real estate with stocks.

Yeonjoon Kim Yong-Kyu Yi , (2012), This paper investigates whether stock markets are related to real-estate market. Results of correlation test show that housing price of Jeju has a negative correlation with apartment price of Seoul and stock price of Korea. And there is a negative correlation between housing price in Korea and Jeju. And results of the Granger-causality test show that apartment price affects to housing price in case of Busan.

Pandey Richa. V Jessica Mary 2016 . This paper attempts to find out the role of real estate in a multi-asset portfolio and need of its securitization in order to be investible in Indian context. Johansen cointegration test and Granger's Causality Test in the VAR block exogeneity on Quarterly data (Q 1 2009-10 to Q3 2016-2017) for HPI (Real estate index) and NSE 50(Stock market index) shows that there is no long run as well as no short run relationship between

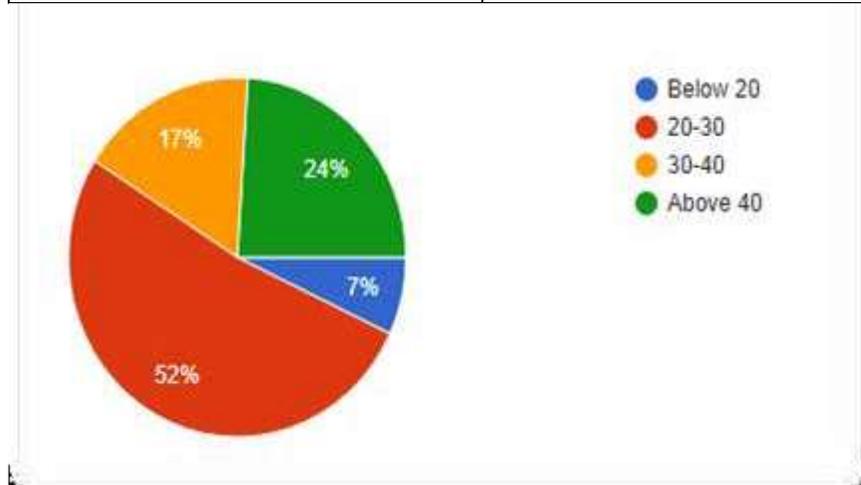
these markets. Segmentation exists between the stock market and the real estate market, and so these two assets can be held in a portfolio for diversification purpose.

Akinsola N (2012) In his paper he analyzed the risk and returns of commercial- property in Southwestern Nigeria and selected stocks market investment between 2000 and 2009; compared the inflation hedging characteristics and diversification potentials of investing in commercial-property and selected stock- market investment. Primary data were collected on characteristics, rental and capital values of commercial- properties from their property managers through the use of questionnaire. Secondary data on stock prices and dividends on banking, insurance and conglomerates sectors were sourced from the Nigerian Stock Exchange (2000- 2009). The result showed that average return on all the selected stock- investments was higher than that of commercial-property. As regards risk, commercial property indicated lower risk, compared to stocks.

**DATA ANALYSIS AND INTERPRETATION:**

**AGE OF RESPONDENTS**

Age	No of respondents	Percentage
Below 20	7	7.0
20 – 30	52	52.0
30 – 40	17	17.0
Above 40	24	24.0



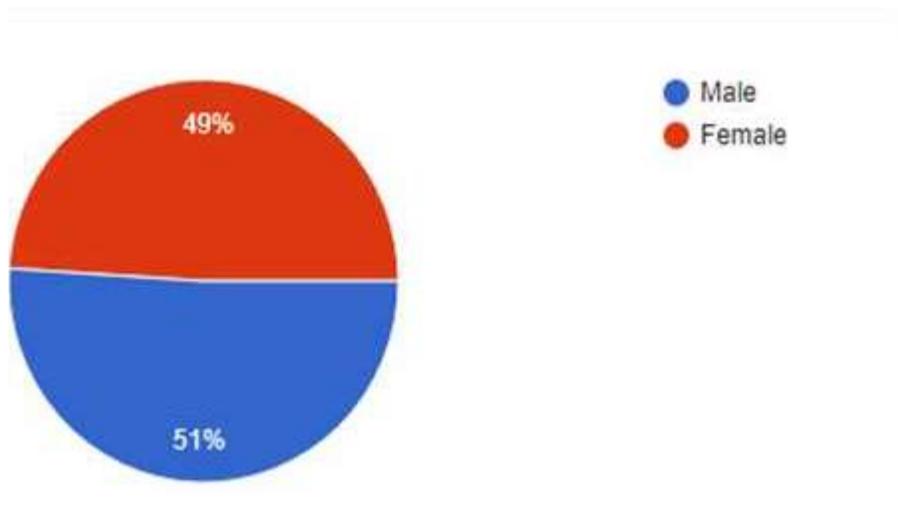
**Interpretation:**

That 52 percent of total respondents lies in the age group of 20-30 years, followed by 24 percent who fall in the age group of above 40, 17 percent in the age group of 30-40 years, 7 percent in age group of less than 20 years.

From the above table it is very evident that majority of the respondents be-long to the age group of 20–30 years.

**GENDER:**

Gender	No. of respondents	Percentage
Male	51	51.0
Female	49	49.0

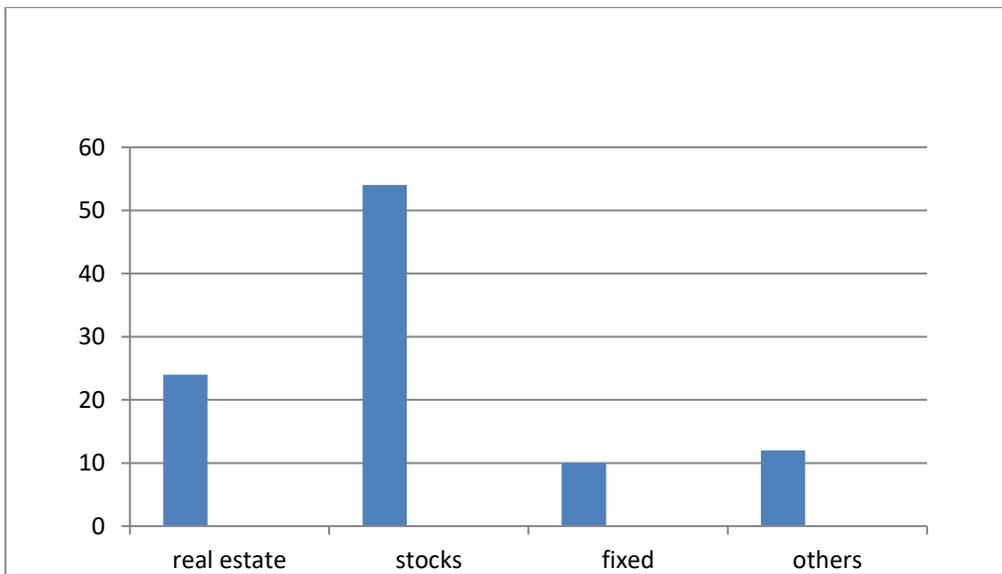


Interpretation:

The gender-wise status of the respondents. Analysis of table reveals that; 51 percent of the respondents are males and 49 percent are females.

#### BETTER FORM OF INVESTMENT

Form of investment	No.of respondents	Percentage
Real estate	24	24.0
Stocks	54	54.0
Fixed	10	10.0
Others	12	12.0



#### Interpretation:

The investors were asked that what they believe is a better form of investment for starting investors. They were given four options Real Estate, Stocks, Fixed Deposits and Others. Maximum no. of respondents i.e. 54 out of 100 feel that stock is a better form of investment for starting investors. Whereas only 24 respondents believe real estate is a better option and 10 respondents believe fixed deposit is a better option. 12 respondents feel that there are other better options for starting investors. More than 50% of respondents believe that investment in stocks is a better option

#### FINDINGS

- From the study it was concluded that majority of the respondent's preferred making investment in stock market as compared to other options.
- High returns were one of the major factors that influenced the investment decision of respondents.
- The study revealed that people recommended stocks as an investment option for starting investors.
- Respondents favoured investing in stock market in terms of liquidity.
- More than 50% people preferred to invest for long – term.
- It is much easier to diversify when you invest in stock market than real estate.
- Majority of investors were found to take investment decisions every quarter.

#### SUGGESTION

- The research strongly recommends that individual investors/people starting should consider investing in shares.
- If you think real estate is a great investment but don't want to get quite so hands on, you could take your real estate investing to the stock market. Real Estate Investment Trusts (REIT) are great ways for you to invest in real estate without being actively involved.
- Follow the mantra of regular investment, long term investment and disciplined investment.

- Before making your first investment, take the time to learn the basics about the stock market and the individual securities composing the market.
- Diversification of portfolio across asset classes and instruments is the key factor to earn optimum returns on investments with minimum risk. Level of diversification depends on each investor's risk-taking capacity.
- We are living in a global village. Any important event happening in any part of the world has an impact on our financial markets. Hence, we need to constantly monitor our portfolio and keep affecting the desired changes in it.
- Have realistic financial goals. There's nothing wrong with hoping for the 'best' from your investments, but you could be heading for trouble if your financial goals are based on unrealistic assumptions.

## **CONCLUSION**

From the findings of the study, it is apparent that there are certain characteristics which make real property and shares a preferred form of investment over the other. This conclusion is drawn from the following findings of the study that, shares required less capital to invest in, they were more liquid than real estate and they offered better availability of change positions.

From the findings of the study, it is apparent that there are certain characteristics which make real property and shares a preferred form of investment over the other. This conclusion is drawn from the following findings of the study that, shares required less capital to invest in, they were more liquid than real estate and they offered better availability of change positions. Stocks may be a roller coaster, but in the long run, the good times outweigh the bad. Equities are liquid. You can buy and sell at a moment's notice. Real estate isn't quite so easy to get in and out of. It's much easier to diversify with stocks as well. You can spread \$500 across thousands of companies, in every region of the world, in every industry, at every market cap.

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# STUDY OF INVESTOR BEHAVIOUR WITH REGARDS TO EQUITY SHARES

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## Abstract :-

It is the data which researcher collects for the purpose of his/her study and is original in nature. The primary data was collected in Mumbai through a questionnaire and survey method. A structured questionnaire was considered comprising of closed ended questions. Data was collected with the help of Google forms as well as with personal meeting with the respondents. This chapter present statement of problem, objectives of the study, scope of the study, limitation of the study, collection of data, sample size, technique and tools to be used. Research methodology is the specific procedures or techniques used to identify, select, process, and analyze the information about the topic. In a research paper, methodology section allows the reader to critically evaluate a study's overall validity and reliability. The methodology section answers two main questions: How was the data collected or generated? How was it analyzed?

## Introduction:-

Over the last few decades, the average person's interest in the equity market has grown exponentially. This demand coupled with advances in trading technology has opened up the markets so that nowadays nearly anybody can own equity. Despite their popularity, however, most people don't fully understand equity. Chances are you've already heard people say things like "Watch out with equity--you can lose your share in a matter of days!". Equity can (and do) create massive amounts of wealth, but they aren't without risks.

## The Definition of Equity

Plain and simple, equity is a share in the ownership of a company. Equity represents a claim on the company's assets and earnings. As you acquire more equity, your ownership stake in the company becomes greater. Whether you say shares, equity, it all means the same thing.

Holding a company's equity means that you are one of the many owners (shareholders) of a company and, as such, you have a claim (albeit usually very small) to everything the company owns. Yes, this means that technically you own a tiny sliver of every piece of furniture, every trademark, and every contract of the company. As an owner, you are entitled to your share of the company's earnings as well as any voting rights attached to the equity.

## Limitations

### Following are the limitations of the study:

- The capital market includes primary market, secondary market, term- lending institutions, banks and investors. But the stock market which constitute the major portion of capital market have been significantly studied. However, the other institutions involved in the market have been relatively given lesser attention and coverage.
- The study is confined to Mumbai district only. Hence the finding may not be generalized for the other parts of the country.
- As the analysis is based on primary as well as secondary data, possibility of unauthorized information cannot be avoided.

- Since the study is mainly concerned with the primary data obtained from the sample respondents, their preference could change from time-to-time.

### **Review of literature**

Deepa Mangala and R.K.Mittal(2005) “Anomalous price behaviour-An evidence of monthly effect in Indian stock market”

Concluded that the mean return for the first half of a trading month is significantly higher than the mean returns for the second half. The increased liquidity might induce the demand for equities resulting in the monthly effect.

Joseph Anbarasu D,Clifford Paul S and Amette B(2011)

“An empirical study on some demographic characteristics of investors and its impact on pattern of their savings and risk coverage through insurance schemes”

Their study reveals that the people are aware about the importance of saving, but the awareness about investment opportunities is low.

Mittal M and A.Dhade (2008) “Personality type and investment choice :an empirical study”

Observed that risk-taking involves the selection of options that might result in negative outcomes. While present is certain, future is uncertain. Hence, all investment involves risk. Dhananjay Rakshit (2008) “Capital market in India and abroad –a comparative analysis”

Concluded that Indian Market is being continuously preferred by the foreign investors and the only cause of concern is its high analyzed volatility.

### **Objective: -**

#### **Following are the objectives of the present study**

- To study what factors affects the investment decision of the people
- To study whether people will prefer to invest in private or government sector
- To understand the investment objectives of people.
- To make people aware about taxation benefits from various investment opportunities

### **Methodology: -**

#### **PRIMARY DATA**

It is the data which researcher collects for the purpose of his/her study and is original in nature. The primary data would be collected in Mumbai through a questionnaire and survey method. A structured questionnaire comprising of closed ended questions. Data would be collected with the help of Google forms as well as with personal meeting with the respondents.

#### **SECONDARY DATA**

Secondary data would be collected through internet on Wikipedia and various other websites. Also various magazines, books research paper related to equity and investor behaviours would be referred.

### **Findings:-**

- 21 respondents were male and 34 were female. Hence, it is concluded that female have shown more interest in the study.
- The majority of the respondent belongs to the age group of 20-30. They showed more interest towards investing in equity shares. On the second is the age group of 50-60 i.e 10.9% , third space is occupied by the age group of 30-40 i.e 9.1 %. In the present study the least respondent is of the age group 40-50 i.e 5.5.
- Most of the respondents belong to income group below 2.5 lakhs. Followed by that is the respondent of income group between 2.5 lakhs – 4 lakhs i.e 16.4 % and then income group above 8 lakhs i.e 7.3% . The least is of the income group from 4 lakhs- 8 lakhs i.e 7.2 %. Therefore the least respondent is of the income group 4 lakhs to 8 lakhs.
- 27.3 % respondent have shown interest to invest in equity shares and 72.7 % respondents says they do not invest in equity shares.
- People prefer Mutual fund as their best option for investing , whereas 25.5 % people prefer to invest in share market . 21.8 % people feel that investing in gold is best option for their investment . Only 14.5 % respondent choose banking institution for investment .
- The factor that that is considered mostly is returns followed by safety of investment and at last tax benefit.
- Majority of the respondents which accounts for 58.2% of the total is more likely to invest for the short term followed by 41.8% respondents who are likely to invest for long term .
- As per the study the people prefer equity share over preference share as their investment option.
- 34.5% respondent were aware about the share market and 65.5% respondent were not aware.
- 87.3 % people want to do market research before investment while 12.7% people do not prefer market research .
- 25.5 % of the respondents contribute towards the occupation of service sector which secured the second place and at the first place is the sector of student i.e.60 % . At the third place is the business sector which is 14.5 % .
- 36.4% thinks that investment in equity is very risky compare to other investment avenues followed up by security of capital i.e 20%. 31.2% believes that there is no guarantee of getting back capital they have invested and last but not the least is fluctuating rate of return i.e. 25.5%.
- 47.3% of the respondents believes that higher return is the most important benefit aspect followed up by 32.7% profit aspect. 20% respondent believes dividend aspect is the benefit of investing in equity shares .

### **SUGGESTIONS: -**

I would suggest that people or investor in India should invest their money in equity shares for long term financing and long term growth. The people who are ready to take risk must invest their money or savings into equity shares which earn them more returns. The basic rule i.e. higher risk is equal to higher returns.

### **Conclusion: -**

It was concluded from this study that more than half of the respondents prefer to invest in equity shares. It was also found that 56% of the respondents agree to invest their money for a short term period .In India most of the people still feel like investment in equity shares is very risky. Most of the investor considers market research before investment in equity shares due to various factors which affects the minds of the investor.

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- The intelligent investor – Benjamin Graham(1949)

#### **Website**

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- [www.oxformlawtore.com](http://www.oxformlawtore.com)
- [www.cfainstitute.org](http://www.cfainstitute.org)

# Unlocking the wealth of futuristic Business opportunities in Thane district.

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Under Graduates- Bachelor of Management Studies (Finance) Vidyalkar School Of Information And Technology

Guide Dr. Poonam Mirwani Assistant Professor

## ABSTRACT

“Small opportunities are often the beginning of great achievements.” -Demosthenes. With an increase in the cut-throat competition, the impressive growth of Thane has paled the performance of neighboring Mumbai. Due to such drastic growth, one must not turn its back on the potential scope in Thane. The research draws attention to the opportunities to expand business in untapped markets that would be beneficial for a longer run. The analysis shown in the study depends on secondary data derived from the Empirical research technique. It highlights the areas on the basis of population, modern retail store, banks, QSR, Lifestyle, Entertainment, Travel Modes, Electronics and automobiles.

**KEYWORDS:** Untapped market, Business Opportunities, Retail business.

## INTRODUCTION

Business in Thane is slowly on the rise with changing consumer preferences and tastes and in the evolution of a global structure. Driven by changing lifestyles, strong income growth and favorable demographic patterns, Thane's business expansion is increasing rapidly. According to Times of India “Statistics compiled in the survey report indicated that though Mumbai ranked first in the state with the highest per capita income of Rs 1.67 lakh in 2012-13, the increase in individual incomes in the last six years stood at 54 percent. Pune, which was second in the state, followed by Mumbai, for the high per capita income, is pushed to the third position because of the rising per capita income of Thane district.” Thane has seen focused investment from companies from across industries, which has led to increased business opportunities in the region. This rise in commercial demand has resulted in a heightened level of interest from real estate developers, leading to a healthy rise in project launches and aiding in the holistic and sustainable growth of Thane. Going forward, new infrastructure projects will enhance connectivity further enhancing Thane's desirability Thane's astonishing demographics has caught the eye of retailers looking for new areas of growth. These key factors have been the growth drivers of the organized retail sector in thane, which now boast of retailing almost all the luxuries of life - Apparel & Accessories, Appliances, Electronics, Cosmetics and Toiletries, Home & Office Products, Travel and Leisure and many more. With this, the business opportunities in Thane is witnessing a revival as traditional markets make way for new formats such as departmental stores, hypermarkets, supermarkets, and specialty stores. The retail revolution is going to act as a catalyst.

## OBJECTIVES OF STUDY

1. To examine the contemporary market scenario in Thane district.
2. To discover emerging business opportunities in Thane district.
3. To propose effective strategies for tapping new markets.

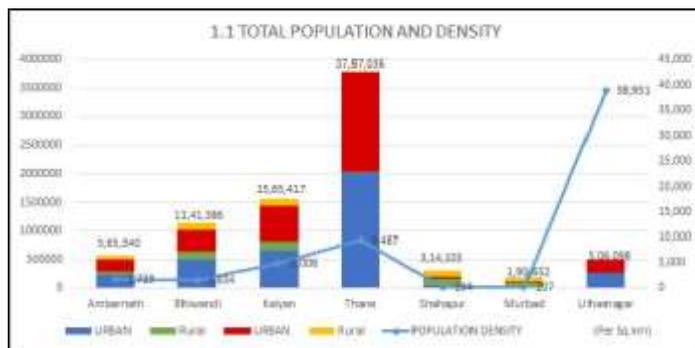
**SCOPE OF STUDY** The aim of the research paper is to identify the potential area of upcoming business opportunities in Thane district . It is to access various factors such as population, transportation, retail store, QSR, entertainment, banks and other factors that would help to examine the location and the purchasing power of the people residing in the given area. In this study we have bifurcated the details in following 7 talukas: 1.Ambernath 2.Bhiwandi 3.Kalyan 4.Thane 5.Shahapur 6.Murbad 7.Ulhasnagar

**HYPOTHESIS H0 –**

There is no significant relationship between demography and contemporary business opportunities. H1 - There is a significant relationship between demography and contemporary business opportunities. **REVIEW OF LITERATURE** Dr. Shahid Akhter (2012) in his paper studied the potential for organized retailing in India. He concluded that organized retailing can spread throughout India through correct branding and promotion. However he also concludes that it is not an easy task because it involves high investment and business risks. Adhikari (2000) attempted to present the recent profile of consumer cooperative movement in India. The consumer cooperative achieved a sales turnover of Rs. 95 billion during the year 1999-2000, which is around 2.5 percent of the total retail sales of the consumer goods in the country. Although the sales coverage is not very significant, the very presence of the consumer cooperatives creates an impact in the market to stabilize the prices and availability of consumer goods. Anil N. Barbole and Varsha Borade (2012) studied the impact of a customer buying attitude on various grocery products in supermarkets. The growing competition among the retailers and the increased customer dissatisfaction among customers are reasons for the grocery retailers strive to know their customers. The different shopping patterns are owing to varied customer tastes and environment. Mridanish Jha (2013) studied consumer behaviour towards organized retailing at Ranchi and concluded that demographics play a major role in buying patterns and marketers should make efficient strategies considering consumer needs and buying patterns. **RESEARCH METHODOLOGY** The nature of study is analytical, based on secondary data. The study is undertaken with the help of Census 2011 population, official websites of various retail outlets, banks, clothing brands, shoe brands, electronics showroom, automobile showrooms, railway stations, Bus stand depots, QSR, movie theatres and various reports. Data analysis and interpretation is done through graphical presentation.

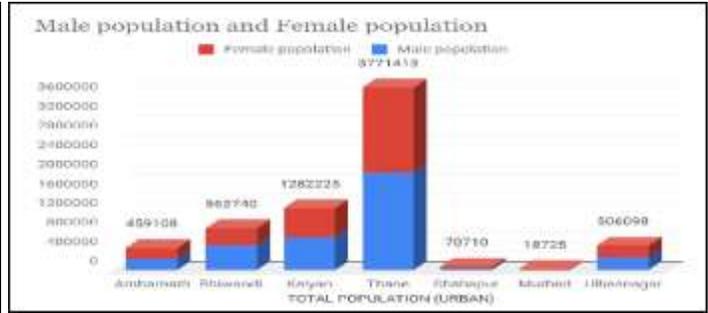
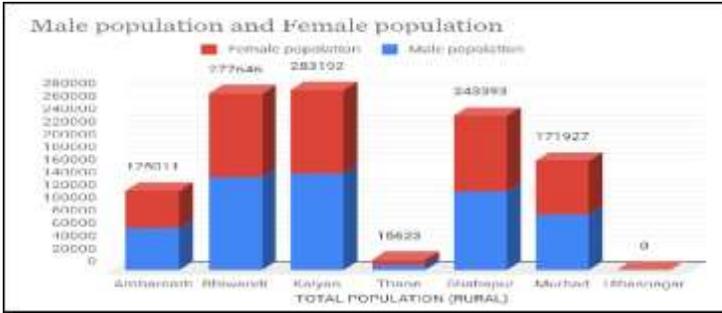
**DATA ANALYSIS AND INTERPRETATION**

- **As per population**



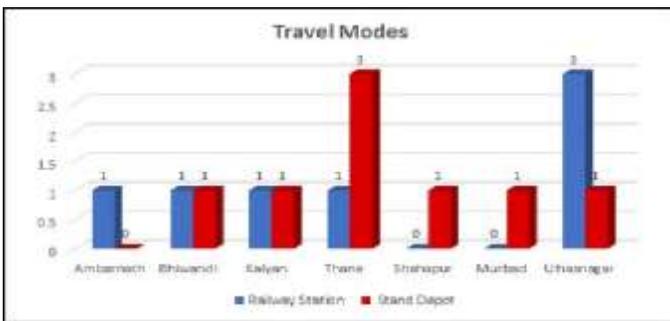
The graphical representation interprets the bifurcation of the population of the talukas of the Thane district.

The population segregation is divided into 3 parts where the total population graph is the composition of both the preceding figures in addition with comparison to the population density of the 7 talukas. The urban population explains the division of urban population between males and females in the 7 talukas of the thane district whereas rural population graph determines the division of rural population between the male and female population in the talukas of the thane district.



Source: <https://www.censusindia2011.com/maharashtra/thane-population.html>

### As per transportation



Source: M-Indicator and <https://msrtc.maharashtra.gov.in/index.php/node/index/106>

The multiple bar graph explains the header Travel modes in Thane district including two factors railway station and Bus stand depot. All the cities of the Thane district have 1 railway station in its vicinity except Shahapur and Murbad. Also, Ulhasnagar has 3 railway stations including Ulhasnagar itself, Vitthalwadi and Shahad. While in the case of Bus stand depot except Ambarnath all the other cities have a minimum 1 bus depot with Thane city being an exception with a count of 3.



Source: <https://www.dmartindia.com/about-us> <https://www.bigbazaar.com/store-locator/>

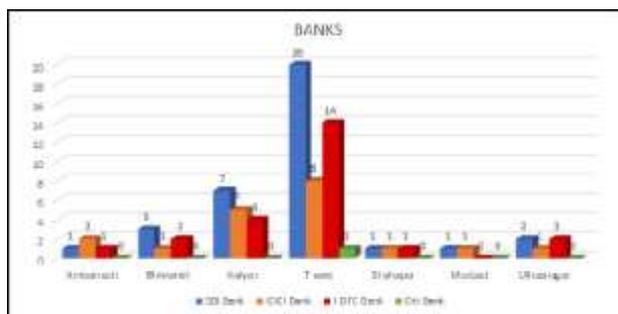
- **As per modern retail stores**

The pie chart heading retail market elucidates the big giants of modern retail stores in Thane district including D-mart and Big Bazaar. Kalyan and Thane account to both D'mart and Big-Bazaar with a pair of 3 Dmart stores in Kalyan and a Big-Bazaar store and 4 Big-Bazaar stores in Thane with a D'mart store. On the other hand, Ambernath has an occupancy of 2 D'mart outlets and Ulhasnagar has a Big-bazaar store. In the rest of the cities, there are no modern retail outlets.

- **As per QSR**

The multiple bar diagram determines the study on the basis of Quick Service Restaurants. It details that Bhiwandi, Kalyan, Thane and Ulhasnagar accounts to 1, 3, 10, and 1 outlets of CCD respectively. While Dominos has 10 outlets in Thane and 1 in Kalyan. McDonalds has spread its stores in Kalyan-1, Thane-2 and Ulhasnagar-1 whereas Pizza Hut is located with 2 stores in Thane and 1 in Kalyan. Ambarnath, Shahapur and Murbad account to 0 outlets of the 4 mentioned Quick Service Restaurants

- **As per banks**



<https://www.sbi.co.in/web/home/locator/branch>

<https://v1.hdfcbank.com/branch-atm-locator/location/maharashtra/thane>

The graphical representation is done considering the branches of 4 major banks that are SBI, ICICI, HDFC and CITI bank. It can be noted that every taluka accounts to 1 or more than 1 branch of all the banks except CITI bank. The details of the same can be found in figure

- **As per entertainment**

The data resembles the graphical representation on the basis of the most premium sector of the entertainment industry i.e Movie theatres. The theatres included are INOX, PVR (also includes Cinemax) and Miraj Cinema. PVR can be located with its 2 chains in Kalyan and

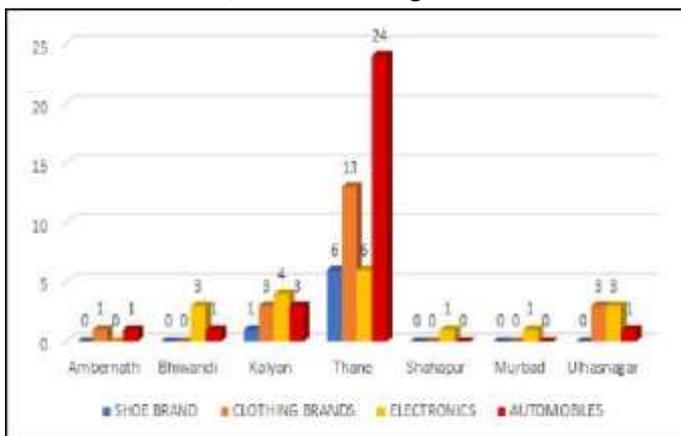
Thane and 1 chain in Bhiwandi. Whereas INOX and Miraj cinemas can only be seen in Thane (1) and Ambernath (1)-Ulhasnagar(2) respectively. Neither of the 3 movie theatre chains were identified in Shahapur and Murbad.



<https://www.inoxmovies.com/Cinemas.aspx>  
<https://www.pvr cinemas.com/cinemas/Mumbai>, "PVR"  
<https://in.bookmyshow.com/cinemas-list/carnival-cinemas/all-regions/cnvl>

● **As per other factors**

Clothing brands, Electronics and Automobiles. The study shows that the shoe brands are situated in Kalyan-1 and Thane-6 respectively. Clothing brands are located in Ambernath, Kalyan, Thane and Ulhasnagar with 1, 3, 13 and 3 outlets respectively. Except Ambernath, Electronics showrooms are there in all the talukas as follows: Bhiwandi-3, Kalyan-4, Thane-6, Shahapur, Murbad-1 and Ulhasnagar-3. Lastly automobile showrooms are spread in the following series: Bhiwandi-1, Kalyan-3, Thane-24 (includes premium automobile showrooms also) and Ulhasnagar-1



## **TESTING OF HYPOTHESIS**

The stated hypothesis, “There is no significant relationship between demography and contemporary business opportunities.” is rejected on the basis of the graphical representation. As there is a relationship between demographic factors and contemporary business opportunities.

## **FINDINGS**

- 1) Thane ranks no.1 in both total population and urban population with Murbad banking the lowest urban population. On the other hand, Kalyan has the highest rural population and it also ranks no. 2 in terms of total population with Ulhasnagar being at the last related to rural population but at the top being the most densely populated area with a total area of 13 sq. km only followed by the giants Thane (147 sq. km), Kalyan (137.2 sq.km), Bhiwandi (698.72sq. km), Ambernath (38 sq. km), Shahapur (1,616 sq. km) and Murbad (921.70 sq. km).
- 2) The data analysis and interpretation section helps us to identify that the brands, retail outlets, showrooms, QSR, banks situated in an area are directly proportional to the spending power of the people residing in the area.
- 3) Ulhasnagar has the highest number of railway stations and Thane has the highest number of Bus depots.
- 4) Thane has 5 modern retail stores in total followed by Kalyan with 4, Ambernath with 2 and Ulhasnagar with 1.
- 5) In terms of Banking sector, public sector banks and private banks are located in Thane with 43 branches followed by Kalyan with 16, Bhiwandi with 6, Ulhasnagar with 5, Ambernath with 4 and Shahapur with 3 and Murbad with 2. Thane is the only taluka locating a foreign bank.
- 6) Thane accounts to 16 different retail outlets of Quick Service Restaurants while other Talukas like kalyan accounts to 6, Ulhasnagar with 1 and 1 in Bhiwandi, all located in the foremost locations of these cities.
- 7) There is a need for more multiplex theatres in the low-lying areas as they are still running with the trend of Single screen theatres.
- 8) Factors including different Multiplex theatres, Shoe brands, Clothing brands, Electronics and Automobiles are mostly located in Thane followed by kalyan, which clearly increases the real estate value of these cities.

## **RECOMMENDATION**

Following are the strategies to grab new untapped markets in order to cater and promote business to a larger audience.

- 1) To escalate the business, populated areas like Ulhasnagar, Kalyan, Bhiwandi and Ambernath would be a suitable option as their population density is considerably high in comparison to their total area.
- 2) Offline promotional activities can be performed at railway stations and bus stand depots.
- 3) There are huge opportunities for retail categories like hypermarkets, supermarkets and departmental stores and Quick Service Restaurants in the low-lying areas like Bhiwandi, Ambernath, Murbad and Ulhasnagar as retail outlets have been successful in capturing customer footfall.
- 4) There is a huge set of audience in Thane district who have their account in international banks but so it can be a win-win situation for both the customers and the foreign banks if they can avail doorstep services to their customers.
- 5) With changes in trends, areas like Ulhasnagar, Ambernath and Bhiwandi are also on a urge to develop. So new multi screen brands can set up their theatres resulting in the cities to change from single screen to multiplex.
- 6) Big brands and companies should settle their centres in Shahapur, Murbad, Bhiwandi and Ambernath as the real estate value of these cities is less in comparison to Thane which will not only help them in profit maximization but in return will also develop these areas.

## **CONCLUSION**

Thane district's standards have consistently increased in the past several years, reckoning socio-economic factors which have made it to be the 2nd best district in terms of development in the state of Maharashtra. Being only 50 kms away from the Mumbai District still it doesn't cope up with the level of development that it should have had. But now it is completely ready to inculcate development all that is already possessed by the Mumbai district. There are high business opportunities in Thane district for all the industries who are planning to expand their business and reach to a new set of audience and cater their products and services on a larger scale including all age groups.

## **FUTURE SCOPE**

This research is kept open for further analysis on demography and contemporary factors like QSR, transportation, modern retail stores, shoe brands, clothing brands, entertainment, banks and electronics.

## **REFERENCE**

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- 2) <https://www.censusindia2011.com/maharashtra/thane-population.html>
- 3) <https://msrtc.maharashtra.gov.in/index.php/node/index/106> and M-indicator application
- 4) From the official website of Dmart, Big-Bazaar, ICICI bank, HDFC bank, SBI bank, CITI Bank, Dominos, pizza hut, Cafe Coffee Day, McDonalds, Woodland, Nike, Adidas, Cotton king, Manyavar, Peter England, Raymond, Croma, Vijay Sales, Digi 1, Maruti Suzuki, Royal Enfield, Toyota showrooms, TATA motors, INOX, PVR, Carnival, Gangar Eye nation, Titan showrooms, Miraj cinemas.
- 5) <https://www.zigwheels.com/dealers/Tata/Thane>
- 6) <https://in.bookmyshow.com/mumbai>
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- 8) Maharashtra District factbook: Thane (2005)

# Social Media Analytical Tool

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## ABSTRACT

Recent years have witnessed the rapid growth of social media platforms (Twitter, Facebook and several blogs) in which users can publish thoughts and opinions on any topic. The recent advancement and growing popularity of social media has changed the web into a dynamic source of information. Social media platforms such as Twitter gave the capability to people to express their thoughts and opinions on the web in a simple way.

Those opinions can be analyzed to yield some helpful information. Big corporations, developers, service providers can use this information to further improve their product or service.

Now the main problem here is how to differentiate the opinion, which one is positive and which one is negative. It will take a person countless time to differentiate from millions of tweets. To tackle this issue we are going to use Sentiment analysis.

Sentiment analysis or opinion mining is the computational study of people's opinions, sentiments, attitudes, and emotions expressed in written language. With the help of our tool one can stream live Twitter data about a particular topic and perform sentiment analysis on it to see how many tweets are positive and how many are negative. Our tool will display the result in the form of Pie charts, Graphs and various other formats.

## 2. INTRODUCTION

In recent years social media sites have seen tremendous growth all around the world. A good example of this is Twitter which has over a billion users and everyday people generate millions of tweets, those tweets are nothing but gold mines of data. If analyzed properly an organization or an industry can increase its product or service quality and profit substantially.

To analyze and understand the tweets on such a massive scale, traditional data analyzing techniques such as excel, SQL won't work because the data generated by these sites come in various formats that's why traditional techniques won't work. So we came up with an application that can help organizations to analyze data efficiently.

The main objective of this project is to focus on how data generated from Twitter can be mined and utilized by different companies to make targeted, real-time and informed decisions

about their product that can increase their market share or find out the views of people on a specific topic of interest. This tool was made in order to analyze chunks of tweets regarding the desired entity(person, product, movement, etc). It performs sentiment analysis on tweets and differentiates which one is positive and which one is negative.

It will take endless hours for a human being to go through so much data one by one and reach a conclusion but with the help of our app, we can do it in just a matter of minutes.

Organizations and Industries can use our tool to get proper feedback from customers. This feedback can be used to improve product quality or improve their services. We use NLP(Natural Language Processing) techniques in our tool, which helps us to perform sentiment analysis.

Instead of using a traditional relational SQL database which will slow down our processing tremendously. Our tool uses various python libraries to mine and utilize tweets from Twitter.

In this tool, we take a parameter from the user and then quickly mine data related to the input and perform sentiment analysis on it and then display the result in the form of graphs and pie charts which makes it further easy to visualize and understand the data.

Companies, Political Parties, Entertainment Industries, Marketing firms, NGOs as well as government entities can use our tool to get proper feedback from their audience or customers.

### **3. SURVEY OF TECHNOLOGIES**

#### **a) Anaconda:**

Anaconda is a free open-source distribution of the Python and R programming languages for scientific computing (data science ,machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment.

Package versions are managed by the packet management system conda. The Anaconda distribution is used by over 15 million users and includes more than 1500 popular data-science packages.

#### **b) Django:**

Django is a Python-based free and open-source web framework that follows the model-template-view (MTV) architectural pattern.

Django's primary goal is to ease the creation of complex, database-driven websites. The framework emphasizes reusability and "plug ability" of components, less code, low coupling, rapid development, and the principle of don't repeat yourself.

Python is used throughout, even for settings files and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models.

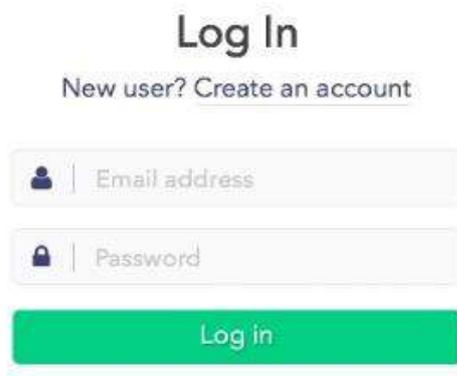
## b) Twitter API:

Twitter is an information network and communication mechanism that produces more than 200 million tweets a day. The Twitter platform offers access to that corpus of data, via APIs.

Each API represents a facet of Twitter and allows developers to build upon and extend their applications in new and creative ways. The Twitter API provides 4 keys(API key, API secret key, Access token, Access token secret) . These keys are required to access the twitter data.

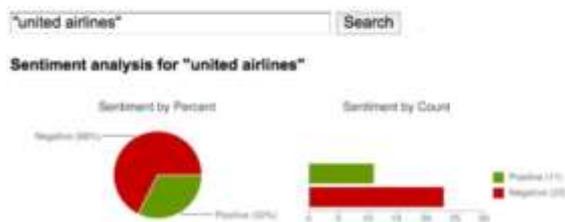
## 4. USER INTERFACE DESIGN

### A. Login Page

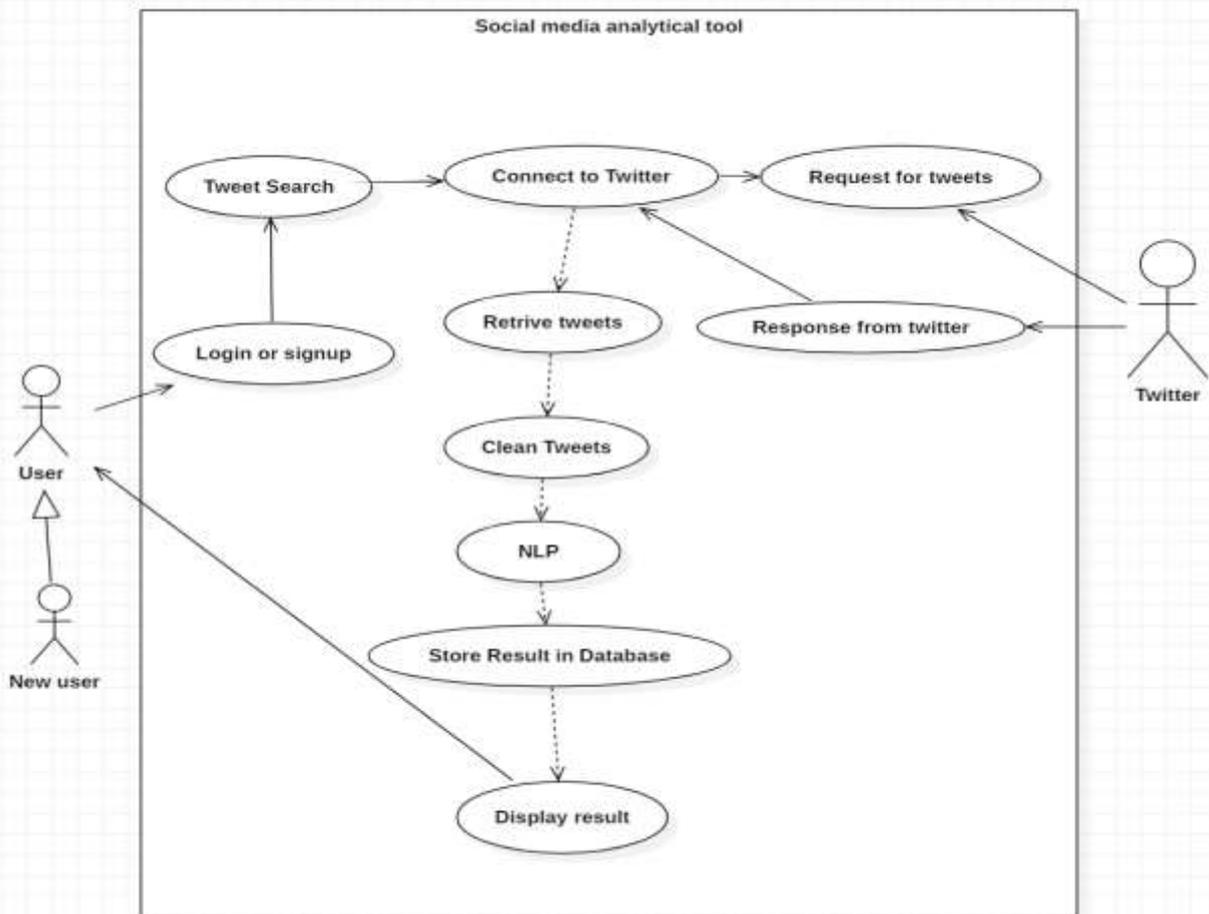


The screenshot shows a login interface. At the top, the text "Log In" is displayed in a large, bold font. Below it, there is a link that says "New user? [Create an account](#)". There are two input fields: the first is labeled "Email address" and has a person icon on the left; the second is labeled "Password" and has a lock icon on the left. Below these fields is a prominent green button with the text "Log in" in white.

### B. Dashboard



## USE CASE DIAGRAM



## CONCLUSION

This tool is related to Big data technology which is flourishing day by day. It has a very vast scope as companies from all different sectors are putting Big data to use.

The huge amount of data is stored and analyzed to reveal hidden customer buying patterns and also to get feedback. Which can be used by these companies to further improve their products.

The main scope of the project is to fetch and analyze the tweets on a particular topic or individual and to perform sentiment analysis and visualize the data in the form of charts and graphs. This tool is very easy to use, the user has to provide a certain parameter. The parameter is nothing but an entity or a topic on which we want to perform our analysis.

All the tweets related to the desired parameter will be mined and analyzed and then display the output of our analysis in the form of graphs and pie charts.

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# SEXUALITY EDUCATION

## *A STUDY ON IMPARTING SEXUALITY EDUCATION IN EDUCATIONAL INSTITUTIONS.*

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### **ABSTRACT**

Sexuality education includes knowledge about hormonal and physical changes in the human body such as puberty, menstruation. It also discusses about body image, good touch and bad touch, consent. Through our research we aim to find out the current awareness which is there among students about this topic also the positive effect which it will create if it is made as a part of the curriculum. Through our research we have founded that according to the NGO's as well as the students making sexuality education a part of the curriculum will have a positive effect and help the students to know about their body and its changes in a better way. The education should be provided to all genders; male and females and transgender preferably together as most institutions currently provide in gender biased batches. This is one topic which is still considered as a taboo but which it should not be as lack of sexuality education is leading us to many crimes in India to which there is no strict judicial punishment. Families of the students should be the first person to give details to them and explain their queries since their childhood so they don't receive any false or corrupt information. NGO's currently play a significant role as they as one of the few sexuality education providing bodies.

***Keywords:*** *Sexuality, Effects, Awareness, Curriculum and Students.*

### **1. INTRODUCTION**

Sexuality Education refers to education about gender, sexual and reproductive health, HIV and STD's. violence and diversity. Through previous researches we can make out that 90% of the Indian youth demand sexuality education to be provided to them to help them understand the different body changes which occurs to them as they grow in every five years. The source of this education to the children and young adults is merely what they see visually, the internet, their elderly friends which aren't the best source as wrong or false education is conveyed to them which them leads to

unacceptance, sexual crimes increases as they are very curious and try to experiment what they learn.

Sexuality education is still considered as a taboo in India and people are not open to talk about it which opens up many questions to the younger generation as they think of it as something bad what should not be discussed. Furthermore, it is important for the youth to know about the LGBT community as they are treated as a minor gender and not given equally importance. As the kids learn what they see it's the responsibility of the Older people to set good examples which would help the young people to be more respectful towards all the genders and treat them equally.

Sexuality Education is not only beneficial for being aware about your body but it also will help us to decrease the sexual crime rate specifically in India. It helps young adults to protect their health to be aware about the human rights and empowering themselves. It starts when they are born, if proper education is not provided it can also lead to death of the person. Girls are targeted to give knowledge about menstruation as it is a considered an important physical change which should be addressed as a girl is becoming a woman other than that nothing is being discussed with them. As compared to boys no mention of sexuality education is there as according to the people's mentality they do not incur any drastic change in their body.

The youth of today has raised their voice on this topic to help develop the country as it is also an important topic for Country's overall development along with Poverty, Unemployment, Corruption, Illiteracy etc.

## **2. OBJECTIVES**

1. To find out awareness about sexuality education among teenage students.
2. To study the positive effect and the social transformation through sexuality education.
3. To find out the challenge faced by the NGO in imparting sexuality education.
4. To find out effective curriculum for imparting sexuality education.

### 3. LITERATURE REVIEW

- ***Boraiah & Yeliyur (2013), in their study on:***

The need to address sexuality in schools, found that the knowledge level is poor among the students and they have requested to include Sexuality Education in the school curriculum. Teachers and Parents have also shown their inclination towards introducing Sexuality Education in High Schools.

- ***Mr. Kumar (2007), in his study on:***

Need assessment for sex education amongst the university students: Students preferred grade level to start sex education with curriculum containing the information on sexual body changes during growth, contraceptives and sexually transmitted disease. Majority of students has received sex information from informal sources and they are not satisfied with that. Majority of them supports the implementation of sex education in educational institutes.

### 4. RESEARCH METHODOLOGY

The data for this research will be gathered from two sources:

- ***Primary data:***

- Interviews & Questionnaires:

Sample Size:

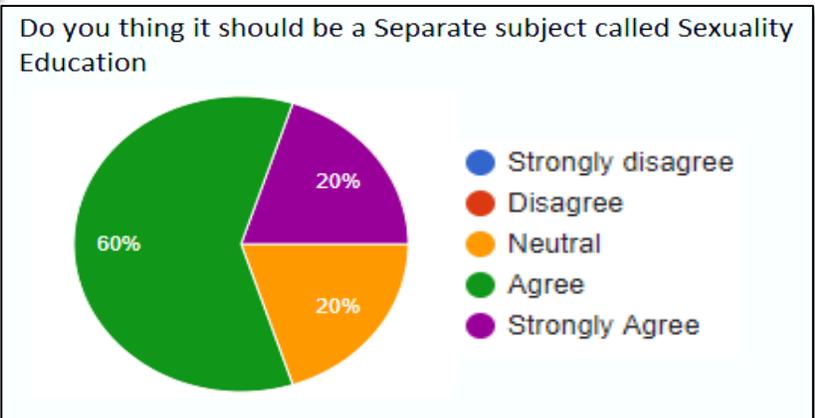
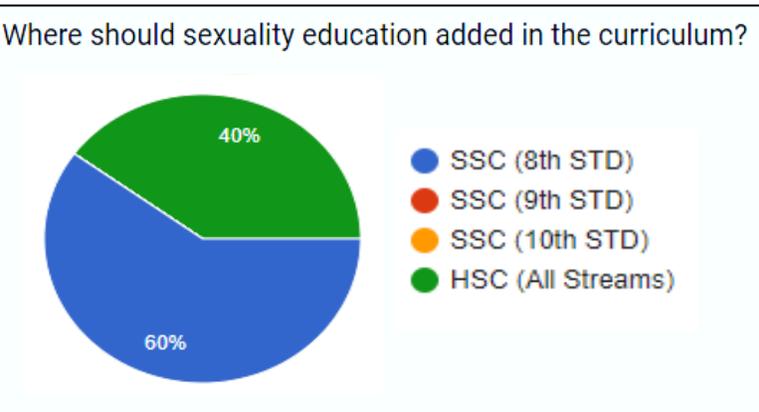
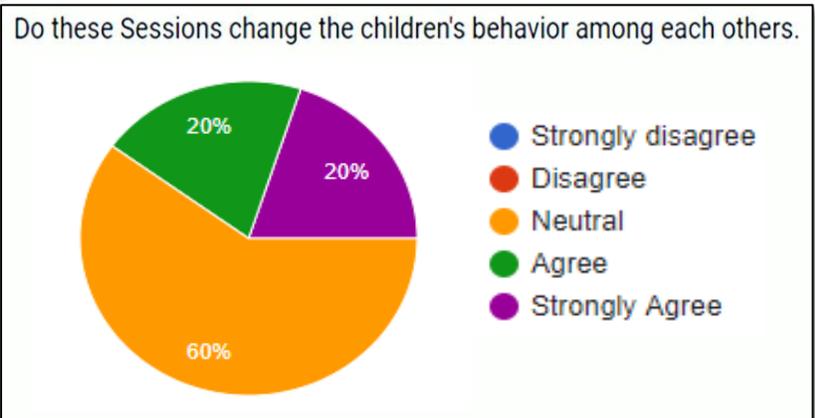
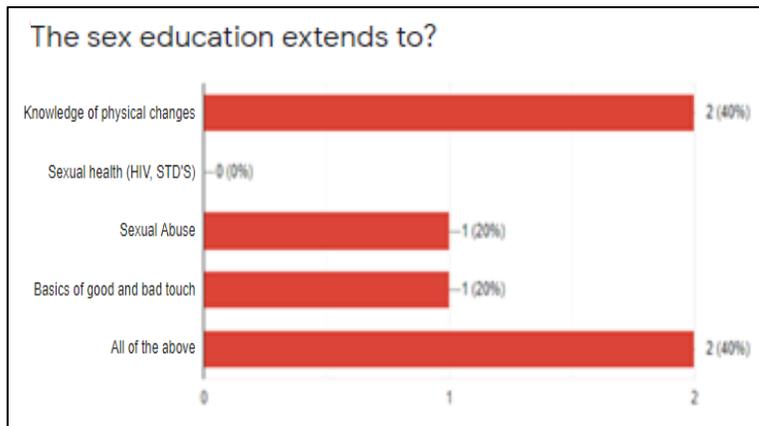
- 5 NGOs (RooBaRoo NGO, Meljol NGO, S.A.H.E.R NGO, Iesha Learning, Masoom NGO)
- 95 students from schools, colleges and undergoing training under NGO.

- ***Secondary data:***

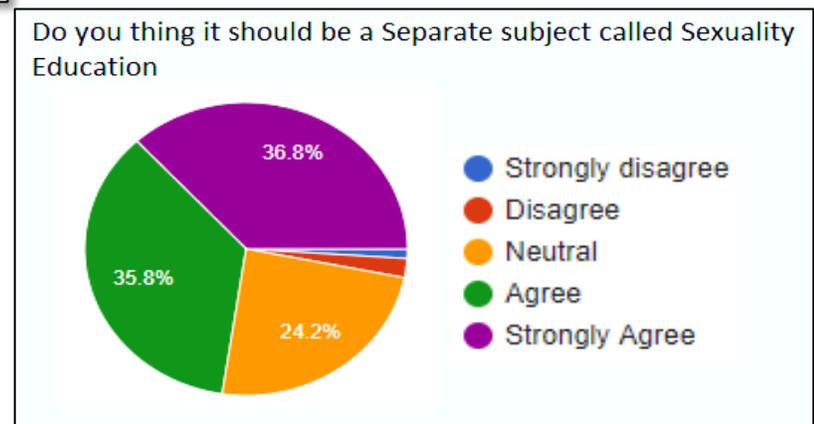
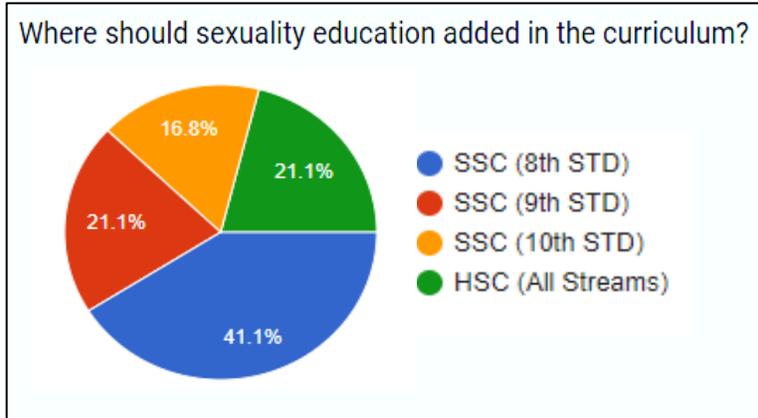
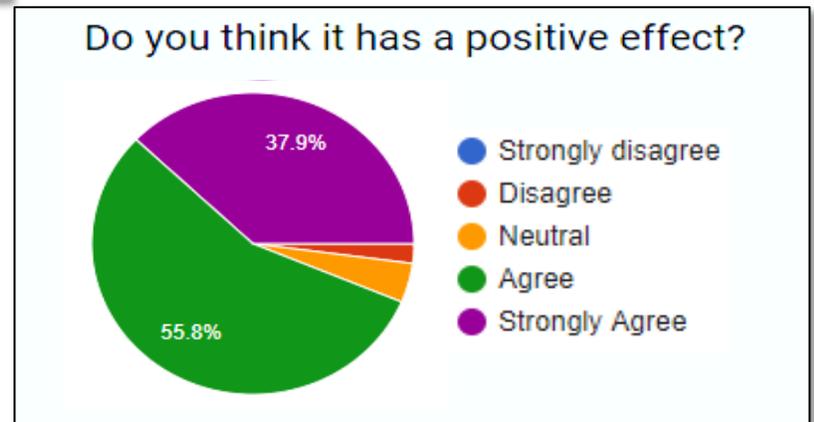
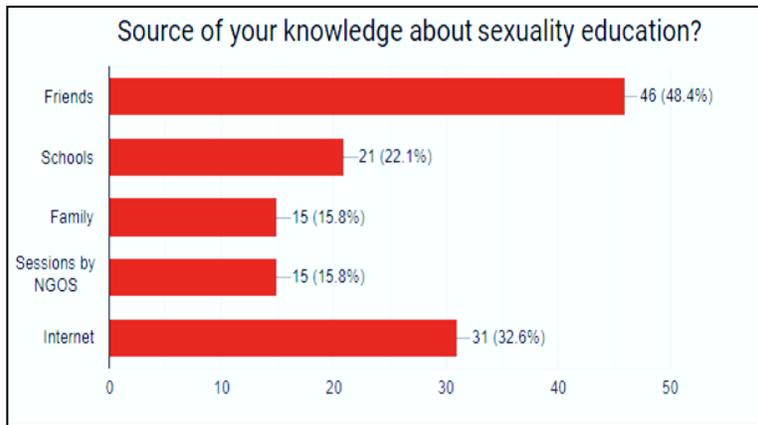
- Previous research papers
- Web sites and Blogs

## 5. FIGURES

### 5.1. RESPONSES OF NGOs:



## 5.2. RESPONSES OF STUDENTS:



## **6. CONCLUSION**

Sexuality education means knowledge of physical change, sexual abuse and bad and good touch. Positive effect and social transformation would happen after sex education is imparted. Agreed by many respondents that such type of training will help them to have knowledge about physical changes. Education should be a part of the curriculum and should be included from 8th STD onwards in Government schools, Maharashtra board along with the different boards in India .The students who went under training sessions by NGO are able to handle the situation of sexual abuse in a better way and also they tend to inform it to friends or family. More sexual exploitation among girls have occurred whereas boys also has been a victim. Sexual abuse in the form of bad comments by passer-by on physique. Boys are less vulnerable as compared to girls and economically backward children. Respecting other gender and their consent is the best outcome after the sex education is imparted.

## **7. RECOMMENDATION**

1. Part of the curriculum (like Value Education)
2. Sex Education should depend on age
3. Session by NGO should be on continuous basis for long duration
4. Sensitive issue to be addressed to both boys and girls.
5. It should be focusing on boys more

## **8. WEBLOGRAPHY**

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**Vidyalankar school of information and technology**

**Corona virus: the market destroyer.**

**Ayan Antuley - SY-BMS**

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**GUIDED BY – HARISH RAO.**

## **Abstracts**

**An outbreak of 2019 novel coronavirus diseases (COVID-19) in Wuhan, China has spread quickly nationwide. Here, we report results of a descriptive, exploratory analysis of all cases diagnosed as of**

**February 11, 2020. Methods All COVID-19 cases reported through February 11, 2020 were extracted from China's Infectious Disease Information System.**

**The cases of corona virus were identified by late 2019 but was spread at mass in 2020.**

## **Introduction**

Corona virus/ covid-19 started spreading from WUHAN, China and is spread from animals such as snakes and bats. These animals contained these viruses and when consumed people got effected through it.

Corona virus has a severe effect on economy of the world especially china.

The death toll of corona virus **WORLDWIDE** as per 25<sup>th</sup> Feb 2020 is approximately 2707 out of 80,299 cases registered. However 27,950 have already recovered from the disease.

This disease has spread all over the world and cases have been registered in many countries.

America, India, Italy, Japan, south kora, Iran, Italy, Philipppines and 26 more countries have registered cases of corona virus.

## 1. China and the world (trade)

The major Chinese trading partners for 2017 were as follows:

2017 Imports and Exports of goods by top 20 Countries (Billions of USD)[3]

No.	Country / Region	Total trade	Exports	Imports	Trade balance
	<b>Total</b>	<b>4,107.1</b>	<b>2,263.3</b>	<b>1,843.7</b>	<b>419.6</b>
1	United States	583.3	429.7	153.9	275.8
2	European Union	573.08	375.1	197.9	177.1
3	Japan	303.0	137.2	165.8	-28.6
4	Hong Kong	286.5	279.2	73.1	206.1
5	South Korea	280.2	102.7	177.5	-74.8
6	Taiwan	199.9	43.9	155.9	-112
7	Australia	136.4	41.4	95.0	-53.6
8	Vietnam	121.9	71.6	50.3	21.3
9	Malaysia	96.1	41.7	54.4	-12.7
10	Brazil	87	28.9	58.8	-29.9
11	India	84.3	68.0	16.3	52
12	Russia	84.2	42.8	41.3	1.5
13	Thailand	80.1	38.5	41.6	-3.1
14	Singapore	79.2	45.0	34.2	10.8
15	Indonesia	63.3	34.7	28.5	6.2
16	Canada	51.7	31.3	20.4	10.9
17	Philippines	51.3	32.0	19.2	12.8

<b>18</b>	<b>Saudi Arabia</b>	<b>50.1</b>	<b>18.3</b>	<b>31.7</b>	<b>-13.4</b>
<b>19</b>	<b>United Arab Emirates</b>	<b>41.0</b>	<b>28.7</b>	<b>12.3</b>	<b>16.4</b>
<b>20</b>	<b>South Africa</b>	<b>39.1</b>	<b>14.8</b>	<b>24.3</b>	<b>-9.5</b>

## **2. Effect of corona on china and world economy**

### **China**

**Fears over the coronavirus triggered a sharp fall in Chinese shares when the market reopened after the Lunar New Year holiday.**

The Shanghai Composite index closed nearly 8% lower, its biggest daily drop for more than four years.

Manufacturing, materials, and consumer goods companies were among the hardest hit, while healthcare shares soared.

The fall came despite China's central bank announcing new measures to ease the impact of the outbreak.

The People's Bank of China (PBOC) unexpectedly lowered short term interest rates as part of its attempts to relieve pressure on the economy from the rapidly spreading virus.

It also pumped an extra 150 billion yuan (\$22bn; £16.3bn) into the economy on Monday, a move aimed at ensuring there is enough liquidity in the banking system.

In total, the central bank will inject 1.2 trillion yuan into the financial system, the majority of which was already planned.

The PBOC said it could make more cash available throughout the week, as Chinese financial regulators forecast the impact on the country's already slowing economy will be "short term".

Car sales in China fell down 92% in the first half of February as corona virus shutdown took its toll, According to an industry trade body.

### **World**

The coronavirus was first identified in early January in China, but investors in U.S. stocks paid it little mind. Just last week, both the S&P 500 **SPX-3.03%** and the Nasdaq Composite **COMP-2.77%** hit all-time highs, a feat the Dow Jones Industrial Average **DJIA-3.15%** had achieved the week before.

On Monday, global markets plunged; The dow shed more than **1000 points**, its third-biggest one-day point drop ever.

**Global oil** demand has been hit hard by the novel coronavirus (COVID-19) and the widespread shutdown of China's economy. Demand is now expected to fall by 435,000 barrels year-on-year in the first quarter of 2020, the first quarterly contraction in more than 10 years," the IEA said in its latest monthly report.

For now U.S.A is in a bad condition as much of its business was conducted from China.

**Hair industry** is hugely effected by virus in China as most of the hair were transported by China. The faster the virus is spreading the more people are concerned about using any human hairs or artificial hairs.

**Meat industry** in Asia countries are facing loss due to misconceptions caused by fake media or unauthorised media's. The misconceptions that any meat can cause virus is spreading at a great speed and hence there is huge drop in prices for meat.

### **Global airlines**

Around the globe will incur revenue loss of \$29.3 bn as an impact of the coronavirus outbreak.

The impact shows a potential 13% full-year loss of passenger demand for carriers in the Asia-Pacific region.

**Corona virus** could cost the global economy more than \$1tn in lost output if it turns into a pandemic, according to a leading economic forecaster. Oxford Economics warned that the spread of the virus to regions outside Asia would knock 1.3% off global growth this year, the equivalent of \$1.1tn in lost income.

### **Phone manufacturing industries.**

Smartphone production is projected to decline 12 percent year-on-year this quarter, which would make it the lowest quarter in five years. The supply chain is labour-intensive, so is being heavily hit by the postponement of work resumption, and there will also be shortages of upstream components like camera modules.

Several fibre optics suppliers are based in Wuhan, where the coronavirus outbreak originated, and together account for 25% of global production. China's 5G rollout could be affected due to the greater need for optical fiber cables in next-generation base stations.

However iPhone said that the manufacturing of its phones won't stop due to virus, but the concern is not manufacturing but selling of those phones in these times.

## **India market analysis after corona virus**

### **Sensex plunges 807 points.**

Benchmark equity indices BSE Sensex and NSE Nifty cracked nearly 2 per cent on Monday following growing concerns over the global spread of the deadly coronavirus.

The 30-share index tumbled 807 points or 1.96 per cent to end at 40,363, while the 50-share Nifty index declined 242 points or 2.01 per cent to settle at 11,838. **STEEL** China is a net steel exporter. China demand has been impacted more than supply, resulting in higher domestic inventory and pressure on domestic prices. Weak domestic steel prices in China and lower iron ore prices outside China have started impacting steel prices outside China too. Lower steel prices directly impact earnings of all steel producers.

### **OIL & GAS**

Downstream companies will be impacted due to a slowdown in demand for petrochemical and refined products.

Lower refining margins will lead to lower profits for downstream oil companies such as BPCL, HPCL, IOCL and RIL.

### **PHARMACEUTICALS**

The Indian pharmaceuticals industry has deep linkages to China, given its reliance on China for critical elements of a drug's supply chain, starting from basic chemicals, key starting materials (KSM), intermediates and even active pharmaceutical ingredients (APIs).

### **AGRICHEMICALS**

The sector will be impacted due to a disruption in the supply chain of bulk chemicals and intermediates

### **CONSUMER DURABLES**

The consumer durables sector will be impacted due to a shutdown of manufacturing units in China. Indian durables manufacturers have a large dependence on China for critical inputs such as compressors for air-conditioners and refrigerators.

Almost all requirements of compressors as well as certain other components required for white goods are imported, with a bulk of the same being imported from China.

#### **AUTOMOBILES & AUTO COMPONENTS**

Kotak said it is difficult to quantify the exact impact as components are imported by both OEMs and vendors. Hero MotoCorp imports alloy wheels from China, which may get impacted if the situation does not improve in 1-2 months.

### **3. Myths about corona virus in India.**

- **Vaccine to cure corona virus is available –**
  - A) No there is no vaccine available.**
  
- **Ordering or buying products shipped from China will bring corona with it and may effect the person through touch-**
  - A) No, these viruses do not stay alive for much time on surfaces hence no postal message or products from China may be harmful.**
  
- **Eating any meat based food can give you virus-**
  - A) No, corona does not spread from meats like chicken, beef, pork, camel meat etc.**

- **Eating garlic, sesame oil and performing yoga can cure corona virus or a person doing this may not get in contact of corona.**
  - A) **As earlier said there is no cure to corona, a person who comes in contact of corona will lead with it and garlic wouldn't effect it.**
- **Homely pets can spread these virus-**
  - A) **As per the research this virus can not be spreaders though or by dogs and cats, however vaccines should be given to your pets as they may lead to some other viruses.**
- **Wearing a mask can stop this virus in coming contact to you.**
  - A) **Although mask is a safer side but virus are very small particles and can enter through any small centimetres hole, hence even mask can not protect a person**
- **In India there is even a perception that corona is a punishment by God given to all non-veg eaters.**
  - A) **Well this can not be proved and people who aren't eating non-veg are still coming in contact of it.**

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