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CONTENTS

Research Papers

PRIVACY AND SECURITY ISSUES IN MOBILE CLOUD COMPUTING

Nisha Vimal Singh

Student, Department of Information Technology and Mathematics, The SIA College of Higher Education, Dombivli (East)

ABSTRACT

Mobile cloud computing is a developing innovation in this century. The association of portable figuring also, distributed computing is known as mobile cloud computing. In reality the adjusted benefits of MC and CC are shaped MCC. Mobile cloud computing will be figuring of Mobile application through cloud. Mobile Cloud Computing (MCC) carries rich computational asset to portable clients, arrange administrators, and distributed computing suppliers. It very well may be spoken to from numerous points of view, and a definitive objective of MCC is to empower execution of rich portable application with rich client experience. Mobility is one of the primary qualities of MCC condition where client can have the option to proceed with their work despite development. Yet at the same time issue are emerging in MCC. High vitality utilization, correspondence cost, execution time and information security during exchange, and so forth. Security and information security is a significant issue in MCC which deflect the clients from embracing this innovation. This study paper illuminates protection and security issues of Mobile Cloud Computing.

Keywords: Mobile Cloud Computing, Mobile Computing, Cloud Computing, Energy Computations, Mobile Application, Privacy and Security.

1. OBJECTIVE

Portable devices are having only limited power supply, limited data storage, and limited computation capacity. But nowadays usage of mobile devices is rising. So the mobile devices need to improve the storage, computation power and minimize the energy consuming. Distributed computing offers to the clients to interface with the cloud pay as you use on request. So the client can use cloud assets in this arrangement. The cloud client can get to the information at anyplace whenever.

Utilizing the portable distributed computing we can avoid over these issues. Portable distributed computing fuses of remote systems, versatile processing and distributed computing. Utilizing cell phones the client can utilize the cloud server farm through remote systems. Fig. 1 shows that client can utilize the information focus by means of system utilizing cell phones implies the portable need not to have colossal measure of capacity in the gadgets itself. The convenient devices calculation process is performed outside of mobile devices into cloud. So the mobile devices need not have enormous measure of calculation control. Cloudlet is gathering of PCs that is trusted and associated with rapid Internet and accessible to cell phones. A mobile user wouldn't like to offload task legitimately to cloud the mobile client as they can offload the undertaking to the ideal cloudlet. Some of the time the device can't discover ideal cloudlet and afterward it will send one solicitation to the cloud.
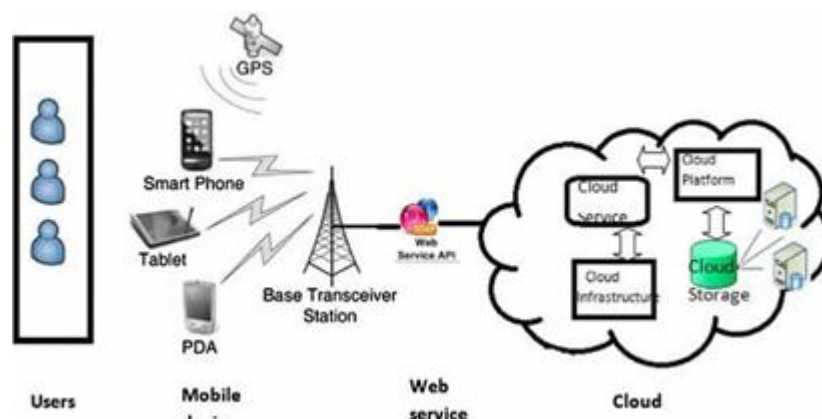
Figure-1: Mobile cloud computing

The entirety of this calculation procedure and information stockpiling is performed outside of the devices the security issue is happening. For instance, cell phones get to the information from the cloud information focus through web or put away information might get by the obscure individual the security misfortune may happen.

So we need to give any verification method to limit the information got to by unapproved clients. The two strategies are followed in security systems. Initial one is discovery of unapproved client and another keeping the

information from unapproved clients. The security may misfortune because of part of variables. In this paper area II contains Literature audit, segment III clarifies the degrees of security what's more, threat in mcc and threats, area IV clarifies sorts of issues in mobile distributed computing, segment V clarifies necessities of mcc security and protection segment VI clarifies keeping information from security issues.

2. REVIEW OF LITERATURE
Security and privacy issues of MCC have been discussed by many researchers.

- J. Oberheide et al. proposed Cloud AV platform, malware detection system. In this architecture, mobile agent first analyses the malicious file. If its signature is not matched with the cached database, it is sent to the network service for analysis with the help of multiple detection engines running parallel on host machines with the help of virtualization technique. These techniques have the advantage of better detection of malicious software, reduced on device software complexity and power consumption but suffer from limitations of disconnected operation and accidental privacy hazard.

- S Zhang et al. presents security framework which adapts mobile device with changing workloads, performance goals and network latency by migrating processing weblets between cloud and mobile device. They enhance this model by trustworthy weblets container, Authentication and secure session management, Authorization and access control of weblets, Logging and auditing behaviour of weblets to make more secure framework. Although security during weblets migration can be improved by other security techniques and cloud environment can be made more trustworthy.

- Xiao and Gong proposed lightweight algorithm for ensuring authorization in mobile cloud environment by generating automatic dynamic credential information with mutual coordination of mobile device and cloud so frequently that it is difficult for hackers to hack credential information of users. However frequent updation of secret information of user increases processing burden and energy consumption on mobile device and communication overhead between mobile and cloud.

- Saman Zonouz et. al. proposed Secloud; a cloud based comprehensive and lightweight security for smartphones. Secloud runs the emulators of Smartphones in cloud which provide security to mobile device by security analysis of data in mobile device. In this architecture cloud assumes to be fully trusted which needs to be reconsidered .The personal data of users accessed to the cloud can affect the privacy issues.

3. LEVELS OF SECURITY AND THREATS IN MOBILE CLOUD COMPUTING
Security issues are separated into two sorts, one is mobile network client's security and another is cloud security. Fig .2 shows that mobile cloud computing security issues are separated into different levels:

1) Mobile device
Data loss from lost/ stolen devices. Information stealing by mobile malware. Focus on mobile security issues and hazard factors.

2) Wireless Network
Data leakage through poorly written third party applications.

Vulnerabilities within devices, OS, design and third-party applications.

3) Cloud
The illegal persons or hackers may access the data. This level concentrates on those issues.
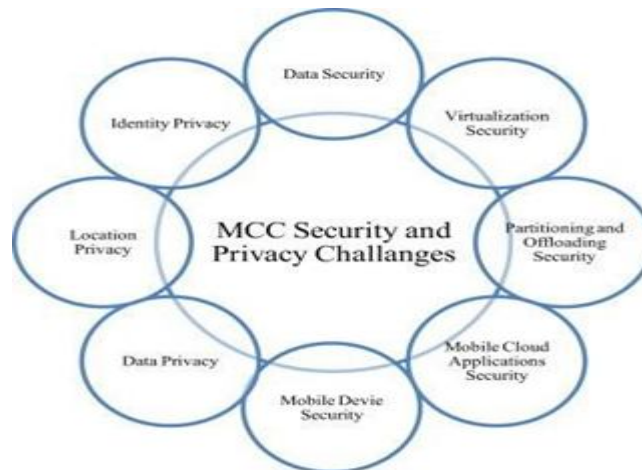
Figure-2: Levels of Security in MCC

In MCC threats are grouped into four

1) Physical Threats

Mobiles are little and costly one. Mobiles contains numerous significant data related to individual or business, for example, contact list, ledger, and so on. So programmer may hack your telephone physically.

2) Network base Mobile Security Threats

We are utilizing cell system or Wi-Fi the programmers attempt to get to our devices. When we connected to the system, they will naturally introduce malware on your device without your insight. They may make disavowal of administration utilizing those malware. They can ready to do Address Impersonation after that the message couldn't arrive at the right goals.

3) Application based Threats

Malware performs vindictive activities on your telephone without your insight and send undesirable message to your contacts without knowing you. Some vulnerable applications contain mistakes which could be abused for vindictive capacities.

4) Web based Threats

At the point when we are utilizing email, face book, instant messages, and twitter to send you connects to sites, that intended for spare your own information like record numbers or passwords in their framework remotely.

4. TYPES OF ISSUES IN MOBILE CLOUD COMPUTING

A portion of the significant issues in security are Data Ownership, Privacy, Data Security and other Security issues.

A. Data Ownership

Distributed computing gives the office to store the individual information and obtained advanced media, for example, digital books, video and sound documents remotely. For a client, there is an opportunity of hazard to lose the entrance to the acquired media information. To dodge these sorts of dangers, the client ought to know about the various rights with respect to the obtained media. MCC uses the setting data, for example, areas and capacities of gadgets and client profiles, which can be utilized by the versatile cloud server to locally advance the entrance the board.

B. Protection

Protection is probably the greatest test in the versatile distributed computing condition. A few applications which contract distributed computing store client's information remotely.

Outsider organizations may offer this significant data to some administration offices without the authorization of the client. For instance: Mobile gadgets use area based administrations which help their companions and different people to get the refreshes about the area of the client.

C. Information Security and other Security Issues

Cell phones are well known for pernicious code. There are numerous odds to lose or take the information since cell phones are for the most part unprotected. An unapproved individual can without much of a stretch access the data put away on the cell phones. The top versatile dangers that effect security are

Data misfortune from lost/taken gadgets. Information taking by portable malware.

Data spillage through inadequately composed outsider applications. Vulnerabilities inside gadgets, OS, plan and outsider applications. Insecure system get to and questionable passages.

Insecure or maverick commercial centers.

Insufficient administration instruments, capacities and access to APIs.

5. REQUIREMENTS OF MCC SECURITY AND PRIVACY

The general security requirements for MCC can be derived from the security requirements defined.

1) Integrity

In MCC, the information storage and preparing are dwelled on the specialist organization's end. Here, the trustworthiness needs to guarantee the precision and consistency of users information. As it were, the respectability counteracts undetected alteration of the data by any unapproved clients or frameworks. The infringement of respectability influences the versatile clients in their business, monetary and different misfortunes.

2) Confidentiality

The confidentiality is fundamental prerequisite that refers to keep mobile users information mystery in the cloud. Here, the confidentiality is a major block for mobile users to benefit the cloud administrations. As the information is transmitted and got inside open systems, and put away or prepared in open cloud servers to profit the cloud administrations, there is probability to uncover the information to unapproved parties.

3) Authentication and Access Control

The confirmation is the procedure or demonstration of deciding the character of a user, users information or application. After successful confirmation process, it is expected to figure out what assets are allowed to get to and what sort of activities can perform, for example, view, run, alter or delete. This is called access control.

4) Privacy Requirements for MCC

The security objective such as, confidentiality, trustworthiness and verification convince the security and these destinations protect the privacy directly or in a roundabout way of the cloud administration clients in mobile devices.

5) Availability

For MCC, the accessibility guarantees that all cloud administrations must be accessible consistently at any spots according to portable clients' necessities. Guaranteeing accessibility incorporates averting unique sorts of accessibility assaults which cause delay, to modify or interfere with the accessibility of administrations.

6. PREVENTING DATA FROM SECURITY ISSUES

There are three levels for utilizing improving the security in Mobile distributed computing. In each level we produce right security; the information may not misfortune at the hour of getting to the cloud by utilizing cell phones through remote web.

1) Mobile end

Mobile must be lightweight. The user must guarantee that all information in mobile devices are secured. Check any unapproved access of getting to information inside the device, ability to convey safely, Can authenticate remote servers.

2) Network end

Improve the protected routing protocol for secure information transmission between cell phones and cloud through remote systems. Capacity to keep up trust benefits and keeps up the honesty of information.

3) Cloud end

In server cloud must give validation. The information which is put away on cloud must be encrypted structure. Utilizing cross checks for distinguishing the client confirmation.

7. CONCLUSION

These days Mobile cloud computing is significant and rising processing idea. Be that, the security is a significant issue in MCC. To defeat from this issue we need to give high security in each degree of MCC. Expanding security in Mobile end, network end and cloud end the information misfortune may control. Create effective security and protection calculation for guaranteeing uprightness, genuineness, secrecy, and protection of client information. Limit the expense of security structure by expelling specialist among customer and cloud. Design platform independent security calculation for improving security.

REFERENCES

[1]. C.Arun, K.Prabu, Overview on Mobile Cloud Computing, International Journal of Advanced Research in Computer Science and Software Engineering, May- 2017, pp. 396- 398.

[2]. Z. Sanaei, S. Abolfazli, A. Gani, and R. Buyya, Heterogeneity in mobile cloud computing: Taxonomy and open challenges, IEEE Communication Surveys and Tutorials, 16(1), 369–392, 2014.

[3]. C.Arun, K.Prabu, Applications of Mobile Cloud Computing: A Survey, International Conference on Intelligent Computing and Control Systems 2017, pp.1037-1041

[4]. N. Fernando, S. W. Loke, and W. Rahayu, Mobile cloud computing: A survey. Future Generation Computer Systems, 29(1), 84–106, 2013.

[5]. Zhang, X., Schiffman, J.,. Gibbs S, Kunjithapatham, A., and Jeong S.2009,Securing elastic applications on mobile devices for cloud computing.In Proceeding ACM workshop on Cloud computing security, CCSW' 09, Chicago, IL, USA.

[6]. Oberheide, J., Veeraraghavan, K., Cooke, E. and Jahanian, F.2008,Virtualized in-cloud security services for mobile devices. In Proceedings of the 1st Workshop on Virtualization in Mobile Computing (MobiVirt),31- 35.

[7] Wang, S .and S. Wang X.," In-device spatial cloaking for mobile user privacy assisted by the cloud", in Proceeding 11th Interantional Conference on Mobile Data Management,MDM '10, Missouri, USA, May 2010.

[8]. Xiao, S. and Gong ,W.,2010. Mobility can help: protect user identity with dynamic credential.In Proceeding 11th International Conference on Mobile Data Management, MDM '10, Missouri, USA, May 2010.

[9] P. Zou, C. Wang, Z. Liu , and D. Bao, " Phosphor: A Cloud Based DRM Scheme with Sim Card," in Proceedings of the 12th International Asia-Pacific on Web Conference (APWEB), June 2010,pp. 459.

ARCHITECTURAL DESIGN FOR HADOOP NO-SQL AND HIVE

Amala M. Natu
Student, Department of Information Technology and Mathematics, The S.I.A College of Higher Education, Dombivli (East)

ABSTRACT

Big data is ultimately the collection of large and complex dataset which is difficult to process using relational database management tools or traditional data processing applications. The unstructured data which is so large in volume, so distinct in variety or moving with such velocity is termed as big data which is difficult to handle using traditional processing techniques. The analysis of big data is challenging as there are large distributed file systems. To overcome this problem big there are certain technologies used by big data. The technologies are Apache Hadoop, Apache Hive, No-SQL and Map Reduce. These technologies overcome the big data problems.

In this research paper we are going to discuss the various technologies in handling the massive data, their advantages and disadvantages of each technology and how these technologies tackle the problems of handling big data.

Keywords: Big data, Big Data Analytics, Hadoop, Hive, No-SQL.

OBJECTIVES

The main aim of this research work is Big data refers to huge amount of data and the main objective of this paper is to meet the basic storage needs. To fix the big data problems.To study the detailed structure of the technologies like Hadoop, Hive, No-SQL.

INTRODUCTION

Big data is one amongst the foremost areas of focus in today's digital world. however with the massive quantity of data comes management of that data as a result of the information is structured or unstructured or each from the various sources in several domain. huge information of such type is incredibly tough to method that contains info of legion those who includes their everyday activities from social sites, cell phones GPS signals, videos etc. massive data is that the largest buzz in domain of I.T. great deal of information is generated from the businesses like Google, Facebook, and YouTube etc. that must be analyzed properly because the information is structured or unstructured. there's a necessity of massive information Analytics that's the process of complicated and large datasets. The challenges of massive data management are volume, velocity, variety. the number of information created daily is large, about 2.5quintillion bytes of data is generated. In fact, IDC predicts the world's information can grow to one hundred seventy five zettabytes in 2025. massive information and its depth analysis is that the core of contemporary science, analysis space and business areas. Such variety of data keep in databases so it became terribly complicated to extract, remodel and create in use. IBM indicates that two.5 Exabyte data is formed everyday that is incredibly tough to research in varied aspects. There are massive information technologies that get existence for giant information management purpose. Technologies like Apache Hadoop, No-SQL, Hive, Sqoop, Polybase.

Hadoop is an Apache open source framework written in Java that allows distributed processing of large datasets in groups of computers using simple programming models. Hive Hadoop has a data warehouse infrastructure tool for processing structured data. It stays on top of hadoop to summarize big data, and makes query and analysis easier. No-SQL database is particularly useful for working with large sets of distributed data.

REVIEW OF LITERATURE

In order to understand the architecture of different big data technologies, the several resources have been consulted. This section provides a review of literature to set a foundation of discussing various aspects of big data technologies.

In 2013 John A keane[2] proposed a framework in which big data applications can be developed. The framework consists of three phases and seven layers to divide big data applications into blocks. The main motive of this paper is to manage and architect large amount of big data applications.

Jian Tan [6] in 2013 talks about the theoretical performance that improves the performance of Hadoop/map reduce. The advantage of this paper that is it accelerates the performance of large scale Hadoop clusters. The disadvantage of this paper is the environmental factors such as network topologies effect on a reduced task in map reduce cluster. The problem was solved, Thuy D.Nguyen author solved the multilevel secure

environmental problem of Hadoop by using security enhanced Linux (SE Linux) in which multiple sources of Hadoop applications run at different levels this protocol is extension of HDFS. The advantage of this paper is solving environmental problems of network without requiring complex Hadoop server components.

Aditya b. [12] (2012) defines a large data problem using Hadoop and Map Reduce. It describes optimal and efficient solutions using Hadoop Cluster, Hadoop Distributed File System (HDFS) for storing data, reduce map for parallel processing to process large scale data sets and records.

BIG DATA TECHNOLOGIES

Big data is a new emerging concept therefore its architectural structure is very new. There are very different technologies whose main purpose is to distribute the data among various local agents and reduce the load on the main server to avoid over trafficking.

HADOOP

Hadoop was produced in 2005 by Doug Cutting and Mike Caffarella. It was originally developed to support supplies for the Nutch search engine project. The project is named after his son's toy elephant, at the time and now the chief architect of Cludera. Apache Hadoop is the open-source framework that provides us with various services or tools for storing and processing big data in distributed environments in groups of computers called as clusters using simple programming paradigms. It is designed to provide local computing and storage to everyone from a single server to thousands of machines. It distributes the file among the nodes which help the system to work in case of any node failure. Application is broken into smaller blocks which reduces the risk of catastrophic system failure. Apache Hadoop has Hadoop kernel, distributed file system (HDFS) by Hadoop, map less and related projects zookeeper, Hbase, Apache Hive.

THE COMPONENTS OF HADOOP ARE

Name Node: Name node is the master node. It maintains the metadata information for the block of data in HDFS like block allocation, replication factor.

Secondary Name node: secondary name node checkpoints Name node's file system. SNN is not for backup but it continuously examine the data from the RAM of namenode and writes into the file system

Data Node: Data node is also termed as slave node. Data node is reliable for storing the data in HDFS. Name node manages all the data nodes.

The Multilevel Secure surroundings addresses the environmental issues of hadoop victimization the Enhanced Linux protocol within which several hadoop applications area unit run at completely different levels.SE protocol is an enlargement of Hadoop Distributed File system. The advantage of hadoop is distributed for storage and machine capabilities, giant block size, it's tolerant of hardware and software failure. The disadvantage of hadoop is that the single purpose of failure of name node. There are unit versions of hadoop that overcome the one purpose of failure. In hadoop one "Name node" is that the single purpose of failure. In hadoop a pair of there area unit active and passive Name nodes. If the active name node fails the passive name node takes the charge as a result of high availableness are often achieved in Hadoop 2.x.x.

The 3 very important components of hadoop architecture are:

1. Hadoop Distributed File System (HDFS)

2. Hadoop Map Reduce

3. YARN

Hadoop skills require thoughtful knowledge of every layer in the Hadoop stack, understanding about the various components in the Hadoop architecture, designing Hadoop clusters, tuning it, and establishing the top chain responsible for data processing. The architecture of hadoop is basically master-slave design for data storage using HDFS and data processing using Map reduce. The master node for data storage is the hadoop hdfs is the name node and for parallel processing of the data Map Reduce is the job tracker.

Worker nodes in the Hadoop architecture are other machines in the Hadoop cluster that store data and execute complex computations. Each slave node has a task tracker and a data node that synchronize processes with the job tracker and name node, respectively. In Hadoop architectural implementations, master or slave systems are setup in the cloud.
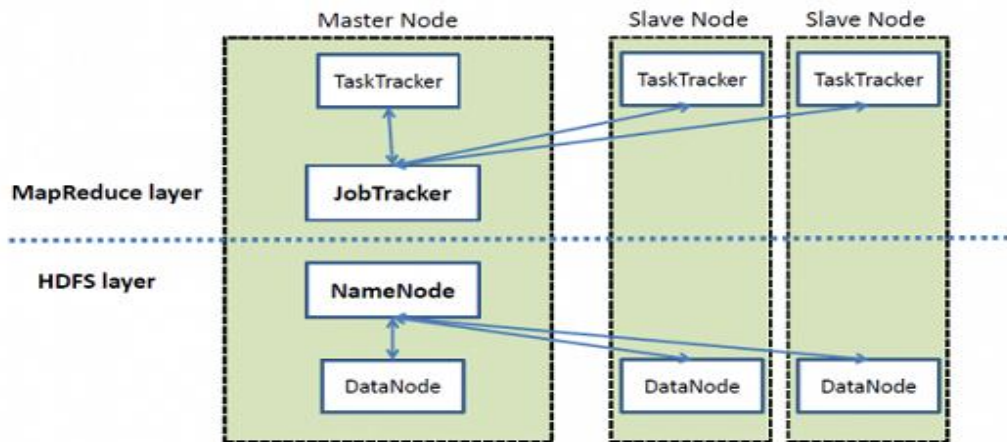
Fig-1 [5]. Architecture of Hadoop

On HDFS a file is divided into several boxes and each is replicated within the Hadoop cluster. A block on HDFS is a block of data within the underlying file system with a default size of 64MB. The size of the block can be increased to 256Mb according to the requirements. The Hadoop Distributed File System (HDFS) application stores data and file system metadata on a separate dedicated server. Name Node and Data Node are two important components of the Hadoop HDFS architecture. Application data is stored on servers referred to as data nodes and file system metadata is stored on servers referred to as name nodes. HDFS mimics file content on multiple data nodes based on the replication factor to ensure data reliability. Communication of Name node and data node occurs via TCP protocols.

Map-Reduce was introduced by Google to process and store bulky datasets on services hardware. Map Reduce is a prototype for processing large-scale data records in a cluster and work continuously carrying out the function. The map minimization programming model is based on two functions that are the map function and the reduce function. The map function functions as the master node accepts input, divides into smaller sub modules and distributes to slave nodes. A slave node further redistributes sub modules that lead to a hierarchical tree structure. The slave node processes the base problem and sends the result back to the master/main node. Map Reduce system arranges all intermediate pairs together based on intermediate keys and refers them to reduce () function to produce the final output. Minimize the function because the master node collects the results from all the sub problems and joins them together to create the output. Map Reduce works by first dividing the input data set into similar sized data blocks for the same load distribution. Each data block is then assigned to a slave node and processed by a map task and the result is generated. The slave node interrupts the master node when inactive. The scheduler then assigns new tasks to the slave node. The scheduler takes into account data localities and resources when it propagates data blocks.

Advantages of map reduce are scalability, Flexibility, Security and Authentication and large number of problems that are easily expressed because map-reducing calculations and clusters of machines handle thousands of nodes and fault-tolerance. The **disadvantage of map reduction** is real-time processing, not always very easy to implement, shuffling of data, batch processing.

Yarn: Apache Hadoop Yarn is a processing framework. Yarn manages resources and provides the execution framework to process. Resource manager receives the processing requests and then passes the parts of requests to the corresponding node manager accordingly. Node manager is installed on each data node and responsible for execution on every single data node.

Hive
Hive could be a data warehouse system engineered on prime of the hadoop and it's used for analyzing structured and unstructured information. Hive performs queries written in HQL the same as the SQL statement. Internally it gets converted to map scale back job by hive compiler. By default the information of hive tables square measure hold on in HDFS directory. Apache hive's applications square measure sql oracle ibm db2. Meta store in hive is that the Meta information info victimization RDBMS and open supply ORM (Object relative model) layer that converts the article illustration into relative schemas and vice-versa. bowler hat is that the default information provided by Apache Hive for meta store. The core elements of hive square measure

Hive shoppers, Hive Services and Hive Storage and Computing. options of Apache Hive square measure as follows:

1) The Hive design incorporates a system catalog that produces search easier.

2) Improved performance through information segmentation.

3) Bucketing within the hive will increase change of integrity performance, particularly once the bucket key and be a part of square measure identical.

4) Hive design incorporates a systematic list that produces the search straightforward.

5) Spontaneously improves logical plans through rule primarily based optimizer.
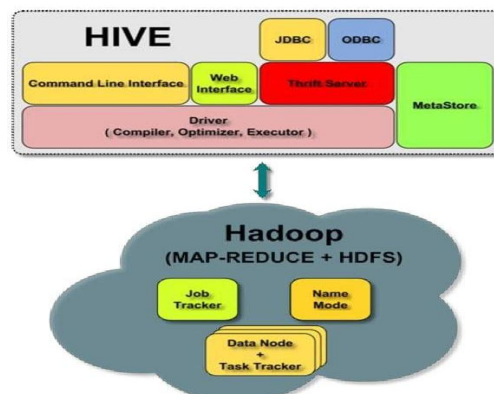
Fig-2[6]: Architecture of HIVE

Advantage of Hive is that data integrity is maintained by providing a complete ACID transaction support. Hive improves the performance through query, cost optimization in comparison with the map reduce. Hive provides high level security to avoid data violation.

Disadvantage of hive is that hive does not provide real-time queries. Row-updating is not possible in hive. Hive does not support sub-queries. Hive is not for online deal processing. In hive data overwriting is allowed but the data is not updated or deleted which causes data redundancy.

No-SQL
No-SQL is commonly known as "Not only SQL" is a complete different framework of databases. No-SQL boosts the performance; it performs agile processing of data on a large scale. It is a database infrastructure which is very helpful for big data. No-SQL is very efficient unlike relational databases. Relational databases are structured in nature whereas No-SQL is unstructured in nature. No-SQL adapts the concept of distributed databases where unstructured data is stored in multiple processing nodes and multiple servers. No-SQL maintains the performance even if data is added it is updated because No-SQL databases are horizontally scalable. These databases are in general part of real-time events, which are found in the process deployed on inbound channels, but they can also be seen as an enabling technique in analytical capabilities such as relative search applications. These are made feasible only due to the elastic nature of the no-SQL model where the dimensionality of a query is developed from data in the workspace and domain rather than being decided by the developer first.

The most famous No-SQL database is Apache Cassandra.
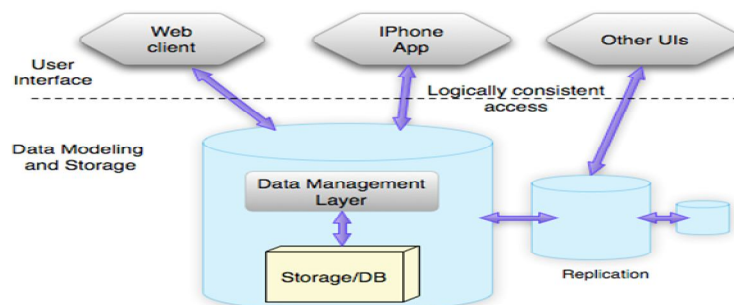
Fig-3 [7]: Architecture of No-SQL

Advantage of No-SQL is it very easy to use, it is an open source and horizontal scalable. Complex data is stored, it can add new data quickly and queries are updated or deleted conveniently. Large volumes are easily managed by No-SQL.

Disadvantage of No-SQL is that there are many more features which are not implemented which make it less mature. No-SQL is an open source but it is controlled my very few firms concluding No-SQL has a very less support There needs to be a lot of development in technical field like installation and maintenance. No-SQL is still very fresh and there are not expertise in No-SQL compared with RDBMS.

CONCLUSION

In this paper we have studied various technologies in big data and their architecture. We have also studied the backdrops of big data and also the need of big data technologies. The architecture, advantages and disadvantages of technologies like Hadoop Hive and No-SQL are been studied. The main aim of our paper was to find how the big data technologies help in storing huge amount of data and improves the overall performance of the system.

REFERENCE

[1] A.Antony Prakash, Dr. A. Aloysius "Architecture Design for Hadoop No-SQL and Hive", International Journal of Scientific Research in Computer Science, Engineering and Information Technology, Volume-3. | ISSN: 2456-3307

[2] Abinav Pothuganti "Big Data Analytics: Hadoop-Map Reduce & NoSQL Databases", (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 6 (1) , 2015, 522-527, ISSN: 0975-9646.

[3] https://www.dezyre.com/article/hadoop-architecture-explained-what-it-is-and-why-it-matters/317

[4] https://www.google.com/search?q=what+is+the+aim+of+hadoop&sxsrf=ACYBGNSd12a-S_mtAaKs WCYnH_MRCthxg:1577011160502&source=lnms&tbm=vid&sa=X&ved=2ahUKEwiW5JywiMnmAhW ZbSsKHeRoC04Q_AUoA3oECA8QBQ&biw=1242&bih=597

[5] https://www.google.com/search?sxsrf=ACYBGNSjcvjuUqbxWyhKfUcCkwa67GR9FA% 3A1577023816928&ei=SHn_XcScONSGmge1_5vQDQ&q=architecture+of+hadoop+images&oq=archite cture+of+hadoop+im&gs_l=psyab.3.0.33i22i29i30l5.1644.5037..6818...0.2..0.278.611.0j2j1......0....1..gws-wiz.......0i71j0j0i22i30.AZTWFqrx7Lo]

[6] https://www.bing.com/images/search?view=detailV2&ccid=p4AubuN5&id=DB800C884535854B 30F1559757B685C297C77B2F&thid=OIP.p4AubuN5Jojh7Z7fskDo0gHaHz&mediaurl=http%3a%2f%2f www.bodhtree.com%2fblog%2fwp-content%2fuploads%2f2012%2f09%2fHive-Architecture1.png&exph=430&expw=408&q=architecture+of+hive+images&simid=60804811442657731 5&selectedIndex=14&qpvt=architecture+of+hive+images&ajaxhist=0

[7] https://www.bing.com/images/search?view=detailV2&ccid=cuaFcC61&id=8852C953CE3016DAB45 692D2E622432DCE9333E1&thid=OIP.cuaFcC61Fa1_n9zC5y6jOQHaE6&mediaurl=http%3a%2f%2fww w.sitepen.com%2fblog%2fwp-content%2fuploads%2f2010%2f03%2fData-ManagementArchitecture.png&exph=358&expw=539&q=architecture+of+nosql+imagesin&simid=60803 5916726470046&selectedIndex=0&ajaxhist=0

CYBER SECURITY

Himanshu Mehra

Student, Department of Information Technology and Mathematics, The S.I.A College of Higher Education
University of Mumbai, Dombivli (East)

ABSTRACT

Nowadays, there have been numbered of increasing articles in media and newspapers related to various attacks and threats on computer systems and networks. Due to the critical infrastructure on which our communities, states and nations depend on networks and computer systems, there is also a high possibility of cyber-attacks. Information security has become the biggest challenge today. These attacks are carried out in many ways that can ruin an individual or company in financial, or other ways, also known as cyber-attack and cyber-crime.

The communities understand to protecting them from the physical attacks, but regarding cyber security there are few who understands what are the things involved in defending against cyber security attacks. Cyber security plays a key role in information technology. Various companies and government have taken several measures to curb these cyber-crimes. So these research paper may help peoples to provide the information for the purpose of security to improve their security posture and enhance their chances of successfully preventing or detecting from cyber-attack and be safe from the threats or virus and be safe from cyber-crimes and cyber-attacks.

Keywords: Cyber Security, Cyber Crime, Cyber Attacks, Security Techniques and Cyber Ethics

REVIEW OF LITERATURE

Cyber security is the activity of protecting information and information systems (networks, computers, data bases, data centers and applications) with appropriate procedural and technological security measures. Firewalls, antivirus software, and other technological solutions for safeguarding personal data and computer networks are essential but not sufficient to ensure security. As the nation is rapidly building its Cyber-Infrastructure, it is equally important that they educate their population to work properly with this infrastructure. Cyber-Ethics, Cyber-Safety, and Cyber- Security issues need to be integrated in the educational process beginning at an early age.

INTRODUCTION

Today man is able to send and receive any form of data may be an e-mail or an audio or a video just by the click of a button but did How do they ever think about how their data IDs are being transmitted safely or safely to another person without any leakage of information?? The answer lies in cyber security. Today, the Internet is the fastest growing infrastructure in everyday life. In today's technological environment many latest technologies are changing the face of mankind [1]. But due to these emerging technologies we are not able to protect our private information very effectively and hence cyber-crimes are increasing day by day. Today more than 60 percent of the total commercial transactions are done online, so the sector needed high quality security for transparent and best transactions. Thus cyber security has become a latest issue. The scope of cyber security is not just limited to securing the information in IT industry but also to various other fields such as cyber space etc.

Even the latest technologies such as cloud computing, mobile computing, E-commerce, net banking etc. also needs high level of security. Since these technologies hold some important information in relation to an individual, their safety has become an essential thing. Enhancing cyber security and protecting critical information infrastructure are essential for the security and economic well-being of every country [2]. Making the Internet secure (and protecting Internet users) has become an integral part of government policy along with the development of new services. The fight against cyber-crime requires a comprehensive and safe approach. Since technical measures alone cannot prevent a crime, it is important that law enforcement officers are empowered to effectively investigate and prosecute cyber-crimes. Today many nations and governments are enforcing strict laws on cyber securities to prevent the loss of some important information. Everyone should also be trained on this cyber security and should protect themselves from these increasing cyber-crimes.

BACKGROUND OF STUDY

Cyber security's importance is on the rise. Fundamentally, our society is more technologically reliant than ever before and there is no sign that this trend will slow. Personal data that could result in identity theft is now posted to the public on our social media accounts. Sensitive information like social security numbers, credit card information and bank account details are now stored in cloud storage services like Dropbox or Google Drive.

The fact of the matter is whether you are an individual, small business or large multinational, you rely on computer systems every day. The aim is to create awareness in the society about cyber-crime and how to prevent them.

Cyber Security

Cyber security is a term of security which is framed through various topics most of them focuses on technical or psychological problems such as computer science, criminology, Economics, engineering, information systems, management, medicine, neurophysiology, psychology, Sociology, etc. [2]. It afford the people with discussions about behaviours and motivations, benefits and consequences about cyber-crime and security. Cyber security will be used to represent the security issues of information systems: Cyber security is one of the information system management by individuals or organizations to direct end-users security behaviours, on the basis of personal perceived behaviours toward potential security breach in work and non-work environment. The extant study of cyber security explores three main streams: individual behaviours toward information security in non-work setting, employee behaviours toward information security in work setting, and organization information system security policy (ISSP) compliance and the related issues.

Cyber Crime

Cyber-crime is a term for any illegal activity that uses a computer as the primary means of commission and theft. The Department of Justice expanded the definition of cyber-crime to include any illegal activity that uses a computer for the storage of evidence. A growing list of cyber-crimes include crimes that are possible by computer, such as network intrusion and the spread of computer viruses, computer-based adaptations of existing crimes, such as identity theft, stalking, bullying, and terrorism are major problems for people and nations [3]. In layman's language, cyber-crime can be defined as a crime using computers and the Internet that can steel a person's identity or sell contraband or stalk victims or disrupt operations with malevolent programs. As day-to-day technology is playing a major role in a person's life, along with technological development, cyber- crimes will also increase.

Various Kind of Cyber Attack

There are several types of attacks, but most common security attacks are described below:

Denial of Service Attacks

These attacks are mainly used to unavailable some resources like a web server to users. These attacks are very common today. They used overload to the resource with illegitimate requests for service. The resource cannot process a flood of requests and either slows or crashes.

Brute Force Attacks

These attacks try to kick down the front door. It is a trial-and-error attempt to guess a system's password. One of the four network attacks is a brute-force attempt. This attack uses an automated software to guess hundreds or thousands of password combinations.

Browser Attacks

These attacks target the end users who are browsing the Internet. The attacks may encourage them to inadvertently download malware. These attacks used fake software updates or applications. Websites are also force to download malwares. The best way to avoid browser-based network attacks is to update the web browser regularly [4].

Shellshock Attacks

These attacks are refers to vulnerabilities found in Bash, a common command-line shell for Linux and UNIX systems. Since many systems are never updated, vulnerabilities still exist all over the web. The problem is so widespread that Shellshock is the target of all networks.

SSL Attack

These attacks are intercept data that is sent over an encrypted connection. These attacks successfully access to the unencrypted information [3]. These attacks are still very common today.

Backdoor Attacks

These attacks are used to bypasses normal authentication to allow remote access. These attacks are added to the software by design. They are added in the Programs or created by making changes in existing program. Backdoors is less common types.

Botnet attacks
These attacks are hijackers. They are computers that are controlled remotely by one or more malicious actors. Attackers use botnets for malicious activity, or hire botnets to perform malicious activity for others [4]. Millions of computers can be caught in a botnet's trap.

Probing
Probing is another type of attack where an attacker scans a network to gather information or discover known weaknesses. An attacker with maps of machines and services that are available on a network can use the information to exploit.

Remote to Local Attacks
A remote to local (R2L) attack is a kind of attack where an attacker send packets to a machine over networks, then exploits the machine's vulnerability to illegitimately increase local access to a machine [2]. This occurs when an attacker who has the ability to send packets to a machine on the network, but does not have an account on that machine, develops some penetrability to gain local access as a user of that machine.

User to Root Attacks
User to root attacks is a kind of attacks where an attacker initiates with access to a moderate user account on the system and is able to expand vulnerability to grow root access to the system in which the attacker starts out with access to a normal user account on the system and is able to exploit some vulnerability to gain root access to the system [2].

Cyber Security Techniques:
Access control and password security
The idea of user name and password has been a fundamental way of protecting our information. This may be one of the first measures in relation to cyber security.

Authentication of data
The documents that we receive should always be authenticated before downloading that is it should be checked if it has originated from a trusted and a reliable source and that they are not altered. Authentication of these documents is usually done by existing anti-virus software in devices [5]. Thus a good antivirus software is also necessary to protect the devices from viruses.

Malware scanners
It is a software that usually scans all files and documents in the system for malicious code or harmful viruses. Viruses, worms, spyware and Trojan horses are examples of malicious software that are often grouped together and referred to as malware.

Firewalls
A firewall is a software program or piece of hardware that helps to eject hackers, viruses, and worms that try to reach your computer over the Internet. All messages entering or leaving the Internet pass through an existing firewall, which checks each message and intercepts those that do not meet the specified security criteria. Hence firewalls play an important role in detecting the malware.

Anti-virus software
Antivirus software is a computer program that blocks, detects, and takes action to disarm or remove malicious software programs such as viruses and worms. Most antivirus software includes an auto- update feature that enables the program to download profiles of new viruses so that it can detect new viruses as they are detected. An antivirus software is a must and basic necessity for every system.

Scrubbing Centers
A scrubbing center is a vast improvement over the first-generation DDoS mitigation methods that used null routing to 'black hole' all traffic destined for a particular IP suspected of being under attack [6]. The problem with the null routing approach was that it blocked all traffic destined for suspected victims, mainly to protect the network from overload, which means a victim would cease receiving any Internet traffic at all (the actual intent of the attack).

Intrusion Prevention System (IPS)
An IPS is essentially an IDS that is installed inline and can take action based on what it detects. Critically, the IDS is designed to be deployed at the boundary between different levels of trust (for instance, a high-trust private network and an untrusted public network) [6]. It's like a firewall, but inside out because it has a set of mostly 'deny' rules as in 'block this known security problem'. When a packet shows up at the IPS, the IPS

looks through its list for a rule indicating it should drop the packet. However, at the end of the list, there is an underlying 'pass' rule. Just as with the IDS, the IPS detects malware threats through the use of binary signatures, logs security events and looks for patterns of behaviour indicating violations to a private network's security policy. An IPS has traditionally been oriented towards detecting and stopping attempts to compromise a host rather than network-level attacks, although some solutions include some rate-limiting functions to address DDoS attacks targeted at the enterprise network.

Host-based IPS
A host-based IPS protects individual devices such as enterprise workstations, servers and smartphones from unauthorized access and malware coming from the untrusted public Internet. As such, they fall squarely into the realm of endpoint protection and, when tuned properly to the specific workstation, application, user role and workflow, can work very well.

Digital signatures
Digital signatures can be extracted from the same mathematical algorithms employed in asymmetric encryption. A user is free to test that he has a private key by getting some information encoded with it. Anyone can decrypt the same by having the public key that will verify the person's credentials [4]. This process is in the exact reciprocal essence of public key encryption and similarly operates on the functions on the assumption that the authorized user only has the private key.

Encryption
Encryption render data indecipherable without application of a proper key to unlock the same. To counter an encryption, one would be required to solve complicated mathematical problems such as factoring large primes that would consume astronomical amount of computing resources and time. Symmetric encryption uses the same key for the purpose of message encoding and decoding, and the security level is similar to that of the key [5]. The distribution of keys will be accompanied by potential security risks. Asymmetric encryption uses a public key to encrypt the message and a private key to decrypt the same. The majority of current security protocols are employing asymmetric encryption for key distribution.

Cyber Ethics
Cyber ethics are nothing but the code of using the internet. When we practice these cyber ethics we have a good chance of using the internet in a proper and safe manner. The below are a few of them:

- DO use the Internet to communicate and interact with other people. Email and messaging make it easy to stay connected with friends and family members, communicate with work partners, and share information and idea with people across town or most of the way around the world [1].

- Don't be a bully on the Internet. Don't take people's names, lie about them, send embarrassing pictures of them, or do anything else to try to hurt them.

- Do not operate others accounts using their passwords.

- Never try to send any kind of malware to other systems and make them corrupt.

- Never share your personal information to anyone as there is a more chance of others misusing it and finally you would end up in a trouble [2].

- When you're online never pretend to the other person, and never try to create fake accounts on someone else as it would land you as well as the other person into trouble.

- Always follow to copyright information and download games or videos only if they are permissible.

The above are some of the cyber ethics that must be followed while using the Internet. We always feel that we formulate appropriate rules in the early stages of implementation in cyberspace.

RESEARCH METHODS
In order to gain better insight of the topic selected, various research papers were studied, which are mentioned in the reference.

SCOPE OF THE STUDY
This paper gives awareness about cyber-crime and cyber-attacks and helps to protect yourself by knowing about cyber security.

This paper is helpful for everyone who wants to do research based on cyber security.

This research paper is helpful in knowing basic cyber security techniques and how to be safe online on the Internet.

CONCLUSION

Computer security is a very huge topic that is becoming much important as the world is highly interconnected, with networks being used to conduct important transactions. Cybercrime continues to bend different paths with each New Year that passes and thus protects information. The latest and disruptive technologies, along with new cyber tools and threats that come to light every day, are challenging organizations to not only protect their infrastructure, but also require new platforms and intelligence to do so is. There is no right solution for cyber-crimes, but for a safe and secure future in cyberspace, we must do our best to minimize them.

REFERENCES

[1] G.Nikhita Reddy and G.J.Ugander Reddy, "A study of cyber security challenges and its emerging trends on latest technologies"– arXiv.

[2] Dr. V.Kavitha and Dr. S.Preetha, "Cyber security issues and challenges - a review" Presented at International Journal of Computer Science and Mobile Computing, Vol. 8, Issue. 11, November 2019.

[3] Jitendra Jain and Dr. Parashu Ram Pal, "A Recent Study over Cyber Security and its Elements" Presented at International Journal of Advanced Research in Computer Science, Volume 8, No. 3, March – April 2017.

[4] Cyber Security: Understanding Cyber Crimes- Sunit Belapure Nina Godbole

[5] Huaglory Tianfield, "Data Mining Based Cyber-Attack Detection" Presented at Glasgow Caledonian University, Glasgow G4 0BA, UK.

[6] Alvaro Cardenas, "Cyber-physical systems security knowledge area" – CyBOK

USB LEVEL DATA SECURITY

Kiran Vitthal Mate

Student, Department of Information Technology and Mathematics, The SIA College of Higher Education, Dombivli East

ABSTRACT

Information Security is particularly significant in each part of information assortment just as information stockpiling. Equipment gadget like USB is especially helpful worldwide so as to store continuous private information. So it is important to give equipment level security to each little stockpiling gadget like pen drive, outer hard circle and so forth. In this setting cryptography is one of the most encouraging procedure to scramble the real information in other structure. In this paper, we propose a powerful encryption procedure in equipment level which will guard the information from outer burglary. Our proposed calculation is related with equipment stockpiling like pen drive and outer hard plate.

Keywords: Cryptography, Encryption, Decryption, Data hiding, Bits, Cypher text.

I. INTRODUCTION

In the event of cryptography unique information is changed over into figure message through the procedure of encryption and the decoding procedure recovers the first information from the figure content. Through the procedure of information security we can shield our classified information from any malevolent operator. Malignant hub may hamper the information whenever, anyplace in worldwide system or in our nearby PC framework. So we generally need to have a trust commendable framework which can shield our information from undesirable or unapproved source .In this setting cryptography assumes a significant job so as to give outrageous degree of information security on constant classified information. We have different programming level security like firewall to channel the approaching sign from
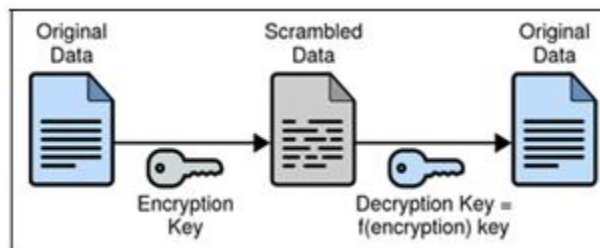
Figure-1: Describes the Encryption and Decryption Procedure

Equipment level security is particularly helpful to store the information securely in a capacity gadget like pen drive, outside hard circle and so forth. Presently a day the utilization of auxiliary stockpiling gadget is expanded quickly to store a large number of information briefly and that is the reason the point of the gatecrashers is engaged to get to the information from those capacity gadgets whenever, anyplace easily.

This paper is organized as pursues. Segment II manages Literature overview, proposed approach is examined in area III, Section-IV shows the engineering of the proposed work, segment V discusses recreation result lastly the end is in segment VI.

II. LITERATURE SURVEY

There are a few procedures that are utilized to verify the information during remote transmission. A similar methodology is utilized for any sort of information correspondence between the sender and recipient. J. Valente. et.al. purposed an Improving automaton security procedure for vulnerabilities ramble. Where Securing ramble passage with a solid secret word, and WPA2 likewise restricting the quantity of gadgets permitted to interface with the passageway. Another thought is to incapacitating ftp and telnet, with the goal that mysterious ftp client can't associate which diminishes the security chance [1]. A. K. Acharya. et.al. present picture encryption utilizing file based technique for encoding the dark scale picture. Utilization of Chaotic framework in the advanced picture encryption extraordinarily expands wellbeing parameters in the encryption pictures, because of the affectability of confused framework to the underlying condition. Increasingly over it is practically unthinkable for any cryptanalysts attempting to decode the picture without approval [2]. J. Won. et.al. In this convention, a safe correspondence framework among automatons and savvy objects is displayed. To fulfill security and productivity prerequisites, they propose the eCLSC-TKEM with the double channel methodology. Our convention e_ciently underpins four security capacities key understanding, client validation, non-

disavowal, and client renouncement. This convention examination is completed in a shrewd stopping the board [3]. D. Choudhary. et.al. portrays in Wireless Sensor system might be legitimized by utilizing MARTE profile. Talking about UML/MARTE models, Wireless Sensor Network specifically, it clarifies that gadgets that are the blend of system and characterizing the correspondence and movement arrangements among the gadgets that are utilized in remote system. Remote sensor has particular sorts of parameters. Here, we have execution of some another proposed procedures to mimic the parameters by utilizing virtual test system structure that depend on the key HW/SW reenactment strategies [4]. Another innovation progress, numerous cryptography calculation and advanced watermarking proposed for greater security of their pictures. The procedure of visual cryptography is utilized to share important pictures. These offers are secured by watermark with pictures. In the wake of getting the transmitted pictures, the less than desirable end separates the offer from the pictures and they get the first emit picture by extricating the watermarked pictures and stacking them genuinely. This is the manner by which the visual cryptography is joined with advanced watermarking for an improved method of security [5].

Luay A. Wahsheh. et.al depicts WSN which have been examined widely in the course of recent years utilized by the military for observation purposes and have since ventured into modern and regular citizen uses, for example, climate, contamination, traffic control, and social insurance. These systems are powerless to programmers who may go into the system with the expectation of rendering it pointless. A case of this would be a foe holding an automaton and getting it to assault neighborly powers. In this paper, we assess the security of remote sensor [6].

S. Jamal. et.al sets up another calculation to perform disorder based encryption over advanced pictures. Dark scaled pictures were utilized for trial investigation of the calculation. The proposed calculation starts with the Chaotic Map (Extended-ACM) to rearrange the source picture, which doesn't just permute the pixel facilitates yet additionally changes the relating force esteems utilizing values from disordered grouping. The rearranged picture is then figured with direction esteems are registered by partial request technique. Contrasting and the current comparative encryption methods, especially, Guan et al. furthermore, Xiao D. et al., it is seen that the proposed strategy shows increasingly noteworthy outcomes. Also, the test investigation clearly bolsters the finished up comments [7, 8].

III. PROPOSED METHODOLOGY

In this paper we propose an encryption procedure on the arrangement of twofold strings. For our methodology any printed data is viewed as the plain content. Here in this methodology we apply the scientific idea of sin(x) for encryption and sin-1(x) for unscrambling, where x is any whole number. The scope of sin(x) is lies between - 1 to 1 and that is the reason regardless of whether we increment the estimation of x somewhat, two progressive sin(x) capacities can't cover by any stretch of the imagination. This property of sin(x) work makes more special variety than some other numerical capacities. Because of its exceptional variety, sin(x) capacity can be valuable for building the

Cryptographic system. Here in this methodology we break the whole content into paired piece stream. We convert every single letters of a book in to 8bit parallel number. After the changing over the content in to parallel number we perform decimal expansion on all the paired bits. At that point choose whether the total of all the double bits is even or odd. On the off chance that the total is odd, at that point we pick sin((nx)+k) where n=bit esteem , x=bit position and k=increment factor. Also, on the off chance that the total is even, at that point we pick sin((nx)- k)) . Both for odd and even whole we check first and last piece of paired stream and choose the suitable capacity referenced in table 1. The stream diagram of our proposed plan is given in figure-5.

Sum	First bit	Last bit	Function
	0	1	Sin(nx)
	0	0	Sin(nx)+2
Odd	1	1	Sin(nx)+4
	1	0	Sin(nx)+6
	0	1	Sin(nx)-2
	0	0	Sin(nx)-4
Even	1	1	Sin(nx)-6
	1	0	Sin(nx)-8

We are considering flag of 3 bits. This flag basically used for decrypting the cipher text into plain text. The algorithm for encryption and decryption is given below:-

---

Encryption Algorithm

Step-1:-
Take any text as an input and flag of 3 bit

Step-2:-
Convert the input text into binary number (8 bit).

Step-3:-
Add the entire bit and store it into the variable named sum.

Step-4:-
If the sum is odd then
      Check LSB and MSB
    If LSB=0&MSB=0 then compute $\sin(nx+2)$
    else if LSB=0&MSB=1 then compute $\sin(nx)$
    else if LSB=1&MSB=0 then compute $\sin(nx+6)$
    else if LSB=1&MSB=1 then compute $\sin(nx+4)$

step-5:-
      else if the sum is even then
      Check LSB and MSB
    If LSB=0&MSB=0 then compute $\sin(nx-4)$
    else if LSB=0&MSB=1 then compute $\sin(nx-2)$
    else if LSB=1&MSB=0 then compute $\sin(nx-8)$
    else if LSB=1&MSB=1 then compute $\sin(nx-6)$

Decryption Algorithm

Step-1:-
From the flag bit we can easily know that which function is selected for encryption. On the basis of that function we have to compute $\sin^{-1}(nx+k)$.

Step-2:- IV. ARCHITECTURE Store the bits into an array named A".

Step-3:-
Make a set of 8 bit of A" and convert the binary bits into ASCII code.

Step-4:-
We will get the plain text from the ASCII code.

IV. ARCHITECTURE
Our proposed architecture consist of following blocks
1. Data block
2. Encryption block
3. USB block
4. Decryption Block

1. Data block:-
Data block consist of some user information preferably textual data to be sent to the USB device via encryption block

2. Encryption block deals with a cryptographic technique discussed in proposed methodology section.

3. USB block:-
This is a typical hardware storage device that allows us to store the data temporarily. Pen drive or external hard drive is the example of USB block.

4. Decryption Block:-
Decryption block deals with a cryptographic technique in order to retrieve the information from cipher text as discussed in proposed methodology section.

The architectural design is given in figure 2:-

DECRYPTION BLOCK
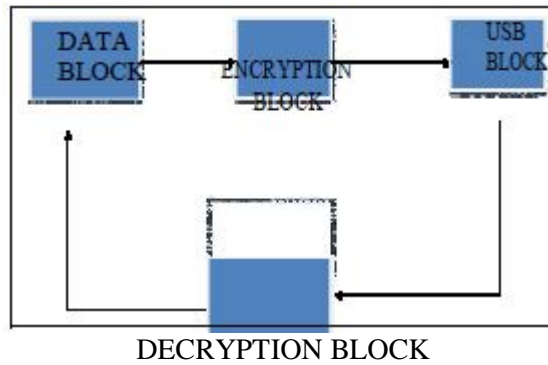
Figure-2: Architecture of our proposed scheme

V. RESULT AND ANALYSIS

Our reenactment study is run upon MATLAB test system and we have taken a few information both for whole number and string for test reason. Here we give not many of them. Let us consider a whole number say, 25 to be scrambled based on the accompanying advances:

Step-1: Conversion of integer in to binary number 25=00011001

Step-2: Find the integer sum of all the bits:

Sum= 0+0+0+1+1+0+0+1=3

So sum is odd

Step-3: select sin(nx) function to encrypt each and every bits. n= bit value and x= bit position starting with 1 from MSB end. Following table shows the each bits and its corresponding sin(nx) value.

Table-2: Bit Vs Sin(nx) function

BIT	Sin(nx-2)
0	0
0	0
0	0
1	0.069
1	0.087
0	0
0	0
1	0.1391

Now consider another input of string type , say "HI" message to be encrypted on the basis of the following steps:

Step-1: Conversion of integer in to ASCII Value Input message: "HI"

ASCII value of „H"=72, „I"=73

Now convert 72 in to 8 bit binary number like, 72= 01001000 Then convert 73 in to binary number like, 73=01001001

So, binary stream for „HI" message is:

0100100001001001

Step-2: Find the integer sum of all the bits:

Sum= 0+1+ 0+ 0+ 1+ 0+ 0+ 0+ 0+ 1+ 0 +0 +1+ 0+ 0+ 1=4 So sum is even

Step-3: select sin(nx-2) function to encrypt each and every bits.

n= bit value and x= bit position starting with 1 from MSB end. Following table shows the each bits and its corresponding sin(nx-2) value.

Table-3: bits Vs sin(nx-2)

BIT	Sin(nx-2)
1	0.0000
0	-0.0340
0	-0.0340
1	0.0520
0	-0.0340
0	-0.3400
0	-0.3400
0	-0.3400
1	0.1220
0	-0.3400
0	-0.3400
1	0.1740
0	-0.3400
0	-0.3400
1	0.2240

The graph for encrypted message both integer and string type plain text is given below.
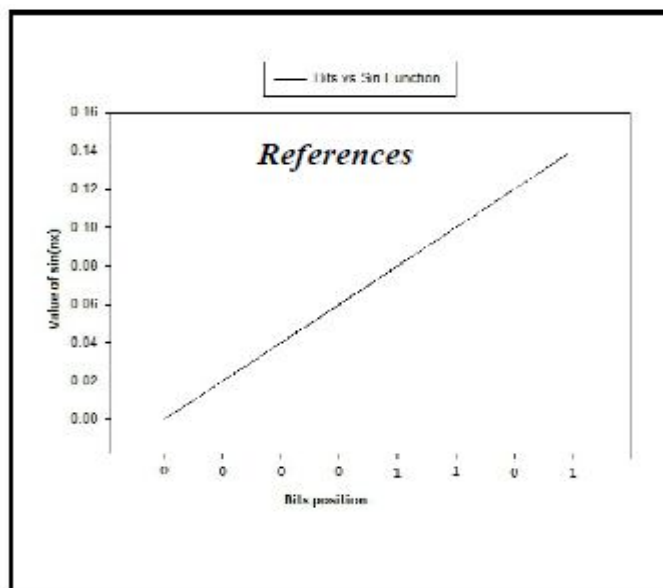
Figure-3: Graph for encrypted bits for input-,,25"
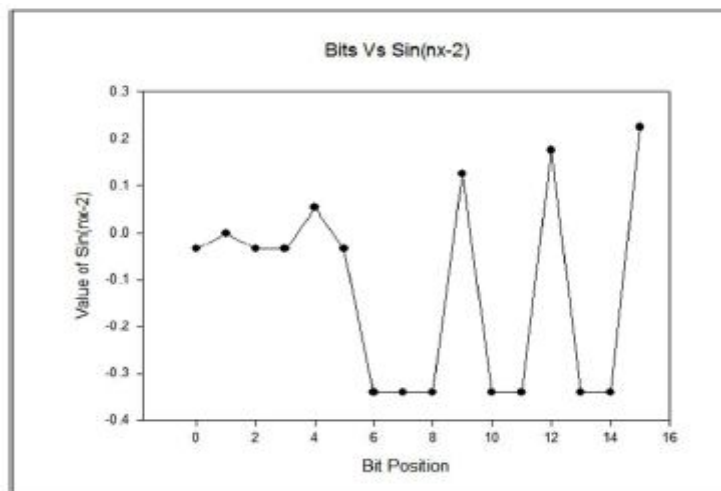
Figure-4: Graph for encrypted bits for input-,,HI"

VI. CONCLUSION

In this paper we propose a strong encryption system so as to verify both whole number and printed kind of message. In future we will execute this idea for video and picture kind of information and furthermore contrast our methodology and existing procedure of the premise of time intricacy, memory utilization and vitality utilization.

REFERENCES

[1] J. Valente, Alvaro A. Cardenas , "Understanding Security Threats in Consumer Drones Through the Lens of the Discovery Quad copter Family", IoT S&P'17, Dallas, TX, USA, November, 2017.

[2] A. K. Acharya "Image Encryption Using a New Chaos Based Encryption Algorithm", acm digital library, ICCCS Proceedings of the 2011 International Conference on Communication, Computing & Security, Pages 577-581.

[3] J. Won, S.Hyun Seo, E. Bertino "A Secure Communication Protocol for Drones and Smart Objects", 10th ACM Symposium on Information, Computer and Communications Security, April 2015

[4] D. Choudhary, V. Verma "Encryption techniques for different introduciros attack in wireless sensor networks" Computational Intelligence & Communication Technology (CICT), 2017 3rd International Conference on 13th July 2017.

[5] J. Saturwar, D.N. Chaudhari, "Secure visual secret sharing scheme for color images using visual cryptography and digital watermarking", Coimbatore, Tamil Nadu, India, November 2017.

[6] Luay A. Wahsheh, Daniel E. Burgner, "Security of Wireless Sensor Networks", Information Technology: New Generations (ITNG), 2011 Eighth International, 12th July,2011

[7] S. Jamal H. Zaidi, "Improved Image Encryption Technique using Multi Chaotic System", in- 2008 Workshop on Power Electronics and Intelligent Transportation System IEEE 2008

[8] Priyajit Biswas, Shyamalendu Kandar, Bibhas Chandra Dhara, A Novel Image Encryption Technique using One Dimensional Chaotic Map and Circular Shift Technique "Signal Processing, 2008. ICSP 2008. 9th International Conference, December 2008.

[9] Quist-Aphetsi Kester ; Laurent Nana ; Anca Christine Pascu "A novel cryptographic encryption technique of video images using quantum cryptography for satellite communications" Adaptive Science and Technology (ICAST), 2013 International Conference on Pretoria ,South Africa, 9th Jan 2014 IEEE

[10] P. Sukarno, N. Bhattacharjee, B. Srinivasan, "An effective crypto-biometric system for secure email in wireless environment, 09 Proceedings of the 7th International Conference on Advances in Mobile Computing and Multimedia.

[11] Tarek Idriss. Magdy Bayoumi, "Lightweight highly secure PUF protocol for mutual authentication and secret message exchange "RFID Technology & Application (RFID-TA), 2017 IEEE International Conference 22 Sept,2017.

[12] Rahul viswakarma,Ramesh kumar Mahapatra "A secure three-party authentication protocol for wireless body area networks " Sensing,

[13] Marcelo L. F. Abbade" A new all-optical cryptography technique applied to WDM-compatible DPSK signals" Published in: Transparent Optical Networks (ICTON), 15th International Conference on 2013

[14] Seung-Hyun Seo; Xiaoyu Ding; Elisa Bertino" Certificateless Cryptographic Protocols for Efficient Drone-Based Smart City Applications" Published in : IEEE Access (Volume: 5) 2017

[15] N. Safrin Sattar ; . Abdullah Adnan ; M. Begum Kali "Secured aerial photography using Homomorphic Encryption " Published in: Networking, Systems and Security (NSysS), 2017 International Conference on 18 Dec - 20 Dec 2017

VII. FLOW-CHART
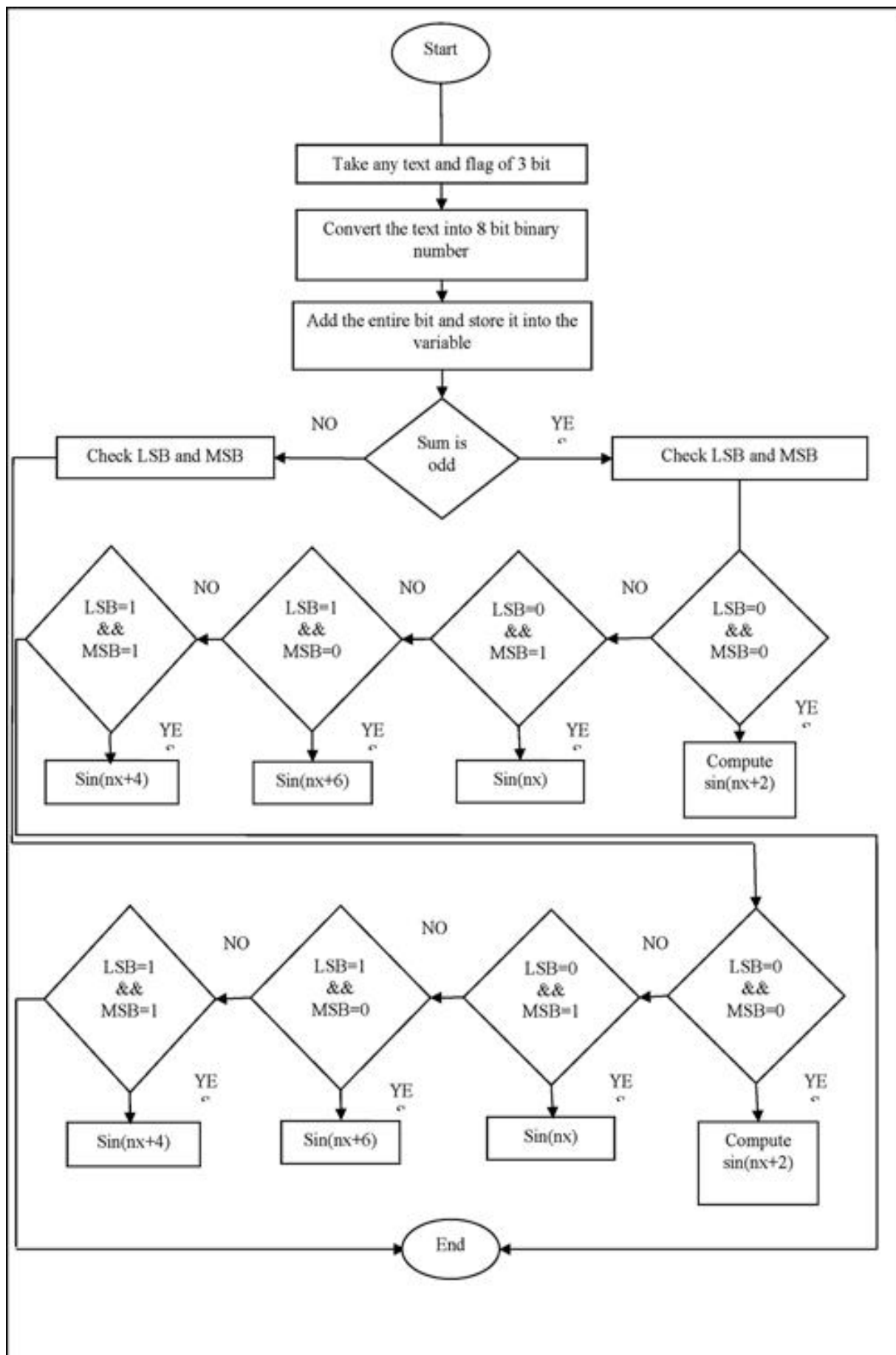
Figure-5: Flow Chart of our proposed scheme

DIGITAL MARKETING

Pranali Sanjay Ranavare

Student, Department of Information Technology and Mathematics, The S.I.A. College of Higher Education, Dombivli (East)

1. ABSTRACT

Nowadays use of modern technologies affects all spheres of modern life with modern technologies. Digital marketing is nothing without the social media nowadays social media is one of the best technology for digital marketing. The research paper digital marketing will help the peoples grow digitally. This research paper will help with the digital marketing and strategic planning and development of marketing. This research paper contribute offers theory and practical insights relative to this run up marketing wide area using digital platform, with data on the important areas for which online marketing's particularly helpful.. the digital marketing will help with the E-commerce section explores different business models and architecture techniques are used for their development purpose for the growth with economical market. In this paper will focused on the

SEO, Facebook, email marketing as well as many keyword are going to be included in this research paper and many more things are going to be included in this research paper that will to understand the people about digital marketing.

Keywords: - Internet, Marketing, Digitization, Social Media, Marketing Trends, Digital Marketing

2. PROBLEM STATEMENT AND STUDY OBJECTIVES

Seeing that the strength of net & social media won't decrease the coming few years, this topic are going to be crucial to each organization (Giedd & Chief, August 2012). the facility of smartphones together with social media could be a constant increasing threat to several firms (Felt & Robb, 2016). The second massive purpose of thought is said to the continued trend of children, adolescents, and teenagers exploitation digital and social media a lot of and a lot of to a fault (Giedd & Chief, August 2012). that's why this study intends to target understanding the internet selling and its technique with following set of objectives:-

- What are the successful techniques of internet marketing used today?

- What is basic comparison between traditional and digital marketing?

- Which is the most preferred internet marketing approach?

- Do companies prefer internet marketing to traditional marketing?

These questions will help us predict the trends in internet marketing and make suitable suggestions to companies.

3. INTRODUCTION

Marketing may be a restless, changing, and dynamic enterprise. The role of promoting itself has changed dramatically because of numerous crises - material and energy shortages, inflation, economic recessions, high state, dying industries, dying firms, terrorist act and war, and effects because of fast technological changes in bound industries. Such changes, as well as the internet, have forced today's promoting government to turning into additional market driven in their strategic deciding, requiring a formalized means that of exploit correct and timely information regarding customers, product and therefore the marketplace and therefore the overall setting. Internet marketing involves the usage of the web to promote and sell merchandise or services. Internet marketing utilizes the facility of electronic commerce to sell and market product. Electronic commerce refers to any market on the web. The electronic commerce supports commercialism, buying, and commercialism of product or services over the web. Web promoting forms a set of electronic commerce. With the outburst of web growth, web promoting has started becoming very hip. It's aforesaid that web promoting initial began within the starting of 1990 with simply text primarily based websites that offered product info. With growth in web, it is not just commercialism product alone, however additionally to the present, info regarding product, advertising area, software programs, auctions, stock commercialism and matchmaking. a number of firms have revolutionized the way; web may be used for promoting, like Google.com, Yahoo.com, Amazon.com, Alibaba.com and Youtube.com. This paper offers views on some current and future trends in web promoting.

4. METHODOLOGY

The searching analysis is meant to permit an investigator to essentially shop around with respect to some development, with the aim to develop suggestive ideas (Reynolds, 1971). This study is searching in nature and includes each quantitative and analysis. As a purpose of this study (critical review), knowledge are collected on all Asian nation basis. The secondary data & data are analyzed for getting ready this paper extensively. The secondary knowledge & data are collected from totally different students and researchers, printed ebooks, articles printed in several journals, periodicals, conference papers, operating paper, company websites for annual reports & CSR activity reports and their internal newsletters. the corporate related knowledge and knowledge square measure used that is offered publicly on the websites of the companies. this is often the best/standard apply for a pursuit that could be a critique sort.

5. LIMITATIONS OF THE STUDY

Based on this study, it will more be argued that knowing that social media sites a company's target market utilizes is another key think about guaranteeing that on-line promoting are going to be successful. The effectiveness of web promoting with reference to completely different business are often analyzed. The study will more be extended to match the web promoting techniques with specific to varied businesses.

6. ANALYSIS AND DISCUSSION OF STUDY

6.1 Internet Marketing

The Internet could be a international system of interconnected laptop networks. it's a network of networks that consists of immeasurable personal, public, academic, business, and government networks.

"Internet works because of combination of a spread of technologies and it's the most important supply of information humans has ever had for its disposal. net additionally ordered the foundations of a lot of information channels than individuals have created till the twentieth century. The term Marketing has several definitions. one in all the foremost wellknown definition says that "Marketing is the human process by that people and teams acquire what they have and wish through creating and exchanging product and worth with others. By connecting these 2 fields "We will apply promoting principles among the web space. this may be done mainly by making an online pages, net advertising, and additionally market research on the web, electronic commerce etc. but net promoting demands a bit bit totally different approach in certain aspects than ancient promoting. merely speaking net marketing, additionally remarked as online-marketing, web-marketing, e-marketing, or i-marketing, is the promoting of product or services over the web.

6.2 Social Media Marketing (SMM)

In layman's terms, program optimisation or SEO is basically tweaking your web site therefore that it comes up naturally or organically for search leads to Google, Yahoo Bing or the other search engine. Google updates its algorithms frequently so solely the relevant results come back up. From that perspective, several consultants say that SEO is dead and also the effort is futile. However, the truth is that Google tries to stop rule manipulation and filters sites that don't should be on the highest of SERPs (Search Engine Result Pages). therefore there's little question you must invest in SEO work. Your web site ought to address the technicalities associated with content and question matching, spidering, indexing, and decoding non-text content. Remember, it's the foremost efficient marketing strategy which will bring organic traffic to your business.

6.3 Affiliate Marketing

Affiliate selling may be a performance-based selling program, wherever you pay publishers WHO bring you customers. The performance is also supported conversions - promotions, leads or simply sales. you will wish to be a part of the affiliate programs of various publishers. Essentially, the publishers can offer you area in their pages to advertise your business and facilitate you drive conversions; and you may pay them supported the compensation model. you will avail the help from associate degree Affiliate Network, which is able to offer you an outsized base of publishers, and other benefits like chase and coverage technology. Affiliate selling is particularly helpful for startups, because it can herald a lot of traffic to their business through high-traffic sites. In essence, Affiliate selling may be a winwin scenario for each the merchants and publishers. Sites like Amazon, eBay, LinkShare and Flipkart run Affiliate Programs. In fact, most on-line businesses with considerable traffic have their own affiliate programs.

6.4 Web Analytics

Perhaps, the foremost necessary side of your Digital promoting is internet Analytics. basically, Web Analytics helps you to gather, measure, understand, analyze, plan, report and predict the net activities for your business. internet Analytics shouldn't be confused with internet Statistics. As opposed to easy coverage, internet Analytics offers you analyses and totally different angles to speculate vis-à-vis your business. a number of the necessary

internet Analytics tools area unit Google Analytics, Spring Metrics, Woopra, Clicky, Mint and Chartbeat. It goes while not oral communication that each publiciser thought to use internet Analytics to grasp his business and improve the ROI and conversions.

6.5 Email Marketing

When you send a commercial message through email to a list of potential clients is called Email Marketing. With effective email marketing software, you can maintain email lists that are segregated based on several factors, including clients" likes and dislikes. Remember to send personal emails. This helps to create trust. Email Marketing may also be considered as spamming and there are laws against it in some countries.

7. CONCLUSION

We expertise a radical amendment in India towards the medical aid. the patron ar wanting and looking out additional on net to search out the most effective deal type the sellers around India as compared to traditional or typical strategies. Cha (2009) conjointly established in his study that additional individuals perceive looking services on social networking sites as helpful and simple to use, the additional doubtless they are willing to buy for things on social networks. The big selection of shoppers utilizing social networks means most target markets will be reached (Cha 2009). Shankar (et al. 2011) also discovered in his study that additional shoppers ar exploitation social media (e.g., Twitter, Facebook, MySpace, and LinkedIn) and have faith in them for selling looking decisions; promotion through these media has become necessary.

In this study, we have a tendency to acknowledged that companies will very get pleasure from Digital promoting like search engine improvement (SEO), programme promoting (SEM), content promoting, influencer promoting, content automation, e-commerce promoting, campaign promoting, and social media promoting, social media improvement, email marketing, show advertising, e–books, optical disks and games and have become additional and additional common in our advancing technology. Vogus (2011) conjointly determined that enormous firms ar concerning social media sites as strategic tools and a few businesses ar even hiring workers to superintend their social media pages. mangold-wurzel ANd Faulds (2009) counseled that social media ought to be thought to be an integral a part of AN organization's integrated promoting strategy and may not be taken gently.

REFERENCES

1. Aaker, D. A., & McLoughlin, D. (2009). *Strategic market management: Global perspectives*. Hoboken, NJ: John Wiley & Sons.

2. Accenture. (2012, December 11). *Auto industry needs to offer consumers a better customized online experience, Accenture survey finds [Press release]*. Retrieved from https://www.accenture.com/in-en/company-auto-industry-offer-custo-mizedonlineexperience

3. Accenture Global Automotive Report. (2015). *Would you buy a car online?* Retrieved from http://www.pcquest.com/would-you-buy-a-car-online/.

4. Agrawal, A. & Arockiadoss, S. (2012). *Innovations in digital consumerism for automotive industry*. Retrieved from http://www.infosys.com/industries/automotive/whitepapers/Documents/digital-consumerism-automotive-indus-try.pdf

5. Ajzen I. (1991). The Theory of planned behavior. *Journal of Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

6. Alexa K., Shayne M., Robert W., & Michael, Z. (1996). Current research: Marketing to the digital consumer. *The McKinsey Quarterly*, *3*(1), 3–21.

7. Angelides, M. C. (1997). Implementing the Internet for business: A global marketing opportunity. *International Journal of Information Management*, *17*(6), 405–419.

8. Anvesh. (2016, June 26). Digital marketing spreading like a virus: Automobile industry affected. *Intelliassist*. Retrieved from http://intelliassist.in/digital-marketing-spreading-likeavirus-automobile-industry-affected/

9. Ary, D., Jacobs, L. C., & Razavieh, A. (1996). *Introduction to research in education*. Fort Worth, TX: Harcourt Brace College Publishers.

10. Bagchi, S. (2013). Automakers go social to woo the next gen customers. *CXOtoday.com*. Retrieved from http://www.cxoto-day.com/story/automakerssee-a-shift-from-traditional-to-social-media-engagement/

OPERATING SYSTEM REVOLUTIONS

Mindhe Devyani Anand

Student, Department of Information Technology and Mathematics, The SIA College of Higher Education, Dombivli East, Dombivli

1.1 ABSTRACT

The Synchronization, control and the links between the hardware and the interfaces that are require for the software processing are managed by the Operating system. Before the Operating system was invented every program require their own hardware specification, own drivers for all the peripheral devices. From the Start and until today the operating system has become the heart and soul of electronic Devices and other hardware systems.

The communication between the hardware and the software takes place through the Operating system. From the start of the decade the OS for real work was produced in 1956 by IBM to operate the main frame computer. Firstly the OS was developed for computers and further grew in every platforms of hardware. Some of the majorly known operating systems are UNIX, Windows, Android and IOS developed by different organization.

The major functions of the operating system is to successfully manage computer resources like the central processing unit, memory, disk drivers and printers , the other is to establish a admin user interface and lastly execute and provide services for devices as a application software. Thus the beginning of the operating system era took place from the IBM and now it is handy with each and every development companies with several sector. Thus the development of Os made every task to be multitasking with its latest trends and technologies. Even the robotic and other gaming devices makes the use of the operating system. As CPU is the brain of the computer, The Operating system is the heart of the computer. The perfect functioning of the devices takes action only if commanded through the operating system. Thus the deep study can explained in deep with the following research done.

1.2 OBJECTIVE

The major objective of the operating system is to provide a bridge between two devices for communication between the hardware and the software of the devices. There are different operating systems for different devices, such as the Android, IOS and other are for mobile devices and windows and other are for the Computer devices. This helps the devices to provide the user convenient and efficient carry on work environment, where the hardware devices are not been visible to the user. The growth of operating system has increased more nowadays, used in every single technology. The objectives of the operating system are listed as below:

To keep track for what is used by which resource, granting such resource requests when required, and handling such conflicting requests from different programs and other users of same individual system.

The transfer of information from one account to another, restricting the use of particular user with their access and rights.

The efficient use of the computer system can be made with the help of operating system.

Such details of the hardware and the other embedded components that are not required to known and been not important to be visible to user are kept hidden.

To provide users a convenient interface that is much easier to understand as well as to use such computer system efficiently.

The operating system is the major hardware component such that making the communication possible between the software and the hardware. Managing all the resources with their required action and managing the time acquired by every single application which is in the use.

Thus to use the system overall with all the required resources on every respective time period is the other main objective of the operating system. Such revolution of the OS has been grown up from the mark nowadays, every functionality in every single devices is making use of it to make the devices run successfully to acquire the major objective meant to be. When we are clear with the objectives we can begin with the actual research on the topic.

Keywords: Android, License, Real-Time Operating Systems, Real-Time Systems, Scheduling

1.3 REVIEW OF LITERATURE

Heart of the computer system is nothing other than the operating system. Without operating system, there is no meaning to the computer system. Security of the operating system is nothing but is the practice of ensuring OS confidentiality, integrity and availability. The real purpose of an operating system is to run certain applications. The chain of the operating system starts with the single use devices, from there to the computer applications to the mobile devices and into the single hand watches also. Thus this growth is always a remark for how advanced the technology can become only with the simple chip of operating system. The issue isn't how secure the OS is, it's how secure the applications are. Several major stages here are multitasking, memory management and all other sectors. Thus the major important part is to make it secure from other threats and the viruses. With the help of these techniques, it protects any computer resources that can be stolen, edited or deleted and if OS security is compromised.

These part of writing let us know how about what all measure made it possible for a successful development of the project. The technical growth of the industry made me feel to think about the purpose, from that the major fact came across was the operating system used in every part of it. The tremendous growth of the operating system made me research on this project, wherein I can excel in much better and understand exact motive and purpose. Thus with help of these I can develop a better chart for flow of every sector of OS. Comparison with the past development and the latest trends in the industry, so in this method, the response time is very less as compared to online processing. Some of the soft system has soft compatibility thus the operating system can manage through all for the easy functioning and accurate transparency between them. Thus managing to give away less latency everywhere it is required. Thus easy management is the main task of the operating system. Nowadays the success behind each and every part of the technology is through its functioning from the functioning the actual outcome is received and this outcome make the device acquire its actual output. These perfect functioning are only possible with the help of the operating system. Every Electronic device has their own operating system that is different to other and this difference make the actual outcome. Here we can explain as in good work is to understand that are virtual reality, multimedia, scientific advanced exploration and planetary rovers, etc. gives some clear idea about the process functioning . One of the best part is that we can also connect several components in one single network. The other function of OS can be connection to the LAN and other private networks. OS security includes many special techniques and methods that are used to ensure security from threats or attacks. Different applications and programs are allowed only to perform mandatory or the important tasks by OS security and stop any other unauthorized intrusion.
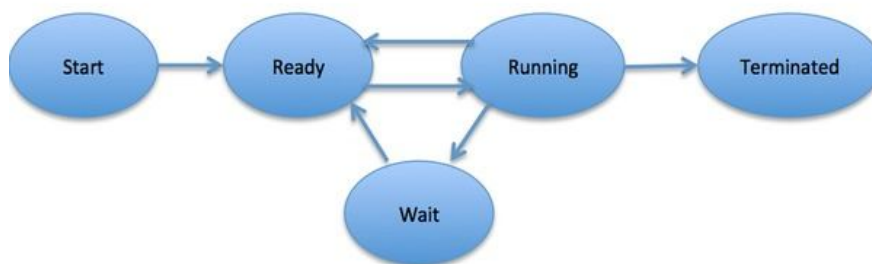
Figure-1.1: The Process State

The growth of the operating system nowadays can be explain with its process of performing the task, how easily it performs every task to give the desired output. The performing of every stage is taken place one after another. The first is the Start phase from there the task is ready and if no such tasks are available then the system perform such individual task and later the process is executed. If the system is busy with the different task then other are sent into the waiting phase of the cycle, such task is performed only when the device is not busy with some other tasks. The tasks are terminated when are successfully executed.

For security of operating system many approaches are considered as follows:

Performing regular OS patches.

Creating secured account with required privileges only (i.e. user management).

Authentication for the user for accessing operating system is also of extreme importance. Once the hacker gets into the system and can stole each and every record. If any hacker gets into our Operating system, then that hacker can damage the operating system and correspondingly data, information may get stolen. From the security till the memory management we can never see any factors of failure. We face some issues when we are not able to understand what fault we have reached in. thus always seek the help from the brain of the computer

devices. The operating system issues along with the solution can be reviewed deeply below in steps to step manner.

1.4 INTRODUCTION AND STATEMENT OF PROBLEM
Computer and laptop operating system problems are found to be a known place. The operating system can become corrupt or suffer problems caused by various major agents like the viruses, malware, spyware, a cluttered registry and installation and un-installation of software amongst others. Temporary files, internet browser temp files and cookies can all cluttering the individual's computer system and thus create a slow and sluggish working environment difficult to work on.

Software problems can also slow your operating system down; you may think you have hard drive, graphics or memory problems but it might also can be a just badly configured piece of software hogging the system resources

MAJOR ISSUES WITH WINDOWS OS
The Computer has Slowed Down, thus the slow device is always onto the nerve. The major problem faced by us is slow performance by the computer, and it come unannounced, problem in the particular phase.

These are the constant issue when the device start using any software and get cool down after some time. Such hack can never be easy to identify and Along with the stack it can also be low speed form that the performance.

MAJOR PROBLEMS WITH MAC OS
The major issues faced by such devices are the frozen screen. Such becomes when multiple task are in queue and because of that the screen gets frozen. These can be resolved by giving particular task on their particular order only. Thus every devices face such kind of issue in the multitask performance this is major solution to get a good speed system for the better performance. Thus the last solution before concluding to throw your PC away tries using the option Force Quit. This is the state of problem where the problem can be stated and resolve such components. Such can become a case to resolve such kind of major issues faced in the operating system with trending technologies. If it takes time Check with the dock sometimes give an issue thus these are some small OS issues.

1.5 RESEARCH METHODOLOGY
This chapter gives an exhaustive account of literature survey of the subject. The literature survey states to use mandatory approach for windows operating system security. Work done by various authors' related to different techniques for achieving security of the operating system is studied in detail. In the past few years, it is also observed that the only password based security to the operating system of the device does not remain sufficient. It also covers the introduction of subject, object, and principles according to the operating systems' point of view. It then moves further with basic access control models used for security. Security is a very important issue in each field. Security is preserving whatever user possesses, keeping confidentiality of that and making it available whenever required by the user. Also security is denying access to the user's resources from illegal user, keeping that safe from theft. Security always keeping a note on what u is not supposed to work on with at that particular moment. More formal is to get on to the Confidentiality, integrity, availability.

The researcher has to first check for working in some situation where it can become easy to resolve any components which are requested to solve threats and bugs accepted. The OS if not clearly checked for the threats and the malware attacks can lead into the failure of performance and the speed of the system. The security is mandatory for all the system performance. As from the beginning of the decade we have several system developed for better performance, less latency and the system stability. These previous are not much present in today day to life, we have several amazing tech replacing them. The Android was on the number two of the IOS on the market place of the technologies. Also the researcher had to find facilities where he could get a good experience of the hardware and software required to code make an attempt to test algorithms and ideas from the researcher. To start with this was a major constraint but towards end of the research it was hardly a constraint because, that is the reason OS is the heart of the Computer devices. Thus due to the increasing trends the technology lead to the most important path flow of the several devices of the android or the IOS made devices, but now changed onto the several made task in these today generation. The major task of the OS develops the most effective note towards the success of such individual product. That is one of the major reason why OS is the heart of the Computer devices, and how successfully every task is performed to give the best result and the outcome.

1.6 LIMITATION OF STUDY

Every individual project ever developed is never possible to be fully correct; some of the parts majorly make it difficult such became the limitation for the study of the project. Major of the part was tried to be much effective with less limitation and higher accuracy. The limitations for our study are the flaws or shortcomings which are the result such as the following unavailability of resources, small sample size, costing, etc. No where we can find such aspects totally present. Generally speaking, the limitations added below are according to where I think would have created a better and most effective response which didn't became possible currently, just before understanding the following we only research on how it was developed and how it works deep functioning is never known I tried to catch better from all the resources that became possible for me. While following became mandatory to point out the limitations, and also elaborate discussion about them is explained.

The research and the deep study were possible only from the single individual thus according to the methods which were available tried to catch all the important knowledge were performed. Thus if the resources are increased then there was a major possibility of more information and deep knowledge on all the points of attraction thus the efforts will be much more in effective and attractive in less number of time. Thus the processes which are performed are not seen by the particular individual, only the knowledge taken from the resources like the websites, the notes and the applications where assumed to be correct and used. Thus the functioning and working of the OS is considered correct and efficient.

The costing is the processes proposed or estimated to cost producing or undertaking something. The cost of operating system is much higher such as the practicality is only seen in the computer system where it is found inbuilt. Thus cost is always a major importance in all the development processes. Thus all the places used for research were found to provide with small sort of information and thus the sites used to catch on the details were much and reading from every notes available where time consuming, the sample space where much more and to consider the important part from such part was much difficult and tuff part. Thus above mentioned are the limitation which are less but yes do exist more making the study less effective and accurate in all the major perspectives.

1.7 MAIN BODY OF PAPER

The operating system comes in various devices; every individual device has their own operating system. Some of the operating system is the iOS, the Android, Symbian, BlackBerry OS and Windows Mobile. Each of these is responsible for their individual devices, their functioning and the user interfaces depends totally on them. The other one is the windows operating system several operating system are namely windows, windows xp, windows 7, windows 10 and many more. Such individual devices are responsible for the computer systems. Nowadays various other devices like the bands, smart watches and other are using the operating system too for much easier use. The literature review for the operating system can be explained in better understanding as below:
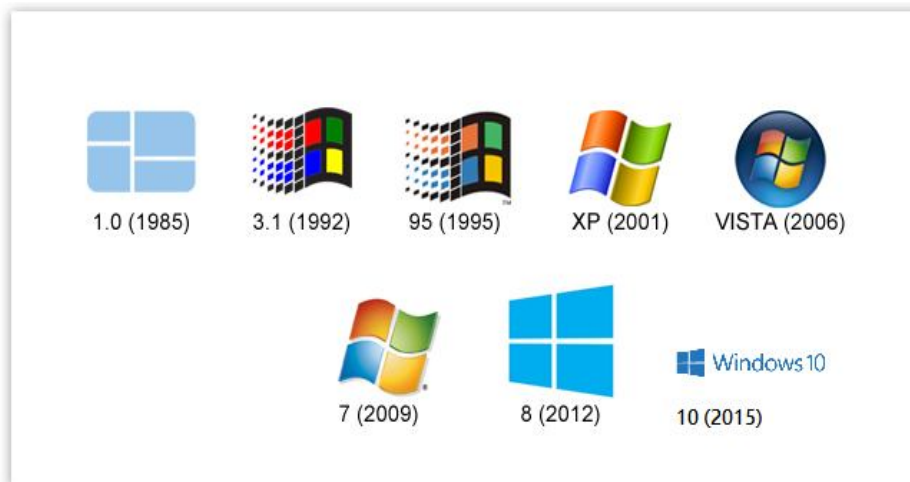
Figure-1.2: Windows Operating System

Windows 1.0

The beginning of the decade started from the Windows 1 and was successfully available in that particular system. As from the growth of the tech previous are replaced today. This was found as a graphical which is 16-bit multi-tasking shell at height as compare to others also on the MS-DOS installation.

Windows XP

Windows xp is a computer operating system and includes the simple graphical user interface, which is enable user to work it with variety of programs on our computer, often simultaneously. Today in this world we have some devices available with the window XP only because of the security available in them. Control is Used to be present in each and every part of the component. We can only upgrade over technology if we catch to the latest trend in the market. Windows XP is really easy to use and learn by our own which is the people unfamiliar with computer, however compared to the newer version which are much more complicated.

Windows Vista

Windows Vista is one of the Microsoft next generation operating system only because it is totally different from other previous version operating system such Windows 98 or XP. This is found as an evident in all level of the user experience including the software appearance and functionality of the GUI, the way workflows are handled, system is easily configured then the stability and security features are active. Such operating system is still in use with various of the organizations.

Windows 7

Windows 7 is the latest version created by Microsoft after the Windows Vista and is grown much ahead although, about to end its journey soon. However the GUI interface for the Windows 7 operating system is totally different from other versions of windows like the window vista. The windows seven was the success to the windows XP with various advanced features such as speeding up the boot time and increasing system performance.

Windows 10

Windows 10 is a one of the series of personal computer operating systems produced by Microsoft as part of its Windows NT family of operating systems at that particular phase. It is the successor to Windows 8.1, and was released to manufacturing on July 2015 and broadly released for retail sale on the year 2019. The windows 10 can also be denoted with X.

Ubuntu

The Ubuntu is an open source operating system is built on the Linux kernel and is also available free for end-user to download it. Ubuntu is uses on GNOME as the desktop environment, is intended have provide a free, simple and that interface while for the offering is provide a full range of latest desktop applications. Finally the information was analyzed, and ultimately the end result of all of the data gathering exercise and research is being presented.

Linux operating system

The Linux operating system was developed with the C++ programming languages, used for various hack and other features. The OS is found to in between applications and hardware and makes the communication between all of your software and the physical resources that do the work. Think about an OS like a car engine. An engine can run on its own, but it becomes that too can be made most impressive when functions are connected to the transmission, axles, and wheels. Incase in the car system the engine running properly won't make the rest of the car work.

Mobile Operating System

Fig-1.3: Mobile Operating System

IOS operating system

Apple iOS was originally known as iPhone OS. From the success in the operating system and from windows and android, we have the IOS. It was early found in the year 2010, thus the company released three versions of the mobile OS after the name of debuted in June 2010. The growth in every sector is made possible from the start till the ending of the task where it is meant to give that particular outcome. The heart and the brain always

communicate for the best performance in every electronic devices, also grown in the robotic and the other gaming devices which are available in the market. The user needs can make all the devices make them work on the environment they require. The iOS developer can aslo find kit provided tools that will allow for iOS app development.

Android Operating System

The android operating system follows a layered approach for application development in operating system where we can develop Android application that is written in Java Programming language also with the kotlin language, along with the Xml for creating such an interfaces to support the nature of the lightweight mobile operating systems is discussed. The analysis here is lightweight SQLite relational database used for developing Android applications. Various study on Android architecture for developing mobile applications, the security framework of Android operating system and the protection of the applications from the malicious attributes. Also presents a review on Android architecture and its security issues. Authors conclude that Android provides more security than other mobile phone because Android platform is multitasking software, means no application will gain critical access to the components of UNIX based OS which is the most secure OS.

BlackBerry OS

The beginning from the windows to android and from there to the BlackBerry OS the growth became market. The major functioning part are for the individual; to adopt their specific software in to the OS. Blackberry OS as the name say it is only running on Blackberry variant phones. This is designed for Smartphone environments and is best known for its robust support for push Internet email.

Revolution of OS

The revolution of the operating system was a long journey from the personal device computer system to the every single electronic device now. The operating system grew from the personal computer system, communicating with software and hardware of the system to the robotic. Thus the journey can be explained with a deep knowledge. The latest research was only indicating about such major threats are indicated and present in the devices, we can find the resources of the operating system available only If elected and from that we promise to run every task in the queue. The queue here are useful to find the high prior work and thus we execute such tasks first which can cause trouble in the future. Some gapes can be found in the system when problem is the knowledge of that particular phase of study. We can make the proper development were all it is mandatory to study and used to the better performance of the system The various organization are working on to full fill the task and to keep that most easy and effective overall to the growth of the technology and the devices. Then only can the researcher avoid duplicating research done previously by someone else. At the same time, it also exposes the gaps and deficiencies in existing knowledge on the subject which this study can contribute to fulfill.

Figure-1.4: Operating system Revolution

The revolution of the operating system from the personal computer devices to the every individual device available consisting the home appliances to the robotic require the OS currently. The request and the response for each and every action require the middle component such is provided by the operating system.. Here in this case we find that operating system can be said as the sandwich, by itself sitting in the middle and covered by the hardware and the software on both the side of the operating system. During the proprietary operating systems evolution, a revolution in operating systems started. This open operating system revolution started out simply enough and was also quite basic. It did have a recipe to follow although the ingredients were all home grown. Like the proprietary operating systems these revolutionary operating systems evolved as well. However they

were not and would never be a homogenized franchise chain, more like fine restaurants, independently run, offering different, customizable delights yet still following the same basic model. Thus basically some of the system found are basically the free source and found in low cost, but the security is too low and can cause many threats onto the future. The horse had already left the gate so to speak. Only because of the trend the franchises and the organization working to find the latest growth for their firm. Ultimately the operating system evolves at a rapid pace and the end users benefit greatly.

1.8 SCOPE OF STUDY

According to the growing industry every field is doing excel with the operating system. The tremendous demands of the technology require a good firmware as per the trend, this is thus only possible with the help of the operating system. There is no technology scope without the operating system. Thus this project research will help us know about various factor in this growing technology. The future of computing centers on the operating system. So does its past. That is the message of an interesting article featured on latest tech today.

The operating system of a computing device is the software that helps the device support the applications that run on it. The most popular operating systems are Windows, Linux / Unix, OSX, iOS, ChromeOS, and Android. Some of the trends and the growth of the operating system are to be available on every devices and is used on every corner like the Bluetooth or the speaker and various other technical devices currently in the trend. The operating system is centrally important to creating a pleasant and productive user experience for the user, so much so that users often choose their computing devices based on the operating system they run.

Today there are no scope for any of the particular devices if does not have any brain or the heart such communication is only possible with the operating system. The operating system thus help us to make the technology become most powerful. This is only possible when the device connect with each and every sector such as the memory, task and the compatibility. Only when every part of the devices are connected and communicated easily to get such part is making the technology grow. The OS thus becomes the Heart and soul of the computer devices. The start to the end whatever is present is only possible with the Operating system only. From the IBM to each and every sector of the technology the operating system came the long way and is the heart of the devices. If the devices are running proper in every field is only possible only because of its task execution. The devices can execute every task make memory available understand the time management. The Operating system have thus given new path to the technologies.The start till the end of the decade there is successful market growth. The data management, the memory and the resources along with the performance are done by communicating with the brain of the computer. We always require such amazing technologies which are only possible with their speed and processing time that has been already provided by the operating system. Thus the successful communication leads to the proper outcome of the tool.

1.9 CONCLUSION

The major task of the operating system is to perform the better study and also why should we know how all tasks are operated. Thus the operating of the devices in the effective way makes him the heart and soul of the computer. None of the devices available nowadays are found to be accurate or performing very well. The performance requires the operating system. The memory has to be managing then we require the operating system. If we want to take resources availability we require the operating system. When we require the queue of the check for which all task are going to be accepted by the computer devices. We have the stack queue where we can find which all task are present in the list and which has to be executed one after the another. We such tasks going to be executed for the first which has arrives the first. These is called as the first in first out, the one of the task which has arrived first will be executed first. In the early stages of the technology there were no such spaces and easy flow or the process management. thus the jobs which was previously difficult to perform are now easy to perform and get the task for the execution. Thus the one of the major fundamentals of the operating system is to make the communication of the hardware or the software easy to manage all the resources and the process flow. Thus from the research of the documents we come to know that the major objective can be only acquired once they are possible to resolve their tasks, such always become possible only when we have the operating system managing them all over the process flow of the electronic devices.

THE IMPACT OF COMPUTER VIRUS ATTACK

Nitin Mahadev Auti
Student, Department of Information Technology and Mathematics, The SIA College of Higher Education, Dombivli East

ABSTRACT
The purpose for research on "The Impact of Computer Virus Attack" is to explore the impact of computer virus attack and to provide guidelines on how all people can protect their personal computer (PC) against virus attack.it is important to address the virus attack and its prevention mechanisms among the personal computer of an individual person in this electronic global world of technology. After the identification of typical factors which had been leads to the computer virus attacks the possible solution for safety had been provided in the below research paper which is going to be useful the security of the pc of all individuals.

OBJECTIVE OF THE RESEARCH
As people highly use Internet Technology to connect with globe to possibility of getting computer virus is greater. Computer viruses have ongoing worldwide problem and can travel rapidly through to the Internet and causing even many destruction. Today need have a comprehensive virus protection policy face growing threat of old and new viruses.

Objectives of research are as follows:

★ Identify reasons which cause virus attacks the personal computer users.

★ Suggest the possible mechanism for safe their computer resources from virus attacks.

Majority of the responsive replied that viruses have full impact on personal computer usage. From the collected data 68 answering revealed that their computer infected by virus attack rather than 6 times within three months.

Program file infection has been constituted as a serious problem by the PC users and it affected the PC severely. Further hard disk infection, system file infection and boot sector infections also detail by the respondents.

LITERATURE REVIEW
A virus is by explanation a computer program that extended or replicates by copying itself. Unlike other threats computer viruses able infect from program to program, file to file and computer to computer very quickly without direct human intervention. (Joseph Wen 1998) declare in research that a computer virus can reason the loss or alteration of programs or data, and can determine their confidentiality. He started that the vital part of a virus is a set of instructions when executed extend itself to other unaffected programs or files. Based on the purpose of virus developer these instructions can do any dangerous activities like showing a message, remove files or fixing stored data, duplicate itself and taking up system resources such as like disk space, memory,CPU time and network connections.

Most of the viruses are stay active in memory until we switch off our computer system. But when we turn off the computer we just temporarily take out the virus from memory, but not permanently destroy from the file or disk it has infected. The next time when we use the computer system virus program is activated and starts its activities continuously. Typically there are many familiar techniques can be used by viruses to destruct the computer system. Basically a typical virus make two functions thus first it copies itself into clean programs or files, second it executes other instructions the virus developer included in it.

INTRODUCTION
This research paper targets find the factors which leads the virus attacks to among personal computer users. Today's society has seen a spectacular increase in the use of computers. As a result users of personal computer today need to have a all-inclusive virus protection performance to face the growing threats of computer viruses.

Virus attacks on computer are more deadly that shows up more damage to the computer. It is important to examine the actions that a virus execute in one's system and the activities that possible to happen over time. This helps in protecting our PC with needful security performance to safeguard the secure information.

RESEARCH METHODOLOGY
The researcher used as a tool to gather data. 110 questionnaires were problem among university undergraduates, professionals and PC users to gather the data. Among the respondent only 100 respondent's data were considered for the investigation purpose. This sample has been interpreted from University, professionals and PC users on the base of accessible sampling method. Researcher had the access for gathering data easily from

these categories. IT composed by the researcher by focus many dimension of computer virus such as reasons for virus attack, virus infection damages in computers, possible data in infected PC, type of antivirus production, preventative performance for virus infection. etc.

LIMITATION OF STUDY
The research is only focusing virus attacks between personal computer users. In that global world business firms are facing high threat to the virus problem.

So business firms are ignored the research. Researcher permits other researchers to carry out research in this area by eliminating the limitations.

MAIN BODY OF PAPER

TYPES AND WAYS OF COMPUTER VIRUS ATTACKS
Boot Sector Virus: These viruses affect on the disk and the hard drive that hold small part relate as the sectors. Once the boot sector is attacked they become infectious when you reboot the system with the infected diskette it distributed through the hard drive.

Multipartite viruses: It is a form of hybrid boot sector program virus affects the programming files. While the infected program is activate it hits the boot record.

Macro viruses: infects a Microsoft Word or related application and causes a series of actions to be performed automatically when application is started or something else triggers it.

Stealth viruses: The characteristic of hiding and usually changes file sizes to outflow detection. A virus with stealth attributes tends to found in boot sector or program file. .

Program Virus: The program virus is keep hidden files or documents, once they are activated or called they start corrupt the system by copying the virus to other files and duplicate to the system.

Polymorphic Virus: The Polymorphic virus act like a chameleon that changes its virus signature often once they get multiplied and ready to affect the next new-fangled file. It is also mean to as binary pattern.

FAT virus : It is a computer virus which attacks the file allotment table (FAT), a system used in Microsoft products and other types of computer systems to perform the information stored on a computer.

Majority of the responsive replied that viruses have full impact on personal computer usage. From the collected data 68 answering revealed that their computer infected by virus attack rather than 6 times within three months. From this research the respondents show the reasons for PC's virus infections are with respect to using pen drives(43%), not having antivirus(29%), visiting harmful sites(12%), free from antivirus updates(11%), does not have licence version of software(5%) and more of internet surfing(9%).

Program file infection has been constituted as a serious problem by the PC users and it affected the PC severely. Further hard disk infection, system file infection and boot sector infections also detail by the respondents. All responsive determine that Internet browsing a virus attack and relative amount of them using the trial version (70%) of antivirus software as a protection performance. Among the licence version of antivirus users just about AVG and Kaspersky are the same position and Norton places second antivirus for Sri lanka users.
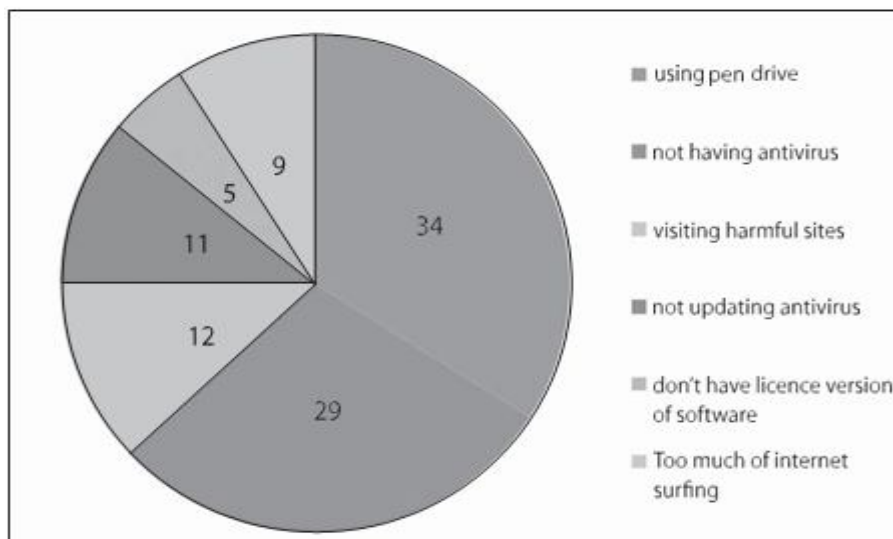
Figure-1: Reason for virus attack
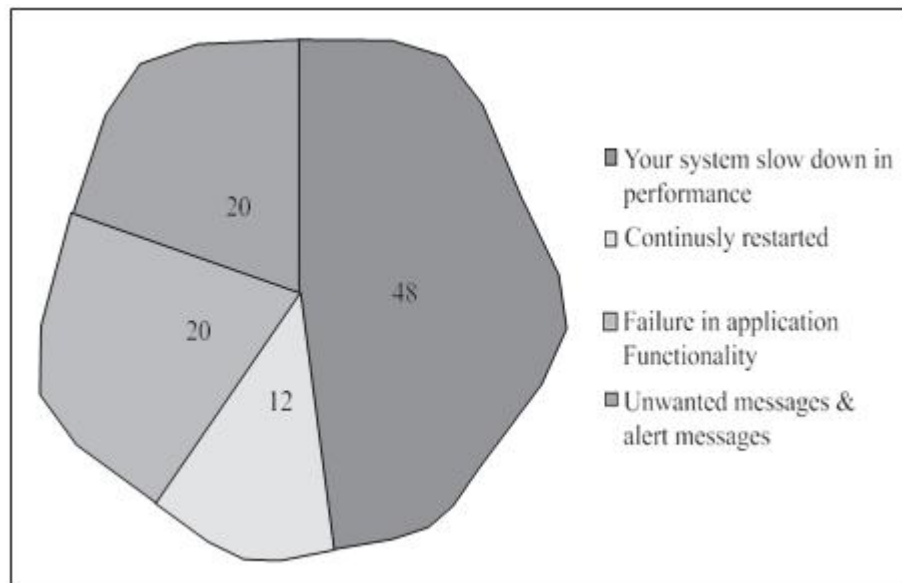
Figure-2: Symptoms recognized when virus infection

CONCLUSION

All responsive replied that virus attack has more effect on their personal computer usage. This research show number of profitable mechanisms which would help to the personal computer users to defend their computers from the virus attacks. The simplest advice for this research is the virus interference and detection mechanisms. It is the simple and least costly ways for the virus attack by practicing such as keep the antivirus program up to date for the latest threats, patching OS loophole, application software loophole and browser loophole frequently, avoid unsafe internet surfing such as visiting doubtful websites, surfing on the cracked websites and downloading from dangerous websites, do not open the mail directly, preserve it and use checking harmful software and when receive the suspicious e-mails delete them instantly.

REFERENCE

- A.Coulthard and T.A. Vuori (2002), Computer Viruses : a quantitative analysis Logistics Information Management, Volume 15. Number 5/6. 2002. PP.400-409, ISSN 0957 – 6053

- Ajayshivaa (2007). Symptoms of virus attacks [Online] February 28, 2007. Available from: http://www.astahost.com/info/tiposc-symptoms-virus-attack.html. [Accessed: 20th May 2013]

- Babak Bashari Rad, Maslin Masrom and Suhaimi Ibrahim (2011), Evolution of Computer Virus Concealment and Anti-Virus Techniques: A Short Survey, IJCSI International Journal of Computer Science Issues, Vol.8, Issue 1

- Essam Al Daoud1, Iqbal H. Jebril and Belal Zaqaibeh (2008), Computer Virus Strategies and Detection Methods, Int. J. Open Problems Compt. Math., Vol. 1, No. 2,

- Frederick B. Cohen and Sanjay Mishra (1992) "Experiments on the Impact of Computer Viruses on Modern Computer Networks" F-Secure Corporation (2001) , "Computer Viruses – from an Annoyance to a Serious reat". White Paper

- Joan C. Hubbard, and Karen A. Forcht (1998), Computer viruses: how companies can protect their systems, Industrial Management & Data Systems, MCB University Press ISSN 0263-5577

- Joseph Wen H (1998), Internet computer virus protection policy, Journal of Information Management & Computer Security 6/2 66–71 MCB University Press. ISSN 0968-5227

- Kendria (2011). Types of viruses and their effects on your PC [Online] April 7, 2011.Available from: http://techgyo.com/index.php/types-viruses-eects-pc. [Accessed: 22th May 2013]

DATA SCIENCE: OPEN RESEARCH ISSUES AND TOOLS

Sangram Singh
Student, Department of Information Technology and Mathematics, The S.I.A. College of Higher Education
University of Mumbai, Dombivli (East)

ABSTRACT
Data is an effective part of information. Currently, world entered in the era that deals with the large amount of data. The data which we had was mostly structured and less in size, but nowadays the most of the data that we have is unstructured or semi structured and more in size. For overcome with this problem the data science is needed.

In this paper we can see the basic ideas about the data science. Data science is the field where we can use the scientific algorithms, methods and techniques to extract knowledge from the structured as well as unstructured data. Data science maintains this storage issue with the help of Hadoop framework. Data science also called as a kind of data analysis that will going to inspect the data. This paper shows the much information relevant to Data Science tools and phases of life cycle that complete the Data Science such as business understanding, data collection, data preparation, exploratory data analysis, modeling, model evaluation, and model deployment.

Keywords: Data analysis, automated discovery, decision making, model evaluation, etc.

OBJECTIVE
The main objective of these analysis is to introduce Data Science Tools. The analysis would provide benefits of using the tools and its future scope.

REVIEW OF LITERATURE
According to Fionn Murtagh and Keith Devlin, Data Science provide the way to the decision makers to make efficient decision for the organization benefits and future enhancement.

Claus Weihs and Katja Ickstadt shows the impact of statistics on Data Science. Statistics provide the efficient way for data analysis.

Panagiotis Barlas, Ivor Lanning and Cathal Heavey introduces the different tools available for Data Science. The tools provide the way for analysis of data.

I. INTRODUCTION
Data Science deals with the extraction of learning from substantial volumes of information which are unorganized or unstructured, which is a continuation of the field of perceptive investigation and information mining, otherwise called information mining and information disclosure. Information science frequently obliges dealing with a precise way to measure of data and composing computation to concentrate bits of knowledge from this information. .The field of data science uses information for planning, insights, and machine learning for researching issues in different spaces during the analysis for data.

Data Science can be consider in two ways firstly, the integration of data sources and analytical and related data processing methodologies. Secondly and quite fundamentally, arising from the convergence of disciplines. Convergence of disciplines is very beneficial in practice. That is, beneficial in regard to addressing and solving problems, and also in regard to the cooperation yielded by cross-disciplinarily.

Basically, data science is the study of the general extraction of knowledge from set of data. Data scientists can solve complex data problems with the help of employing deep expertise in some scientific discipline. Data science majorly focused with the data mining process that leads to removal of unwanted data from the large given data set. In general, Data mining or "Knowledge Discovery in Databases" is the phenomena of discovering patterns in large data sets with database systems, machine learning, statistics and artificial intelligence. The overall need of a data mining process is to extraction formation from a given data set and transforms it into an understandable structure so that it can be further usable. Automated discovery tools have the potential to analyze the raw data and present the extracted high-level information to the analyst, rather than having the analyst finds it for himself or herself.

Data Science is leading to different definitions, one of the most comprehensive definitions of data Science was recently given by Cao as the formula:

Data science = (statistics +informatics +computing+ communication + sociology + management) | (data + environment + thinking).

II. ISSUE IN DATA SCIENCE

Well, data is a lucrative field to pursue as they are plenty of demand for people with similar skills. In this business arena. data scientists are deemed to possess some superhuman powers as they wade across tones of data and come up with a solution for solving business problems.

There exists no career without any challenges and how can data be an exception to this. In this article, we want to explore the real-time challenges of data science which are based on perspectives from those experts in the field.

Problem Identification

One of the major concerns in analyzing a problem is to identify it accurately for designing a better solution and defining each aspect of it. We have seen data scientists to try mechanical approach by beginning their work on data and tools without getting a clear understanding of the business requirement from the client.

There should be a well-defined workflow before starting off with the analysis of the data. Therefore, as a first step, you need to identify the problem very well to design a proper solution and build a checklist to tick off as you analyze the results.

Accessing the Right Data

It is vital to approach your hands on the right kind of data for the right analysis which can be a little time consuming as you need to access the data in the most proper format. There might be issues ranging from hidden data and insufficient data volume to less data variety. It is also a kind of challenge to gain permission for accessing the data from various businesses.

Data scientists are expected to manage the data management system and other information integration tools such as Stream analytics software which is used for data filtering and aggregation.

The software allows connecting all the external data sources and syncing them in the proper workflow.

Cleansing of Data

Big data is estimated to be a little expensive for generating more revenue because data cleansing is making troubles to operating expenses. It can be a nightmare for every data scientist to work with the databases which are full of inconsistencies and anomalies as unwanted data leads to unwanted results. Here, they work with tons of data and spend a huge amount of time in sanitizing the data before analyzing.

Data scientists make use of data governance tools for improving their overall accuracy and data formatting. Addition to this, maintaining a data quality should be everyone's goals and businesses need to function across the enterprise benefit from good quality data. Bad data can result in a big enterprise issue.

Lack of Professionals

It is one of the biggest misconceptions to expect that the data scientists are good at high-end tools and mechanism. But they too need to have possessed a piece of sound knowledge and gain subject depth. Data scientists are considered as bridging the gap between the IT department and top management as domain expertise is required for conveying the needs of the business to the IT department and vice Versa.

To resolve this, data scientists need to get more useful insights from businesses in order to understand the problem and work accordingly by modeling the solutions. They also need to focus on the requirement of the businesses by mastering statistical and technical tools.

The Road Ahead

In reality, being a data scientist requires the implementation of results by making use of refined data and practical applications. The data world is a difficult and fast challenge. However, a career in the data industry is not only based on experts but it is based on being an expert who understands how to fit the demands of industries.

III. TOOLS USED IN DATA SCIENCE

SAS

It is one of those data science tools which are specifically designed for statistical operations with the given data set. SAS is closed source proprietary software that can be used by large organizations to analyze data. It uses base SAS programming language for providing statistical modeling. It is widely used by companies and professionals working on reliable commercial software. SAS contains numerous statistical libraries and tools that you as a Data Scientist can use for modeling and organizing their data. While SAS is most reliable and has strong support from the company, it is highly expensive and is only used by bigger industries. Furthermore,

there are many packages and libraries in SAS that are not available in the base pack and can require an expensive up gradation.

BigML

BigML, it is another mostly used Data Science Tool. It provides a fully intractable, cloud-based GUI environment that you can enable for processing Machine Learning Algorithms. BigML gives a standardized software using cloud computing for industry requirements. By that, companies can use Machine Learning algorithms across with various parts of their company. For example, it can use this one software across for sales forecasting, product innovations, and risk analytics. BigML specializes in predictive modeling. It uses a wide variety of Machine Learning algorithms like clustering, classification, time-series forecasting, etc.

BigML provides an easy to use web-interface using Rest APIs and you can create a free account or a premium account based on your data needs. It allows interactive visualizations of data and provides you with the ability to export visual charts on your mobile or IOT devices.

Furthermore, BigML comes with many automation methods that can help you to automate the tuning of hyper parameter models and even automate the workflow of reusable scripts.

D3.js

JavaScript is used as a client-side scripting language. D3.js, a JavaScript library allows you to make interactive visualizations on your web-browser. With several APIs of D3.js, you can use several functions to create dynamic visualization and analysis of data in your browser. Another powerful feature of D3.js is the usage of animated transitions. D3.js makes documents dynamic by allowing updates on the client side and actively using the change in data to reflect visualizations on the browser.

You can combine this with CSS to create illustrious and transitory visualizations that will help you to implement customized graphs on web-pages. Overall, it can be a very useful tool for Data Scientists who are working on IOT based devices that require client-side interaction for visualization and data processing.

MATLAB

MATLAB is a multi-paradigm numerical computing environment for processing mathematical information. It is closed-source software that facilitates matrix functions, algorithmic implementation and statistical modeling of data. MATLAB is most widely used in several different scientific disciplines.

In Data Science, MATLAB is taken as for simulating neural networks and fuzzy logic. Using the MATLAB graphics library, you can develop powerful visualizations. MATLAB is also used in image and signal processing. This makes it a very versatile tool for Data Scientists as they can face all the problems, from data cleaning and analysis to more advanced Deep Learning algorithms.

Furthermore, MATLAB's easy integration for enterprise applications and embedded systems make it an ideal Data Science tool. It also helps in automating various tasks ranging from extraction of data to re-use of scripts for decision making. However, it suffers from the limitation of being closed-source proprietary software.

Excel

Probably the most widely used Data Analysis tool. Microsoft developed Excel mostly for spreadsheet calculations and today, it is widely used for data processing, visualization, and complex calculations. Excel is a powerful analytical tool for Data Science to analyze the data. While it has been the traditional tool for data analysis, Excel still packs a punch.

Excel comes with various formulae, tables, filters, slicers, etc. You can also create your own custom functions and formulae using Excel. While Excel is not for calculating the huge amount of

Data, it is still an ideal choice for creating powerful data visualizations and spreadsheets. You can also connect SQL with Excel and can use it to manipulate and analyze data. A lot of Data Scientists use Excel for data cleaning as it provides an intractable GUI environment to pre-process information easily.

With the release of ToolPak for Microsoft Excel, it is now much easier to compute complex analyzations. However, it still pales in comparison with much more advanced Data Science tools like SAS. Overall, on a small and non-enterprise level, Excel is an ideal tool for data analysis.

ggplot2

ggplot2 is an advanced data visualization package for the R programming language. The developers created this tool to replace the native graphics package of R and it uses powerful commands to create illustrious visualizations. It is the most widely used library that Data Scientists use for creating visualizations from

analyzed data. Ggplot2 is part of tidyverse, a package in R that is designed for Data Science. One way in which ggplot2 is much better than the rest of the data visualizations is aesthetics. With ggplot2, Data Scientists can create customized visualizations in order to engage in enhanced storytelling. Using ggplot2, you can annotate your data in visualizations, add text labels to data points and boost intractability of your graphs. You can also create various styles of maps such as choropleths, cartograms, hexbins, etc. It is the most used data science tool.

Tableau

Tableau is data visualization software that is packed with powerful graphics to make interactive visualizations. It is focused on industries working in the field of business intelligence. The most important aspect of Tableau is its ability to interface with databases, spreadsheets, OLAP (Online Analytical Processing) cubes, etc. Along with these features, Tableau has the ability to visualize geographical data and for plotting longitudes and latitudes in maps.

Along with visualizations, you can also use its analytics tool to analyze data. Tableau comes with an active community and you can share your findings on the online platform. While Tableau is enterprise software, it comes with a free version called Tableau Public.

Jupyter

Project Jupyter is an open-source tool based on IPython for helping developers in making open- source software and experiences interactive computing. Jupyter supports multiple languages like Julia, Python, and R. It is a web-application tool used for writing live code, visualizations, and presentations. Jupyter is a widely popular tool that is designed to address the requirements of Data Science.

It is an intractable environment through which Data Scientists can perform all of their responsibilities. It is also a powerful tool for storytelling as various presentation features are present in it. Using Jupyter Notebooks, one can perform data cleaning, statistical computation, visualization and create predictive machine learning models. It is 100% open-source and is, therefore, free of cost. There is an online Jupyter environment called Collaboratory which runs on the cloud and stores the data in Google Drive.

Matplotlib

Matplotlib is a plotting and visualization library developed for Python. It is the most popular tool for generating graphs with the analyzed data. It is mainly used for plotting complex graphs using simple lines of code. Using this, one can generate bar plots, histograms, scatterplots etc. Matplotlib has several essential modules. One of the most widely used modules is pyplot. It offers a MATLAB like an interface. Pyplot is also an open-source alternative to MATLAB's graphic modules.

Matplotlib is a preferred tool for data visualizations and is used by Data Scientists over other contemporary tools. As a matter of fact, NASA used Matplotlib for illustrating data visualizations during the landing of Phoenix Spacecraft. It is also an ideal tool for beginners in learning data visualization with Python.

NLTK

Natural Language Processing has emerged as the most popular field in Data Science. It deals with the development of statistical models that help computers understand human language. These statistical models are part of Machine Learning and through several of its algorithms, are able to assist computers in understanding natural language. Python language comes with a collection of libraries called Natural Language Toolkit (NLTK) developed for this particular purpose only.

NLTK is widely used for various language processing techniques like tokenization, stemming, tagging, parsing and machine learning. It consists of over 100 corpora which are a collection of data for building machine learning models. It has a variety of applications such as Parts of Speech Tagging, Word Segmentation, Machine Translation, Text to Speech Speech Recognition, etc.

Scikit-learn

Scikit-learn is a library based in Python that is used for implementing Machine Learning Algorithms. It is simple and easy to implement a tool that is widely used for analysis and data science. It supports a variety of features in Machine Learning such as data preprocessing, classification, regression, clustering, dimensionality reduction, etc.

Scikit-learn make it easy to use complex machine learning algorithms. It is therefore in situations that require rapid prototyping and is also an ideal platform to perform research requiring basic Machine Learning. It makes use of several underlying libraries of Python such as SciPy, Numpy, Matplotlib, etc.

TensorFlow

TensorFlow has become a standard tool for Machine Learning. It is widely used for advanced machine learning algorithms like Deep Learning. Developers named TensorFlow after Tensors which are multidimensional arrays. It is an open-source and ever-evolving toolkit which is known for its performance and high computational abilities. TensorFlow can run on both CPUs and GPUs and has recently emerged on more powerful TPU platforms. This gives it an unprecedented edge in terms of the processing power of advanced machine learning algorithms.

Due to its high processing ability, Tensorflow has a variety of applications such as speech recognition, image classification, drug discovery, image and language generation, etc. For Data Scientists specializing in Machine Learning, Tensorflow is a must know tool.

Weka

Weka or Waikato Environment is used for Knowledge Analysis is a machine learning software written in Java. It is a collection of various Machine Learning algorithms for data mining. Weka consists of various machine learning tools like classification, clustering, regression, visualization and data preparation.

It is open-source GUI software that allows easier implementation of machine learning algorithms through an intractable platform. You can understand the functioning of Machine Learning on the data without having to write a line of code. It is ideal for Data Scientists who are beginners in Machine Learning.

RESEARCH METHODOLOGY

In order to gain better insight of the selected topic, various research paper were studied, which are mentioned in the reference.

LIMITATION OF STUDY

In Data Science, the data analyst uses data sets to tease out correlation between the variables to provide decision making support. But, sometimes not all correlation are important and provide useful information. As with many technological barriers and endeavor, data science tools are prone to data breach and led to compromise.

SCOPE OF THE STUDY

This paper provide information about various tools used by data scientist. This paper is going to be useful for everyone either academician, researcher, etc. who want to explore or to get basic idea about data science tools. Further these paper can be used to improve the tools efficiency and provide some new algorithms and tools for data science.

IV. CONCLUSION

The role of statistics in data science is under-estimated as, e.g., compared to computer science. This yields, in particular, for the areas of data acquisition and enrichment as well as for advanced modeling needed for prediction.

Stimulated by this conclusion, statistician as well-advised to more offensively play role in this modern and well accepted field of data science.

Only combining and complementing mathematical methods and computational algorithms with statistical reasoning, particularly for big data, will lead to scientific results based on suitable approaches. Ultimately, only a balanced interplay of all sciences involved will lead to successful solution in data science.

This article has sought to form the foundation for further study of the specific content of data science education and training, and of business sectoral importance.

REFERENCES

[1] Fionn Murtagh and Keith Devlin, "The Development of Data Science: Implications for Education, Employment, Research and the Data Revolution for Sustainable Development", June 2018.

[2] Claus Weihs and Katja Ickstadt, "Data Science: the Impact of Statistics", January 2018.

[3] Panagiotis Barlas, Ivor Lanning and Cathal Heavey, "A Survey of Open Source Data Science Tools", February 2015.

[4] Proyag Pal, Triparna Mukharjee and Dr. Asoke Nath, "Chellenges in Data Science: A Comprehensive Study on Application and future Trends", IJARCSMS, Vol.3, Issue 8 , August 2015.

ARTIFICIAL INTELLIGENCE – AN OVERVIEW

Akshaya Rajesh Chikane
Student, Department of Information Technology and Mathematics, The S.I.A College of Higher Education,
University of Mumbai, Dombivli

ABSTRACT
Artificial Intelligence is a relatively new branch of computer science, a tremendous amount of effort has been put into research associated with understanding biological systems, abstracting key principles of intelligent behaviour, and developing practical applications of AI. Face recognition, self-driving cars, industrial robots, tumour detection and speech recognition are all real world enigmas being solved with application of intelligence (AI). AI is widely known in sports industry and is shaping the industry at a fast space. AI is not only used to track player statistics but also by team and organizations to enrich the fan experiences.

The main objective of these research paper is to explore and expand the potential impact of artificial intelligence system on day to day life. This paper takes a closer look at how machine learning and AI can help a team to win, but also how teams, organizations and companies can improve their annual turnover by creating more effective marketing campaigns, sponsorship deals and better sports event in general. The two most common languages are LISP and Prolog known as AI languages. Artificial intelligence is working more in decreasing human efforts but with less growth.

Keywords: Artificial Intelligence, Automation, Digitization, Business Strategies, Innovation, Business.

INTRODUCTION

Artificial Intelligence AI refers to the application of computes and information technology to develop machines that can mimic the cognitive abilities of human beings. The emerging technologies viz. internet of things (IoT), data science, big data, cloud computing, artificial intelligence (AI), and block-chain are changing the way we live, work and amuse ourselves. This is also impelling business, strategists, pioneers, entrepreneurs and investigators to use AI to design new strategies and create new sources of business value. Andrew Ng, co-founder Google Brain; former vice president & chief scientist of Baidu; co-chairman and co-founder of Coursera and an adjunct professor at Stanford University said in 2017 at Stanford MSx (Master of Science in Management for Experienced Leaders) Program (Lynch 2017) - "Just as electricity transformed almost everything 100 years ago, today I actually have a hard time thinking of an industry that I don't think AI will transform in the next years". The statement carries considerable weight as Prof. Ng is one of the six top thinkers in AI and machine learning (Marr 2017), a prominent computer scientist and an AI entrepreneur i.e. he has the expertise in academia as well as industry. Therefore, it is necessary to pay attention to the wide-ranging implications of AI on governments, communities, companies, and individuals. This paper will address the influential academic achievements and innovations in 3 the field of AI, its influence on the global market and the strategic objectives of organizations, and the shaping of business contexts with AI. Research plays an increasingly important role in the development of innovations and new technology.

Today's business world technology applications continue to improve efficiency in decision making and overall business operations. Business Management and operations are in an era of data, which shapes day to day processes in business operations. Artificial Intelligence aims at leveraging the existence of expansive data to promote business intelligence decision making using sophisticated algorithm that are used to create insight into future business processes, consumer behaviour, and market trends; and promote informed decision making, which gives businesses a competitive edge over other competitors.

BUSINESS INTELLIGENCE EVOLUTION

Business intelligence data refers to information that is gathered to provide insight into business decision making. Business intelligence has evolved from a reactive orientation to a protective

Orientation, which makes it viable to apply artificial intelligence into business data analytics to provide better future insights into business decision making. The high proliferation and use of new data sources such as smart-phones, tablets, and the internet of things devices have significantly revolutionized how businesses access data and the type of data that is available. Previously, the static reports from business intelligence systems were limited, but the introduction of machine learning has significantly improved the use of data with a proactive approach. The revolution of business intelligence systems from a reactive approach to business systems to a more proactive approach allows date alerts and also real-time insights, which allows business organizations to make better use of data.

PRESCRIPTIVE, DESCRIPTIVE AND PREDICTIVE ANALYTICS

Business intelligence has evolved in many ways, which continue to be evident in the modern application of information in business management and operations. The descriptive analytics of business intelligence helps in creating summaries to inform the management of business operations that have already taken place. Business intelligence has made it possible to collect raw data and present it in a manner that can help management understand the past decisions and their implications on future business outcomes.

Predictive data analysis in business intelligence helps business organizations make future predictions that help in the creation of future insights, which can be used to create future insights through the use of algorithms. Artificial Intelligence will significantly improve the ability of businesses to make future forecasts, which can be used to improve business production decisions by estimating demand trends in the market. The latest application of artificial and business intelligence in business decision making and practice is the use of algorithms to prescribe possible actions and advise management on how best to arrive at certain management solutions for different organizational problems. The prescriptive analytics is a business intelligence application that is powered by artificial intelligence with the aim of providing business advice, which has significantly improved business decision making and digitization of business processes.

METHODOLOGY DATA AND RESULT:

In this paper, we have investigated the effect of the tremendously increasing intelligent behaviour of machines on the growth rate and changing behaviour of the business all over the world. AI startups born all over the world to meet customer expectations in different application areas. 100 AI start-ups is the list of 100 promising private companies implementing AI algorithms in 22 different lines of business. This list of 100 AI start-ups were chosen from the pool of over 1650 companies by CB Insights' Mosaic algorithm [6], based on factors like financing history, investor quality, and momentum. In 2011 the total investment in these AI start-ups across the world was $25.88 million which increased to $1866.6 million in 6 years (2011 to 2016). Figure 1 depicts 71.13% increase in investment in these AI start-ups. Across the world, U.S. is leading this revolution with maximum investment. We can see from the graph that total investment in AI start-ups has increases exponentially in last 6 years.
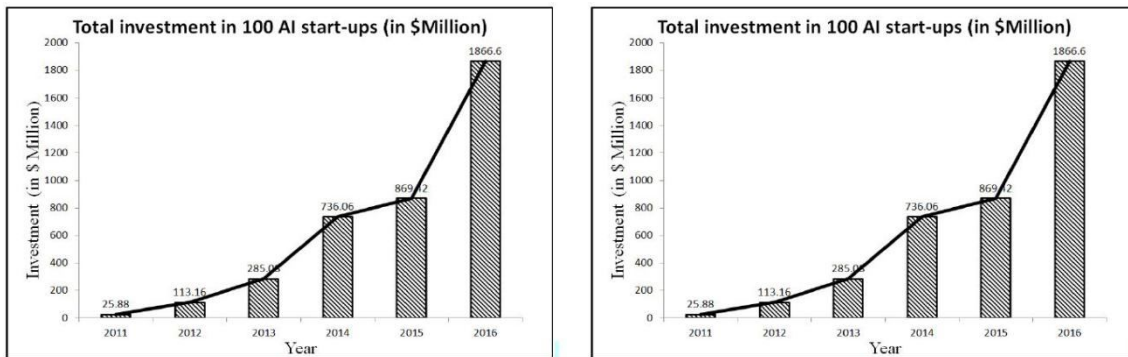
AI start-ups initiated all over the world are categorized in 22 different fields including autonomous vehicles, business intelligence, healthcare etc. Figure 2 depicts the percentage of 100 AI start-ups in 22 lines of business which majorly covers all the fields where AI is showing its impact.
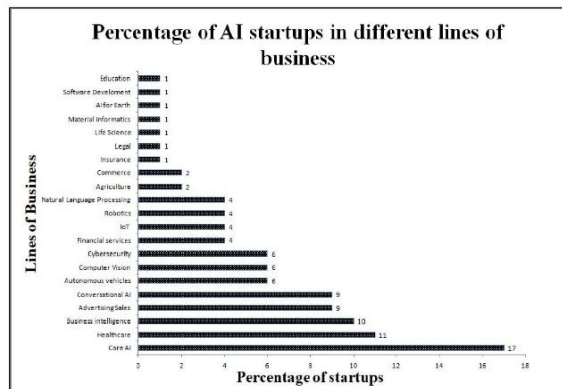
We can see that the spread of AI is all pervasive, from education to healthcare, from home to industry, there is no place where AI is not being explored.

IMPROVED BUSINESS EFFICIENCY

Artificial intelligence is set to create more business efficiency through deep learning software applications that will provide business organizations with real-time insights on how the business is fairing. The adoption of AI in already existing technology will significantly improve business efficiency; for instance, the use of humanoid office robots for learning office tasks and operating more efficiently than human-based labor. The humanoid robots are fitted with real-time data analysis AI, which will make it easy to retrieve information. Further, the AI enabled humanoid robots can be connected to other business systems, which will increase the ability of management to monitor and coordinate the activities of different departments compared to the use of business intelligence dashboards. The use of deep learning and Tensor Flow, which are used to ease the hiring process by automating the process of reviewing job applicant information for those who apply through an organization's website by helping to easily identify appropriate candidates. The time saving deep learning AI application will help organizations easily locate and recruit human resources, which will help increase efficiency by reducing the overall downtime that can be caused by the absence of skilled manpower.

Due to the growth of e-commerce, online customer communications management is very dear to every business organization that has created a website or ventured into online sales. The AI-driven chatbots are being used to manage social media communication and to engage online customers. Therefore, the chatbots can save time and also respond to customer queries faster compared to human-based customer service. Therefore, the chatbots are one of the recent AI tools that can be used to improve organizational efficiency and provide organizations with a competitive advantage in handling customers and promptly answering customer queries Deep learning AI applications are making shopping more efficient and faster through personalized recommendations through the deep learning application, which can create a customer profile for all online buyers. In other cases, business organizations are using AI software applications such as deep learning to augment investment options, which improve an organization investment decisions as well as detect possible fraud. The application of AI-powered software provides business organizations with virtual assistance in the management of many customers, which is critical to every business model today. The chatbots ensure that business organizations are always online in the markets, which helps keep customers updated with new product information.

Information is very vital in today's organizational marketing, AI-enabled business intelligence systems can analyse market information and provide business insights on the best approaches to market goods and services, and also which products are doing well in the market. AI software can easily analyse information and data points on the Web within a short period and provide the required feedback, which can be implemented by the business to improve business processes.

IMPROVED BUSINESS SECURITY

The high global interconnectedness has made it difficult for many organizations to safeguard themselves against cybercriminals who exploit the high number of possibilities and targets. Business organizations can leverage the used of new AI to manage and protect their information and online e-commerce customers from the growing threat from cybercriminals. The application of machine learning and AI on industries and business applications due to their computing power, data collection, storage, and interpretation can be used to tame cybercriminals in a proactive approach in which security risks are identified, and approaches to mitigation can be put in place before any damage can be done to customer or the business data and systems. Machine learning techniques and continuous AI retraining can be used to proactively stay ahead of what the cybercriminals are thinking. Therefore, AI can be applied in a preventive and predictive way by business organizations to increase cybersecurity. Many business organizations have fully developed digital models, which run on systems that can easily be hacked by cyber criminals, which could be detrimental to the overall organizational operations and customer trust. When human beings are in charge of system security, there are many loopholes and gaps that are left because of the human nature of human security analysts. Machine learning and AI work without getting tired or being limited by time, which seals all the possible gaps that can be exploited by cybercriminals to commit cyber-crimes such as fraud and information theft. Therefore, the use of AI and machine learning can reduce the overall threat caused by the skills gap and reduce the number of malware that can lay dormant in business systems before they can be detected which can reduce the vulnerability of systems.

REDUCED COST OF LABOUR

Artificial Intelligence is the application of machines with human-like capabilities in which machines are made to function with the capability of human intelligence. The use of machines is beneficial to organizations in that they reduce overall operational cost. Reducing operational cost is significant to every

organization because it can be used to acquire a competitive advantage in the market. Apart from being used to improve product communication AI can be used in personalized recommendation systems that can be used to drive more customers to buy products, which improves brand loyalty. The smart chatbots can provide clients with the necessary product information even in the absence of online sales agents. Through the use of AI-driven personalized recommender an organization can save money from wasteful marketing activities. Market prediction insights that are derived from the use of AI ensure that market strategists base their decisions on facts and not on mere fantasies, which helps to optimize an organization's marketing activities. Unlike highly paid analysts, AI works from day one without making mistakes and taking breaks, which is cost friendly to an organization. Through machine learning, AI can discover market and operational inefficiencies, which are costly. Management can make market and production corrections to increase efficiency and reduce extra costs that are incurred due to inefficiencies.

GLOBALIZATION

In globalization, the high interconnectedness of people in the world can be used as an advantage by business organizations by applying AI software such as machine learning can help businesses to understand markets. Globalization requires a common approach to communication, which has been made possible through the use of natural language processing AI and language generation AI, which will improve the ability of organizations to share product information and penetrate new markets. Therefore, AI will significantly contribute to the unification of the world through the creation of AI technology, which will assist with foreign language interpretation. By understanding other cultures, global business organizations such as Coca-Cola will be able to penetrate more markets with products that are tailored to the specific cultures. The high demand for the personalized experiences in the global market can only be achieved if business organizations promote the adoption of new AI technology to understand customer behaviour and habits. Through the use of AI and machine learning, business organizations will be able to deliver the right content and products to customers.

AUTOMATION OF BUSINESS PROCESSES

Business systems automation is another important application of since the industrial revolution and has significantly improved production. From automation in automobile manufacturing and assembly plants to automated hotel booking systems, which use AI software and AI driven advanced robots, which work in manufacturing industries. Most of the routine work and tasks in the production process have been automated to increase production efficiency and reduce the cost of production. The reduced cost of production due to automation plays a significant role in contributing to an organization's competitive advantage by enabling an organization to offer products at a low price compared to other competitors who are yet to automate their production processes. The primary advantage of automation is that an organization can increase its total output because unlike human capital the robots do not wear out or require breaks for refreshment Machines are more efficient and accurate compared to human beings and have already been proved in car assembly plants where human labor has been substituted with robots. In this case, some aspect of car assembly requires a lot of human strength, which leaves employees worn out. When employees are tired, they are prone to make mistakes that can endanger the safety of the people who will use the product that is under assembly. Robots reduce the high cost of labor from short period shifts used by businesses to reduce the fatigue on workers. As a result of using robots in the assembly and other energy intense operations accidents are reduced as well as the possibility of making mistake which can endanger the public. In this case, AI application increases the efficiency and accuracy of the overall operations in industries that require a lot of energy and manpower. Business and production organizations should implement AI in a way that it improves the creativity of the employees by leveraging technology by easing fears and ensuring that employees benefit from AI applications. Artificial intelligence is based on learning systems modelled on neural patterns, which ensure various applications in industry and business managements.

CONCLUSION

AI has a positive impact on the overall business operations and also the creation of market leadership. The organization that implements AI in their operations can achieve high operation optimization. The adoption of AI improves overall decision making within an organization by using AI insights to make informed decisions. In marketing, AI is used to ensure an organization marketing efforts are not wasted and product information can reach the potential customers. AI has increased automation of business processes and production processes, which reduce overall production costs and helps create high-quality products for mass consumption. The use of AI helps business organizations have a proactive approach towards cybersecurity, which improves the security of business and customer information.

Increase in productivity, time and cost efficiency, human error reduction, faster business decisions, customer preference prediction, and sales maximisation are some of the key advantages of automation, cognitive technologies, and data analysis using AI algorithms. It can be analysed from above data that AI wave is on and appetite for AI growth is exponential. The investment in AI is showing an upward trajectory in last 6 years & should remain the same for upcoming years. Increase in productivity, time and cost efficiency, human error reduction, faster business decisions, customer preference prediction, and sales maximisation are some of the key advantages of automation, cognitive technologies, and data analysis using AI algorithms. It can be analysed from above data that AI wave is on and appetite for AI growth is exponential.

REFERENCES

1) Brynjolfsson, E., & Mcafee, A. N. D. R. E. W. (2017). The business of artificial intelligence. Harvard Business Review.

2) Hislop, D., Coombs, C., Taneva, S., & Barnard, S. (2017). Impact of artificial intelligence, robotics, and automation on work.

HAND GESTURE RECOGNITION WITH IMAGE PROCESSING

Prachi Khobragade and Jinal Dharaviya

Bachelor of Science in Information Technology , Guru Nanak College of Arts, Science and Commerce, G.T.B Nagar Sion, Mumbai

ABSTRACT

This analysis for the sign language alphabet recognizer for dumb and deaf peoples. This recognizer converts the hand gesture into text format. Hand gestures are physical movement by using eyes and hands and non-physical movements, body position etc. people can express their feeling with different hand shapes and facial expressions. This paper proposes algorithms and the strategies used for the recognizer and the future prospect. CNN is used to describe an architecture for applying neural networks to two-dimensional arrays (usually images), based on spatially localized neural input. It also described as the technique of shared weights and local receptive fields.

CNN contains 4 layers Convolution layer, Pooling layer, Non linear layer, Fully connected layer this layers are used to process the images

The advantages of using CNN for image recognition are it takes less memory, it is easy to train the machine, it has a good feature extractor. It is easy to train the machine using the existing datasets

Keywords: Neural Network, Machine Learning, Convolution Neural Network, Activation Functions

1. OBJECTIVES

Disable peoples feels so though to express their feelings to everyone, sometimes they regret themselves to express their thoughts and views and everyone like us cannot understand their language easily. So to make them comfortably express their views and communicate using this software will be used as medium to understand easily. The algorithm and netural network which are used are given in this paper.

2. REVIEW OF LITERATURE

Xin Jia researched Deep learning algorithms are a subset of the machine learning algorithms, which aim at discovering multiple levels of distributed representations. Recently, numerous deep learning algorithms have been proposed to solve traditional artificial intelligence problems. Their research work aims to review the state-of-the-art in deep learning algorithms in computer vision. They provide an overview of various deep learning approaches and their recent developments, and then briefly describes their applications in diverse vision tasks.

3. INTRODUCTION AND PROBLEM DEFINITION

As disable peoples were facing lots of communication problems with us. Even for a simple thing they might need the help of other persons. They sometimes fail to communicate their thoughts. Nowadays android and embedded systems is appearing as main prime trends in all applications. Due to that change of our life style in smarter way. Hand gesture is a method of communication between deaf and dumb people. They need to use sign language. After that they communicate to deaf and dumb people more fluently. To change the life style of dumb people, this project is developed. Sign language utilizes both physical and non-physical communication. Hand gestures are physical movement by using eyes and hands and non- physical movements, body position etc. Dumb people can express their feeling with different hand shapes and facial expressions. Each gesture has meaning allocate to it. Sign languages has different approaches:

I. Kinect sensor, Image Processing, Data Gloves, Leap Motion.

II. In Kinect sensor technique sensors are used to detect sign language.

III. Image Processing used web camera to capture images.

IV. In Data Gloves technique, flex sensors, accelerometer and motion tracker are used.

V. Leap motion controller is a sensor. It converts the sign language into computer command.

This gesture problems lead us to the introduced of first step towards visual gesture recognition with the help of detecting, analyzing and recognizing of gestures from the set of real images. The gesture segment is composed of two steps: accurate gesture contour track, and continuous tracking domain.

4. LIMITATIONS OF STUDY

This study is only limited to software. It requires large set of data to process as well as a good RAM processor to train the machine . Training of machine takes lot of time.

5. RESEARCH METHODOLOGY AND MAIN BODY OF PAPER

Convolutional neural network is used in image processing and speech recognition. Bottleneck is one of the feature of convolutional neural network. Tensorflow is an image processing model and bottleneck is used to speed up and reduce the training time to improve the performance of the algorithm. Bottleneck is a neural network that consists less layers than the back or forth layers. Such layer encourages the network to compress feature representations to best fit in the available space, in order to get the best loss during training.

Huge large bulks of datasets are needed for training. In convolutional neural network, first the images i.e., input data are given, then the input images which have been given is divided in to number of layers. Number of layers gets transformed in to a series of convolutional layers and pooling layers. The layers get flatten in to multiple hidden layers and then it will get classify with some probabilistic value and get trained. Bottleneck layer helps to reduce the size of the input images tensor in a CNN layer. With the help of this, the program functionality gets increased and better works smoother way. Deep learning and multilayer perceptron are the two concepts from which a bottleneck layer gets generated.

Activation Function

The activation functions are used to decide whether the neural should be activated or not on the basis of the weight sum of input and adding bias to it. Activation function is important for the artificial neural network to learn and make decision on complex and Non-linear complex functional mappings between the inputs and response [2]Activation function can be either linear or non-linear depending on the function it represents, and are used to control the outputs of out neural networks, across different domains from object recognition and classification, image processing, to speech 4 recognition, scene understanding and description ,other domains , validating categorically that a proper choice of activation function improves results in neural network computing

Perceptron neural network consists of:

$y_{in} = \sum w_i x_i + b$

Where, x_i = input

w_i = weight

b = bias

Activation function for single layer:

$Y = f(y_{in})$

$$f(y_{in}) = \begin{cases} 1 & i\ y_{in} > 0 \\ 0 & i\ y_{in} = 0 \\ -1 & if\ y_{in} < 0 \end{cases}$$

Variants of activation functions:

1. Linear Function
2. Sigmoid Function
3. Tanh Function
4. RELU Function
5. Softmax Function

The activation function used is sigmoid function

Sigmoid Function

Sigmoid function is an activation function and defined as squashing function. Sigmoid function lies between 1 and 0(used in programs as -1)

It is used in artificial neural network to add non-linearity to the model

Sigmoid has 'S' shaped graph which is used to define increase and decrease of the weight

Formula: $f(x) = \left(\dfrac{1}{1 + e^{-x}} \right)$

6. SCOPE OF STUDY

In this paper the scope of study revolve around the artificial neuron network and the best suitable network for image processing. Artificial neuron network processes the image with the help of various layers, there can be one or more hidden layers to process information.

Convolution neural network is preferable to do image processing and classification for its high accuracy. [3]The CNN follows a hierarchical model which works on building a network, like a funnel, and finally gives out a fully-connected layer where all the neurons are connected to each other and the output is processed.

7. CONCLUSION

From this study we can understand that Convolutional Neural Network is one of the efficient network to process the image. If more data are given to train the machine then it gives the more accurate output. In CNN more number of hidden layers are not required to process images

Result
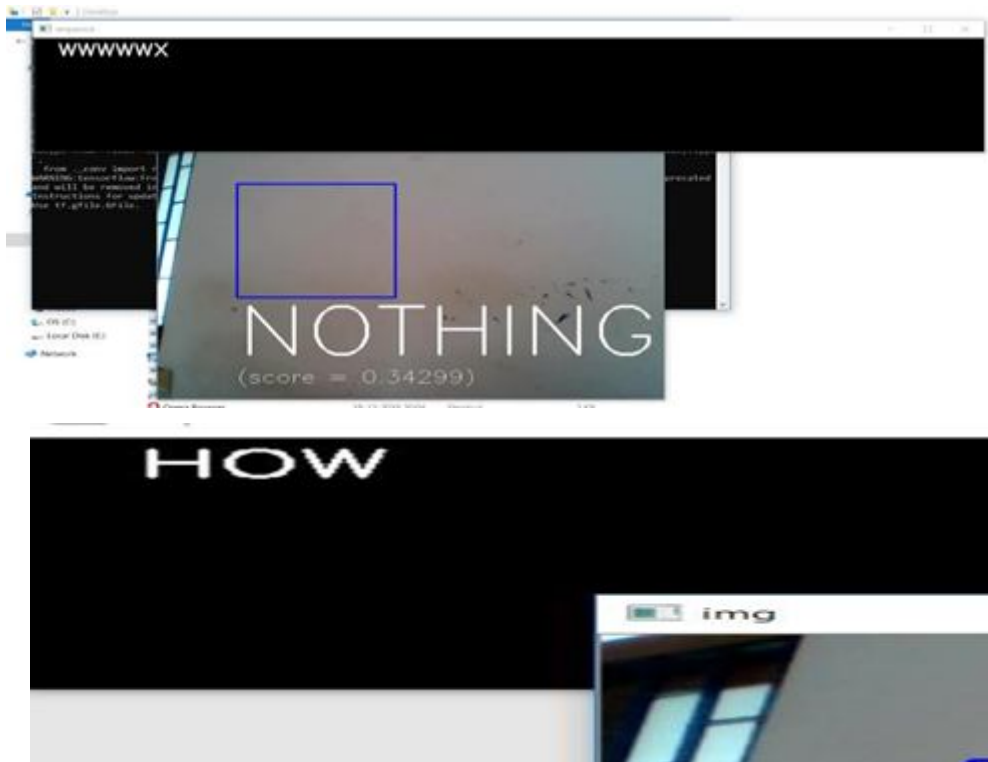
Dataset source
The dataset used from the loicmarie github project sign-language-alphabet-recognizer

REFERENCES

1. David L. Elliott (1993), Institute for Systems Research University of Maryland College Park, ISR Technical Report TR 93-8, A Better Activation Function for Artificial Neural Networks.

2. Chigozie Enyinna Nwankpa, Winifred Ijomah, Anthony Gachagan, and Stephen Marshall(2018), Activation Functions: Comparison of Trends in Practice and Research for Deep Learning

3. Kishan Maladkar, Convolutional-Neural-Network-Image-Classification-Overview

4. Xin Jia (17 July 2017), 2017 29th Chinese Control And Decision Conference (Ccdc),Image Recognition Method Based On Deep Learning

STOCK MARKET PREDICTION BASED ON TIME SERIES AND ANALYSING ITS TRADING INDICATORS

Rohit Sureshsingh Choudhary

Department of Information Technology, Guru Nanak College of Arts, Science and Commerce, G.T.B Nagar, Mumbai

ABSTRACT

Technical analysis for stock market with its technical indicator helpful for traders to derive strategies and to analyse the correct timings for buying or selling the stocks. Due to intricate behaviour, the stock price is strenuous to predict. Stock price prediction is challenging and entangle for traders. Many trading Analyst have performed several algorithms to analyse the price movement. In the Stock market, News have excessive impact. This paper proposes trading strategies consisting Bollinger Bands and Moving Average Convergence/Divergence (MACD) and to predict the future price movement using a Long Short-Term Memory (LSTM) algorithm using historical data. First objective of this paper is to optimize the two famous trading indicators Bollinger Bands which include three bands upper band; middle band; lower band calculated using mean and Standard deviation that helps to analyse the trend of price movement, and MACD indicator that is design to disclose changes in the strength, direction, momentum and duration of a trend in a stock's price. Further, LSTM algorithm analysed to build a predicting model of stocks. The prediction is based on the daily adjustments to predict the price. The dataset of NSE: PHILIPCARB used to analyse the behaviour and predict the price.

Keywords: Bollinger Bands; Moving Average Convergence/Divergence (MACD); Long Short- Term Memory (LSTM).

INTRODUCTION

Bollinger Bands are a type of statistical visualization graph featuring the prices, volatility and provide assistance to glance buy/sell signals over time of financial instrument or commodity, using a method discovered by John Bollinger in the 1980s. Investors employ these graphs as a statistical tool to inform trading decisions, control self-operated trading systems, or as a component of technical analysis, using the past data.

Moving Average Convergence/Divergence (MACD) is a trading indicator used as technical tool to visualize stock prices momentum, propounded by Gerald Appel in the 1970s. The MACD indicator (or "oscillator") is a collection of three main time series component computed from historical price data, usually the closing price. These three components are: the MACD line, the MACD signal, and the MACD histogram. MACD indicator helps investor to take short and long position in market.

Stock price prediction is a difficult task due to its dynamically changing environment. News have greater impact on price movement. The choice of algorithm here is Long Short Term Model (LSTM) a type of recurrent neural network propose by Sepp Hochreiter & Jurgen Schmindhuber has greater accuracy for predicting price, since different weights has been assign to each input, while forgetting memory it considers as unnecessary to predict next output. Historical price data from company NSE: PHILIPCARB will be used as source of information to train the network.

LITERATURE SURVEY

Yawen Yu, Shanshan Wang and Lijun Zhang researched for combine the text analysis technique with comments to predict the impacts of investor sentiment on the stock price in the short term using BP neural network to improve the prediction accuracy of closing price.

Debadrita Banerjee researched the most reliable way to forecast the future is to try to understand the present, his study offers an application of ARIMA model based on which he predict the future stock market.

PROBLEM DEFINITION

The stock market is arduous, since it varies with changing market environment. To analyse the market trend and price momentum. To decrease delusive forecasts of the stock market and proliferate the ability to predict stock price. To eschew risk and the complex in predicting stock movement.

METHODOLOGY

Data Source

Technical analysis done on the NSE: PHILIPCARB on daily basis. The data of the company obtain from Alpha vantage API and then the data is manipulated and converted into csv files using pandas library for developing Bollinger Bands, MACD and to train model.

Tools for Experiment: Python IDE, Jupyter Notebook.

Bollinger Bands

Bollinger Bands use three bands to make trading decisions. The middle band is a simple moving average of time series data, 20 period moving average considered as a good choice to visualize, and simple moving average is an average of pervious n data values at period.

$$SMA = \frac{1}{n} \sum_{i=0}^{n-1} P_{p-i} \qquad (1)$$

In the above formula, P stands for the data value at period p and n is the number of data used in the computation, Based on the Middle band, the Upper and Lower Bands are calculated as,

Upper band $= 20pSMA + (20p\sigma * 2)$ (2)

Lower band $= 20pSMA - (20p\sigma * 2)$ (3)

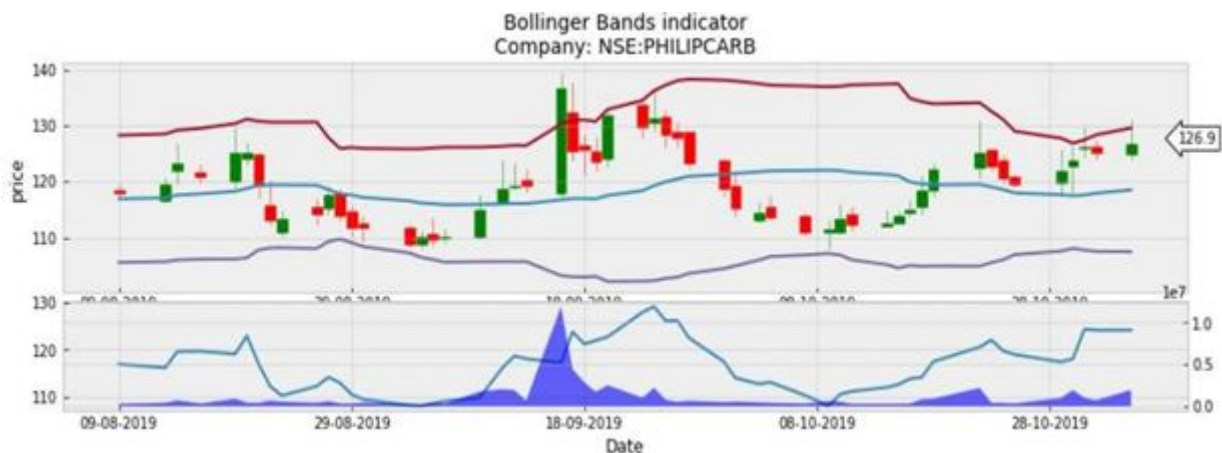Bollinger Bands can be a useful indicator to recognize the high and low volatility,

Figure-1: Bollinger Bands

When there is an increase in the volatility of price the Bands get widen and gets narrow on low volatility. This helps the investors to peek at the point for making profit, since low volatility ensures there is no price movement and less risk. These bands also used to point out the trading period to take a trade. When the closing price moves above the middle band derives bullish spread and bearish spread for when the closing price falls down after touching the upper band. The Closing price never crosses above or below the Bollinger bands

Moving Average Convergence/Divergence (MACD)

MACD indicator uses MACD line, MACD signal and MACD histogram to make trading decisions, they are calculated using Exponential moving average (EMA). EMA assigns a weighting element to each data value according to the change in period. The most recent data value gets the greatest weight and each data gets lowest weight as we scrutinize data in decreasing order.

$$EMA = (close_{price} - EMA_{p-1}) * W + EMA_{p-1} \qquad (4)$$

In the above formula, $close$price is the current closing price, p is the period, W is the weight and

EMA_{p-1} is the previous EMA, where,

$$W = \frac{2}{p+1} \qquad (5)$$

MACD indicator is occasionally computed on $9pEMA$, $12pEMA$ and $26pEMA$. 9 period EMA is considered as the signal line, MACD line is computed as,

MACD line $= 12pEMA - 26pEMA$ (6)

MACD histogram is less reliable, it need support of other indicators, it is computed as,

MACD histogram $= (12pEMA - 26pEMA) - 9pEMA$ (7)

Figure-2: MACD indicator

This indicator assists the investors to take long and short positions based on the direction of the price movement. In the Figure 2. The investor can neither take short nor take long position as long as MACD line and the signal line both are far from each other. This indicates not to take trade or hold position. When the MACD line crosses above the signal line the investor go long and buys the stock, when the signal line moves above the MACD line indicates the investor to take short position. Comparing the MACD line with MACD histogram, the histogram proliferate from zero as long as MACD line stays above the signal and falls at the time signal line the surpass the MACD line

Long Short Term Memory model
Keras library with Tensorflow platform running in background is used to develop the network. The input layer employ with number of input characteristics, followed by multilayer LSTM with hidden nodes and a single output layer, Sigmoid and relu activation functions are applied on the input layer to train the model. The model is trained by observing the value of first 300 adjusted close stocks, based on these values the value of 301th stock is predicted, using this methodology all the stock of NSE: PHLILIPCARB is individually trained.

Experiment
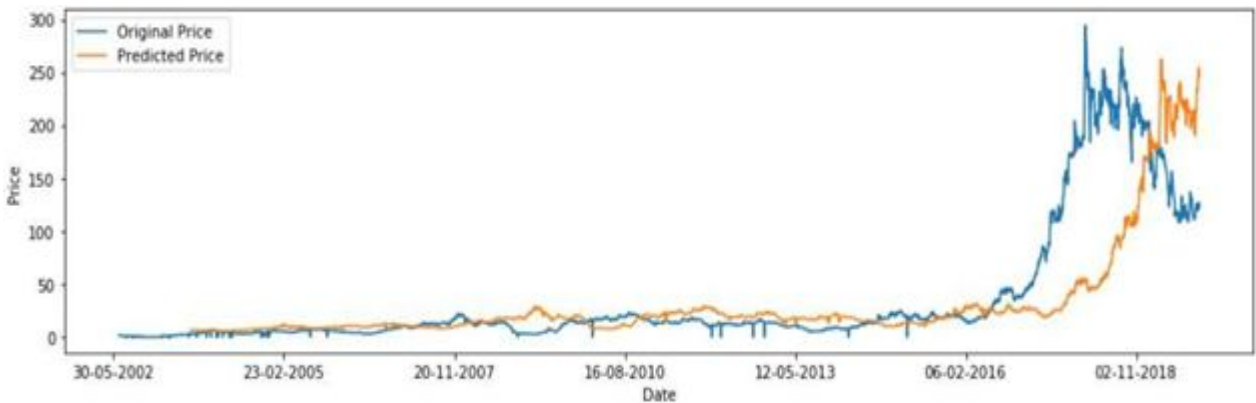
Figure-3: The Long Short Term Model for stock price prediction

The features fitted into the model almost able to predict the price based on the insampling data. In the Figure 3, our network almost able to understand the behaviour of the price movement. The model fairly able to reduce the loss (0.00042105) to improve the accuracy of the prediction.

SCOPE OF STUDY
Based on the nature of this research, a quantitative empirical research was conducted on Stock price for few reasons. First, to understand the market volatility, behaviour and buy/sell position with the use of one of the famous trading indicators, Bollinger Bands and Moving Average Convergence/Divergence. Second, to predict the stock price with the use of Long Short term Memory model which has the ability of forgetting the unnecessary data for next output.

LIMITATION OF STUDY
The average time to complete one epoch to train the model takes 45sec-50sec which is pretty expensive, large amount of data of closing price is provided to model to predict the price. This technique may not be reliable to predict the price on small amount of data as well as out of sample data.

CONCLUSION

Bollinger Bands helps market traders to understand market volatility and generates buy/sell positions and MACD indicator can be considered as tendency following price movement indicator. The pure use of these indicators help the investors to derive winning strategies on random walk. LSTM model able to make prediction, it almost create a shadow of original price based on provided features for training. In future, more features will be given including sentiment analysis along with the support of trading indicators to train model to achieve more accuracy in prediction of price.

REFERENCES

1. Agung B. Prasetijo, Takdir A. Saputro, Ike P. Windasari & Yudi E. Windarto. (2017). Buy/Sell Signal Detection in Stock Trading with Bollinger Bands and Parabolic SAR. 4th International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE). IEEE. Semarang, Indonesia. pp. 41.

2. Burton G. Malkiel. (1973). W. W. Norton & Company, Inc. A Random Walk Down Wall Street.

3. David M. Q. Nelson, Adriano C. M. Pereira, Renato A. de Oliveira. (2017). Stock Market's price movement prediction with LSTM neural networks. International Joint Conference on Neural Networks (IJCNN). IEEE. Anchorage, AK, USA. pp. 1419.

4. Debadrita Banerjee. (2014). Forescasting of Indian stock market using time-series Arima model. 2nd International Conference on Business and Information Management(ICBIM). IEEE, Durgapur, India.

5. R. Yamini Nivetha & Dr. C. Dhaya. (2017). Developing a Prediction Model for Stock Analysis. 2017 International Conference on Technical Advancements in Computers and Communications. IEEE. Melmaurvathur, India. pp. 1.

6. Seng Hansum. (2013). A New Approach of Moving Average Method in Time series Analysis. 2013 Conference on New Media Studies (CoNMedia). IEEE. Tangerang, Indonesia.

7. Siyu Yao, Linkai Luo and Hong Peng. (2018). High-Frequency Stock Trend Forecast Using LSTM Model. the 13th International Conference on Computer Science & Education (ICCSE 2018). IEEE. Colombo, Sri Lanka.

8. Yawen Yu, Shanshan Wang & Lijun Zhang. (2017). Stock Price Forecasting Based on BP neural network Model of Network Public Opinion. 2017 International conference on Image, Vision and Computing. IEEE. Chengdu, China. pp. 1058.

9. vantage.co/query?function=TIME_SERIES_DAILY_ADJUSTED&outputsize=full&symbol=NSE:PHILIPCARB. (Accessed 2nd Oct, 2019).

10. https://en.wikipedia.org/wiki/MACD. (Accessed 9th Oct, 2019).

11. https://en.wikipedia.org/wiki/Bollinger_Bands. (Accessed 4th Oct, 2019).

ARTIFICIAL INTELLIGENCE

Vidhyanand Yadav

Student, Department of Information Technology and Mathematics, The SIA College of Higher Education, Dombivali East

1. ABSTRACT

In Today's world the branch of science is concerned with making computers behave like a human being. Artificial intelligence includes expert system, neural system, natural learning, game playing and robotics. Currently no computer has exhibit full artificial intelligence (able to simulate human behavior). Nowadays the hottest area of artificial intelligence is neural network which is providing successful in number of disciplines as behaved by the human being such as voice recognition and natural language processing. There is multiple programming language that are known as for the AI language because that are most exclusively used for the purpose of AI language. The two most common are LISP (List Processing) Language and prolong (for logic). Artificial language is working in a lot of decreasing human being effort but with less growth.

2. INTRODUCTION

Artificial Intelligence is used to develop computer programs to solve the complex problems by application for process that are analogues to human reasoning process.

The artificial intelligence was found on the central property of human, intelligence the sapience of homo sapiens can precisely described to simulated by machines. This has been increased the phenological issues about the nature of the mind and the ethics of creating artificial beings, issues which had been recognized by myth, fiction and philosophy since antiquity. Artificial intelligence had been the subject of tremendous optimism but also suffered setbacks. Nowadays artificial intelligence has become essential part for technology industry.

3. REVIEW OF LITERATURE

The roots of artificial intelligence and the concept of intelligence machines may be founded in Greek mythology with real mechanism which indicating behavior with some degree of intelligence. After the modern computer becoming available it is possible to create programs that perform difficult tasks.

1950-1960: - The first operational AI program were written in 1951 to execute Ferranti Mark I machine of university of Manchester: A draughts playing program that is written by Christopher Strachey and the chess playing program code that was written by Dietrich Prinz.

1960-1970: - During this period Marvin Minsky and Seymour Paper issue the perceptions representative represent the limits of neural and after that Alain Colmenar developed the prolog computer language.

1980's ONWARDS: - In the 1980's neural network become used with broadcast algorithm that had been first described by Paul John Warbots in 1974.in 1985 the market of artificial intelligence market was a boom and got a growth over a billion dollars.

1990's ONWARDS: - In the 1990's and early 21 century, I achieved its greatest success. The success was because of the rising computational power of computer a greater importance on solving exact problems using AI.AI was used for logistics, data mining, medical analysis and many other things in skill industry.

4. SOME APPLICATIONS ON ARTIFICIAL INTELLIGENCE

AI should be designed using lots of algorithms. These algorithms help the system for determining the expected response which will basically tell the machine what to expect and work accordingly. Here are the greatest AI applications that are probably used in our daily life: -

1. Voice recognition

2. Machine learning platform

3. Ai optimized hardware

4. Robotic process automation

5. Text analytics and NLP o   Voice recognition

o   Virtual agents:

o   Machine learning platform

AI Design Models

AI application are around us and in this research paper. I will discuss some most common application of AI that we always use in day to day life, which is Virtual Assistants such as google assistant, Siri, Cortana...etc. From the past few years smart assistants are becoming a very common technology in smart devices and most importantly that these assistants are getting smarter. In addition to the awesome help they provide us that every of these apps has unique features that can be used. Artificial Intelligence works with the following phases: that is as followed: by collecting the data, clean manipulate, prepare the data, train model, test data, and improve the data as mentioned in below figure. Before accessing any data, a business analyst must verify the quality of the data to ensure that it meets the requirement.
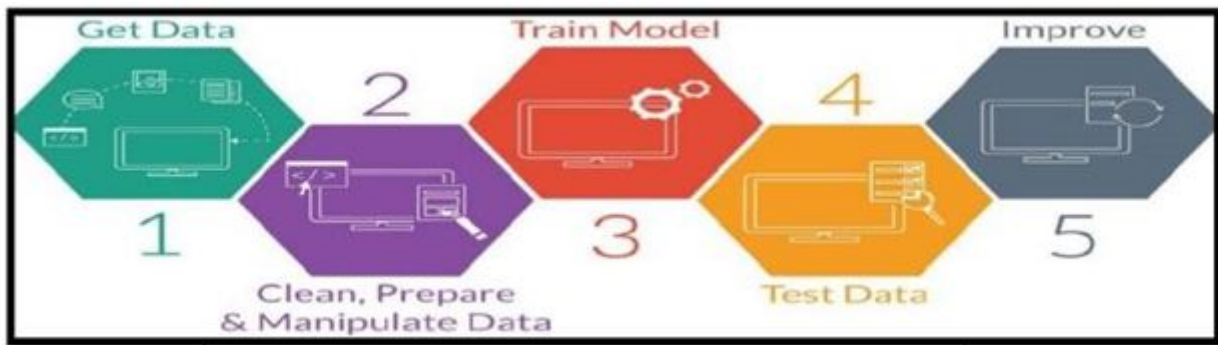
5. COMPONENTS OF AI

The major components of AI are as explained below: -

5.1: - The User Interface

The user interface means the interaction between the expert systems problem-solving process. A good expert system may not be useful if the user is unable to interact with the system. The system should have a good user interface so the user can understand the system and able to work on it else there is no use of such system which will not be able to understand by the user.

5.2: - The Information Base

It stores all the data and the information about the exacting problems domain. It makes this accessible in the form so that information can be used. The rules include both manufactures rules that can concern to the area of the expert system and the heuristic and rules of the thumbs that are provided by the experts in order to make a system to find out the solution of the problems that are faced.

5.3: - The Shell OR Interface Engine

The interface engine is a program that locates the suitable information in the information base and by applying consistent processing and analytical strategies that can be used for the development of the system.

6 RESERCH METHODOLOGY
☐ **BRANCHES OF ARTIFICIAL INTELLIGENCE**

1.1 Genetic Programming

Genetic programming is a function that get program to carry out exact tasks and solve exact problem. Meaning of genetic programming is innovative algorithm methods that will help us draw the ancestry to the organic growth of a human being that has been occupied for the search for computer programs that are performed under user defined task. The world can thank JOHN KOZA and the expert team with him in 'Artificial Intelligence' for the method of genetic programming.

1.2 Ontology

ontology is the branch of artificial intelligence that is been anxious with various kind of objects.it is a concept that are formally represented with the area.it can be used to cause of entity with an exacting area and explain the exacting area in detail.

1.3 Epistemology

Epistemology concerns itself study of information or data that can be helpful for solving the disease of the world. Epistemology that has been managed to cut for itself in place of artificial intelligence.

However, the epistemology focuses on answering the below four question that are focused on What is information? How is the information is acquired? What do people know? How do we know what we know? the term 'Epistemology' was first introduced by Scottish philosopher James Frederick Ferrier.

1.4 Heuristics

It is a branch of artificial intelligence that concern with the experience-based techniques for solving the problems and discovering the new ideas. Heuristic methods and techniques that are all concern rapidly and powerfully discovering the optimal answering for the specific problems. Heuristic method usually speaks about the judgement for many or exact solutions to the problems that are been faced.

☐ TOOLS THAT ARE USED IN ARTIFICIAL INTELLIGENCE

Nowadays there are large number of tools to solve the problem of artificial intelligence. Thus, some of the tools are been discussed below: -

2.1 Search and Optimization

Many problems in AI can be solved by searching through many possible solutions that is reasoning decreased to a performance of search. the logical proof can be viewed in searching for a path that leads from start to conclusions, where each step is the application of an inference rule. Planning about the algorithms search through trees of goals and sub goals, attempting search to find a path to a target goal or a conclusion, a process called means-ends analysis that can be used for the purpose of solving the problem using artificial intelligence. The robotics algorithms for moving limbs and grasping objects use local searches and optimization in configuration. The solution for the problems of a human being can use "heuristics" or "rules of thumb" that eliminate choices that are unlikely to lead to the goals. Evolutionary computation uses the form of optimization search that enables to solve the problems. They begin with a population of organisms and then allow them to recombine, selecting only the fittest to survive each generation this thing can be solved by search and optimization.

2.2 Neural Network

The neural networks are set of algorithms modeled loosely after the human brain, that are designed to recognize patterns and find out the solutions related to the problems that are going to faced. They interpret the data as per the requirements of kind of machine for perception, labeling or clustering raw input using the data that had been provided. The neural network patterns are contained into which all real-world data, be it images, sound, text or time series, must be translated and using the neural networks the data is recognized and managed in a proper so that can help to get the solutions as per the requirement of the human beings that will help to find out the solutions. Neural networks will help us to cluster and classify in AI. We can think of them as a clustering and classification layer on top of the data that we can use store and manage. They help to group unlabeled data according to similarities among the example inputs, and they classify data when they have a labeled dataset to train on to find out the solutions to the problems.

2.3 Logic

Logic is used for representation of information or a data and problem solving, but it can be applied to other problems as well. There are multiple forms of different logic are used in AI Research. Propositional or sentential logic statements can be true or false. There are many types of logics that can be used there are First-order logic, Fuzzy logic, Subjective logic, Default logics, non-monotonic logics that can be used for problem solving.

☐ AREAS OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence focuses on problem solving methods. Intelligence relies on ability to manipulate symbols and find out the solutions for the problems. Artificial Intelligence though is discipline, has been evaluate the society beyond imagination. The goal of artificial intelligence

i.e. the expert system, natural language processing, pattern recognition, and robotics is to simulate human intelligence with computers to solve the problems.

Some of the recent computational techniques and areas that are utilized and used in developing fields of Artificial Intelligence are discussed below;

Expert System

Expert System is the knowledge that is based on the computerized systems which play an important role of intelligence interface or gateway for providing access to the database and to obtain the relevant information or a data that is required to the expert system.

An expert system is a computer program that provides expert advice, decisions or recommended solutions for the problems that are been faced. The different components of expert systems are as follows: - Knowledge base, Inference Engine, and User Interface.

Natural Language Processing

One of the important goals of computer science is to teach computers to understand the language that a human being speaks. The Ultimate generation of computer language is the Natural language. Artificial Intelligence scientists have been succeeded with developing a Natural language interface to a certain extent using limited vocabulary and syntax.

Natural Language Processing allows a computer to understand the questions that are been asked and the solutions are provided by the natural language computer system that had been build. The goal is to design and build computer that analyze, understand and generate language that a human being naturally speaks. The different components of natural language processing are as follows: - machine translation, speech synthesis, speech recognition, information retrieval, information extraction and data sharing.

Pattern Recognition

Pattern recognition is process of enabling a close match between some new stimulus and That previously stored stimulus patterns. This process is being performed continually through the lives of all the living things in this world. Pattern recognition are studied in many fields, including psychology, ethology, cognitive science and computer science to find out the solution as per the requirements. Pattern recognition is based on either a prior knowledge or on statistical information extracted from the patterns.

Robotics

The field is often described as the one of AI that is concerned with perceptual and motor tasks using AI the robots are created that are used to solve the problems of a human beings.

7. SCOPE OF ARTIFICIAL INTELLIGENCE

The scope of artificial intelligence are as follows: - 1]Computer science

- Dynamic programming

- Automatic storage management 2]Transportation

- Boston dynamics

- Honda's Asimo 3]Hospitals and medicines

- Heart sound analysis

- Robotics automation

Etc. there are many more scopes of artificial intelligence.

8. CONCLUSION

Nowadays artificial intelligence is the emerging and one of the most advance field and very important in the world of technology. It's had been provided the mankind a very powerful tools that are helpful for the usage of day to day life of a human beings. With the help of efficient use and deployment of artificial intelligence we are, and we will achieve a better world in which in which artificial intelligence is going to play a very important role. They may can become such a advance machines that can replace a human beings and this is going to be the greatest threat of mankind.in a short existence AI has been increased understanding about the nature and intelligence and that are provided an impressive of application in the wide range of area in the world.AI has sharpened the understanding the human actions and human nature and all types of behavior that will revealed the complexity of modeling the human reasoning providing new areas and will help in the rich challenges in the future.

REFERENCE

- Mahanta, J. (2017, July 10). Introduction to Neural Networks, Advantages and Applications. Retrieved November 23, 2017, from https://towardsdatascience.com/introduction-to-neural- networks-advantages-and-applications-96851bd1a207

- Mahmodey, Z. (2017, April 22). Big Data and Artificial Intelligence for Digital Business. Retrieved November 25, 2017, from http://www.immersiveauthority.com/big-data-artificial- intelligence-digital-business/

- https://www.forbes.com/sites/mariyayao/2017/08/08/industrial-ai-factories-of- future/#30b20565128e

- J. Matthews, Basic A* Path finding Made Simple, AI Game Programming Wisdom, Charles River Media, Inc., Hingham, MA, 2002.

- Mahdiyeh EslamiI, Hussain Shaareef, Azah Mohamed, "Application of artificial intelligent techniques in

- PSS design: a survey of the state-of-the-art methods".

- Oscar Firschein, Martin A. Fischler, L.Stephen Coles, Jay M. Tenenbaum, "FORECASTING AND ASSESSING

- THE IMPACT OF ARTIFICIAL INTELLIGENCE ON SOCIETY", unpublished.

- S.N. Deepa, B. Aruna Devi, "A survey on artificial intelligence approaches for medical image classification", Indian Journal of Science and Technology, Vol. 4 No. 11 (Nov 2011).

- Vassilis S Kodogiannis and John N Lygouras (2008) Neuro-fuzzy classification system for wireless capsule endoscopic images. J. World Acad. Sci.Engg. & Technol., 45, 620-628. [14] Zadeh L, "Fuzzy sets Inf

- Control", 1965.

DATA SECURITY IN CLOUD COMPUTING

Dimple Anand Badger

Student, Department of Information Technology and Mathematics, The S.I.A. College of Higher Education, Dombivli (East)

ABSTRACT

This paper discuss about the data security in cloud computing. It is a study of data and security related aspects which is related to the cloud. Despite having many features, cloyadavud computing also has some issues. The most critical issue of cloud computing is its security. When data is kept on individual machines compared to data stored on the "cloud", security risks and privacy issues are high. These risks have to be considered by customers before moving to cloud service. The paper will provide a details about the data protection methods and approaches used worldwide to ensure maximum data security by minimizing the risks and threats. The obtainability of the data in the cloud is helpful for many applications, but it stances a risk by revealing the data to applications that may already have a safety flaws.

For instance, the usage of virtualization aimed at cloud computing can lay data at risk when a guest Operating System is ride on a hypervisor without knowing the consistency/dependability of the guest Operating System, which may have a safety flaw. The paper will also provide an insight on the data security aspects for Data-in-transit and Data-at-rest, and also several cloud computing security issues and solutions against cloud computing security problems. The study is based on all the levels of SaaS (software as a service), PaaS (platform as a service) and IaaS (infrastructure as a service).

Keywords: Data Security, Cloud Computing, Data Security, Data-in-transit, Data-at-Rest, Risks and threats.

OBJECTIVES

The aim of this paper is:

- To understand the security issues and identify the appropriate security technologies which are being used in the current world of the cloud computing.

- To identify some of the security challenges expected in the future of cloud computing.

- To suggest few security procedures for the future challenges to be faced in Cloud Computing.

LITERATURE SURVEY

To understand the elemental keys of cloud computing and to store secure data on the cloud, many resources have been considered. This section discuss about a review of literature of the paper.

In 2016, Albert Albugmi, Madini O. Alassafi, Robert Walters, Gary Wills, wrote a paper titled Data Security in cloud computing. The aim of this paper is to understand the risks and concerns and identify the security techniques used to mitigate them in cloud computing. They have provided an excellent insight into the basic concepts of cloud computing. According to them, one of the foremost reasons of why large enterprises still would not move their data to cloud is "Security issues". There are many risk and security concerns that is associated to cloud computing and their data. They have focused on major security challenges and discussed various encryption techniques to secure data.

In 2019, Sukaran Golani, Suraj Sahal ,Vaishali, Sonika, wrote a paper titled Technical survey on cloud computing and its security issues. They have discussed about the basic concepts of cloud computing and its characteristics also they illustrated the Cloud services model in a appropriate manner, which says that "Top Service has the best Development".

INTRODUCTION

What is meant by cloud computing ? Cloud computing allows omnipresent, convenient, network access to the computing resources like-networks, servers, storage, applications, and services that may be chop-chop provisioned and free with negligible management effort or service supplier interaction'. a serious concern within the adaptation of the cloud for knowledge is security and also the privacy.

One of the advantages of the cloud computing - data to be shared between different organizations. Many well-known companies-Google, Facebook, Amazon, Microsoft, Yahoo and many others are working hard to develop more and more cloud computing systems and improving their services to reach a plethora of users worldwide.One of the major questions that arises while using the cloud to store the data - whether to use an

another parties cloud services or to create an internal organizational cloud. Sometimes, the data is too subtle to be stored within an public cloud, for example, highly private future product details etc. This type of data can be tremendously subtle and the penalties of exposing this data on a public cloud can be serious. In such cases, it is highly suggested to store the data in internal organizational cloud.

This paper is the study of the data security techniques which is used for shielding and safeguarding the data in cloud all over the world. This talk over about the possible threats to the data in the cloud and their keys accepted by various service providers to defence the data.

Cloud computing environments are of 3 types viz – public, private, hybrid. Public cloud is less secure as compared to private cloud because any user can have access to store the data. The private cloud cannot be used by anyone only an authorized person have the rights to access it. The private cloud is too secure as it provides security. Hybrid cloud model is the combination of public and private cloud. In this, some data is accessible to the public, while some have restrictions.

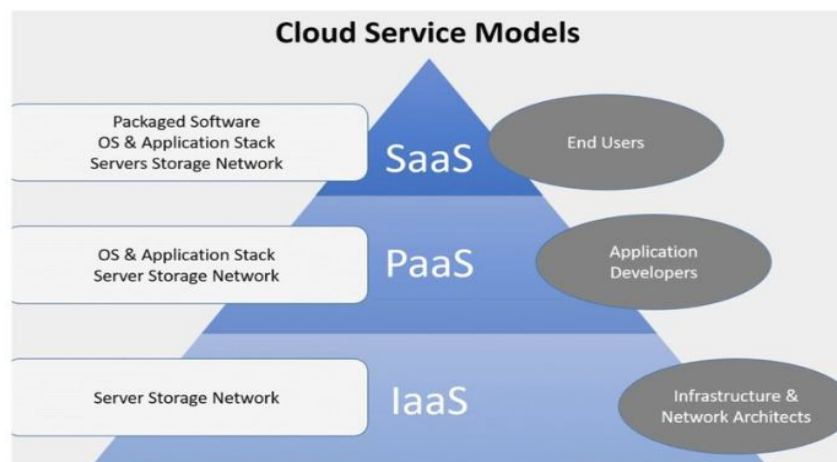Cloud computing services are as follows:

Fig 1 [3] : Cloud Service Models

(A) Infrastructure as a Services (IaaS) : Infrastructure as a services-institutions, companies or general public use the cloud services to access the data which is available online which includes files and applications. It is indistinguishable to Utility computing which provides the services for which the user had paid for. SaaS and PaaS services is dependent on IaaS for getting computing power for free. Using Cloud service providers we can gather storage, I/O devices and etc, together in a large mere of dataset for providing facilities to the clients, SaaS and PaaS.

(B) Platform as a Services (PaaS) : In PaaS, the hardware and software applications are offered to users all over the cloud. It provides the ease to the customers by installing the applications onto their system. Some of the PaaS providers charges money for such services. The user will have to pay for such services which they wish for. Some of the PaaS providers are Google app engine and Microsoft Azure.

(C) Software as a Services (SaaS) : SaaS is an Cloud service model which enables their users by providing software over cloud so that the one or the user do not need to install the software on their systems. The user also do not need to install any hardware. Such services is bought on a subscription basis. Such services keeps the software updated without any interference of the user. It is also stated as On-Demand Software.

SECURING DATA USING ENCRYPTION
The encryption techniques for data at rest and data in transit may differ from each other. Like, the encryption keys for data in transit can be short/dwarf, while for data at rest, encryption keys can be taken for a longer period of time.
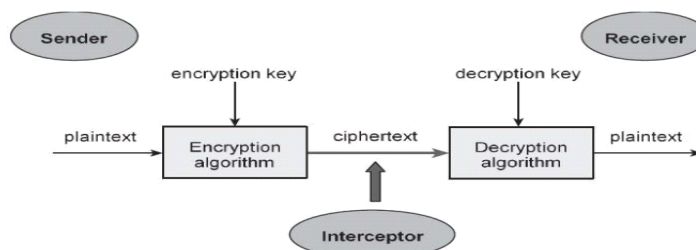
Fig 2 [4]: Basic Cryptography Process

Nowadays, different cryptographic techniques are being used for encoding the data. Cryptography has also improved the level of data protection for reassuring the content integrity, authentication, and availability. In the simplest form of cryptography process, the plain text is encrypted to cipher text by using an encryption key, and the resultant cipher text is further decrypted by using a decryption key which is shown in Fig 2.

A. Block Ciphers: Block is an algorithm for encoding cipher data - to generate cipher text where a cryptographic key and algorithm are to process a lump of data instead of every bit at a time. In this technique, it is ensured that similar blocks of text are not encrypted in a message the same way. Typically, cipher text technique from the preceding encrypted block is applied to the later block in a chain.
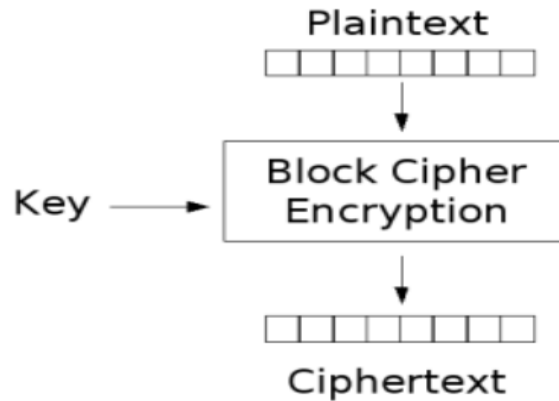

Fig 3 [5]: Block Cipher Mechanism

As illustrated in Fig 3, Plain text is split into blocks of data, typically 64 bits. These blocks of data are then encrypted exploitation associate degree coding key to provide a cipher text.

B. Stream Ciphers : This system of encrypting knowledge is additionally known as a state cipher as a result of it depends on the cipher's state. During this technique, every bit is encrypted rather than a block of data. Associate degree coding key associate degreed an rule are applied to each bit, one by one.

The performance of stream ciphers is usually quicker than block ciphers thanks to low hardware quality. However, this system will create serious security issues if not used properly.
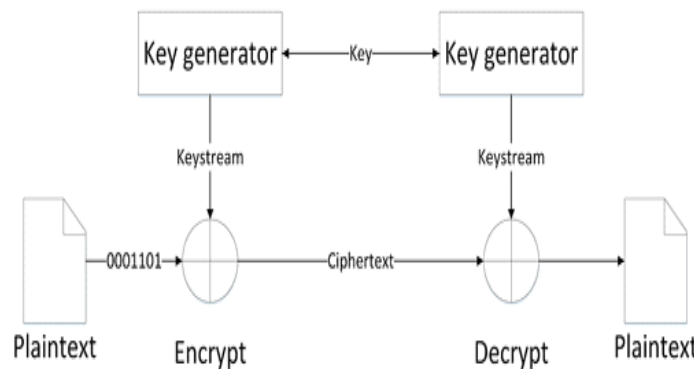

Fig 4 [6]: Stream Cipher Mechanism

As illustrated in Fig 4, The stream cipher uses an encryption key that is used to encrypt each bit instead of a block/s of text. The dericed cipher text is a stream of encrypted bits that can later be decrypted using a decryption key to produce the original plain text.

C. Hash Functions: In this technique, a mathematical function refe/rred to as a hash function is employed to convert the input text into associate degree alphameric string. commonly the created alphameric string is mounted in size. this method ensures that no 2 strings will have constant alphameric string as associate degree output. although the input strings square measure slightly completely different from one another, there's doubtless to be plenty of distinction between the output strings they manufacture. This is a very basic mathematical function which is shown in equation (1) or else very complex.

$F(x) = x \bmod 10$ ………..(1)

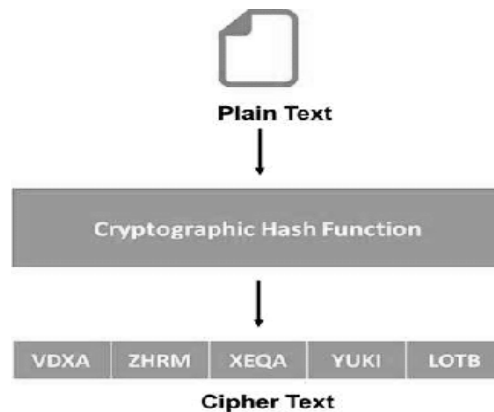Fig 5, further down shows the mechanism of hash function cryptography.

Fig 5 [7]: Cryptographic Hash Function Mechanism

All of the above methods and techniques are widely used in encrypting the data in cloud to ensure data security. The use of these techniques varies from one scenario to another. Whatever technology is used, it is highly recommended to ensure data security in both private and public clouds.

LIMITATION OF STUDY

Although the paper has reached its objective but the paper is of basic level. This paper discusses common encryption / security techniques to protect data. In the future, new technologies and techniques will be produced so that data can be protected and protected and privacy is provided. Then it can happen that this technology will be outdated. The 2 main techniques such as block cipher and stream cipher differ in the way that the plain text is encrypted/protected and decrypted. The idea behind block ciphers is to divide plain text into the blocks and encrypt those blocks. While the stream converts the plaintext bit to the same as the cipher stream.

RISKS AND SECURITY CONCERNS IN CLOUD COMPUTING

There are many risk and security concerns associated to cloud computing and their data. However, this paper will discuss about virtualization, storage and multitenancy in the public cloud.

• **Virtualization :** It is a technique in which a fully functional or performing operating system image is gathered in another operating system in order to use the resources of the actual operating system. A special function called hypervisor to run the guest OS as a virtual machine is required by the host OS

Virtualization is a fundamental element of cloud computing that helps deliver the core values of cloud computing. However, virtualization poses some risks to data in cloud computing. One potential risk is accomodating a hypervisor itself. A hypervisor can become a first target when it gets weak. If a hypervisor is compromised/accomodated , then the entire system can be compromised and therefore another risk is associated with virtualization is associated with resource allotment and de-allotment. If VM operation data is written to memory and it is not cleared before re-allocation of memory to the next VM, there is a possibility of data exposure for the next VM that may be undesirable.

One solution to the above issues is a better plan for the use of virtualization. Resources must be used carefully and data must be properly authenticated before resources are allocated.

• **Storage in Public Cloud :** Storing knowledge in a very public cloud is another security concern in cloud computing. typically clouds implement centralized storage facilities, which might be a pretty target for hackers. Storage resources square measure advanced systems that square measure a mix of hardware and software system implementations and may be exposed to knowledge if there's even a small breach within the public cloud.

In order to avoid such risks, it's forever counselled to own a non-public cloud if achievable for terribly sensitive knowledge.

Multitenancy: Shared access or multitenancy is additionally thought-about joined of the main risks to information in cloud computing. Since multiple users are misusing a similar shared computing resources like hardware, Storage and memory etc. it's threat to not solely one user however multiple users.

In such situations there's continually a risk of personal information accidentally leaky to alternative users. Multitenancy exploits may be exceptionally risky as a result of one fault within the system will permit another user or hacker to access all alternative information/data.

These sorts of problems may be taken care of by with wisdom authenticating the users before they'll have access to the information. Many authentication techniques area unit in use to avoid multitenancy problems in cloud computing.

DATA SECURITY IN CLOUD COMPUTING

This includes encryption methods. Requirements for data protection/security is dependent on cloud service models.

Two states of data usually have threat to its security in clouds; data at Rest which suggests the information hold on within the cloud and data in Transit which suggests data that's acquiring and out of the cloud. Confidentiality, and Integrity of knowledge relies upon the character of knowledge protection mechanisms, procedures, and processes. the foremost vital matter is that the exposure of knowledge in higher than mentioned 2 states.

A. Data at Rest: The data at rest refers to data within the cloud or any data that may be accessed mistreatment the web. This includes backup knowledge still as live knowledge. As mentioned earlier, typically it's terribly tough for organizations to safeguard knowledge if they are doing not have physical management over the information, they're not a personal cloud. However, this issue are often resolved by taking personal cloud with fastidiously controlled access[2].
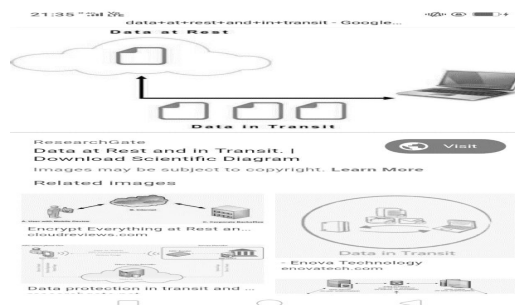

Fig 6 [8]: Data-At-Rest and in Transit

B. Data in Transit: Data in transit commonly refers to the data that is getting and out of the cloud. Such data are often within the kind of a file or information hold on the cloud and might be requested to be used at another location. Whenever, data is uploaded to the cloud, at time of being uploaded is named data in transit. Data in transit are often terribly sensitive data like usernames and passwords and might be encrypted now and then. However, knowledge in unencrypted type is additionally data in transit.

Data-in-transit is usually additional exposed to risks than comfort knowledge as a result of it's to maneuverer from one place to a different. (See Figure 6). There area unit some ways within which treater code will reveal knowledge and generally have the power to change the info on the thanks to the destination. to guard knowledge in transit, one among the simplest methods is cryptography[2].

DATA SECURITY CHALLENGES IN CLOUD COMPUTING

With the increase in data volume, data handling has become a matter of the city. As companies start moving to the cloud, a higher emphasis ensures that everything is safe and secure and there is no risk of data hacking or breaches. As, cloud allows people to work without hardware and software investment, users can gain flexibility and data agility. However, since the cloud is often shared among a lot of users, security becomes an immediate concern for cloud owners.

Security issues within the cloud: Cloud vendors provide a layer of security to the user's data. However, this is still not enough as data privacy can often be threatened. There are various types of attacks, shoulder surfing attacks and phishing attacks. Here are the security challenges within the cloud:

(i) Data protection and misuse: When various organizations / companies uses the cloud to store their data, there is a risk of misuse of data. To ignore such risk, there is an need to secure/protect a data repository. To achieve this task, one can use authentication and restrict access control to the data of the cloud.

(ii) Locality: Within the cloud world, data is often distributed across multiple regions; Finding the exact location of data collection is quite challenging. However, as data is transferred from one country to another country the rules governing data collection also change; This brings compliance issues and data privacy laws to the picture, which relates to the storage of data within the cloud. As a cloud service provider, users have to inform their data storage laws and the appropriate position of the data storage server.

(iii) Integrity: The system needs to be hardened so as to provide security and access restrictions. In other words, data should only be used with authorized personnel. Within the cloud environments, data integrity should be maintained at all times to ignore any data loss. In addition to restricting access, the permission to make changes to the data should be limited to specific people, so that there is no problem of widespread access at a later stage.

(iv) Access: Policies related to data security and data control are necessary in the long run. Authorized data owners are required to provide access to individuals so that everyone has only the necessary access to parts of the data stored within the data mart. By controlling and restricting access, there is much greater control and data security that can be imposed to ensure maximum security for stored data.

(v) Confidentiality: There is a lot of sensitive data that can be stored in the cloud. Such data has a multiple/additional layers of security on it to reduce the possibility of breaches and phishing attacks; this can be done by the service provider, as well as the organization. However, data privacy should be of utmost priority for sensitive content as a precaution.

(vi) Breaches: The blocks/breaches inside the cloud are not unheard of. Hackers can breach/block security parameters within the cloud, and steal the data that might otherwise be considered as confidential to the organizations. Conversely, a breach can be an internal attack, so organizations need to put special emphasis in tracking employee actions to avoid any unwanted attacks on stored data.

(vii) Storage: For organizations, data is being stored and made available to approx. For service providers, it is mandatory to store the data in physical infrastructures, which makes the data sensitive and alert to physical attacks.

There are also challenges that interact indirectly or affect cloud computing but has no direct effect integrity of Cloud Computing Applications. Such scenario includes: network traffics, breaks and modification of administrative problems, like non-optimal uses of resources, crowd and Miss-Connection. There are other risks, for example, related to applications of cloud computing, risk of social engineering attacks, natural disasters and equipments can be stolen.

SCOPE OF RESEARCH

Cloud is growing and by 2020 around 75% of the business will be on cloud. Conversely, challenges exist - cost, security, management, OPS and automation, performance, and the biggest of all - "skills-gap"!

One of the largest security considerations with the cloud computing model is that the sharing of resources. Cloud service suppliers have to be compelled to inform their customers on the amount of security that they supply on their cloud. during this paper, we tend to 1st mentioned numerous services of cloud computing. knowledge security is that the major issue for cloud computing. Also discussed about the Major security challenges in cloud computing and many other risks and concerns, including security aspects of networks and virtualization. This paper has been illustrated all these security problems which is going on in the cloud computing. Because of the difficulties of the cloud, the end-to-end security will be very difficult to achieve. New security technologies need to be developed and the old security technologies must be fundamentally replaced to be able to work with the architecture later.

CONCLUSION

Cloud computing, like other technologies, is able to reduce the cost of already available technologies these days. All the old or new technologies have some advantages and some disadvantages, when the cloud provides a lot of features to its users, it also has some issues related to privacy and security.

The increasing usage of cloud computing for storing data is certainly increasing the trend of increasing the ways to store data within the cloud. If not properly protected, the data contained within the cloud may be in danger. This paper mentions data risks and security threats within the cloud and summarizes 3 types of security considerations. Virtualization is investigated to discover the threats posed by the hypervisor. Similarly, threats caused by public cloud and multitenancy are mentioned. The key ideas of this paper were data security and its threats and solutions in cloud computing. Data has been cited in many states with technologies that are economical for encrypting information within the cloud.

This paper provided a summary of the block cipher, stream cipher and hash function used to encrypt information / data within the cloud whether it is at rest or in transit. Security issues can be dealt with using the above mentioned cryptographic security algorithms, to provide a safe and reliable environment for customers to store and access their data.

REFERENCES

[1] Sukaran Golani, Suraj Sahal, Sonika, Vaishali (2019) "Technical survey on cloud computing and its security issues", *Golani Sukaran et al; International Journal of Emerging Research & Development*, Vol(*2*), Issue.3

[2] Ahmed Albugmi, Madini O.Alassafi, Robert Walters, Gary Wills (2014) "Data Security in Cloud computing", *Fifth International Conference on Future Generation Communication Technologies,* Vol(*1*).

[3] https://www.uniprint.net/en/7-types-cloud-computing-structures/

[4] https://www.tutorialspoint.com/cryptography/cryptosystems.htm

[5] https://www.infosecwriters.com/articles/2015/09/14/introduction-block-cipher-algorithms-and-their-applications-communication

[6] https://onlinelibrary.wiley.com/doi/full/10.1002/sec.1399

[7] https://www.researchgate.net/figure/Cryptographic-Hash-Function-Mechanism_fig5_309321387

[8] https://www.researchgate.net/figure/Data-at-Rest-and-in-Transit_fig1_309321387

WHAT IS COMPUTER GRAPHICS?

Rohit Gupta

Student, Department of Information Technology and Mathematics, The S.I.A College of Higher Education, Dombivli (East)

1. ABSTRACT

Computer graphics are found in almost every industry. When picking up a magazine or newspaper or watching TV or movies images or pictorial views are seen all because of computer graphics. Computer graphics is a medium for presentation and design. During early days the computer graphics was mainly used for presentation. Then it was started to use computer graphics in design development stage.

Computer graphics is used to draw pictures, lines, charts etc. on computer screen by using hardware and software. Computer graphics is use to manipulate and display information in graphical or pictorial form. In computer graphics objects are presented as a collection of discrete picture elements known as pixel. These pixels are the smallest screen element.

Computer graphics is an art of using computer technology to create visual images from data. Computer graphics is the representation and manipulation of image data using various technology to create and manipulate images. Computer graphics are used for adding color, excitement and visual stimulation to media. One can edit graphics object with help of hardware or software. A graphical representation is quite easy to understand and remember rather than a text or audio. Obviously, any technology that come, comes with some advantages and disadvantages.

Nowadays, computer graphics is widely spread over the world. It is categorized into various different categories as 2 - Dimensional (2D), 3 – Dimensional(3D) and animated graphics. As technology as improved 3D computer graphics have become more common in use still 2D computer graphics are widely used.

The intent of this research paper is to study more about the computer graphics and design. As computer graphics allows user to interpret large volume of data in graphical or pictorial way. We will be studying about the basic ideas, uses or application, advantages and disadvantages, properties, types, impact on world, purpose etc. of computer graphics.

Keywords: - Computer Graphics, Pixels, 2- Dimension, 3-Dimenson, Multimedia.

2. OBJECTIVE

The objective of this paper is to give the people the knowledge of what computer graphics actually is. This paper will help people to gain interest in this subject. And gives people a new way to make a career in this sector. Since growing technology also got improves in the computer graphics, 3D graphics is nowadays playing major role.

3. REVIEW OF LITERATURE

Many people still didn't aware of what computer graphics is and how powerful an interesting actually it is. Today and the coming generation will have great demand in computer graphics the only required skill is creativity. There is good change of phase occurred when 3D graphics came into picture and people loved 3D graphics more than 2D for example – 3D movies.

4. INTRODUCTION

Computer graphics is the combination of 2 words i.e. computer and graphics. Plotting some pixels on a computer screen to make an image is known as computer graphics. Computer Graphics involves technology to access. The Process transforms and presents information in a visual form. In today life, computer graphics has now become a common element in user interfaces, T.V. commercial motion pictures. Computer Graphics is the formation of pictures or images with the help of a computer. The end product of the computer graphics is a pictorial representation it may be a business graph, drawing, and engineering. In computer graphics, two or three-dimensional pictures can be created that are used for research. Many hardware devices algorithm has been developing for improving the speed of picture generation with the passes of time. It includes the creation storage of models and image of objects. These models are used for various fields like engineering, mathematical and so on. Today computer graphics is entirely different from the earlier one. It is an interactive user can control the structure of an object of various input devices.

5. RESEARCH METHODOLOGY

The data was collected through google forms and thus primary data is the source of information. The questions were asked based in the format of normal questionnaire which contain 8 to 10 questions along with email-id and name.

6. IMPORTANCE OF COMPUTER GRAPHICS IN DAILY LIFE

• 3D computer graphics is mostly seen in the entertainment industry and also in video games and visual effects in movie production.

• In medicine, computer graphics is used to visualize data obtained from medical imaging, such as CT scans.

• Computer-aided design relies on computer graphics for modelling and visualizing products, buildings, cars, etc.

• The same modelling techniques are used for creating 3D-printed objects.

• Digital design for printed media and web makes use of 2D computer graphics.

• Television broadcasters uses 2D and 3D computer graphics for live graphics.

7. TYPES OF COMPUTER GRAPHICS

There are two kinds of computer graphics- raster (composed of pixels) and vector (composed of paths). Raster images are more commonly called bitmap images.

A bitmap image uses a frame of single pixels where each pixel can be of different color or shade. Bitmaps consist of pixels.

Vector graphics use mathematical link between points and the paths connecting them to define an image. Vector graphics are composed of paths.

The image to the left below represents a bitmap and the image to the right represents a vector graphic.
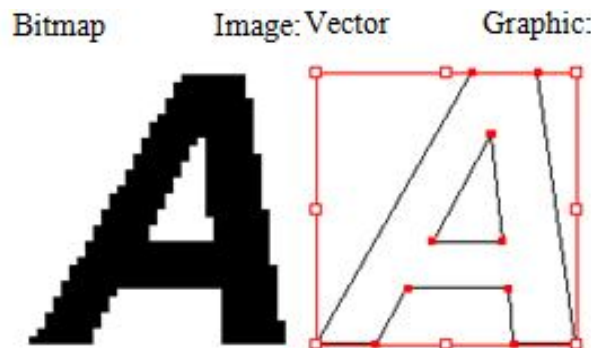
Introduction of the PostScript page- description language computers could display images and fonts using point-to-point math rather than by pixels alone with the help of adobe systems. The advantage of using a page-description language such as PostScript becomes clear when you extent an image up. The larger you display a bitmap, the more broken or jagged it appears, while a vector image remains smooth at any size. That is why PostScript and TrueType fonts always appear smooth because they are vector- based.

The broken or jagged appearance of bitmap images can be partially overcome with the use of "anti-aliasing". Anti-aliasing is the application of slight transitions in the pixels along the edges of images to minimize the jagged effect (below left). A scalable vector image will every time appear smooth (below right):

Anti-Aliased Image: Bitmap Smooth Image: Vector
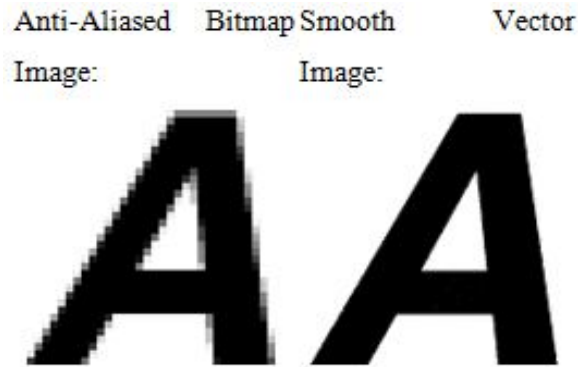
Bitmap images requires higher resolutions and anti-aliasing for a smooth appearance. Vector-based graphics on the other side are mathematically represented and appear smooth at any size or resolution.

Bitmaps are best used for images and photographs with slight shading. Graphics best associated for the vector format are page layout, type, line art or illustrations.

8. APPLICATIONS OF COMPUTER GRAPHICS

Computer graphics deals with storage, creation and manipulation of different type of objects and images.

Some of the applications of computer graphics are:

1. Computer Art

With the help of computer graphics, we can make fine and commercial art which include animation packages, paint packages. These packages provide facilities for designing object shapes and specifying object motion. Cartoon drawing, paintings, logo design can also be done.

2. Computer Aided Drawing

Designing of buildings, automobile, aircraft is done with the help of computer aided drawing, this helps in providing minute details to the drawing and producing more accurate and sharp drawings with better specifications.

3 .Presentation Graphics

For the preparation of reports or summarizing the financial, statistical, mathematical, scientific, economic data for research reports, managerial reports, moreover creation of bar graphs, pie charts, time chart, can be done using the tools present in computer graphics.

4. Entertainment

Computer graphics is mostly used in the movie industry and game industry. Used for creating motion pictures, music video, television shows, cartoon animation films. In the game industry, focus and interactivity are the key features, computer graphics helps in providing such features in the efficient way.

5. Education

Computer generated models are extremely useful for teaching huge number of concepts and fundamentals in an easy to understand and learn manner. Using computer graphics many educational models can be created through which more interest can be generated among the students regarding the subject.

6. Training

Specialized system for training like simulators can be used for training the candidates in a way that can be grasped in a short span of time with better understanding. Creation of training modules using computer graphics is simple and very useful.

7. Visualization

Today the need of visualize things have increased drastically, the need of visualization can be seen in many advance technologies, data visualization helps in finding insights of the data, to check and study the behavior of processes around us we need appropriate visualization which can be achieved through proper usage of computer graphics.

8. Image Processing

Various types of images or photographs need editing in order to be used in different places. Processing of existing images into refined ones for better interpretation is one of the main applications of computer graphics.

9. Machine Drawing
Computer graphics is often used for creation, designing and modifying of various parts of machine and the whole machine itself, the main motive behind using computer graphics is the clarity and precision we get from such drawing is ultimate and extremely desired for the safe manufacturing of machine using these drawings.

10. Graphical User Interface
The use of pictures, images, icons, pop- up menus, graphical objects helps in creating a user-friendly environment where working is easy and pleasant, using computer graphics we can create such an atmosphere where everything can be automated and anyone can get the desired action performed in an easy fashion.

These are some of the applications of computer graphics due to which its popularity has increased to a huge extend and will keep on increasing with the progress in technology.
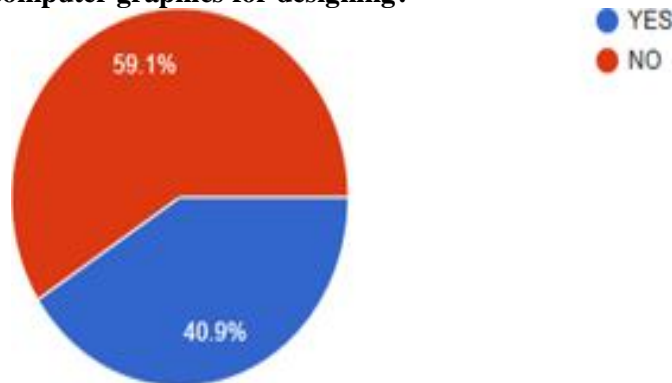
9. SURVEY RESULT ON COMPUTER GRAPHIC
Questions asked to respondents:
1. Do you know about computer graphics?
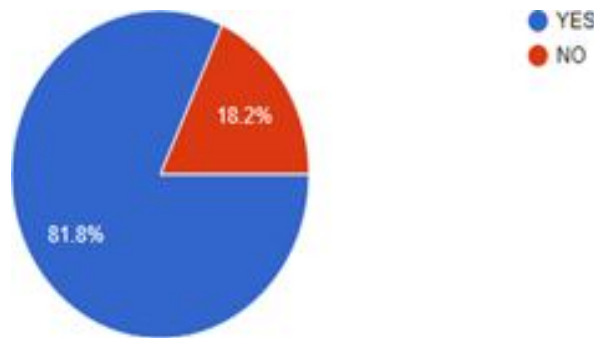
According to survey, fig 1. says that many people know about what computer graphics is but still there are some people who aren't aware of computer graphics.

2. Have you ever used computer graphics for designing?

In fig 2. Almost 59% haven't used computer graphics for any purpose but there are 40% people who have worked on computer graphics.

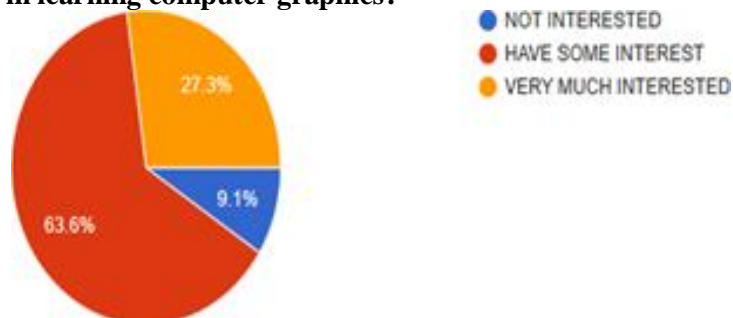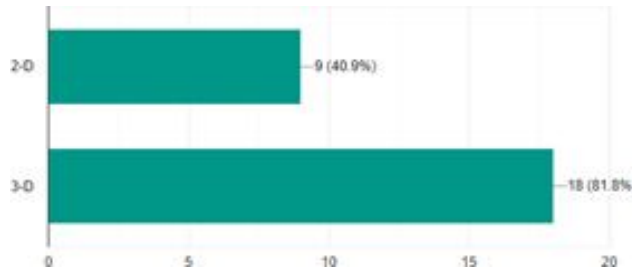**3. Are you interested in learning computer graphics?**

Fig 3. says that most of the people have some interest in learning computer graphics while some are very much interested and only few of them are not interested in learning computer graphics.

4. Which type of graphics do you like the most or Would like to create?
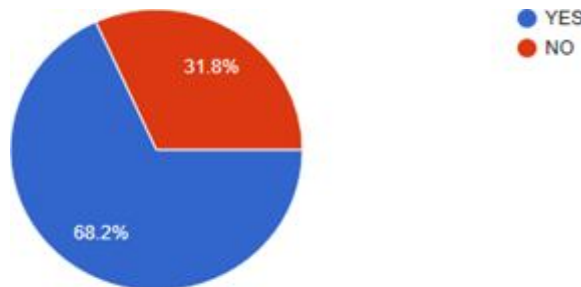

Most of the people like 3D graphics but fig 4. Suggest that there are some people who like 2D graphics as well.

5. Do you know about pixel?
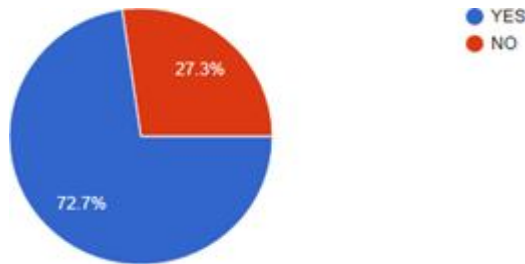
In fig 5. Almost 72% people know what pixel is. And only some of them don't know about pixel.

6. Are you familiar with 3-D graphics?

According to the above fig 6. Most of the people are familiar with 3D graphics while there are some people who don't know.

7. Which design is currently used most according to you?
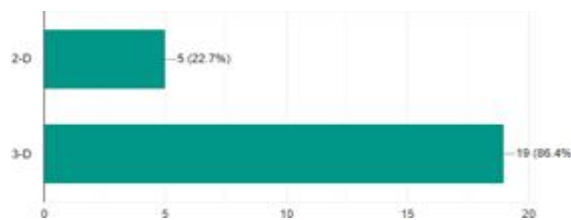
As 3D design is liked by most of the people it is been used most and demand is also growing for 3D design.

8. Does computer graphics demand will grow along with the growing world?

Fig 8. says that most of the people think that computer graphics will have great demand in future and will grow higher.

10. SCOPE OF GRAPHIC DESIGNING IN INDIA
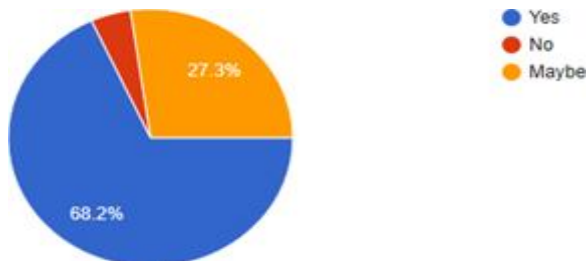
Graphic Designing Scope in India Graphic Design can be called as the process of visual communication which combines words, images, and ideas to present the information to the audience. Pictures are the most effective means of communication and graphic design suggest this very well. The graphic designer is good at solving the problems associated with visual communication. A good graphic designer has the desired skills in Layouting, Drawing, Photography, Typography, Lettering and Diagramming. They develop the layout and production design of magazines, newspapers, journals, corporate reports and other publications. Also help in making marketing brochures for services and products, promotional displays packaging, design distinctive logos for businesses and products. Because of huge growth of the media industry and excellent employment options are available, most of the people are going for professional and advanced level Graphic Design course.

What to expect from Graphic Designers?

Most of the times client gives a brief to graphic designer, which expresses what issue needs to be addressed and a specific outcome should be achieved. The main test is to collect data and evaluate it to figure out with the best possible solution which can be conveyed via a design or image. The success of a good design is known not just by how attractive the design looks but also how it should convey the message to the target people.

A graphic designer should have expertise in

- Layouting

- Typography

- Diagramming

- Drawing and Lettering

They should also have a good sense of beauty to know the correct selection of artwork, colors, photography and other visual elements for the design. Graphic designers use a variety of visual channels to communicate messages via shapes, fonts and colors on print design, websites and social media. A good graphic designer possesses strong social and marketing skills in addition to an eye for details and strong knowledge of graphic design applications.

11.LIMITATION OF STUDY

The data was collected through google form and thus there was no face to face communication. The sample size taken was less and the area was limited where there may be variety of responses whose responses may vary from the sample selected.

12.CONCLUSION

In this paper, i have highlighted the basics of computer graphics, its application along with some limitation, etc. according to survey there are some people who are not familiar with graphics skills and their demand in growing market. Computer Graphics will continue to get more sophisticated. Their 3-D photo realistic ability and potential to predict changes over time have changed the product development and marketing as well as scientific research and education. They are responsible for highly special effects in movies and on television. Many newspapers and magazines use only computer-generated graphics. Computer graphics makes an impact in everyone's life in almost every form every day.

13.ACKNOWLEDGEMENT

14.REFERENCE

[1] https://www.researchgate.net/publication/ 326147819_The_Journey_to_Improve_Teaching_Computer_Graphics_A_Systematic_R eview.

[2] https://www.google.com/search?q=scope+of+study+in+computer+graphics&oq=scope+of+study+in+ computer+graphics&aqs=chrome..69i57.17717j1j7&client=ms-android-xiaomi-rev2&sourceid= chrome-mobile&ie=UTF-8.

[3] https://www.researchgate.net/publication/6923213_Computer_graphics_visions_and_challenges_A_ European_perspective.

[4]   https://www.encyclopedia.com/science-and-technology/computers-and-electrical   engineering/computers-and- computing/computer-graphics.

[5]   https://www.encyclopedia.com/science-and-technology/computers-and-electrical-   engineering/computers-and- computing/computer-graphics.

[6]   https://www.javatpoint.com/computer- graphics-introduction.

[7]   https://www.researchgate.net/publication/ 271439178_Computer_graphics.

[8]   https://www.engpaper.net/computer- graphics.html.

[9]   http://graphics.berkeley.edu/papers/.

[10] https://www.encyclopedia.com/science-and-technology/computers-and-electrical   engineering/computers-and- computing/computer-graphics.

[11] https://www.slideshare.net/mobile/rhspcte/in troduction-to-computer-graphicsppt.

SEARCH ENGINE OPTIMIZATION (SEO)

Amruta Pol and Jyoti Chilka

Msc IT, Msc IT, SIES College of Commerce & Economics, TV Chidambaran Marg, Sion (E), Mumbai

ABSTRACT

Search engine optimization is a strategical technique to take a web document in top search results of a search engine. Online presence of an organisation is not only an easy way to reach among the target users but it may be profitable too if optimization is done keeping in view of the target users as of the reason that most of the time users search out with the keywords of their use (Say; PhD in web technology) rather than searching the organisation name, and if the page link comes in the top positions then the page may be profitable. This work describes the tweaks of taking the page on top position in Google by increasing the Page rank which may result in the improved visibility and profitable deal for an organisation. Google is most user-friendly search engine proved for the Indian users which give user-oriented results. In addition, most of the search engines use Google search patterns so that can have concentrated on it. So, if a page is optimised in Google it is optimised for most of the search engines.

Keywords: Search engine optimisation, SEO, Google optimisation, On page optimisation, Off page optimisation, Image optimisation, URL structure optimisation.

1. OBJECTIVE

1.1 Search engine optimization

It is the way of increasing the visibility of a page by natural means i.e., unpaid search results. In this process the website undergoes redevelopment to make our keywords effectively communicate with major search engines. This work is done by SEO (Search engine optimizers), They may target image search, academic search, local search, video search. Optimising a page involves editing contents & HTML codes in order to increase its relevance to specific keywords and proper indexing in search engines. The contents and coding's are edited keeping in view of the indexing pattern of the search engines which are done by a crawler named Googlebot in Google. It is the most powerful way to reach to reach the customer as we meet them when they are in need. Mostly all the users find the target websites during their search.

2. REVIEW OF LITERATURE

(By Vertexera Inc) The search engine optimization is considered to be a process that is intended to improve the visibility of the particular website. This increased by selecting particular axiom or a phrase related to it. The search engine optimization transacts with the data and design related issues which are necessary to solve the issue with ranking or rating of a site. The task of search engine optimization is not confined to a single attempt as it hinders testing through trace and slip technique, updating on a regular basis, enhancing the performance level periodically so that the rank of the site is preserved. For this purpose, the companies generally contract out this task to the companies or individuals that are experts in this field. It is estimated that an approximation of about 500 billion articles are rendered in the Search engine. Hence a particular website of a company may intend to face a lot of rivalry to gain a top rating.

3. INTRODUCTION AND STATEMENT OF PROBLEM

Users use search engines for most of their queries but they only prefer the results available on first page and 2-3% of users go on further pages (except Researchers), Now imagine if the page of an organisation is on 2-3rd or 4th page then the business which can be generated from that page has a very less change to return and user will prefer the page coming on the 1st page. More than Trillion web pages get indexed per day in a search engine. There are millions of searches per day. Most of the visitor's visit the website by hitting the links available in search engines and believe that companies found on the top results are the best brand in their product service and category. These clues make it very clear that if an organisation wants to go on top in their sales then they should concentrate in getting their page widely available in the search engines. For example, if someone wants to use cab services and unknown to the place where he is now, normally if he/she is a techie search of for cab services with the name of city and hit the top 10 links and use their services. There are many businesses of online booking system of tickets which are growing these days and are getting very good responses in very short span of time; in this particular case it is very necessary to be on top results of a search engine so that the customers can easily be fetched out.

4.1 On Page Optimisation
4. RESEARCH METHODOLOGY
4.1.1 Title optimisation
It is a piece of HTML keyword which tells about the website in general and the search engine and users. It is an important part of the website which is used by the search engines to find the relevance of website. Below is the structure of how it links looks in code.

<head>

<title>SEO India - search engine optimization India, seo services, seo company India, affordable seo India Chandigarh </title>

<head>

Following the screenshot of how search engine shows its relevance when fetching out user query.

Figure 4: Figure showing title optimisation\

4.1.2 Hyperlinks
A hyperlink is a navigation element or reference of a document in the other part of the same document, or a specified section of another document, that automatically brings the referred information to the user when the navigation element is selected by the user. The search engines basically predict that if we are linking something from our page is closely related to our page; In brief it makes the contents user-friendly if seen from the search engine point of view. Snapshot of a hyperlink is shown below.

Figure 5: Figure showing hyperlinks

All the words more... are hyperlinks to get detailed information about the respective section.

4.1.3 URL
We should improve the structure of URL's by using words as simple to understand URL'S will convey content information easily. If the URL'S contains relevant keywords, it provides users and search engine with more information about the page and ID or oddly named parameter would as the URL to a document is displayed in the search results after the title.

4.1.4 Quality and easy to understand contents
Creating and using useful contents increase the influence of a page more than all the tweaks. This tweak is very important in the sense that if a user likes the content then he/she shares it happily via blog, email, forums or other means. We should think from user point of view whether what he searches out to find his contents in a search engine, in addition to it we should create a new and fresh contents, useful service that no other site offers. Content should be written in a manner that user enjoys the content and it is easy to follow and it should be created in view of users not search engines.

4.1.5 Meta Tags optimisation
Meta tags are very useful in providing the search engine about the proper information of a website. Below a complete metatag used by us is shown. Out of all meta tags description tag is most important as it is a part of search results and if the optimisation keywords are provided here properly results with very nice result

Fig 8: Figure showing Meta tag optimisation

4.1.6 Newsletters
Many a times when a user visits a website and wants to be updated with updated of the company to which the website belong ,In this case newsletter are the best options ;In this the users provides his/her email-id over there & if there any update comes over the page it is sent automatically sent to the users inbox.

4.1.7 robots.txt
This file is used on the files of our website whom we want should not be accessed by the crawler; it is kept in the root directory of the website. If we have some subdomain of our website and want its access to be limited by the web crawler then by creating a robots.txt file for this we may prevent its access to the crawler.

4.1.8 Sitemaps
This is a simple page in our website containing the listing of the pages on our site, which displays the structure of our website in a hierarchical way. We should always make two sitemaps, one for users and other for search engines and make the sites easier to navigate. Sitemaps designed for visitors help visitors if they have problems finding the pages on a site & the sitemap designed for search engines makes it easier for search engines to discover the pages of a site.
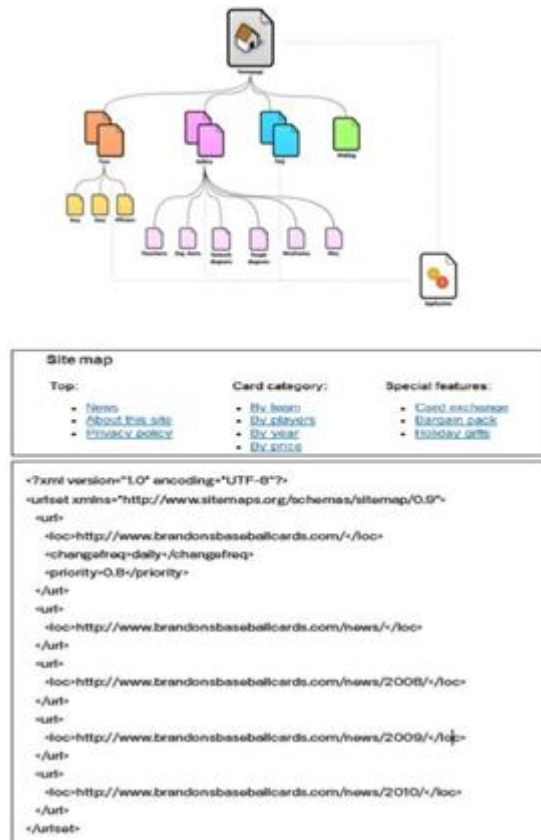

Figure 10: Examples of an HTML site map & XML sitemap. An HTML site map helps users easily find content which they are looking for, and an XML site map helps search engines in finding pages on our site.

4.1.9 Hidden target keywords
In this technique we wrote the keywords on the pages by using hyperlinks with other pages full of keywords. Which were being optimised? Keywords which matching colours of the page so that it seems to be invisible to the users were used, these keywords remained from users but it worked a lot as it was accessed by the crawlers.

4.1.10 Image optimization
In this technique when optimising a page with targeted keywords we should name the image with the targeted keyword name, it has also a good impact in optimisation. Image search optimization techniques can be viewed as a subset of search engine optimization techniques that focuses on gaining high ranks on image search engine results.

5.1 Search engine optimization
5. LIMITATION OF STUDY
It is the way of increasing the visibility of a page by natural means i.e., unpaid search results. In this process the website undergoes redevelopment to make our keywords effectively communicate with major search engines. This work is done by SEO (Search engine optimizers), They may target image search, academic search, local search, video search. Optimising a page involves editing contents & HTML codes in order to increase its relevance to specific keywords and proper indexing in search engines .The contents and codings are edited keeping in view of the indexing pattern of the search engines which are done by a crawler named Googlebot in Google. It is the most powerful way to reach to reach the customer as we meet them when they are in need. Most of the users find the target websites during their search.

Figure.1 Search engine optimisation

5.2 Page Rank
It is an algorithm used by Google which assigns numerical weight to the URL of web documents to measure its relevance. The numerical weight that it assigns to any given element E is referred to as the PageRank of E and denoted by PR (E) . Stanford University is the birthplace of PageRank when Larry Page (hence the name Page-Rank) and Sergey Brin were involved in research of a new kind of search engine. The idea of Sergey Brin was that information on the web could be ordered in a hierarchy by "link popularity": a page is ranked higher as there are more links to it. In 1998, the first paper describing the PageRank and initial prototype was published after which Page and Brin founded Google Inc., the company which is behind the Google search engine. It shows the popularity or a particular link or a website. The page with higher rank gives more optimised results.

5.3 Onpage optimisation
It is the first step which every webmaster should concentrate, this deals with the changes we do in our page in order to improve visibility and rank. On Page Optimisation is optimising your website in a way that it can rank better in search engines and improve visitor satisfaction. This optimisation technique depends on nature and business of our website. It is advisable to update the contents of our website and optimise the content each time as these factors are directly related to the content and structure of the website. Modifying Title, Body text, Hyperlinks, URL, Quality and easy to understand contents, increasing the frequency of keyword, robots.txt, sitemaps, Image optimization etc which requires extensive research with the competitor webpages.

5.4 Off page optimisation
This is the work which is done apart from the website to improve the visibility & ranking of a page. Off page search engine optimization is supposedly the complement of On Page Optimization It mainly concentrates in creating backlinks & social media marketing. It is very novel practice to have links from a webpage which has good rank and visibility. It is the best technique to go ahead of the competitors if the webmaster team is equipped with quality of web researchers. In brief it consists of various link building methods like Blog posting, Social networking, Press release, Video submission, link exchange, Article submission etc.

5.5 Search engine Anatomy
There are four parts in a search engine is observed when a query is done, we may call them as the part of search results. The search engine also shows how many results are fetched and in how much time.

5.6 Non sponsored listing
These results are shown in the result page at the top most right corner, for these listing we need to pay to Google.

5.7 Search box
This portion is used by the user for his query; it may be from his country or from World Wide Web.

5.8 Google instant
As we start typing out our query in Google, it starts displaying our result analysing each word.

This feature depends on the speed of connection, many a times it doesn't work on slow connection.

6. MAIN BODY
Content is the success key for ranking in search engines, so it is very important to concentrate on the content of the website which help the content to be considered by the search engine crawlers at the time of assigning the rankings. Following tweaks have been implemented in our project: -

1) Use of heading tags.

2) Word frequency: -On an average we had provided 500 to maximum of 800 of words on each page.

3) Keyword density: -Frequency of keyword to be optimised was kept 3%-5% on the pages with 500-700 words & 8%-10% on the pages with 700+ keywords.

Relevant keywords: -Most important keywords of the users query were used carefully specially on the top of page. In general the keywords appearing on the top of a page or top area are most prominent for indexing by the crawler

6.1 Crawlers & Database
The name "PageRank" is a trademark of Google, and the process has been patented.
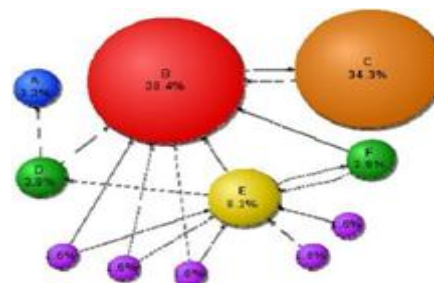

Figure 2: Page ranking in Google

It is a computer programme which browses the World Wide Web in a methodical, automated manner or in a orderly fashion. It normally visits the URL'S of our website.

Google	Googlebot
MSN	MSNbot
Yahoo	Yahoo Slurp

Table1: Search engines and their crawlers

7. SCOPE OF STUDY

7.1 Google webmaster tool

Google Webmaster Tools is a no-charge web service by Google for webmasters. It allows webmasters to check indexing status and optimize visibility of their websites. It has tools that let the webmasters:

1) Submit and check a sitemap

2) Check and set the crawl rate, and view statistics about how Googlebot accesses a particular site

3) Generate and check a robots.txt file. It also helps to discover pages that are blocked in robots.txt by chance.

4) List internal and external pages that link to the site

5) See what keyword searches on Google led to the site being listed in the SERPs, and the click through rates of such listings

6) It views statistics about how Google indexes the site, and finds if any errors while doing it

7) Set a preferred domain (e.g. prefer example.com over www .example.com or vice versa), which determines how the site URL is displayed in SERPs.

7.2 Meta Tag analyser tool

Following are the uses of Meta Tag analyser tool

1) See how search engine robots analyze your or your competitors web site

2) Receive tips on how to improve your Meta Tags

3) Check the keywords used on the page and find the keyword density.

4) Check web server operating system where site is hosted

5) Check website load time

6) Check website file size

7) Check URLs and links found on the page

7.3 Link popularity check tool

Popularity of a website is checked using this tool. This tool shows how many other sites are linking to the site. Most search engines use this type of data to calculate how popular the website is. More the links to the site, the better is the search engine rankings will be. We can even provide some competitors' URLs to compare our site to theirs.

7.4 Sitemap submission tool

This tool is helpful in submitting sitemap to various search engines.

7.5 Keyword suggestion tool

This tool suggests keywords related to our keyword which can be used while doing optimisation.

7.6 Keyword Traffic estimator

This tool shows us approximately how many daily searches our keywords would get. This tool is used to research the best keywords for our website.

7.7 SEO dictionary

It is the list of SEO related keywords with their definitions.

7.8 Page rank checker

This tool is used to check the rank of the page so that further actions can be taken to improve the rank of a page.

7.9 Page snooper

This tool is used to see the source code of any online site to see the exact structure of the website.

7.10 Broken link checker

This tool checks the outgoing links on the page to see if they are broken.

7.11 Link counter

This tool counts the number of outgoing links or URL's on a given page and display results. This tool could be useful for link exchange purposes, as we should not trade links with pages with too many outgoing links. It is recommended not to trade links with pages that have over 50 links.

7.12 Reciprocal link counter

This tool checks if any given list of sites are linking to your website. It is a great tool to keep track of the reciprocal links to make sure your partner has not removed the link, without visiting their page. You can put up to 100 URL's of sites that you would like to check.

8. CONCLUSION

This paper proposed the novel methods or search engine optimisation for driving more and more users to a website. These methods are   then continuously for 24 weeks and then discovere more and more users accessing the project website. The rank of the website was raised from 1 to 4; In addition to it sub links were assigned by Google which is assigned to a website which has more number of users according to Google. As a future work we would to develop tools which can add a site to a search engine whenever user wants and can remove the sites which are not good for Mankind. Our project can be visited on http://www.dnares.in .

1	Title	90%
2	Backlinks	75%
3	Domain and file names	75%
4	Description Tags	66%
5	Image optimisation	65%

Table2: Impact of various factors according to SEO point of view.

Figure 12: Figure showing SEO impact percentage

REFERENCES

- Wikipedia Available: http://en.wikipedia.org/wiki/

- Search engine optimization website http://seo.yu-hu.com/glossary/off_page_optimization.htm

- HubspotBlog http://blog.hubspot.com

INTERNET OF THINGS: IOT FOR SMART CITY WITH ITS APPLICATION, USE CASES AND IMPLEMENTATION STRATEGIES

Asmita Subhash Patil
MSc. Information Technology Part 1, Jnan Vikas Mandal's Mehta College, Airoli

ABSTRACT

Internet Of Thing Or Iot Is A Way Of Interconnecting Various Network Base Devices To Any Computing Device That Has The Ability To Connect With The Internet. Iot Has Become A Huge Part Of Day To Day Life As It Has A Major Role In Every Field. It's Main Aim Is To Transfer Data Over The Network Without Any Need Of Physical Connectivity Between Devices. Iot Has The Ability To Manage The Pressure Of Urbanization, Management Of Education System By Using Various Advance Tools And Technologies, Helps Residents To Create New Lifestyle Which Is Simply More Secure And Comfortable. In This Research Paper We Will Discuss About The Iterative Approaches To Implement Smart City With Its Applications, Challenges, Security Management, Various Offered Services And Objectives Of Iot.

Keywords: Internet Of Things, Iot, Iot For Smart City

INTRODUCTION

We are changing the paradigm of what we can do in smart cities since the IoT. Beyond technology we are capable to deliver new services that will truly impact the behavior. We have multiple kinds of services. The most efficient services can be seen that are related to the energy and lightning will be from one category and other services related to mobility, these two are offering plenty of opportunities and conducted new services such as smart lighting, smart parking, smart connected buildings, etc. The services related to mobility are well defined and associated. While services related to energy will be more complex. In IoT world we cannot potentially access the wide range of data which turns out to be a complete mess. To overcome this your first challenge is to create coherence within this task , filter them in the appropriate way and to be able to treat them in the truly intelligent way. Cities are being talked about smart cities from the ages now and they are still lost to organize the new services. Even for the implementation, we need a large organization for supporting the deployment of quiet complex solutions but in terms of vision and practical ability of the new services we have the strong relationship with cities. Start-ups and companies has the different roles. We are on the way to realize this vision of smart cities, there are lots of innovations in front of us. We are at the moment where a first set of technologies are ready for clearly delivering a new generation of services.

APPLICATIONS

There are many use cases that are important in public globally. The assisted vehicle relies on autonomous vehicles. Waste management or Traffic and parking rely on the solutions based on IoT where they can use for parking payment or parking sensors. For Transportation, a connected bus stop has been developed where the user can see the bus lines that stop at a given bus stop.

Citizen connection with Energy and utilities too are based on IoT. Increasing graph of building Environment is also based on IoT. For Security, there is a sensor to interpret the noises around it. This sensor can check that the noise is from a car crash, a shot, or an attempted burglary. Then it sends an event to the Platform. These types of events can be handled in different ways surveillance camera, noise detection technique, etc

SERVICES

With the internet of things, cities are becoming smarter encouraging citizens and reinventing themselves. Connecting everything from Wi-Fi hot-spots to emergency alerts. City planners are creating better and safer places for people to live and work. By integrating technology and driving innovation it is helping city officials to reduce operational cost, increase sustainability and plan for long term city growth. Sensors and connectivity can remotely monitor everything from air quality to public safety. For transportation, smart programs can alert drivers in real time about traffic delays, synchronize light for emergency vehicles and suggest alternative routes to keep traffic running smoothly. In communities with ageing infrastructure maintaining water pipes is critical. So now with a sensors cities can easily detect exact locations of water leaks making repairs more cost effective. A leading smart city innovation has the experience of managing large complex city project combining with real time analyst a strong Eco-system and a global network. We are bringing the power of their internet of things to make the city smart.

CHALLENGES

The main challenge is to deliver concrete services for the citizens. Challenge is to be able to deliver the new generation services whatever the size of the territory that you are trying to address. With that manage the territory with its entire perspective. Overcoming city vendor and overcoming developer cit. Meeting real citizen needs and Sharing IoT infrastructure for new business cases. Quantifying social and economic benefits. And sharing more than just open data. Encouraging more agile policy making.

TERATIVE APPROACHES TO IMPLEMENT SMART CITY

Internet of things is providing various opportunities to help cities drive Economic Development, Cost optimization, Environmental sustainability initiatives. The smart waste bin is a great example of how new data and technology can inform operational decision- making cities better to live in for our citizens. ICT technologies to improve citizen's lives with respect for the environment and for future generations, with taking care of local attractiveness and competitiveness. By managing to develop economic and social surroundings. This platform allows the view of all solutions in only one place. The purpose is to make the citizen the focus of the city, the focus of public administration, providing this citizen with high-quality and more efficient utility services at extremely low cost.

ADVANCE TOOLS AND TECHNOLOGIES

The Smart concept of IoT is smart parking which shows the traffic analysis of cities all around the world. Smart cities are the cities where urban planning can be associated with intensive use of technology, they have citizens as protagonists. IoT integration platform is divided in layers. One of the layers is the Environment where the status of garbage and street drains can be checked. When the garbage reaches the level predefined as full, an event is sent through this platform. The same process is used for street drains. Ultrasonic sensors are connected as management classification of their cleaning generated a significant cost reduction. In the transportation layer, there are parking space sensors.

FUTURE SCOPE

By 2020, Gartner estimates there will be 50 billion smart devices. Transmitting data to the cloud and to each other will be a more easy process. The influx of people from rural to urban cities will increase every year and Barclays predicts 70% of India's GDP in 2020 will be from urban

India. To tackle inefficiencies and create sustainable communities by 2020 smart cities market will be worth $15 Trillion globally Rs.7000 cr. Earmarked for 100 Modi's Smart city mission. IoT represents the best way to make cities smarter. Indeed IoT is applied in multiple scenarios such as monitoring of building's status with passive WSNs, environmental monitoring e.g. Gas concentration, Water level for lakes or soil humidity, waste management, smart parking, reducing CO_2 footprint, or autonomous driving.

CONCLUSION

This paper has presented recent trends and advancements in IoT enabled smart cities paradigm. We devised a taxonomy for IoT based smart cities based on communication protocols, major service providers, network types, standard bodies and major service requirements for the understanding of the reader. Based on the conducted study, we concluded that smart city applications rely on several wireless technologies such as IEEE. Furthermore, we studied major open IoT platforms for the ease of researchers. In addition, a number of reported case studies of several newest IoT deployments and research projects are presented to reveal an increasing trend of IoT deployments. In the end, we unearth several open research issues such as multi-vendor interoperability , low cost, low power consumption and security which demand considerable attention from our research community.

REFERENCES

- https://www.researchgate.net/publication/319938161_Internet_of_Things_IoT_Technologies

- _for_Smart_Cities

- https://www.researchgate.net/publication/316240064_Internet-of-Things_Based_Smart_Cities_Recent_Advances_and_Challenges

MOBILE CLOUD COMPUTING: ISSUES, CHALLENGES AND SOLUTIONS

Ravina Dattatraya Shinde
MSc. Information Technology Part 1, Mehta College, Airoli

ABSTRACT
IT resources are increasing day by day in all areas. Mobile Cloud Computing i.e. MCC is a hybrid form of wireless network, cloud and mobile computing to make rich computation resources for mobile users, network providers and network operators and also cloud computing providers. Rich MCC technology gives long battery, high functionality, storage and mobility to serve a mobile device anywhere, anytime, to anybody through Ethernet or Internet environment and its platform based on pay-as-you-use principle. MCC integrate cloud computing into mobile environment, mobile performance like storage and battery, security, privacy. This research paper is all about MCC, its challenges with its existing solutions and approaches are pretended.

*Keywords: Cloud Computing, Mobile Cloud Computing.*

1. INTRODUCTION

Mobile Cloud Computing is a hydration of Mobile computing and Cloud computing. Here we can handle data and stored data in cloud and access with the help of mobile and any other electronic devices. Mobile cloud computing is a technology that allow transition of data, voice and video via mobile or any other wireless computer device without having any connection with the physical device or other physical link. Mobile Cloud Computing is using a computer while moving i.e. ability to compute remotely. MCC can be access any where to any time. The main concept involves in MCC is mobile communication, mobile hardware and mobile software.
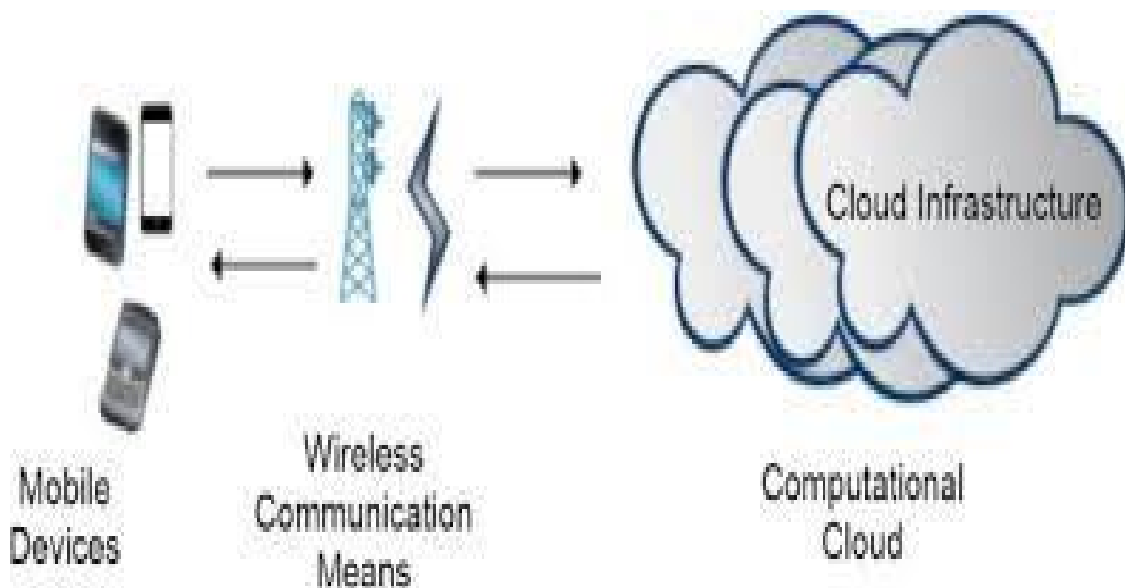
2. MOBILE CLOUD COMPUTING ARCHITECHTURE

Mobile devices are connected to mobile network through base stations that establish and control the connections and interference between device and network. Mobile users request and information are transmit to the central processor that are connect to service provider. Cloud controllers process the requests to provide client with the corresponding cloud services. Cloud controller services is developed with the concept of utility computing, virtualization and service oriented architecture.

The detailing of cloud architecture can be change in other contexts. Alternatively, a service oriented architecture, called Aneka, is introduced to enable developers to build. Microsoft.NET applications with the supports of application programming interfaces (APIs) and multiple programming models presents an architecture for creating market oriented clouds and proposes an architecture for web delivered business services.

Mobile devices are connected to the networks through base stations that establish. It also control the connections and functional interfaces between networks and mobile devices. Mobile clients requests and then the information get transmitted to the central processor which is connected to servers providing mobile network services. The mobile users requests are delivered to a cloud via Internet. Cloud controllers process , is the process where subscribers requests to provide mobile users with the corresponding cloud services.
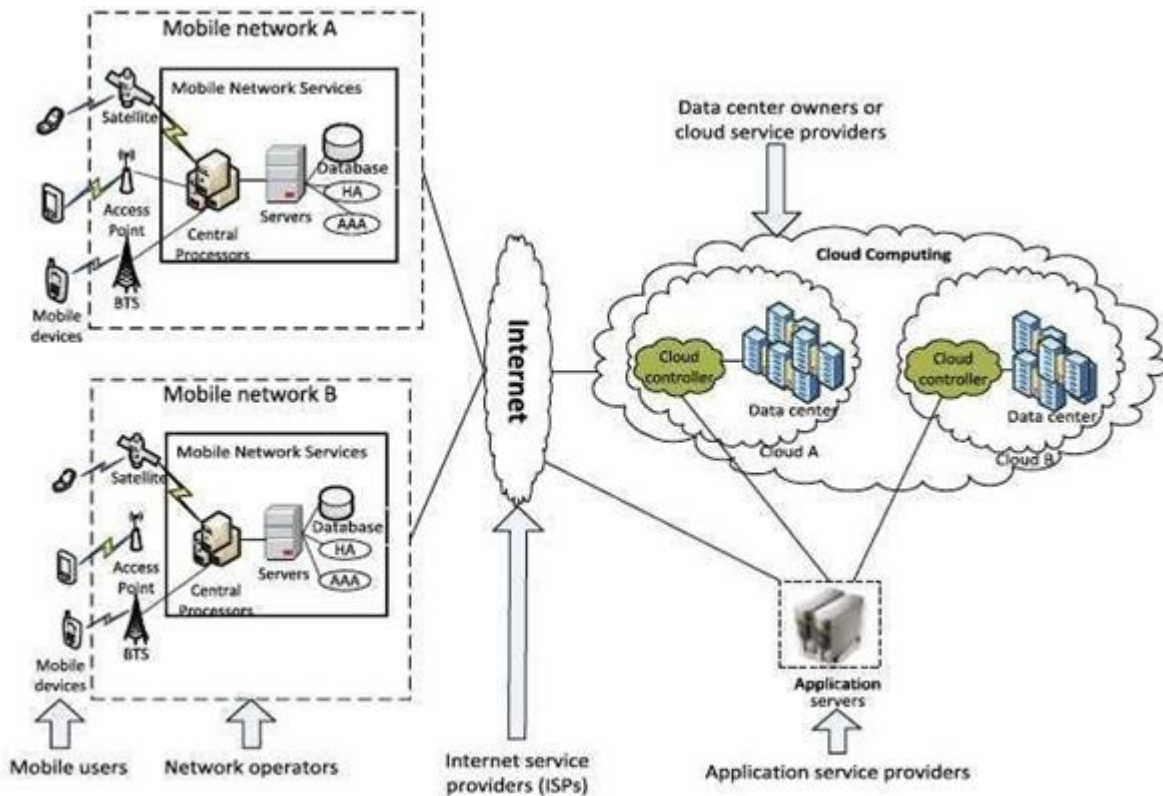
3. FUNCTIONS

Mobile computing having different functions to make MCC service user-friendly and helpful too. Functions of MCC are as follow User Mobility means having a hardware and software which is having mobility feature that it can be move from one physical location to another physical location with same service. So the service cloud be hardware network or remote network.

Using Network Mobility we can receive the data, voice and video one country to another country. That means we can use mobile in other countries also. Bearer mobility is nothing but a service provider. User should be move from one bearer to another bearer. Device Mobility means your device is working as a desktop computer when you are working at the office , when you came out it will work like another device like palmtop computer device. A user session should be able to move from one agent environment to another agent environment. For e.g. if you are having CDMA network, network continues if it gets disconnected due to some reasons and again it will be restarted. This is an e.g. for Session Mobility. Agent Mobility means user agent should be able to move from one node to another node. Host Mobility means the user device either it can be client or server. When device is acting as server you should take care of IP add, so that it will keep data secure.

4. MOBILE NETWORK BASELINE ARCHITECHTURE
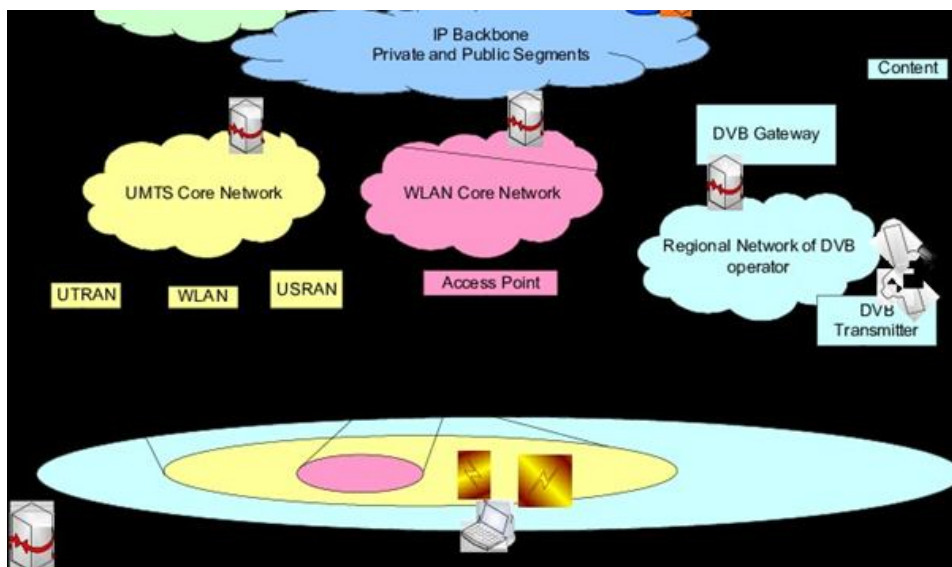
5. NETWORK IN MOBILE COMPUTING

Network in mobile computing involves Wireline Network which consist of traditional landline system. Wireless network is also known as Public Switch Telephone Network. Wireless network is a network set up by using radio signal frequency to communicate among computers and network device. Wireless network can be CDMA stand for Code Division Multiple Access, GSM stands for Global System for Mobile Communication, GPRS , WLL stand for Wireless Local Loop, etc. Ad-hoc network is called is as temporary network which are created to share data such as Bluetooth and infrared, which supports wireless communication.
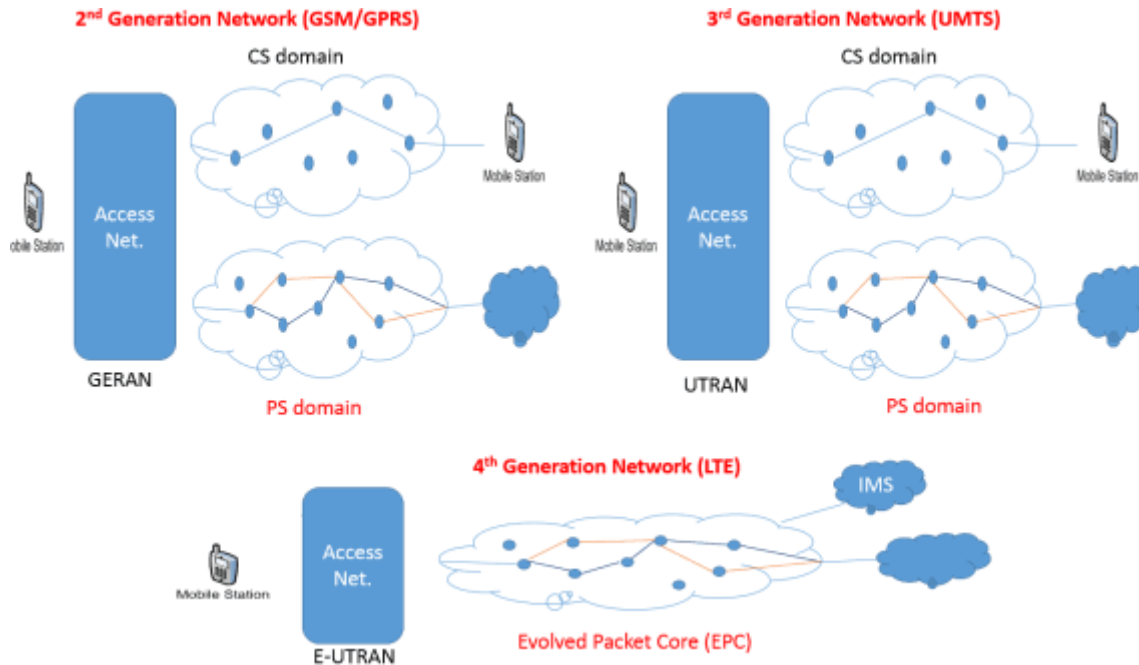
6. MOBILE CLOUD COMPUTING CHALLENGES

Low bandwidth is one of the big issues in mobile cloud computing (MCC) that need to be tackled. Mobile cloud computing use radio waves which is limited as compare to wired networks. Other available wavelength are distributed in different mobile device. So that , it can been three times slow to access the speed as compared to wired networks. Privacy and security is a serious challenging issue in mobile cloud computing. Privacy is harder to manage threats in mobile devices as compare to desktop devices. Because in a wireless networks there are more chances of incomplete and absence of the information from the network. Connection with devices is another serious threat in mobile cloud computing. Clients often find complaints like, transportation crowding, breakdown of network, out of coverage area and so on. Sometimes clients get a low frequency signals, which can affects the access speed and storage facility. Mobile cloud computing is used in different operating system driven platform like android and Windows Phone. So mobile cloud computing has to be compatible with different platforms for better communications. The performance of various mobile platform network is managed and handled by the IRNA (Intelligent Radio Network Access) technique. Mobile devices are generally slow and less powerful ,it also consume more energy. Mobile cloud computing increases battery usage of mobile devices which is the most important issue in mobile devices. Computer and mobile devices should have long life battery so that users can access applications and other operations. When the size of altered code is small, then the offloading consumes more energy than local processing. Some organizations try to find ways to overcome this problem.

7. MOBILE CLOUD COMPUTING ADVANTAGES

Computers are one of the main inventions in the world. The invention of computer has modified the world. During lately each field of life looks to be processed. Later within the 21st century a replacement technology was introduced within the world referred to as mobile computing. Now-a-days computers area unit changed into mobile computers referred to as laptops. A little introduction of mobile computing is that you just will do your add motion. In easy words it means you'll do your work whereas sitting anyplace within the world. You are doing not need to sit at one place to try to your work. The most challenge of Mobile computing is that, we are able to communicate with alternative people's whereas sitting anyplace within the world.

8. CONCLUSION

This paper presents a survey on MCC and explains the trends and challenges in MCC. Mobile applications are evolving day by day with the increasing use of mobile phones. Mobile usage has been increased so users want

to do all the functionalities on the mobile device. With the help of cloud computing new opportunities are emerging in this field and this is the hot topic in research area. Computations are increasing day by day in fields like commerce, science and technology. In the recent years MCC is focusing on enhancement of mobile limitations and make it more powerful using virtualization techniques. As discussed above, different MCC models have been presented; one thing common in all is that they are lacking privacy of the application. A security mechanism is required to ensure illegal access and protection from malicious attack. To handle this issue MCC privacy framework can be used. This mechanism provides a way to create virtual private network to monitor the user activates and authentication framework. Similarly in future, a standard should be created for mobile cloud computing and data management policies to overcome these issues to make it successful and reliable technology. This paper provides a road map for the new researchers and set some future directions in this field.

9. REFERENCE

[1] http://ac-support.europe.umuc.edu/~meinkej/inss690/zimm erman/INSS%20690%20CC%20-%20Mobile%20Computing. htm.

[2] Muller, N. J. Mobile Telecommunications factbook. New York: McGraw-Hill.

[3] CiiT International Journal of Networking and Communication Engineering,Vol 3,0974-9713/CIIT–IJ-2504. Digital Object Identifier No: NCE122011001.

[4] http://www.doc.ic.ac.uk/~nd/surprise_96/journal/vol1/ vk5/article1.html.

[5] Syed A. Ahson, Imad Mahgoub: Research issues in Mobile Computing, 0-7803-4468-5/98.

[6] Srikanth Pullela, Department of Computer Science. University of Texas at Arlington: Security Issues in Mobile Computing.

[7] http://ac-support.europe.umuc.edu/~meinkej/inss690/zimmerman/INSS%20690%20CC%20-%20Mobile%20Computing. htm.

BRING YOUR OWN DEVICE (BYOD)

Priyanka Das
Student, Department of MSc (Information Technology) - Part 1, Jnan Vikas Mandal's Mehta College

ABSTRACT
In today's fast-paced world, IT industry is growing enormously and hence consumerization of IT. With the advancement of technology, IT users have to keep them aware and updated of the latest technologies or devices. The IT users thus spend most of their times after work in home to grasp the latest technologies in order to implement them in their organization. As a result of this they become more familiar or comfortable with the devices they use at home and prefer them in workplace even. Therefore, BYOD management plays an important role in IT industry. In this paper we are going to illustrate the pros and cons of BYOD, BYOD Management tool and alternatives to BYOD.

Keywords: Bring Your Own Device, corporate, data, employees, Mobile Device Management, organization

1. OBJECTIVE
To get the insight of BYOD and illustrate its concept in this paper, various research papers, articles related to BYOD were reviewed and thoroughly studied.

2. REVIEW OF LITERATURE
The literature review revealed that the study of the advantages and disadvantages of BYOD was performed

[2] [4]. Demonstration of Alternatives to BYOD was also performed [1]. The BYOD management tool, working of MDM, features of MDM and MDM industry use cases was demonstrated [5].The limitations of BYOD program was depicted [3] [6].

3. INTRODUCTION AND STATEMENT OF PROBLEM
BYOD or "Bring Your Own Device" is a concept in which an employee usually prefers to use their own device at home as well as workplace. So in BYOD set up, employees need not use different devices for personal and professional purpose – the only same device can be used for multiple purpose. They can learn from anywhere and at any time and make the best utilization of time and knowledge and need not spend time on understanding the device as they are already familiar with it and hence there is no learning curve.

4. RESEARCH METHODOLOGY
The BYOD program was thoroughly reviewed from various research papers and sources from the internet. Good knowledge of understanding was gained on the advantages and disadvantages of BYOD, BYOD management tool, features of MDM, organization based use cases for MDM, limitations of BYOD and its alternatives by studying various articles on BYOD. This paper illustrates the pros and cons of BYOD and its alternatives based on the understanding from the reviewed sources.

5. LIMITATION OF STUDY
Security is one of the biggest limitations of BYOD program. As the employees will be working or accessing the company's sensitive data on their personal devices, monitoring the security on personal devices can be a tough task. Another limitation is the scalability issue. There might be cases where the organization do not have a proper network infrastructure to handle extra traffic that occurs due to the usage of multiple personal devices by many employees. The lack of firewall or anti-virus software in the employee's personal device may often lead to weak networks. Since the employees will be working on their personal devices, they will be accessing the device from anywhere outside the organization using unsecured WIFI. This is another limitation of BYOD programs as unsecured networks may encourage or welcome hackers and provide them with easy access to the organization's networks or systems.

6.0 ADVANTAGES OF BYOD
- Increased Productivity: As the employee uses their own device, they can work immediately and with ease as they are already familiar with the device and hence saves time and provides increased productivity.

- Cost-efficiency: Organization can save the money for setting up the additional devices as employees can use their own devices and that may increase the profit level of the organization.

- Employee Satisfaction: Allowing the employees to use their own device at workplace helps the employees to attain a level of satisfaction as they are happy to use their own device and implement their technical skills at workplace.

- Portability: As the employees are using their own devices, they are free to use it from anywhere and at any time and add extra value to the organization. There is no hard and fast rule that they have to leave their devices at their workstations that are assigned to them as they are not using the organization's device. The employee here uses their own device and carries to office from home and vice versa.

- Sanitation: This relates to the hygiene keeping health as wealth into consideration associated with an interaction technique. In an organization, multiple users may use the same system without keeping sanitation concerns in mind. But if the employees are using their own device, the well-used and well- maintained devices often leave positive impact on the usage.

- Morale: As the employees are well-worse with the functioning of their own devices it becomes easy for the employees to work.

- Respect towards the device: The employees often do not take good care of the organization's assets/devices. But if they carry their own devices they handle them with care and keep them safe.

6.1   DISADVANTAGES OF BYOD

Apart from the advantages of BYOD- Bring your own Device, there are various disadvantages which can be highlighted and discussed:

- Security: The organization's confidential data may be at risk as the employee uses the same device for personal and professional use. There is a gruesome chance for unauthorized data sharing and data loss as the personal apps and the organizational apps run side by side in the same device.

- Loss of device: The employee needs to carry their own devices from home to workplace and vice versa but if it is the organization's asset, the employee need not carry it. In the process of carrying the device to and fro, the device might get stolen/ lost/ misplaced and as a result of it there are enormous chances of losing the organization's data.

- Device Variation: Organizations usually uses systems with similar configurations and versions. If the employee uses their own devices, there might be possibility of configuration or version mismatch leading to compatibility issues that might hamper the productivity and delivery.

- Privacy: In order to manage the organization's data, the organization takes control over the personal device of the employee. If we visualize this from the employee's perspective, then this is a vital issue and can be stated as a barrier on the privacy of the employee.

- Scalability: Every organization has their own network infrastructure set-up already. If the employees bring their own devices to their workplace it adds extra traffic to the network leading to scalability issues.

- Maintenance: If employee uses multiple devices that runs on multiple operating systems then this will require extra concern for additional maintenance and support to the organization which will add on to extra cost.

- Social Acceptability: There might be situations where a particular employee cannot afford to buy devices (laptops/tablets/smartphones) that can support the applications required to fulfill the organizational needs. This often leads him/her in an embarrassing situation at workplace when other employees bring their highly configured and maintained devices to provide support.

- Exit Procedures: An employee can resign at any point of time. If the employee is using his/her own device, then the organizational data has to be cleared out of the employee's device before the employee leaves the organization or else there might be data breach.

7.0   BYOD MANAGEMENT TOOL

MDM (Mobile Device Management) solutions are recognized as one of the most important BYOD management tools as BYOD management is nowadays as important as managing the devices in the corporate world.

Mobile Device management is regarded as the solution for managing wholesome activities that relates to mobile devices. MDM provides solutions like storing the useful contents about mobile devices, taking decisions on which applications can be present on the devices, locating the devices and securing the devices in case it is stolen or lost.

7.1 WORKING OF MDM

MDM is two-tier architecture where devices act as a client and MDM act as a server which manages the devices, configuration, apps and policies. The MDM server is used by IT admins remotely to manage mobile endpoints which contains devices like mobile phones, tablets and laptops of the employees.

7.2 FEATURES OF MDM

MDM has extensive set of BYOD features and using it we can almost nullify all the disadvantages of BYOD set up and only take benefits of its advantages.

The features of MDM are highlighted in the below mentioned points-

- Easy and quick onboarding: The employees can register their devices with MDM by making the best utilization of the onboarding methods provided by MDM. The employee receives an invite from the IT admin containing instructions for self-enrollment via E-mail or SMS and after following the simple instructions, the employees receive the credentials by which they can enroll their personal devices for organizational use.

- Well planned management of personal devices: In an organization, there are both usage of personal and corporate devices. In order to configure the two different types of devices, separate set of policies are required. This is complex when dealing with large number of devices. MDM has an extravagant feature of accumulating personal devices into separate groups and then associate policies and apps to these groups. At any point of time a personal device can be brought under management after adding to this group and associating with the policy. When a device moves from one group to another, the new groups get automatically associated and the previous policies and groups get removed.

- Categorization of corporate data: MDM provides a solution which lets containerization of the corporate data from where only it is accessible without creating disturbance to the personal data. Here the corporate data is encrypted and stored in a logical container which differentiates it from the personal data ensuring that there is no illegal or unauthorized access to the corporate data.

- Pre-configuring policies: MDM provides predefined basic configuration policies such as E-mail, Exchange ActiveSync, Wi-Fi etc, on the device so that the employees does not spend extra time in configuring corporate policies.

- Handling corporate apps: Using MDM, it becomes easier for the employees to install the apps they need as the IT admin can build an app catalog and create an application service portal. Even the settings can be pre-configured for the apps along with the permissions by making the apps ready to use once they are immediately installed and require very nominal intervention of the user.

- Device maintenance: You can initiate and automate OS updates from MDM server in case we encounter that the personal device is running outdated OS versions. The concept of BYOD states that the devices are portable and handy. There are high chances of the device getting lost/stole/misplaced. In such cases in order to prevent the data breach or unauthorized data loss MDM lets you lock the device remotely. To get the exact location of the device you can ring an alarm by locating the device. Lost Mode can be enabled in case the device is lost and in this case the device gets automatically locked preventing from data accessibility. MDM provides you with the option of resetting the password to make sure that the device cannot be unlocked from the Lost Mode by entering the device password. To handover the device to its authorized owner you can optionally display a message and a contact number. At last, you can also sweep the device to restrict misuse of data.

By viewing the device screen or controlling it you can remotely troubleshoot the device in case the employee faces any issue out of the organizations' premises. MDM prompts the user to accept a remote session to make the user aware of this. You can deprecate the device which automatically deletes the corporate data leaving behind the personal data unattended in case the employee is leaving the organization.

7.3 ORGANIZATION BASED USE CASES FOR MDM

MDM can be utilized across industries. Below are some use cases:

Case 1: Healthcare

In this century most of the healthcare organizations are stepping forward towards Electronic Health Records (EHRs), as a result usage of mobile devices have become more popular in the healthcare sectors. An MDM provides a solution where the Personal Health Information (PHI) stored on mobile devices remains secure from illegal access.

Case 2: Transportation

The transportation industry is highly benefited with the advantages of MDM. A history of location traversed is well maintained and the business can also track shipment and location of the vehicles by using the MDM solution. Corporate devices can also be locked down to particular applications and/or settings to prevent device miss use and ensure maximum level of productivity.

Case 3: Retail

Mobile devices have also made it possible to enter into the market of retail sector and this is because of digital signage, mPOS, and self-service checkouts. Some enterprises in the retail industry use the combination of in-house application and certain policies on more standard devices like phone and tablets while the others use the mobile devices built for a specific requirement. An MDM solution supports the management of both the specialized devices such as the standard mobile devices rugged devices.

8. ALTERNATIVES TO BYOD

Apart from BYOD, there are other alternatives also available that can also be used by an organization which are as follows:

COPE: Corporate Owned/Personally Enabled is an alternative which allows the employee to use the device for personal and professional use that the organization buys and owns. In order to comply with the customized Mobile Device Management (MDM) and Enterprise Mobility Management (EMM), the employees are allowed to use devices and operating systems that are pre-approved. The company is also able to manage and get rid of sensitive information if required as COPE policy gives corporate data ownership to the company.

CYOD: Choose Your Own Device is an alternative in which the employee is only allowed to use the devices which are added to the whitelist of the organization. This reduces the security issues as the organization is letting the employees only to use the devices that are not prone to threat. Now if the employee's device does not make the cut, the employee has to purchase new device to meet the organizational needs. CYOD combines the policies of both BYOD and COPE. Here the devices need to be pre-approved so the policy is compatible with the organizations MDM and EMM solution. This policy increases the security and reduces the glitches that comes with BYOD policy. In CYOD, personal and corporate data is not isolated which can increase the risk factor of the organization.

Direct-to-carrier stipends: Direct-to-carrier stipend is an alternative where the employee is assigned with the responsibility of buying their own device and carrier service. The employees are provided with the monthly credit and most of the responsibilities of the organization is taken away. The organization saves most of the monetary funds by using this option as the amount of the credit is based on the role of the employee and the organization pays just the portion of employee's phone bill. A large amount of devices and operating systems have access to organization's network but the support from within the organization and risk management are highly difficult to get a handle on.

9. SCOPE OF STUDY

BYOD is already in use in various organizations as employees feel comfortable to work in their personal devices. The main reason behind any organization to reject BYOD is the security issue where the company's sensitive data can be at stake due to improper precautions but if the employees are well educated on the regulations beforehand itself then this risk issue can be cut down to some extent. The scope of BYOD is not only limited to IT, it can also be implemented in educational sectors where the student can carry their own devices to schools, colleges or universities to perform their practical or complete their courses. This will benefit them a lot as it will save their valuable time and also they will be able to finish their projects or assignments at the moment it is assigned to them as they using the devices they are well accustomed with.

10. CONCLUSION

BYOD has various advantages and disadvantages, but implementing it and making it as a good fit for a company wholly depends upon the particular organization. It is always better to be well accustomed to the pros and cons before taking a decision. You should have the following to implement a successful BYOD program:

• A definite BYOD policy with the defined security policy.

   An IT overhead to provide assistance to various devices.

• The infrastructure scalability to handle network traffic.

- If circumstances permits then BYOD is a great initiative to be implemented in an organization. This initiative allows overall growth of the employee and even increases the productivity of the organization. It encourages the young generation of the 21st century to be successful in the rapidly growing global society.

REFERENCES

[1] https://solutionsreview.com/mobile-device-management/3-alternatives-to-byod-for-2017/

[2] https://info.hummingbirdnetworks.com/blog/are-you-aware-of-these-byod-advantages-and-disadvantages

[3] https://www.1rti.com/the-advantages-disadvantages-of-byod/

[4] https://www.bookwidgets.com/blog/2016/11/what-is-byod-14-pros-and-cons

[5] https://www.manageengine.com/mobile-device-management/what-is-mdm.html

[6] https://www.huffpost.com/entry/byod-in-the-workplace-ben_b_1097334

ONLINE PROPERTY TRANSACTION: LOOP HOLES AND SOLUTIONS

Manthan Waghela and Mukesh Gupta
Student , MSc (IT), S.I.W.S. College

ABSTRACT

This research will demonstrate various types of sources available for transaction of a property,mainly focusing on online property transaction.Majorly there are two types1-Online property transaction 2-Offline property transaction.As of now online is covering various areas of human needs, it has also reached to the property buying and selling and is happily welcomed by people as it promises a hassle less transaction. But still there are some loopholes in the online pattern of property transaction, which creates samehassle that people were facing offline. We will discuss this problem further in this paper and we will try to give a solution for the same.

Keywords: Offline Property Transaction, Problems of offline transaction, Online Property Transaction,

Problems of online property transaction, Solutions to the problems faced during online property transaction, OCR.

OBJECTIVE

Certain loopholes are found in the current system of Online Property Transaction, so the main motto of this paper is to figure out those loopholes and give a proper solution.

INTRODUCTION AND STATEMENT OF PROBLEM 1-OFFLINE PROPERTY TRANSACTION:

Offline is a traditional way for selling and buying properties from years for peoples.In this pattern people visits an agent's office to try to find a buyer for their property and on the other hand a buyer too has to visit the agentsoffice to find a seller of the property for the area in which he needs to purchase. .As the agent becomes a medium between seller and buyer to interactand make their deal happen. He takes certain amount of money from each of them to make their deal happen.

2-Problems faced during offline transaction

1- People feel they have to give too much amount to the agent.

2- Agents mostly prefer to show those properties to the buyer whose owner offers them more money and due to which the buyer becomes unknown about the properties, which are convenient according to his needs.

3- Many fraud agents have been found who takes money from their clients without accomplishing their promised deals and never returning their money.

3- Online Property Transaction

This pattern of property transaction promised to demolish all the hassle faced by the people during offline deals.In this form a seller can advertise his/her property by simply registering on the website, filling up the information about their property, uploading some images of their properties for the buyers toview, mentioning the cost of the property and their contact details so the buyer can directly contact them instead of having an agent as a medium to the seller.Some of the websites like nobroker.com,99acres.com and magicbricks.com promised that this platform would eliminate the agents as it allows the buyer to connect directly to a seller and vice versa.

4- Problems faced during Online Transaction

This kind of platform did notdeliver as it had promised to eliminate the hassle created by the agents.1-As a seller, anyone can come up to this kind of websites and register a property to sell.

2- An authentication process is missing during registration, so anyone can claim to be the owner of the registered property online.

3- Many agents are registering different properties on this kind of websites. So when a buyer tries to reach the owner of the property through the given contact details on the websites, he is ultimately redirected to an agent.

RESEARCH METHODOLOGY

5-Solution to the problem faced during Online Property Transaction:

1-A proper authentication methods should be used by the websites during registration of a seller, so that the agents are eliminated to certain extent.

2-This websites can use OCR (Optical Character Recognition) technology to authenticate a genuine owner of the property.

6- OCR

OCR (optical Character Recognition) is a technology used to recognize a text within a digital image, scanned document etc.Google lens is a good example for this, which is using OCR technology and providing free services to us.

7- How OCR will help and be used in a Property Transaction Websites and Application

While registering a seller and allowing him to put up an advertisement for the property he wants to sell. There can be a mandatory section wherehe needs to upload a scanned copy or an image of a proper property document showing his name and confirming that the person who is registering is the genuine owner of the property and not an agent.

For example:

A person can upload an image of light bill of recent month.Therefore, by using OCR technology we can recognize whether he has uploaded a genuine light bill or not, we can recognize his name as well and compare it with the registered name and through this process, we can authenticate an owner or the ones who are much close to the owner.

CONCLUSION

By using this kind of methodology, we can eliminate agents to certain extent and make the process hassle free.

BIBLIOGRAPHY

- www.nobroker.com
- www.magicbricks.com
- www.99acres.com
- www.housing.com

INTERNET OF THINGS

Khan Shahnawaz
Student, Msc (IT), S.I.W.S. College

● **ABSTRACT**

We're Coming Into A Replacement Era Of Computing Technology That A Lot Of Are Line The Web Of Things (Iot). Machine To Machine, Machine To Infrastructure, Machine To Surroundings, The Web Of Everything, The Web Of Intelligent Things, Intelligent Systems—Call It What You Wish, However It's Happening, And Its Potential Is Big.

Keywords: Communication, Information and Technology, And The Internet.

● **OBJECTIVE**

We see the IoT as billions of good, connected "things" (a kind of "universal world neural network" within the cloud) which will include each facet of our lives, and its foundation is that the intelligence that embedded process provides. The IoT is comprised of good machines interacting and human activity with different machines, objects, environments and infrastructures. As a result, large volumes of information square measure being generated, which knowledge is being processed into helpful actions which will "command and control" things to create our lives abundant easier and safer—and to scale back our impact on the surroundings. The power of this new era is unbounded, with wonderful potential to enhance our lives. the subsequent thesis is an intensive relevancy the chances, utility, applications and therefore the evolution of the web of Things.
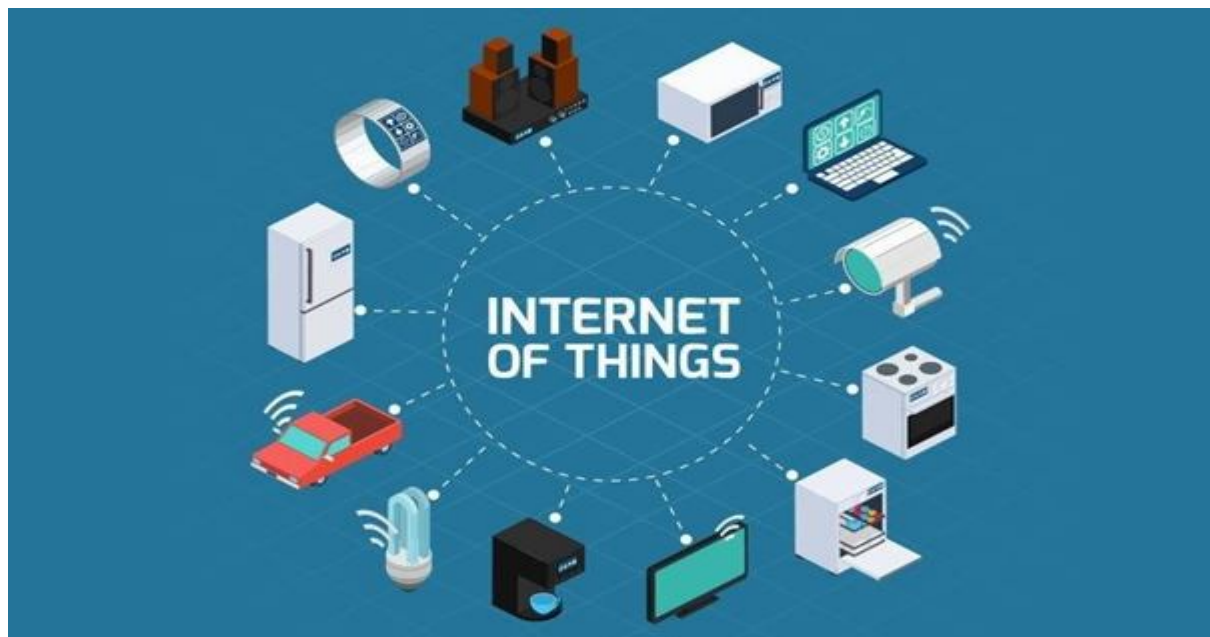
● **REVIEW OF LITERATURE**

2.1.   Applications per Gartner, Inc.

(a technology analysis and informatory corporation), there'll be nearly twenty six billion devices on the web of Things by 2020. ABI analysis estimates that quite thirty billion devices are wirelessly connected to the web of Things by 2020.

As per a recent survey and study done by church bench analysis net Project, an oversized majority of the technology specialists and engaged net users who responded—83 percent—agreed with the notion that the Internet/Cloud of Things, embedded and wearable computing (and the corresponding dynamic systems) can have widespread and helpful effects by 2025. As such, it's clear that the IoT can include an awfully sizable amount of devices being connected to the web. In an energetic move to accommodate new and rising technological innovation, the united kingdom Government, in their 2015 budget, allotted £40,000,000 towards analysis into the web of Things.

British Chancellor of the pecuniary resource patron saint dramatist, posited that the web of Things is that the next stage of the data revolution and documented the inter-connectivity of everything from urban transport to medical devices to manage appliances.

2.1.1. Environmental observation
Environmental observation applications of the IoT usually use sensors to help in environmental protection by observation air or water quality, atmospherical or soil conditions, and might even embrace areas like observation the movements of life and their habitats.

2.1.2. Infrastructure management
observation and dominant operations of urban and rural infrastructures like bridges, railway tracks, on- and offshore- wind-farms may be a key application of the IoT.[66] The IoT infrastructure will be used for observation any events or changes in structural conditions which will compromise safety and increase risk.

2.1.3. producing Network management and management of producing Instrumentality, quality and scenario management, or producing method management bring the IoT among the realm on industrial applications and good producing similarly.

2.1.4. Energy management
Integration of sensing and exploit systems, connected to the web, is probably going to optimize energy consumption as a full.[49] it's expected that IoT devices are integrated into all varieties of energy overwhelming devices (switches, power retailers, bulbs, televisions, etc.) and be ready to communicate with the utility provide company so as to effectively balance power generation and energy usage.

2.1.5. Medical and tending systems
IoT devices will be wont to alter remote health observation and emergency notification systems. These health observation devices will vary from pressure and vital sign monitors to advanced devices capable of observation specialised implants, like pacemakers or advanced hearing aids.

2.1.6. Building and residential automation
IoT devices will be wont to monitor and manage the mechanical, electrical and electronic systems employed in numerous varieties of buildings (e.g., public and personal, industrial, establishments, or residential)[49] in home automation and building automation systems.

2.1.7. Transportation
The IoT will assist in the integration of communications, control, and data process across numerous transportation systems.

● **INTRODUCTION AND STATEMENT OF PROBLEM**
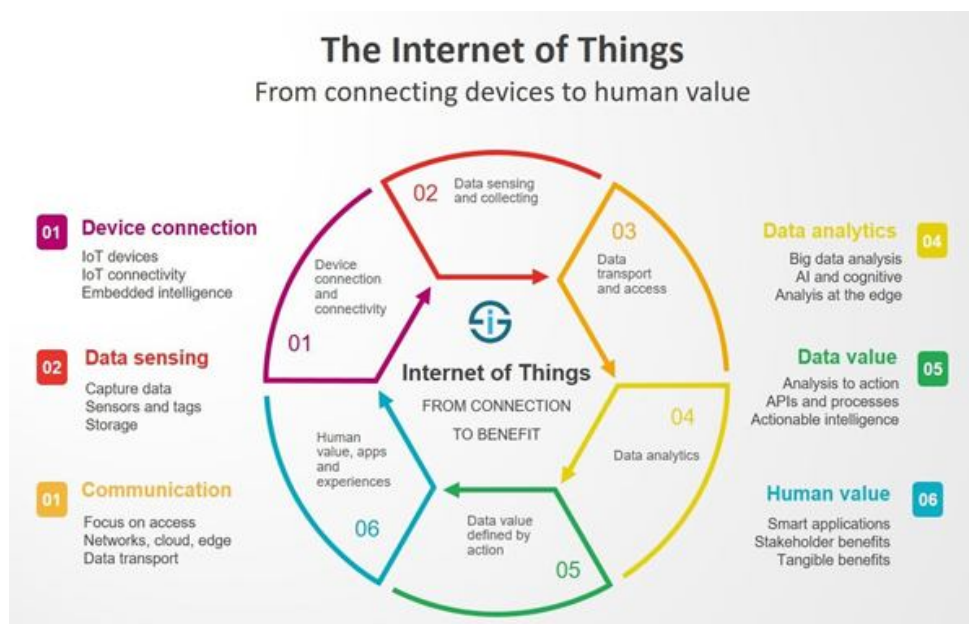
The Internet of Things (IoT) is that the network of physical objects—devices, vehicles, buildings and different items—embedded with physical science, software, sensors, and network property that permits these objects to gather and exchange knowledge. The IoT permits objects to be perceived and controlled remotely across existing network infrastructure, making opportunities for a lot of direct integration of the physical world into computer-based systems, and leading to improved potency, accuracy and economic benefit; once IoT is increased with sensors and actuators, the technology becomes an instance of the a lot of general category of

cyber-physical systems, that conjointly encompasses technologies like good grids, good homes, intelligent transportation and good cities. every issue is unambiguously placeable through its embedded automatic data processing system however is ready to interoperate among the present net infrastructure. specialists estimate that the IoT can include nearly fifty billion objects by 2020.

● RESEARCH METHODOLOGY

The on top of objectives are studied through the employment of primary additionally as secondary knowledge. within the lightweight of objectives set forth the knowledge has been collected from numerous analysis students. the first knowledge has been collected from numerous analysis students with the assistance of form. A form is ready and used as a tool for grouping the info. The necessary step during this Table three shows that solely seven.69% of the researchers don't seem to be exploitation web. On the opposite hand twenty four (92%) analysisers area unit exploitation web for his or her research purpose, that is nice by keeping visible the Indian state of affairs and world state of affairs of web users. it's been additionally verify that field analysis students area unit privy to the benefits of use of web. those that don't seem to be exploitation the net for his or her analysis work have given the explanation that they are doing not feel it necessary in their involved subject

Table 3: Users of web Users of web No. of Users share Use web twenty four ninety two.30% No Use of web a pair of seven.69%

● CONCLUSION

The generality of embedded process is already happening everyplace around North American nation. At home, appliances as mundane as your basic toaster currently keep company with AN embedded MCU that not solely sets the darkness of the piece of toast to your preference, however conjointly adds purposeful safety to the device. Your white goods has started reprimand you and keeping track of what you place in it. There square measure energy-aware HVAC systems which will currently generate a report on the activity in your house and suggest ways that to scale back your energy consumption.

The electrification of vehicles has already started happening, and in exactly many years from currently, every automotive can contain >50 p.c a lot of physical science than it did simply 5 years past. The cars of the longer term can so be ready to drive themselves. Similar changes also are happening in different aspects of our lives … in factories, transportation, faculty systems, stadiums and other public venues.

Embedded process is everyplace.
Connecting those good devices (nodes) to the net has conjointly started happening, though at a slower rate. The items of the technology puzzle square measure coming back along to accommodate the web of Things ahead of the majority expect. even as the web development happened not ciao past and caught sort of a conflagration, the web of Things can bit each facet of our lives in but a decade.

● REFERENCES

1. Alessandro Bassi Designing IoT solutions with the IoT Architectural Reference Model Springer Open

2. IoT https://en.wikipedia.org/wiki/Internet_of_Things

3. From the Internet of Computers to the Internet of Things https://as.inf.ethz.ch/publ/papers/Internet-of-things.pdf

4. Internet of Things Model https://www.iot-a.eu

BREAST CANCER PREDICTION USING NEURAL NETWORKS

Shalma Kulam Gouse

M.Sc (IT) Student, Information Technology, S.I.W.S College

ABSTRACT

Breast cancer is a dreadful disease. Millions of women died every year because of this disease. It is very essential to detect breast cancers as early as possible. Breast cancer can be diagnosed by using the various medical imaging processing technique. This study reviews various neural networks used in medical imaging processing used for classification of cancer like Artificial Neural Network (ANN) and Convolution Neural Network (CNN).

Keywords: Artificial Neural Network (ANN), Breast Cancer detection, Neural Network (NN), Mammography, Computer Aided Detection (CAD).

- **OBJECTIVE**

This research paper is supposed to analyze the role of neural networks in a medical field, such as detection of breast cancer using neural networks in the form of imaging procedure.

- **INTRODUCTION AND STATEMENT OF PROBLEM**

Breast cancer is one of the most common reasons of death among women which is frequently diagnosed non-skin cancer. It is assumed as a second dangerous disease impacting 2.1 million, women each year and causes the highest number of cancer related deaths. As per WHO (World Health Organization) survey, In 2018, it is estimated that 628,000 women died because of breast cancer. It is about 15% of all cancer deaths among women. The accurate detection of cancer is challenging task however it is advised to diagnose the cancer before it started to affect other parts in the body. Breast cell becomes abnormal and starts to divide uncontrollably when breast cancer occurs. These affected cells form large lump of fatty tissues which slowly develops as tumors. It is important to have an appropriate screening technique to diagnose the earliest symptoms of breast cancer. Now a day, mammographic imaging techniques are generally used to diagnose premature breast cancer because mammography screening performs as a routine tool to detect breast cancer. It provides high resolution perception of the internal anatomy (breast) and helps to detect disease caused by cells natural growth. Masses and microcalcifications are the premature signs of breast cancer which can be detected only using modern screening technique. Generally masses are hard lump which has irregular edges and microcalcifications are collection of calcium deposits which are small in size and present inside the breast cancer tissues. The detection of masses is more difficult compared to the detection of microcalcifactions because of large variation in size and shape and it exhibits poor image contrast in mammograms. Computer Aided Detection (CAD) used to classify benign (not harmful for the body and does not spread to other part of the body) and malignant (cell spreads to other part of the body and cause to death) mammogram.

- **MAIN BODY OF PAPER**

A neural network (NN) plays a very important role in breast cancer detection. Neural networks composed of biological neurons which operate in parallel, and it contains three layers, namely input layer, hidden layer and output layer. Neural network needs to be trained to perform specific function. To get desired output, weights can be adjusted accordingly until the actual output of the network matches the target output. Such situation is shown in figure1.

Artificial Neural Network

Artificial neural network (ANN) can be used as automated classifiers and widely used for various fields such as data classification, machine learning, pattern recognition etc. Image features classified into many aspects such as colour, texture, special relations and shapes. There are three types of image features classification such as,

1. The rule based method like decision tree and rough sets

2. The statistics based method like support vector machine
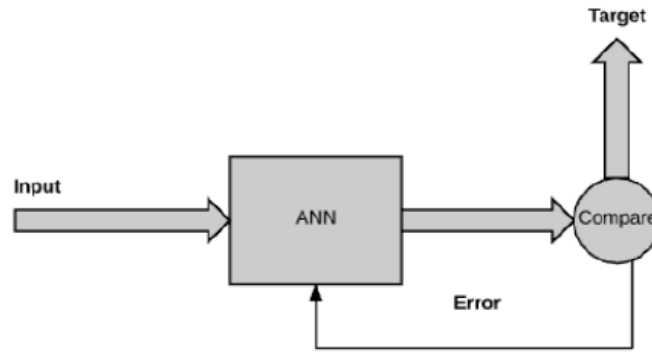
3. Artificial neural networks (ANN)

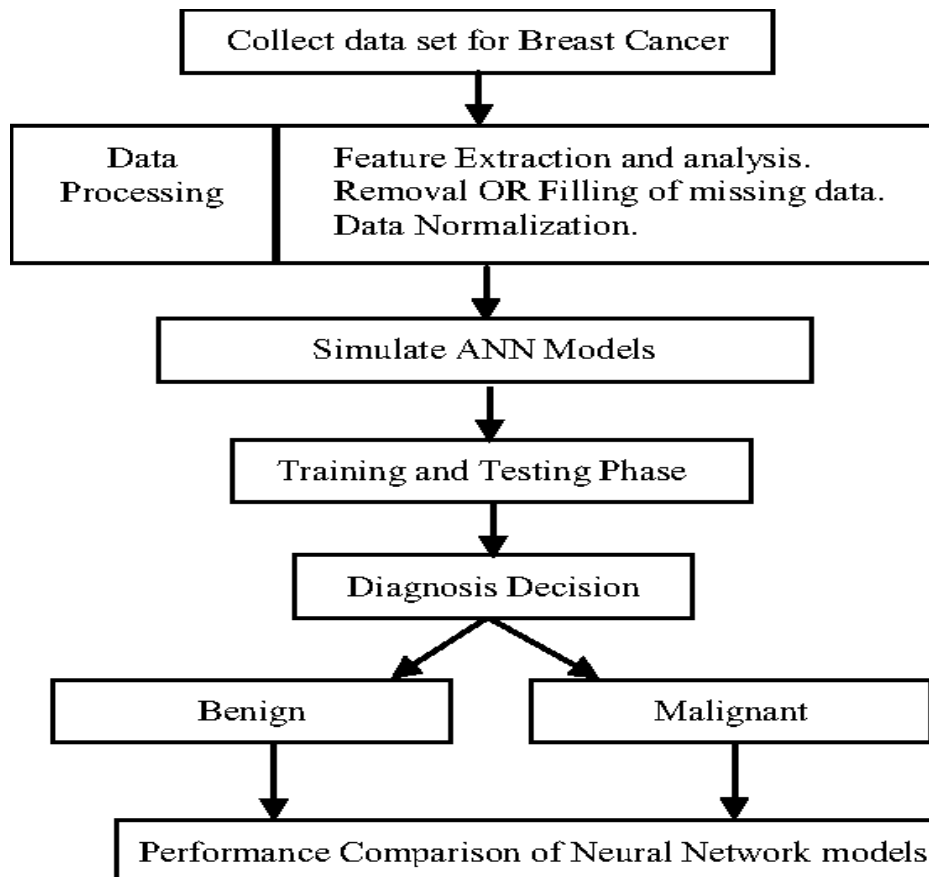**Figure 1: Working of ANN**

Figure 2: Methodology of work

Figure 2 shows the methodology adopted in this research work. Gray Level Co-occurrence Matrix (GLCM) features were calculated along four angles and at four distances. Five statistical measures were determined from GLCM. For results verification mini MIAS database was taken into consideration, and were classified by using Artificial Neural Network (ANN). Accuracy, specificity, and sensitivity achieved by using this model are 96%, 93% and 100%. Gray Level Co-occurrence Matrix (GLCM) along 0^0 is used to calculate texture features from mammogram, thus features will applied to ANN for training and classification process.
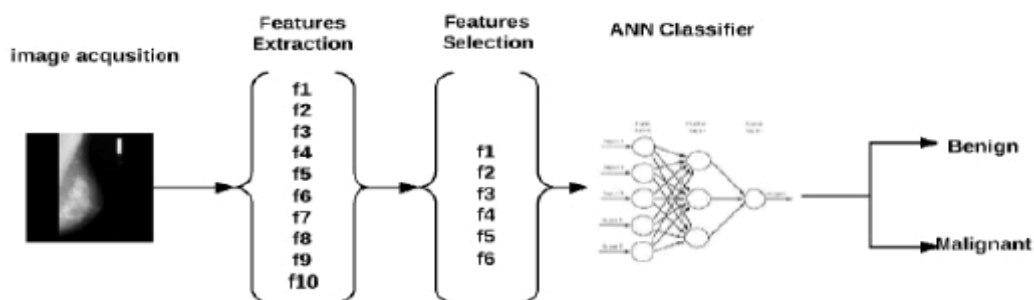

Figure 3: System architecture of ANN

Figure 3 explains the system architecture of ANN i.e overall system divided into four parts. First part of ANN architecture is image acquisition. Second part of ANN architecture is extracting features from the mammography images by selecting optimal features, so that ANN classifier can identify the class of mammogram appropriately. Using texture features, the suspicious looking parts were extracted from the mammography images. Mini-MIAS database used for this experiment. This mini-MIAS dataset contains 322 mammography images called mammograms where 270 images are non cancerous or benign and 52 images are cancerous or malignant. This database has 1024×1024 pixel images. It can be accessed easily. Figure 4 and Figure 5 shows the sample images of Benign and malignant class respectively.
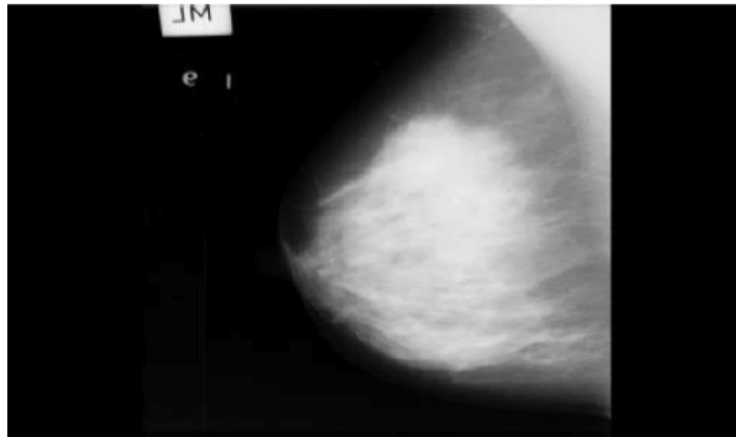
Figure 4: Sample image of Benign class
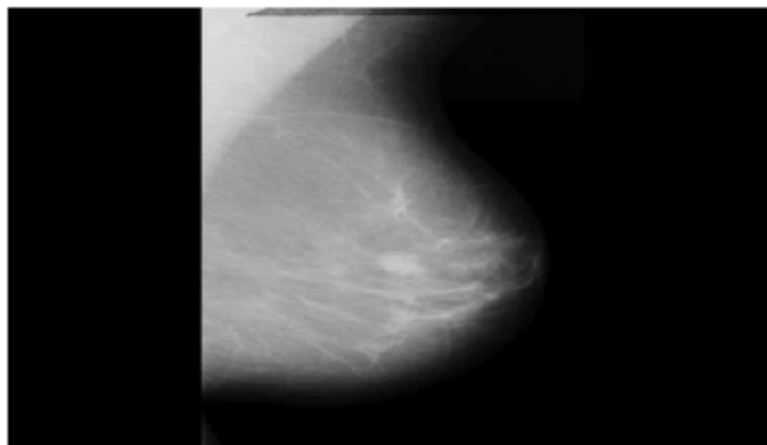
Figure 5: Sample image of Malignant class

Texture features were extracted using GLCM along 0^0 for each mammography image, thus features will applied to ANN for classification process in further stages. In the third part, optimal features were selected for testing and training purpose. This third part is very important since the accuracy of classification is totally depending on features selection process. In the last part mammograms are classified into Benign and Malignant by using ANN classifiers.

- **CONCLUSION**

It is very essential that the breast cancer must be identified at the initial stage to reduce the death rate of breast cancer. We may obtain improved results by altering the network designs and parameters. We may combine various imaging technologies such as MRI, CT Scan, mammographic image, and ultrasound to determine their collective results. This technique is called as multimodel fusion and can be used to perform high quality research that might provide even better results. This is the burning research topic because there are n numbers of unrevealed topics available in which researchers can work and discover new techniques and tools.

REFERENCES

1. Tariq, N. (2018). Breast Cancer Detection using Artificial Neural Networks. *Journal of Molecular Biomarkers & Diagnosis*, *09*(01). doi: 10.4172/2155-9929.1000371

2. Agrawal, S., & Agrawal, J. (2015). Neural Network Techniques for Cancer Prediction: A Survey. *Procedia Computer Science*, *60*, 769–774. doi: 10.1016/j.procs.2015.08.234

3. Dabeer, S., Khan, M. M., & Islam, S. (2019). Cancer diagnosis in histopathological image: CNN based approach. *Informatics in Medicine Unlocked*, *16*, 100231. doi: 10.1016/j.imu.2019.100231

4. ., B. A., ., M. H. Z., & ., H. N. S. (2007). Mammogram Breast Cancer Image Detection Using Image Processing Functions. *Information Technology Journal*, *6*(2), 217–221. doi: 10.3923/itj.2007.217.221

5. Zou, L., Yu, S., Meng, T., Zhang, Z., Liang, X., & Xie, Y. (2019). A Technical Review of Convolutional Neural Network-Based Mammographic Breast Cancer Diagnosis. *Computational and Mathematical Methods in Medicine*, *2019*, 1–16. doi: 10.1155/2019/6509357

6. Mehdy, M. M., Ng, P. Y., Shair, E. F., Saleh, N. I. M., & Gomes, C. (2017). Artificial Neural Networks in Image Processing for Early Detection of Breast Cancer. *Computational and Mathematical Methods in Medicine*, *2017*, 1–15. doi: 10.1155/2017/2610628

7. Shell, J., & Gregory, W. D. (2017). Efficient Cancer Detection Using Multiple Neural Networks. *IEEE Journal of Translational Engineering in Health and Medicine*, *5*, 1–7. doi: 10.1109/jtehm.2017.2757471

8. Shi, Z., & He, L. (2011). Current Status and Future Potential of Neural Networks Used for Medical Image Processing. *Journal of Multimedia*, *6*(3). doi: 10.4304/jmm.6.3.244-251

9. Gardezi, S. J. S., Elazab, A., Lei, B., & Wang, T. (2019). Breast Cancer Detection and Diagnosis Using Mammographic Data: Systematic Review. *Journal of Medical Internet Research*, *21*(7). doi: 10.2196/14464

10. Ragab, D. A., Sharkas, M., Marshall, S., & Ren, J. (2019). Breast cancer detection using deep convolutional neural networks and support vector machines. *PeerJ*, *7*. doi: 10.7717/peerj.6201

CLOUD COMPUTING SECURITY ISSUES AND METHOD TO ENSURE SECURITY

Pranay Bhaskar Surve

Student, M.Sc. IT, S.I.W.S. College, Mumbai University, Maharashtra

ABSTRACT

Cloud computing provides a convenient access to a shared pool of configurable computing resources on demand. In cloud computing, the services are provided in the form of IT-related capabilities, which are accessible with minimal management effort and without requirement of the detailed knowledge of the technologies that are related to cloud computing. Because of the Security threats involved in Cloud Computing the users hesitate to use its services in spite of the great savings promised by Cloud. In this paper an overview of Cloud Computing and the security challenges related to Cloud are discussed.

Keywords - Security, Cloud Computing

INTRODUCTION

Cloud computing has become a popular buzzword; it has been widely used to refer to different technologies, services, and concepts. It is often associated with virtualized infrastructure or hardware on demand, utility computing, IT outsourcing, platform and software as a service, and many other things that now are the focus of the IT industry. The term cloud has historically been used in the telecommunications industry as an abstraction of the network in system diagrams. It then became the symbol of the most popular computer network: the Internet.The Internet plays a fundamental role in cloud computing, since it represents either the medium or the platform through which many cloud computing services are delivered and made accessible.

Cloud Computing Architecture

It is possible to organize all the concrete realizations of cloud computing into a layered view covering the entire stack (see Figure 4.1), from hardware appliances to software systems. Cloud resources are harnessed to offer "computing horsepower" required for providing services. Often, this layer is implemented using a datacenter in which hundreds and thousands of nodes are stacked together. Cloud infrastructure can be heterogeneous in nature because a variety of resources, such as clusters and even networked PCs, can be used to build it. Moreover, database systems and other storage services can also be part of the infrastructure.
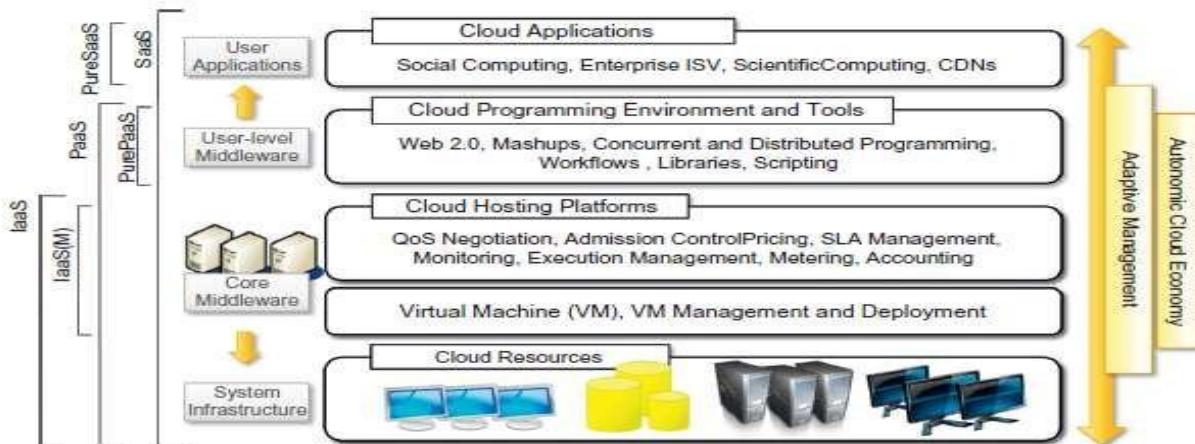

FIGURE 4.1

The cloud computing architecture.

The physical infrastructure is managed by the core middleware, the objectives of which are to provide an appropriate runtime environment for applications and to best utilize resources. At the bottom of the stack, virtualization technologies are used to guarantee runtime environment customization, application isolation, sandboxing, and quality of service. Hardware virtualization is most commonly used at this level. Hypervisors manage the pool of resources and expose the distributed infrastructure as a collection of virtual machines. By using virtual machine technology, it is possible to finely partition the hardware resources such as CPU and memory and to virtualize specific devices, thus meeting the requirements of users and applications. This solution is generally paired with storage and network virtualization strategies, which allow the infrastructure to be completely virtualized and controlled. According to the specific service offered to end users, other virtualization techniques can be used; for example, programming-level virtualization helps in creating a portable

runtime environment where applications can be run and controlled. This scenario generally implies that applications hosted in the cloud be developed with a specific technology or a programming language, such as Java, .NET, or Python. In this case, the user does not have to build its system from bare metal. Infrastructure management is the key function of core middleware, which supports capabilities such as negotiation of the quality of service, admission control, execution management and monitoring, accounting, and billing.

Some of the Cloud services Model

- **Infrastructure- and hardware-as-a-service**

Infrastructure- and Hardware-as-a-Service (IaaS/HaaS) solutions are the most popular and developed market segment of cloud computing. They deliver customizable infrastructure on demand. The available options within the IaaS offering umbrella range from single servers to entire infrastructures, including network devices, load balancers, and database and Web servers.

- **Platform as a service**

Platform-as-a-Service (PaaS) solutions provide a development and deployment platform for running applications in the cloud. They constitute the middleware on top of which applications are built.

Application management is the core functionality of the middleware. PaaS implementations provide applications with a runtime environment and do not expose any service for managing the underlying infrastructure. They automate the process of deploying applications to the infrastructure, configuring application components, provisioning and configuring supporting technologies such as load balancers and databases, and managing system change based on policies set by the user. Developers design their systems in terms of applications and are not concerned with hardware (physical or virtual), operating systems, and other low-level services. The core middleware is in charge of managing the resources and scaling applications on demand or automatically, according to the commitments made with users. From a user point of view, the core middleware exposes interfaces that allow programming and deploying applications on the cloud. These can be in the form of a Web-based interface or in the form of programming APIs and libraries. Developers generally have the full power of programming languages such as Java, .NET, Python, or Ruby, with some restrictions to provide better scalability and security.

- **Software as a service**

Software-as-a-Service (SaaS) is a software delivery model that provides access to applications through the Internet as a Web-based service. It provides a means to free users from complex hardware and software management by offloading such tasks to third parties, which build applications accessible to multiple users through a Web browser. In this scenario, customers neither need install anything on their premises nor have to pay considerable up-front costs to purchase the software and the required licenses. They simply access the application website, enter their credentials and billing details, and can instantly use the application, which, in most of the cases, can be further customized for their needs. On the provider side, the specific details and features of each customer's application are maintained in the infrastructure and made available on demand.

Cloud Computing Deployment Model

2. **Public Cloud: - This type of cloud is the dominant**

Public Cloud:-The public cloud can be used by the general public cloud consumers for their own benefits and the public cloud service provider has got the complete ownership of the public cloud with their own policies, values, costing and charging models. Many popular public Cloud Service providers are Amazon EC2, Force.com, Microsoft and Google App Engine etc.

Private Cloud:- The cloud infrastructure is operated within a single organization, and managed by the organization or a third party regardless whether it is located premise or off premise. The cloud resources are used by the organization itself for its private use. The private clouds are built by an organization for serving its critical business applications.

Hybrid Cloud: - This type of cloud infrastructure is Hybrid Cloud:- This type of cloud infrastructure is basically a combination of two or more clouds, it can either be public, private or community .The hybrid cloud is used by the organizations for optimizing their resources to increase their core competency by margining out peripheral business functions onto the cloud while controlling core activities on premise through private cloud.

Community Cloud: - This type of cloud is jointly Community Cloud:- This type of cloud is jointly constructed by certain organizations and the same cloud infrastructure as well as policies, requirements, values and concerns is shared by them. The economic stability and democratic equilibrium is formed by the cloud community.

Fundamental of Cloud Security Information security is a complex ensemble of techniques, technologies, regulations, and behaviors that collaboratively protect the integrity of and access to computer systems and data. IT security measures aim to defend against threats and interference that arise from both malicious intent and unintentional user error.

Confidentiality - Confidentiality is the characteristic of something being made accessible only to authorized parties. Within cloud environments, confidentiality primarily pertains to restricting access to data in transit and storage.

Integrity - Integrity is the characteristic of not having been altered by an unauthorized party. An important issue that concerns data integrity in the cloud is whether a cloud consumer can be guaranteed that the data it transmits to a cloud service matches the data received by that cloud service. Integrity can extend to how data is stored, processed, and retrieved by cloud services and cloud-based IT resources.

Authenticity - Authenticity is the characteristic of something having been provided by an authorized source. This concept encompasses non-repudiation, which is the inability of a party to deny or challenge the authentication of an interaction. Authentication in non-repudiable interactions provides proof that these interactions are uniquely linked to an authorized source. For example, a user may not be able to access a non-repudiable file after its receipt without also generating a record of this access.

Availability - Availability is the characteristic of being accessible and usable during a specified time period. In typical cloud environments, the availability of cloud services can be a responsibility that is shared by the cloud provider and the cloud carrier. The availability of a cloud-based solution that extends to cloud service consumers is further shared by the cloud consumer.

Threat - A threat is a potential security violation that can challenge defenses in an attempt to breach privacy and/or cause harm. Both manually and automatically instigated threats are designed to exploit known weaknesses, also referred to as vulnerabilities. A threat that is carried out results in an attack.

Vulnerability - A vulnerability is a weakness that can be exploited either because it is protected by insufficient security controls, or because existing security controls are overcome by an attack. IT resource vulnerabilities can have a range of causes, including configuration deficiencies, security policy weaknesses, user errors, hardware or firmware flaws, software bugs, and poor security architecture.

Risk - Risk is the possibility of loss or harm arising from performing an activity. Risk is typically measured according to its threat level and the number of possible or known vulnerabilities. Two metrics that can be used to determine risk for an IT resource are: the probability of a threat occurring to exploit vulnerabilities in the IT resource and the expectation of loss upon the IT resource being compromised.

Method to Ensure Security in the cloud – Having now outlined the various risks faced when using clouds, we can now take a look at the methods industry has developed to deal with these issues. In this section we will focus on the methods used to ensure all the various forms of data security, and also take a brief look at the strategies employed to solve the other secondary issues.

Methods to Ensure Data Security
1. Local Backup – To keep the data with proper backup as sometimes when data is lost it can't be gained again. Also some data can be used by the user who has it.

2. Avoid Storing Sensitive Information – Saving sensitive data may sometime be fatal. So avoid strong sensitive data such as password, ac details, etc..

3. Use Encryption - Use local encryption as an additional layer of security. Known as zero-knowledge proof in cryptography, this method will even protect your data against service providers and administrators themselves.

4. Apply Password – Apply a reliable password so that it can't be predicted by anyone.

CONCLUSION
Security in cloud computing is still in its infancy and needs more research attention, even though cloud computing has been deployed and used in production environments. Our paper presents a survey regarding cloud computing security and a number of possible research topics are also discussed to improve the security in cloud.

REFERENCES

- Computing and network sustainability by Bhanuprasad Vishwakarma https://books.google.co.in/books?id=MDwrDwAAQBAJ&pg=PR13&lpg=PR13&dq=cloud+computing+by+bhanu+prasad+vishwakarma&source=bl&ots=jeTEK-oxHM&sig=ACfU3U0vdf65kgjbwCb7kODiMozIq66XDw&hl=en&sa=X&ved=2ahUKEwizscGTptHmAhWz4XMBHWFxBCsQ6AEwAnoECAoQAQ#v=onepage&q&f=false

- Cloud Security Alliance, Security Guidance for Critical Areas of Focus in Cloud Computing, V2.1 http://www.cloudsecurityalliance.org/guidance/csaguide.v2.1.pdf.

- S.Subashini, V.Kavitha. A survey on security issues in service delivery models of cloud computing. Journal of Network and Computer Applications 34(2011)1-11.

- Google, Google Apps. http://www.google.com/apps/

- Rabi Prasad Padhy, Manas Ranjan Patra and Suresh Chandra Satapathy ," Cloud Computing: Security Issues and Research Challenges", IRACST - International Journal of Computer Science and Information Technology & Security (IJCSITS) Vol. 1, No. 2, December 2011.

- Ensure security data - https://www.idexcel.com/blog/tag/how-to-secure-data-in-cloud-computing/

- https://www.sdxcentral.com/cloud/definitions/cloud-computing-security-architecture/

- https://www.cse.wustl.edu/~jain/cse570-15/ftp/cld_sec/index.html

- https://www.researchgate.net/publication/329906249_Security_Issues_and_Challenges_in_Cloud_Computing_A_Review

- https://en.wikipedia.org/wiki/Cloud_computing_security

- https://www.researchgate.net/publication/309321387_Data_Security_in_Cloud_Computing

- http://www.academia.edu/Documents/in/Cloud_Computing_Security-1

SOFTWARE TESTING- MANUAL TESTING VS AUTOMATION TESTING

Sheetal Vikas Bangar

Student, S.I.W.S College, Sewree Wadala Estate, Mumbai, Maharashtra

ABSTRACT

Software testing is a process to verify whether application is working as per expectations or not. In other word it's a process of finding defects from the applications. Testing is a process used to help, identify the correctness, completeness and quality of develop computer software. Software testing is carried out using two ways such a manual testing and automation testing. Different metrics are gathered during software development process and software testing process.

This research paper consists concept of automation and manual testing and benefit of both the testing. Analysis of automation and manual testing based on testing metrics. Software testing is really essential since it makes sure of the customers reliability and their satisfaction in the application. It is essential to make sure the Quality of the product. Quality product delivery to the customers helps in gaining their confidence. Manual test basically does not require the knowledge of any testing tools.

Its require more efforts. In manual testing tester have to write the test cases manually and run the test cases. So its requires a lot of time as well human efforts to do testing manually.

Whereas Automation testing is done using testing tools. It is done using writing the test scripts manually and run the test scripts with the help of testing tools For.eg Selenium web drivers. Testing automation tools enables developers and testers to signify the complete practice of difficult in software progress.

Keywords: Manual testing, Automation testing, test cases, levels of testing

OBJECTIVE

This research paper is all about brief comparison between manual testing and automation. Its all about which one more beneficial and less time consuming. Their is big confusion in between which type of testing is more convenient. Over here the All difference are been cleared. Both manual and automation testing are still widely used by large as well as small enterprises based on their requirements.
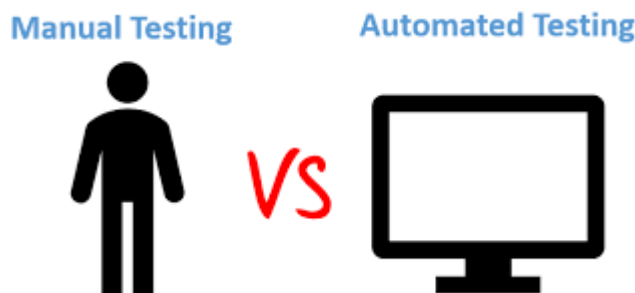
INTRODUCTION

Nowadays, software testing is becoming popular and essential in the software development industry. Software testing is a critical element of software quality assurance and presents review of specification, design, and coding. Creating test cases manually and executing them without any tool support is called manual testing. Manual software testing is done by a human sitting in front of a computer screens, trying various conditions and input combinations, checking the results to the expected result with actual result. Automation Testing means using an automation tool to execute test cases. The goal of automation is to reduce number of test cases and time consumption. Here are some automation tools: Win runner, Load runner, JUnit, Silk test etc.

Manual testing and automated testing are different segments with respect to requirements and specification. Each method, specific testing techniques offers that are black box testing, white box testing, integration testing, system testing, performance testing, and load testing. Some of the techniques are better to manual testing, and few of them are best performed for automation tool. Following two sections will discuss the differences in detail with it.

MAIN BODY OF PAPER

I. SOFTWARE TESTING

Software testing includes experimentally and systematically checking the correctness of application. Software testing is a way of ensuring the quality of the product to its stakeholders with knowledge of the quality of the

product. Various type of Software has different types of requirement. For example, Game software is completely different from the banking.

II. TYPE OF TESTING
1. MANUAL TESTING

2. AUTOMATION TESTING

1. MANUAL TESTING
In manual testing, tester manually executes test cases without using any automation tools. Manual testing is the most primitive of all testing types and helps find bugs in the software system. Any new application must be manually tested before its testing can be automated. It requires more effort, but is necessary to check automation feasibility. Manual testing does not require Knowledge of any testing tool. One of the software testing fundaments is "100%Automaton is not possible". This makes manual testing imperative.

The goal of Manual testing is to ensure that the application is error free and it is working in conformance to the specified functional requirements. Test suites or cases, are designed during the testing phase and should have 100% test coverage. It also makes sure that reported defects are fixed by developers and re-testing has been performed by testers on fixed defects. Basically, this testing checks the quality of the system and delivers bug-free product to the customer.

Pros of Manual Testing:
Benefits of manual testing
- It provides accurate & visual feedback.

- It is viable for all type of applications, such as web application or mobile application.

- Most cost-effective than automation testing.

- Manual testing involves human, which is always beneficial for any project.

- For manual testing their no need of having the knowledge. Cons of Manual Testing:

Disadvantages of manual testing
- It is considered less reliable than automation testing, because it is conducted by a human, making it prone to human error.

- Is more time-consuming than automation testing, especially during regression testing.

2. AUTOMATION TESTING
Automating software testing includes developing of test scripts using scripting languages such as Python, JavaScript or Tool Command Language), so that test cases can be executed by computers. Test design and development can be automated to reduce manpower and save cost. The automation software can also enter test data into the system under test, compare expected and actual results. Automation testing is consider the most conveienet in the company. Success development cycles will require execution of same test cases repeatedly. Using a test automation tool it's possible to record this test suite and re-play it as required. Automation is to reduce number of test cases to be run manually.

Benefits of Automation Testing

- It is faster than the manual testing.

- It saves Time and Cost

- Provides improves accuracy.

- Increases Efficiency

- Execution of test cases speed is much better.

- Scripts are reusable.

Automated testing is the process in which testing tools or scripts run tests that repeat pre- defined actions, comparing a developed program functionalities and actual outcomes. If the expected result and actual result matches your project or product behaves as expecting and bug free, if the results don't match, however, there is an issue that needs to be assigned.
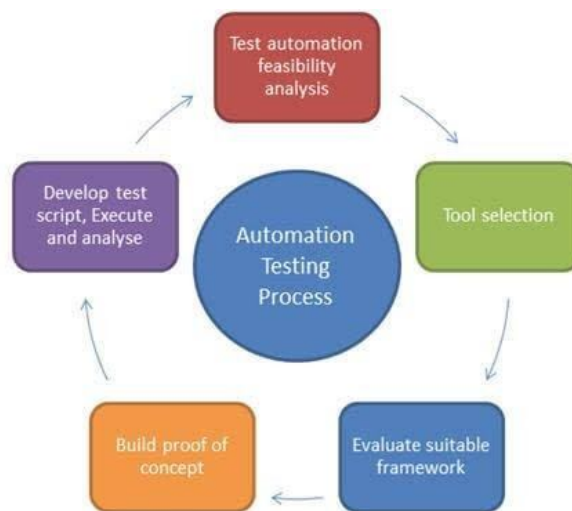
Figure 1: Automation Testing Process

METHODOLOGY
MANUAL TESTING

- It is done manually by Quality Assurance analyst (Human).

- Manual Testing process is not accurate because of the possibilities of human errors

- Manual Testing is a time-consuming process

- Possible without programming knowledge

- It allows random Testing.

- In manual testing the test scenarios, test cases are written and executed manually.

AUTOMATION TESTING

- Automation Testing is done with the help of automation tools (computer) by a tester.

- Automation process is reliable because it is code and script based.

- Automation Testing is very fast.

- Programming knowledge is important.

- Random testing is not allowed by automation testing. Following are the tools used for automation testing:

1. Ranorex Studio

2. Selenium

It is a software testing tool used for Regression Testing. It is an open source testing tool that provides playback and recording facility for Regression Testing. The Selenium IDE only supports Mozilla Firefox web browser.

CONCLUSION

Manual testing is time consuming, manpower is much needed. Automation tools enable us to record the test cases and re-play it if required. Once the test cases is automated, there is no need of human intervention. In automation testing the initial investments are bigger than manual testing and you cannot automate everything but automatable test cases, determine which ones (manual or automated) would provide the biggest return on investment. As comparatively Automation testing is much convenient then manual testing because does not requires the human resources and time consumed is very less.

REFERENCES

[1] Software Engineering- Principles and practices by Rohit Khurana ITL ESL.

[2] "Open Source testing tools, news and discussion" (http://opensourcetesting.org).

[3] MCGRAW, Gary:Software Security (Addison Wesley: 2006).

[4] Vivek Kumar "Comparison of Manual and Automation Testing" International Journal of Research in Science and Technology (IJRST) 2012, Vol. No. 1, Issue No. V, Apr-Jun ISSN: 2249-0604.

[5] Long street, David H. Software Maintenance and computers. IEEE Computer Society Press tutorial. Los Alamitos, Calif: IEEE Computer Society Press.

RAINFALL PREDICTION USING DATA MINING AND MODIFIED KMEANS

Dhanashree Adam and Rohit Nishad
S.I.W.S College

ABSTRACT

In The Present Article, An Attempt Is Made To Derive Optimal Data-Driven Machine Learning Methods For Forecasting An Average Daily And Monthly Rainfall Of The Kaggle Dataset. This Comparative Study Is Conducted Concentrating On Three Aspects: Modelling Inputs, Modelling Methods And Pre-Processing Techniques. For The Modelling Of The Rainfall, A Novel Hybrid Multi-Model Method Is Proposed Mkmeans And Compared With Its Constituent Models. The Models Include The Kmeans, Multivariate Adaptive Regression Splines, The K-Nearest Neighbour, And Radial Basis Support Vector Regression. The Modified K-Means Showed Higher Classification Accuracy (91.40%) Over Kmeans (90.90) Models.

Keywords: Rainfall Forecasting, Machine Learning, Multi-Model Method, Pre-Processing, Model Ranking.

1) OBJECTIVE

• Discover structures and patterns in high-dimensional data.

• Group data with similar patterns together.

• This reduces the complexity and facilitates interpretation.

2) REVIEW OF LITERATURE

The idea of ensemble learning is popular in other time series applications as well. A novel neural network ensemble approach called the generalized regression neural network ensemble which is a concatenation of existing machine learning algorithms. Everingham constructed an ensemble method comprising statistical data mining models, to forecast crop productions in north eastern Australia. All the methods are coupled with two data-pre-processing techniques. The constituent models of the hybrid method are the ANN, Multivariate Adaptive Regression Splines (MARS), the k-nearest neighbour, and radial basis Support Vector Regression (SVR). The hybrid Method generates sub-models first from each of the above methods with different parameter settings. Second, all the sub-models are ranked with a variable selection technique called least angle regression (LARS). Third, the higher ranked models are selected based on their Leave-One-Out Cross-Validation (LOOCV) error.

3) INTRODUCTION AND STATEMENT OF PROBLEM

Accurate forecasting of rainfall has been one of the most important issues in hydrological research because early warnings of severe weather can help prevent casualties and damages caused by natural disasters, if timely and accurately forecasted. To construct a predictive system for accurate rainfall, forecasting is one of the greatest challenges to researchers from diverse fields such as weather data mining environmental machine learning operational and statistical forecasting A common question in these problems is how one can analyse the past and use future prediction. The parameters that are required to predict rainfall are enormously complex and subtle even for a short term period. Soft splitting means that the dataset can be overlapped and the overall forecasting output is the weighted average of each local model. The approach of combining several models is also known as ensemble modelling. The basic idea behind the ensemble model is to build several different models for the same process and to integrate them together. The most widely use empirical approaches used for climate prediction are Regression, artificial neural network, fuzzy logic and group method of data handling.

4) RESEARCH METHODOLOGY

The dynamical approach, predictions are generated by physical models based on system of equations that predict the future Rainfall. The forecasting of weather by computer using equations are known as numerical weather prediction. Regression is a statistical measure that attempts to determine the strength of the relationship between one dependent variable usually denoted by Y and a series of other changing variables known as independent variables. Regression model which contain more than two predictor variables are called Multiple Regression Model.
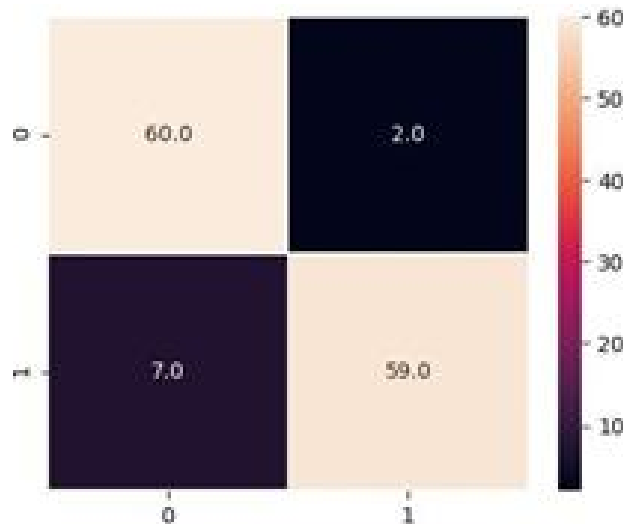
Proposed Algorithm models with exiting results

Algorithm	Accuracy /Efficiency
K-means	90.90
Modified K-means	91.40

Proposed Algorithm Accurancy compression with result
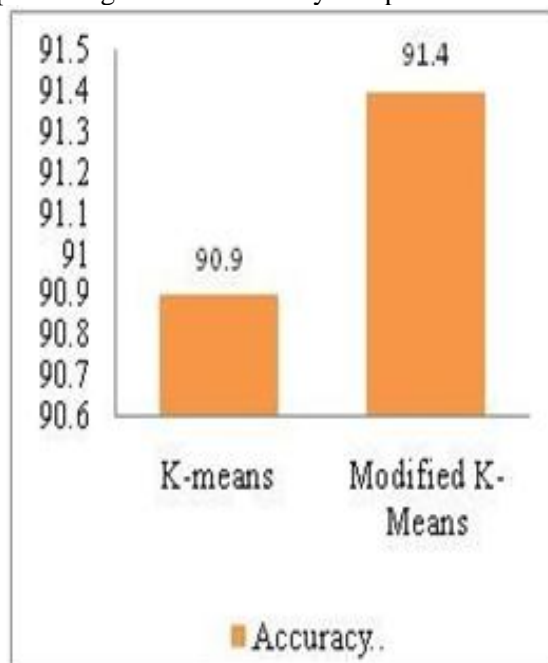
## 5) LIMITATION OF STUDY

The rest of the paper is organised as follows.

In Section 2, we discuss briefly the study area and the rainfall series used in this paper.

In Section 3, we describe the hybrid forecast model including the input selection technique and the variable selection method, and how the weights are extracted. Section 4, This is followed by discussions about the experimental setup and results. Section 5, Conclusive discussions of the paper appears.

Forecasting for year of graph
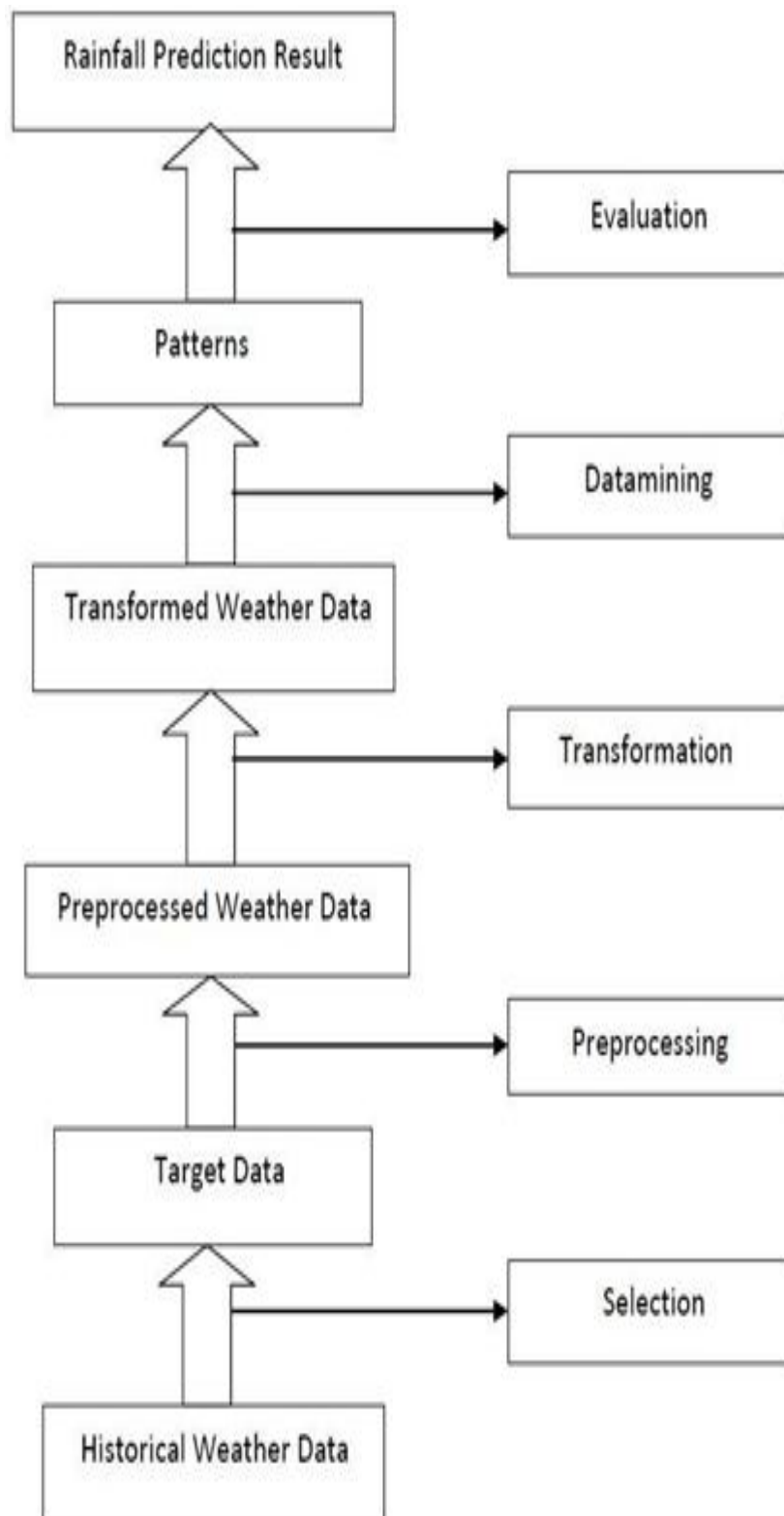
6) MAIN BODY OF PAPER

The proposed predictive model is used for the prediction of rain-fall. The predictive model is build using the available rainfall dataset, mathematical equations and algorithms of data mining, ma-chine learning and so on. Very first step is, the dataset is prepare-cessed for removing unwanted data, noise, and finding the missing values. Once after pre-processing the data, the dataset is divided into two partitions like in training data and testing data i.e. 80% of dataset is used for training purpose and 20% of data of dataset is used for the testing the predictive build model. Once after success-full validation of the build model i.e. the model working efficiently with correct output then the model is deployed for the future application.

Code for modified k-means algorithm

```
Input : E=(E_1,e_2.....e_n)(set of entities to be clustered)
          K(number of clusters)
Mazltres(limit of iterations)
Output:c=(c_1,c_2,.....c_k)
L={1(e)|e=1,2.......n-|) (set of cluster labels of E)
Foreachc_i€C do
Foreach 1(e_i-| [{<-e}]_i€do(eg random selection)
end
Foreachc_i€E do
1(e_i-| [{<-argmin Distance(e_i,c_i)J€(1....k}
end
changed<-false;
iter<-0;
repeat
foreachc_i€Cdo
|Update Cluster-|(c_i);
end
Foreache_I€E do
|mini dist<-argmin distance-|(e_i.c_i)j€(1.....k);
If minidist≠1(e_i)then
1(e_i)<-minDist:
Changed<-true;
end
end
iter++;
until changed = true and iter ≤max iters:
```

Proposed modified K-Means model flow chart
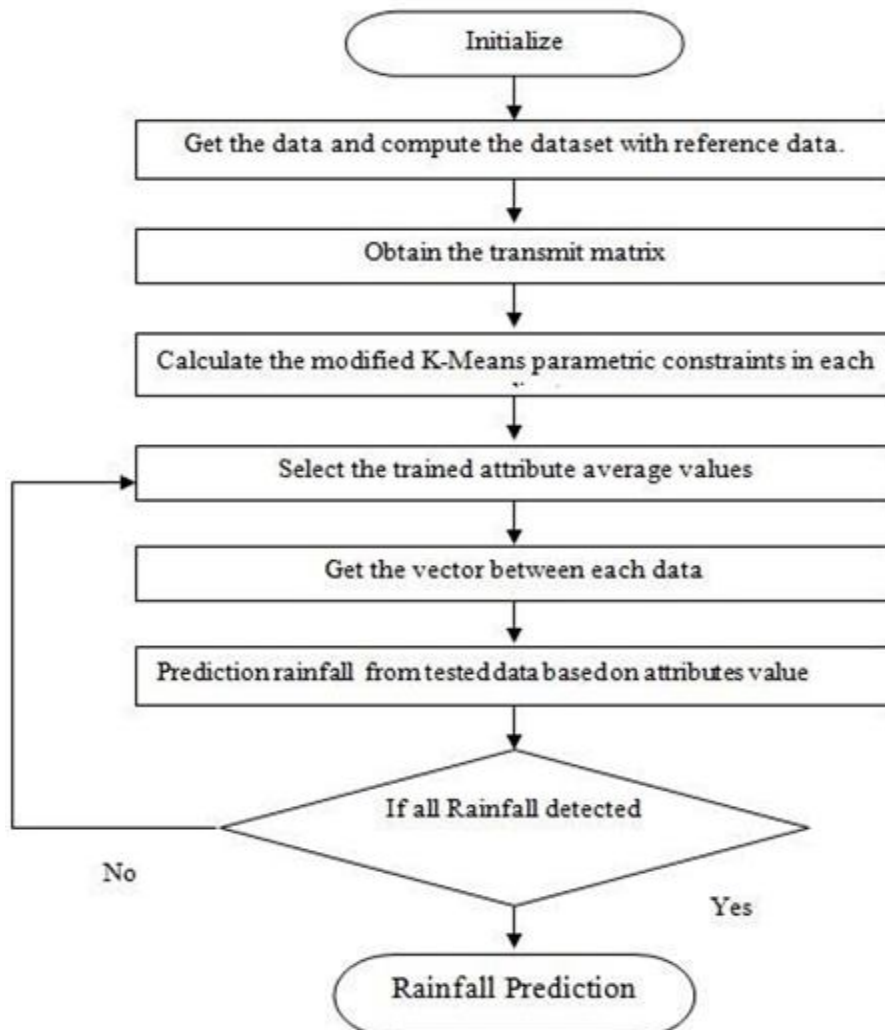
7) SCOPE OF STUDY

X-> Subdivision

Y-> Annual Rainfall in mm values.

To analyze the performance of the proposed model, accuracy, precision and recall were used for evaluating classification results and mean squared error (MSE) and R2 score were used for evaluating regression results. The Modified K-Means Algorithm was chosen to solve this problem.

CONCLUSION

The forecasting of rainfall is a very important factor in terms of water resource management, human life and their environment and prior to the agriculture for proper crop management.

As rain-fall is a nonlinear in nature, it values are not constant, In the process of survey paper investigation of different prevalent Machine Learning, Data Mining and Satellite forecasting techniques and algorithm are presented to predict the rainfall. These techniques would help in predicting the accurate rainfall. However some limitations is clearly noticed in all the methods of rainfall prediction discussed in this survey paper The extensive references in support of the different developments of methods provided in this research should be of great help to solve their problem they will be facing in their proposed prediction model.

REFERENCES

[1]   https://ieeexplore.ieee.org/document/5453745

[2]   https://towardsdatascience.com/understanding-k-means-clustering-in-machine-learning- 6a6e67336aa1

[3]   https://www.researchgate.net/figure/Flowchart-of-k-means-clustering-algorithm

[4]   http://ijsart.com

[5]   http://www.academia.edu/Documents/in/K_Means

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2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.

3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1" margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.

4. The title of the paper should be in capital letters, bold, size 16" and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14" and single-spaced, beginning from the second line below the title.

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5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.

6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

All references must be arranged first alphabetically and then it may be further sorted chronologically also.

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Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, *2*(3), 29–33.

Bateson, C. D.,(2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, *12*(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), "Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher's Colleges In Thailand", International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

- **Text Book:**

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2007). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies* (3rd ed.). New York: McGraw-Hill.

S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures.* New York: Nova Science.

- **Edited book having more than one editor:**

Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code:Student edition 2010.* Aurora, ON: Canada Law Book.

- **Chapter in edited book having one editor:**

Bessley, M., & Wilson, P. (1984). Public policy and small firms in Britain. In Levicki, C. (Ed.), *Small Business Theory and Policy* (pp. 111–126). London: Croom Helm.

- **Chapter in edited book having more than one editor:**

Young, M. E., & Wasserman, E. A. (2005). Theories of learning. In K. Lamberts, & R. L. Goldstone (Eds.), *Handbook of cognition* (pp. 161-182). Thousand Oaks, CA: Sage.

- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology*, 2(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

- **Unpublished dissertation/ paper:**

Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

- **Article in newspaper:**

Yunus, M. (2005, March 23). Micro Credit and Poverty Alleviation in Bangladesh. *The Bangladesh Observer*, p. 9.

- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American, 293*, 22-23.

- **Website of any institution:**

Central Bank of India (2005). *Income Recognition Norms Definition of NPA*. Retrieved August 10, 2005, from http://www.centralbankofindia.co.in/ home/index1.htm, viewed on

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