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NATIONAL CONFERENCE

On

The Advance Computer Science & Information Technologies

(NCACSIT-2017)

Sponsored By

Savitribai Phule Pune University

Under

Quality Improvement Program

Organized By

Department of Computer Science,

P.Æ.SOCIETY'S

Modern College of Arts, Science & Commerce, Pune

On

29th & 30th December 2017

in Association with

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Progrssive Education Society's

MODERN COLLEGE OF ARTS, SCIENCE AND COMMERCE

Ganeshkhind, Pune -411 016

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About College

Progressive Education Society‟s Modern College of Arts, Science and Commerce, Ganeshkhind established in 1992 offer courses under 21 undergraduate, 10 post graduate and some PhD programs of Savitribai Phule Pune University, Pune in various classical and interdisciplinary courses in Humanities, Social Sciences, Commerce, Life Sciences, Electronics, Natural sciences, Statis-tics and Mathematics, to name a few, with students from 18 countries and 24 Indian states. The college is also running UGC funded Bachelor of Vocation in Food Processing and Technology course and differ-ent Career Oriented Courses. The college has been awarded with highly prestigious Star Status from the Department of Biotechnology (DBT), Government of India in 2017, being the first college under SP Pune University to get this coveted status. The college has been re-accredited with "A" Grade by NAAC, Bangalore. The college is supported under FIST program of the Department of Science and Technology (DST), Government of India. The college has received different coveted awards institut-ed by S.P. Pune University viz. Best College Award, Best Principal Award, Best College Award for Stu-dent Welfare Board and Program Officer of the Board Award, Best NSS Unit and Program Officer Award, Best College Magazine in District and at University level as also Jagannath Rathi Award for Best College. Notably, the Maharashtra Energy Development Agency (MEDA) has honored us with a State level award for excellence in Energy Conservation and Management recognizing us as a Green Educational Institute. We have ITC enabled class-rooms, well equipped Laboratories, hi-tech Computer Laboratories, and well-stocked Library along with a Digital Library with internet facility, a computerized Administrative Office. Such state- of-the-art infrastructure enables the college to provide learner-centric environment.

About IARA

Indian Academicians and Researchers Association (IARA) is an educational and scientific research organization of Academicians, Research Scholars and practitioners responsible for sharing information about research activities, projects, conferences to its members. IARA offers an excellent opportunity for networking with other members and exchange knowledge. It also takes immense pride in its services offerings to undergraduate and graduate students. Students are provided opportunities to develop and clarify their research interests and skills as part of their preparation to become faculty members and researcher. Visit website www.iaraedu.com for more details.

Objective of Conference

Objective of National Conference on The Advance Computer Science & Information Technologies is to provide a platform for re-searcher scholars, academicians and industry professionals to exchange their valuable ideas and showcase the ongoing works which may lead to path breaking foundation of the futuristic engineering in Computer Science & Information Technology.

PREFACE

Dear Distinguished Delegates, colleagues and guest, Department of Computer Science of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind is Organizing Two Day National Conference on "**Advances in Computer Science and Information Technology 2017**" on 29th & 30th December 2017.

This conference is managed and sponsored by Savitribai Phule Pune University, Pune, Maharashtra under the scheme of Quality Improvement Program and organized by Department of Computer Science, Modern College of Arts, Science and Commerce Ganeshkhind Pune college is always strives hard to compile the research efforts of scientist, researchers and academicians across the broad spectrum of computer science and information technologies. This conference is aimed at discussing the wide range of problems encountered in present and future high technologies among the research fraternity.

The conference is organized to bring together the member of our national & international community at common and platform so that, the researcher from different states of India can present their leading edge work.

The conference program committee is itself quite diverse and truly national with resource and participant from Punjab, Rajasthan, Gujarat, Madhya-Pradesh, Karnataka etc. The conference has solicited and gathered technical research submissions related to all aspects of major conference themes and tracks. This proceedings records the fully reviewed papers presented at the conference. All the submitted papers in the proceedings have been reviewed by the reviewers drawn from the scientific advisory committee, external reviewers and editorial members depending on the subject matter of the paper.

The conference has been arranged to favor interaction among the attendees coming from many diverse horizons, scientifically, geographically from academia and from industry. We would like to thank to program chair Scientific Advisory Committee, local advisory committee of college conference convener for their work, we like to thank and show gratitude to the chief patron Dr. G. R. Ekbote Chairman P. E. Society, Pune, We are great full to all those who have contributed, we hope that all participant and other interested readers benefits scientifically from proceedings and also find it stimulating in the process in their quest of achieving greater heights.

Finally we would like to wish you success in your technical presentations and techno-socio environment.

With your warmest Regards

Organizing Committee
NCACSIT-2017
Department of Computer Science
Modern College of Arts ,Science and Commerce
Ganeshkhind, Pune, Maharashtra

MESSAGES

From Vice-Chancellor Desk

सावित्रीबाई फुले पुणे विद्यापीठ
(पूर्वीचे पुणे विद्यापीठ)
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Savitribai Phule Pune University
(formerly University of Pune)
Ganeshkhind, Pune-411007, India.

प्रा. नितीन र. करमळकर
कुलगुरू

Prof. Nitin R. Karmalkar
Vice Chancellor

दूरध्वनी : (कार्यालय) ०२०-२५६९३८६८
Telephone : 020-25693868
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MESSAGE

I am happy to know, that Department of Computer Science of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind, Pune 16 is Organizing Two Day National Conference on "Advances in Computer Science and Information Technology 2017" on 29th & 30th December 2017.

The aim of Conference is to provide a platform to all researchers, academicians and industrialist from different different areas of Computer Science and information Technology and for communicating exchanging of their knowledge experiences and will thus open new doors of scientific works to face new challenges in the different areas of Science and Technology for the betterment of the Society and Nation. I am therefore sure that this Conference will meaningful, relevant, purposive, interactive and credible worth remembrance and will be the best platform for dealing with all issues related to the field.

I extend my best wishes for successful organization of the National Conference.

(Prof. N. R. Karmalkar)

Ref. No.: VC/ 470

Date : 28.12.2017

From Chairman Desk

॥ ज्ञानमयोभव ॥

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Secretary
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Date: - 23/12/2017

MESSAGE

I was pleased to know, that Department of Computer Science of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind is Organizing Two Day National Conference on "**Advances in Computer Science and Information Technology 2017**" on 29th and 30th December 2017.

The future probably belongs to people who dare to dream big. It belongs to those who make way through the clouds of oblivion with the force of their determination. **"I have always believed that the answer to my destiny lies in creating the results, I desire."**

I wish all the success to the conference and expect that this good work will be continuing in future.

Prof. Dr. Gajanan R. Ekbote
M.S. M.N.A.M.S.
Chairman, Business Council
Progressive Education Society
Pune-5

From Secretary's Desk

॥ ज्ञानमयोभव ॥

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Date: - 23/12/2017

MESSAGE

I am extremely pleased to know that, Department of Computer Science of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind, Pune 16, is organizing Two Day National Conference on "**Advances in Computer Science and Information Technology 2017**" on 29th and 30th December 2017.

It is appreciated that all the research articles related with the topic will be published on the same day in Conference Proceedings as well as in International Journal.

I welcome all the guests and delegates and wish the success for the conference and future endeavor.

Prof. Shamkant S. Deshmukh
Secretary
Progressive Education Society
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From Principal Desk

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MESSAGE

Respected All the Dignitaries,

I am delighted to inform you that, Department of Computer Science of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind, Pune 16, is organizing Two Days National Conference on "**Advances in Computer Science and Information Technology 2017**" on 29th and 30th December 2017.

The main aim of organizing conference is to provide a common platform for all the participants and learners coming from various fields, so that they can share their knowledge, innovates new thoughts and ideas, discus on various issues and interact with each other. Hence, college has selected multidisciplinary theme for the conference. The theme itself, express the vital role of all Researchers and their contribution for any kind of development and Green Economy gives an idea about Sustainable Development without degrading the surrounding Environment, which is the utmost need of an hour.

The Key Note Speakers from all parts of India and Plenary Talk will definitely showcase a new scenario of knowledge to all participants. Thus, with this view our colleges promote all the eminent scientists, researchers and academicians towards recent trends in Computer Science and Information Technology and contributing in the welfare of Society and Nation.

I acknowledge with deep sense of gratitude, to our college Patron and Chairman Shri.Dr. G. R. Ekbote Sir and Honorable Secretary Prof. S. S. Deshmukh Sir and all the executive members of P.E. Societies' Modern College of Arts, Science and Commerce Ganeshkhind, Pune-16 for their remarkable Support and Cooperation as well as Savitribai Phule Pune University, Pune for sponsorship under the Quality Improvement Program for the conference.

I also express my gratitude to, Indian Academicians and Researchers Association (IARA) for publishing all research paper on the same day of conference.

Lastly, I welcome the entire participant and wish this conference will prove to be educative, informative and fruitful for all and achieve a grand success.

With lots of good wishes and regards

Dr. Sanjay S. Kharat
MSc. PhD, LLB.
Principal
Modern college, Ganeshkhind-16

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Research Papers

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IOT SCHEME TO ENHANCE THE FARMING PROCEDURE

Dr. Rajpal Choudhary
Principal, Acharya Shree Nanesh Samta Mahavidayala, Nanesh Nagar Data, Chittorgarh

ABSTRACT
In developing nations like Asian nation, despite of high-tech advancement we've got been less centered towards our agriculture. Existing condition of agriculture is not therefore thus acceptable to supply most crop yield due to lack of skill awareness among farmers. because the acquirement rates of farmers those concerned in agricultural field is considerably low, applying and dealing with new technology may be a major concern. If farmers will embrace new technologies properly, agriculture sector will be a serious sector for generating employment furthermore as increasing GDP in developing countries like Asian nation. As of 2012, this sector contributes regarding eighteen of the entire G.D.P. of Asian nation however around five hundredth individuals square measure concerned during this. IoT can facilitate North American nation to extend the productivity of this vast maximize individuals concerned during this sector. Application of IoT scheme will bring renaissance in agricultural field. IoT can aid in predicting crop yield, crop price, soil temperature, real time knowledge regarding air quality, water level and correct temporal arrangement of crop to be delivered to plug, which is able to facilitate to extend productivity. Study says we are going to have nine.6 billion individuals on Earth by 2050 which is able to increase demand for food and IoT in agriculture ought to be a crucial driver to fulfill this demand. so, we'd like to develop such system which is able to enhance farming procedure. Objective of this paper is to extant a plan however IoT scheme will enhance the general farming output furthermore as increase GDP

1. INTRODUCTION
With the increasing population in Asian nation, there'll be a large demand of food in returning days. More than 70% of Indian population depends on agriculture for his or her keep [6]. Agriculture plays major role within the economy of the country as Asian nation ranks second worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for thirteen.7% of the gross domestic product (Gross Domestic Product) in 2014, regarding five hundredth of the total workforce [3]. In Asian nation agricultural growth is heavily addicted to the subsequent factors.

1. Farming and crop technology
2. Cropping pattern
3. Environmental factors
4. Government policy
5. Market factors

Farmers have to be compelled to perform variety of responsibilities whereas operating in crop fields. Some repetitive tasks that are performed within the field, like seeding, weeding, fertilizing, and watering, might on the face of it be mundane, and labor-intensive. however, those tasks need premonitory decision-making to be done before the particular activities in order to form farming cycle to be effective. sensible Agriculture helps to deal with several of these problems expressed above by reducing wastage of crops, effective usage of plant food and thereby increase the crop yield. IoT based agriculture is running with success in developed country however still at terribly budding stage in Asian nation. The major challenges we have a tendency to face the notice of technical instrumentation among farmers. On high of that value of implementation is additionally an enormous challenge in Asian nation. so, we should always concentrate on developing a lot of specific and effective sensors, ought to apply correct methodology to implement those. sensible farming doesn't target solely large, typical farming exploitation however boost family farming, organic farming conjointly. It conjointly helps in terms of environmental problems through economical use of water.

2. INTERNET OF THINGS
Internet of Things essentially helps in automation. It helps to attach with entity around USA. device like small controller embedded among entity behaves sort of a real object and starts communicating. in step with study [1] variety of things connected to net can exceed number of people on earth in close to future. Cisco net Business answer cluster [7] analyses that total connected things can reach fifty billion in 2020. essentially basic goal of IoT is to attach everything around USA and modify seamless communication between them with terribly minimum human intervention. It focuses affiliation anytime, anyplace with something.

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3. AGRICULTURAL ISSUE

In this section many problems baby-faced by farmers are addressed [13]. Climate Change: it's the most important issue of agriculture currently days. in an exceedingly conference in metropolis on "Climate sensible Agriculture" consultants from agriculture sectors noted that agriculture production can decrease 10-20% by 2050 attributable to temperature change. temperature change affects directly all the factors associated with agriculture. It directly impacts on quality and productivity of crops. so, a fast answer is needed to deal with this issue. A recent report by Ericsson, in fact, claims that data and communication technologies (ICT) might facilitate split to sixty-three.5 Gt of GHG emissions by 2030[8]. The Internet of Things will facilitate decar bonizes our energy system, give trendy energy systems to each individual, manage our infrastructure, and permit USA to adapt to and address temperature change.

3.1 Disease Detection and Diagnosis

Due to lack of correct chemical management mechanism several crops get spoiled because of malady [9]. IoT enabled system will facilitate in capturing pictures of plant leaves being investigated for diseases, then preprocess those pictures, and sending the processed pictures to remote laboratories. The image preprocessing step was necessary for saving transmission value of causation pathologic leaf pictures to plant pathologists in remote laboratories. bunch rule helps to section leaf pictures.

3.2 Calculator

Applying plant food is a very important farming activity with a possible to greatly have an effect on farm productivity. selections on that chemicals to use and their crop-specific applicable quantities have to be compelled to be made by farmers. Soil Study: Soil is another major element in farming that features a nice impact on the success of agriculture. Farmers equipped with soil knowledge receive a plus in farming, together with in preciseness agriculture.

3.3 Water Study and Crop water estimation

Water quality affects farming and agricultural output. Farmers want to make selections on the quantity of water their crops want. Crop water needs depend upon varied conditions: crop sorts, season, climate, and growth stages of crops [11]. Crops lose water through transpiration, and cover loses water through evaporation. A project in Scotland, iDee, developed a Smartphone application that encourage users to submit data of water conditions, i.e. water level, water clarity, obstruction in watercourse, protects cowl, temperature, nonnative plants in water, and incidental pictures of the watercourse Dee [15].

3.4 Crop turn out Readiness Analysis

If farmers square measure equipped the knowledge of crop value beforehand, they will sell their crops in specific time to earn well. associate degree innovative use of sensible phone-based sensors is to work out maturity of fruits. In [8,16], IoT primarily based application, sensible phone camera is employed to capture photos of fruits beneath white and UV-A lightweight sources to work out maturity levels for inexperienced fruits. Farmers might integrate the system into their farms by separate fruits of various maturity levels into piles before causation them to markets.

4. SENSORS WORKS IN AGRICULTURE

Fundamental of IoT lies in sensors and actuators. Sensors are going to be enjoying vital role to capture all knowledge. the info from sensors square measure sent to net server info victimization wireless transmission. By using IoT and cloud services, and thru preciseness farming techniques, the potency and quality of agricultural production, storage and transportation are often enormously improved. The sensing element is interfaced with Arduino small controller and programmed. Once it's programmed, it's placed within a box and unbroken within the farm. Following [14] square measure some functionalities of various style of sensors used for higher farming.

- Soil wetness sensing element helps to manage irrigation expeditiously. This sensing element with 2 probes is inserted into the soil. The probes square measure wants to pass current through the soil. The wetness in soil has less resistance and thus passes a lot of current through the soil whereas, the dry soil has high resistance and passes less current through the soil. The resistance worth facilitates sleuthing the soil wetness.
- The DHT11 is termed as temperature and wetness sensing element. the entire quantity of vapor in air is defined as a live of wetness. once there's a modification in temperature, ratio also changed. The temperature and wetness changes occur beforehand once irrigation. the quantity of water droplets in air is enhanced once irrigation. This causes decrease in temperature that successively increases the ratio of the surroundings. The temperature and wetness reading square measure typically notified to the user so the user is often able to apprehend the sphere conditions from anyplace.

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- lightweight sensing element helps to sight candlepower of the setting. lightweight being a serious supply for crops responsible for chemical process. lightweight Dependent Resistor(LDR) is employed during which the resistance decreases with increase in candlepower and the other way around. measuring of resistors is finished by voltage divider circuit as a result of candlepower variations. candlepower will increase voltage level. The analog reading is taken from the board. It is often utilized in inexperienced homes wherever artificial lighting is finished victimization any of the incandescent lamps, fluorescent lamps rather than daylight.

5. SMART AGRICULTURE WITH IOT

IoT isn't simply a technology however associate degree system of technologies or merger of various sets of technology which will have a profound impact on our lives – personal, skilled and social. With regard to agriculture, IoT devices give precise data on a large vary of parameters that square measure needed for enhancing farming strategies and cultivation of contemporary turn out. These embody environmental factors, growth conditions, soil, farming instrumentation [14], greenhouse production setting [15], water irrigation, tormentor and fertilizers [16]. WSN helps in time period observation and management. The initiative Digital Asian nation taken by our current Prime Minister ought to reach rural individuals a lot of. it's so, heart rendering that the govt of India has recognized it and in some ways in which set down the vision for the digital rural India through sensible Agriculture. 'Financial Inclusion' and 'IoT for Agriculture' are often the 2 pillars to kick-start the journey of rural Asian nation towards socio-economic equality. it's currently upon the personal sector and start-up communities to bring innovations which will facilitate understand these dreams. There square measure several firms like on farm, far mobile, Crop, Farm and Farm logs square measure operating towards sensible farming. IT major TCS has go along with their test wherever farmers from Punjab and UP are able to sight blight malady in potato season. Basically, agriculture reforms are often depicted as total of 3 main domains [4].

1. Smart Agriculture
2. Nano Technology
3. Bio-Technology

6. SMARTPHONE WILL FACILITATE IN SMART AGRICULTURE

Smartphone and IoT area unit complementary to every alternative. thus, it's an enormous role to play in sensible agriculture. Now a day, attributable to cheaper smart phone on the market in market, farmers will simply have access to that. furthermore, their computing power helps user to form a spread of sensible applications. The automaton mobile application i.e. automaton app helps to observe and management the sector from anyplace. The mobile application uses PHP script to fetch knowledge from MySQL info [10]. All the information captured by sensors area unit hold on in MySQL info. The automaton fetches the information and code it in JSON format to show in automaton device. The program for the applying is intended during a method that permits each the observance and management of field from the device. the net association ought to be provided to observe and management the sector. cheap sensible phones equipped with numerous sensors area unit gap new opportunities for rural farmers United Nations agency antecedently had restricted access to up to-date agricultural data (e.g., market, weather, and crop illness news) and help from agricultural specialists and government extension staff. On prime of that farmers are going to be notified through sensible phone in emergency condition arise at farms.

7. CHALLENGES IN IMPLEMENTING IOT

As agriculture sector runs in low margin, obtaining investments is quite tough. though IoT connected technology is growing, still there are a unit some challenges in implementing IoT particularly, in rural areas. Some barriers like wireless, broadband coverage area unit acknowledge. Moreover, there's one thing referred to as "image problem". folks still believe agriculture belong to grandad generation such a big amount of folks don't need to return in this sector. Another challenge is the question "who are going to be the owner of these sensing element controller data? knowledge on soil or water can be employed by biotech giants. Access to real time data regarding harvest helps corporation predict property worth of farmers to induce plan regarding market. but IoT ought to be brought nearer to primary sector by group action with complementary tools to come up with additional economical product. Electronic media will facilitate during this regard by advertising commercials and on-air campaigns regarding new technologies. the knowledge from one farm is shared with alternative farm so as to induce collective output.

8. CONCLUSION

Although IoT in agriculture is in emergent stage in Asian nation still the method we have a tendency to area unit grip technologies we will be hopeful. If farmers area unit given correct coaching regarding technologies,

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with a sensible mobile in hand they'll perform several of their agricultural tasks while not even reaching there. primarily it helps farmers to remain connected with their farms from anywhere anytime. It conjointly helps in reducing human effort with enhanced productivity and at a similar time it boosts economy of farmers. thus, with absolutely equipped software system and Internet of Things, agriculture trade will give higher vision for next generation and create Asian nation better in returning days.

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COMPARITIVE ANALYSIS OF TCP and SCTP BANDWIDTH MEASUREMENT OF WI-FI NETWORK IN ANDROID SMARTPHONES

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ABSTRACT
Wireless technology is an important and mostly used medium in current days. It is used to transfer data efficiently and effectively over long distances. It is developing field, the devices can be developed to support communication with higher data rate and security. With increase in number of wireless devices, slows down the internet performance of Wi-Fi network. The main reason of such performance degradation is the channel allocation. In this paper the performance analysis of channel allocation of TCP and SCTP protocol are considered. The paper tried to focus on TCP and SCTP bandwidth in order to analyze the performance.

Keywords: Wi-Fi, Android Smartphone's, SCTP Protocol

1. INTRODUCTION

In traditional systems , computer networks transfer's data from one machine to another on any network using ISO/OSI layers or TCP/IP layers. It consists of an important layer called transport layer. The primary role of transport layers is to provide end to end communication service between two or more applications running on different hosts. It also provides functions such as flow control, error recovery and reliable delivery. The transport layer employed one of two protocols, transmission control and user datagram protocol. The choice of transport protocol depends on the requirement of the application in the terms of quality of service. Application that requires reliability in order to delivery of the data, it uses the TCP whereas once if it can tolerate a certain degree of loss it prefers UDP because it provides faster degree of packets. To extend transport layer functionality the new protocol the stream control transmission protocol(SCTP).like TCP ,SCTP, offer a point to point connection oriented reliable delivery transport service for application communicating over an IP network. SCTP provides a number of functions that are critical for telephony signal ling transport and at the same for communication SCTP supports for multi-homing and partial ordering. it establish a session with another SCTP host over multiple interfaces identified by separate IP address. Thus SCTP can benefit applications that require reliable delivery and fast processing of multiple unrelated data stream protocol.[1,2,6,7,9,10]. Research on extending TCP and SCTP to support concurrent multipath transfer, consisting in simultaneously sending data over different size and number of request Serially and Bidirectional.[3,5,8,10]

WI FI NETWORK

WI FI is an international standard describing the characteristics of a wireless LAN It connects laptop computers, office equipment, personal assistants etc. and creates wireless local area networks IEEE 802.11 defines two topologies: the infrastructure mode and the Ad hoc mode. In infrastructure mode, each station connects to an access point (AP) via a wireless link. The set-up formed by the access point and the stations located within its coverage area are called the basic service set (BSS**)**. It is possible to connect several access points (BSS), by a distribution system (DS), to form a large network covered by several cells. The set-up is called the Extended Service Set (ESS).When using ad hoc mode, stations are able to communicate directly, in peer to peer communication mode, an access point.[15,16]

2. LITERATURE REVIEW

In communication Wired technology playing the very important role from several years but these technology have been drawbacks of using cable, it is very difficult to use for long distance communication. Even also reliability does not occur. Therefore these drawbacks can be overcome by using wireless communication. The wireless communication has been allowed for transferring data over long distance The advantage of using wireless communication is Reliability of data, greater mobility and possibilities to move devices and connect it freely without utilization of cables. Wireless communication communicates via satellite. The data can transfer with the help of wireless network such Wi-Fi.[1,4,7,18]

Wi-Fi is the wireless fidelity which allows an electronic device to communicate over wireless signal. Fidelity gives compatibility between wireless equipment from different manufacturer. Wi-Fi works on physical and data link layer It allows local area network to operate without cables and wiring. It is very much popular for the home and business network . [1,3,5,16,17]

The rapid growth of digital wireless telephony gives rise to an increasing demand for data services as well. This is achieved through the concept of transport layer connection established between different interface pairs at the

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two end points. During the normal operation SCTP always uses at most one path at the time for communication. [10,12]

SCTP is the fundamental member of a family of protocols designed by the SIGTRAN group to allow SS7messages to be transported over an unreliable IP infrastructure

All data transferred between the hosts is encapsulated in SCTP packets. SCTP packet contains a common header and a sequence of structures called 'chunks'. [11,13,14]

The Stream Control Transmission Protocol (SCTP is a Transport Layer protocol, serving in a similar role as the popular protocols: TCP and UDP. Indeed, it provides some of the same service features of both, ensuring reliable, of messages with congestion control like TCP, and preserving data message boundaries similarly to UDP. However, differently to TCP and UDP, SCTP offers such advantages as multi-homing and multi-streaming capabilities. The main difference to TCP is the multihoming mechanism and the concept of several streams within a connection. Where in TCP a stream is referred to as a sequence of bytes, an SCTP stream represents a sequence of messages. Multi-streaming allows data to be partitioned into multiple streams that have the property of being independently delivered to the application at the receiver. This means that the loss of a data chunk that belongs to a certain stream will only affect the delivery within that stream, without affecting the delivery of other streams. This prevents head-of-line blocking problem that can occur in TCP, as TCP supports only a single data stream within sliding window control with adapted versions of the well known TCP slow-start, congestion avoidance, fast retransmit and fast recovery mechanisms SCTP congestion control mechanisms include two major differences with the equivalent TCP mechanisms. First, the direct dependence of SCTP on the number of bytes acknowledged, rather than the number of acknowledgements received, to increase the congestion window. Secondly, the implicit dependence of SCTP on SACK messages for acknowledging the received data chunks.[16,18]

3. RESEARCH OBJECTIVE

Following research questions were aimed in writing this paper:

- What is the performance of TCP and SCTP protocol in smartphone (Android 6)
- What is the performance of SCTP over TCP?
- Is SCTP better than TCP? How?

4. EXPERIMENTAL WORK

Various tools are available for performance measurement of Wi-Fi network such as Wi-Fi analyzer wireshark, Acrylic Wi-Fi (Windows), AirGrab WiFi Radar (Mac OS X), Cain & Abel (Windows), Homedale (Windows), LizardSystems Wi-Fi Scanner, WirelessNetView , Wireless Diagnostics (Mac OS X Lion and later), SL Speed Test, Wi-Fi Network Analyzer, Wi-Fi Spectrum Analyzer, Wireless Manager and even Wi-Fi Hotspots, InSSIDer, Xirrus Wi-Fi Inspector, Connectify, WeFi, Hotspot Shield,Plug and browse.

These tools can be installed on different operating systems depending on their compatibility. It can run on Windows, Mac OS, Linux, Android The tools which runs on android smartphones are Speedtest.net, 3G 4G WiFi Map & Speedtest, Wifi Analyzer, Network Signal Info, WiFi Expert, WiFi Manager, WiFi Connection Manager [18]. Amongst these tools,iperf tool has been selected for experimental work as this tool runs on the operating systems like windows, linux, Mac OS , Linux, reeBSD, OpenBSD, NetBSD, VxWorks,

5. IPERF TOOL

iPerf is used for TCP performance tuning and it also measures throughput ,bandwidth and jitter ,data loss in case of UDP tests. There are two components of iperf tool server and client. It is an open source command line tool.[7].

6. SETUP

The parameters for the experiment are no. of requests and size of data. There are three cases in which the experiment was carried out viz. unidirectional, bidirectional (sequential and parallel). The device used for this experiment was Android 6 (marshmallow) smart phone. Following are the different commands used for the experiment of TCP and UDP bandwidth measurements:

a) To send data of different size in one direction:
perf –c 192.168.43.144 --sctp –n 10

b) To send more no. of requests in one direction:
perf –c 192.168.43.144 --sctp -r 10

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c) To send data from both directions sequentially:
perf –c 192.168.43.144 --sctp –d –n 10

d) To send data from both directions parallel:
perf –c 192.168.43.144 --sctp -p -n 10

e) To send no. of requests from both directions sequentially:
perf –c 192.168.43.144 --sctp –d –r 10

f) To send no. of requests from both directions parallel:
perf –c 192.168.43.144 --sctp –p –r 10

7. RESULTS AND INTERPRETATION

Case I-a) Unidirectional-Changing the size of data

Size of data (in KB)	TCP		SCTP	
	Client (Mbits/Sec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
10	0.38	35.05	2.02	14.0
100	1.03	70.2	1.92	13.7
1000	1.19	121.5	1.76	22.7
10000	0.782	158.2	1.04	56

Table 1 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. size of data

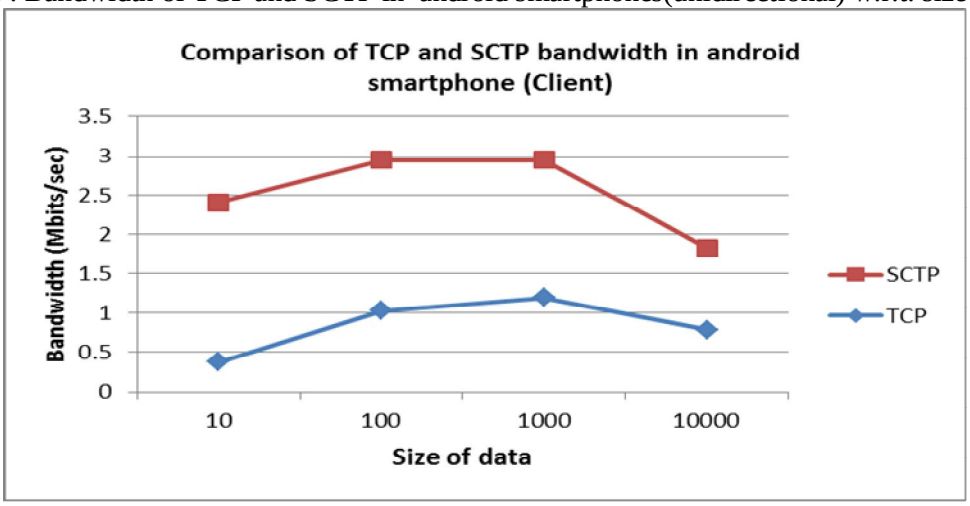

Fig.1: Comparison of client bandwidth in TCP & SCTP unidirectional w.r.t. size of data unidirectional w.r.t. no. of requests

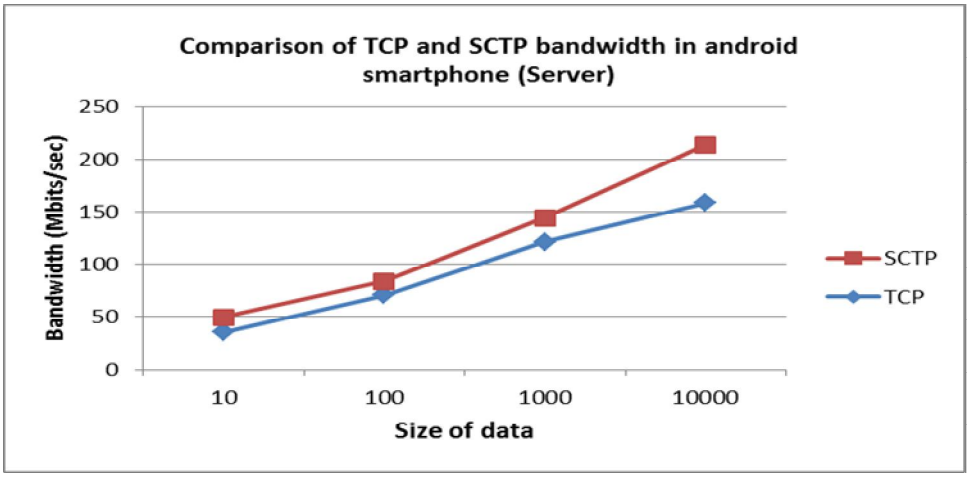

Fig.2: Comparison of Server bandwidth in TCP & SCTP unidirectional w.r.t. size of data unidirectional w.r.t. no. of requests

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INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth.

Case I-b) Unidirectional-Changing the number of requests

No. of Requests	TCP		SCTP	
	Client (Mbits/Sec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
10	32.5	31.3	22.9	1.26
20	40.5	32.5	21.0	1.25
40	51.0	33.5	20.7	1.25
80	52.5	34.0	20.5	1.25
100	52.9	35.9	20.4	1.25
120	61.5	35.9	20.1	1.00

Table 2 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. no. of request

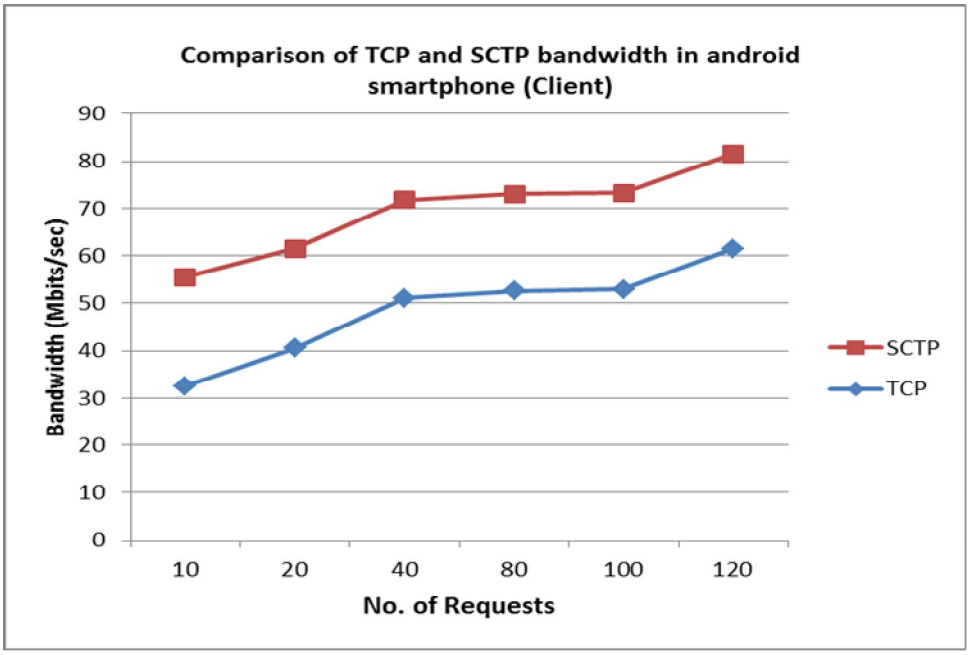

Fig.3: Comparison of client's bandwidth in TCP & SCTP unidirectional w.r.t. no. of requests

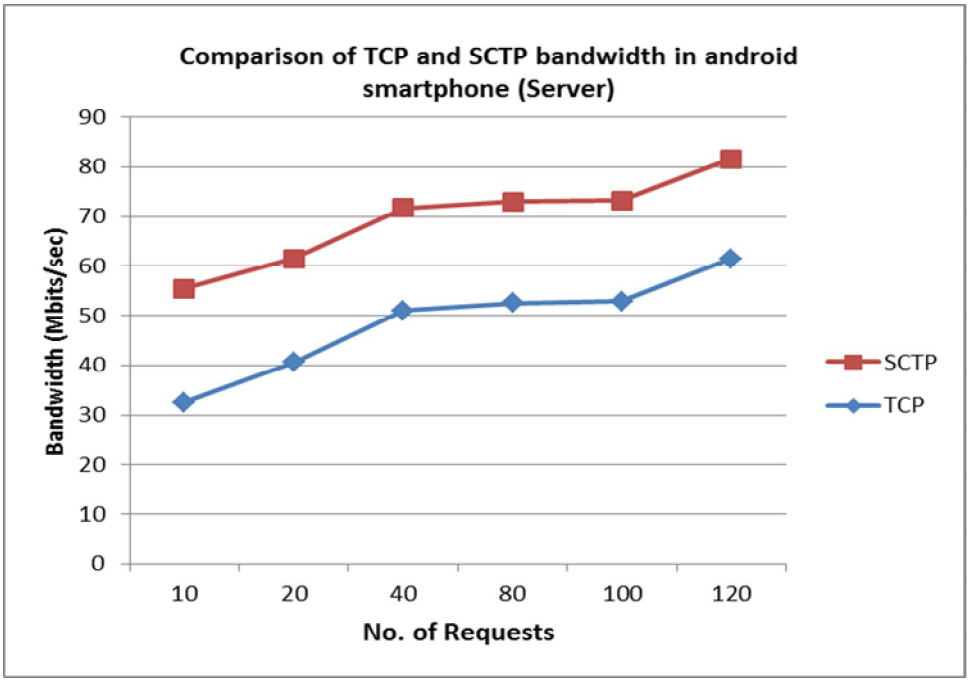

Fig.4: Comparison of Server 's bandwidth in TCP & SCTP unidirectional w.r.t. no. of requests

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INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth.

Case II-a) Bidirectional (Sequential) -Changing the size of data

Size of data (in KB)	TCP		SCTP	
	Client (Mbits/Sec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
10	1.61	9.65	18.9	6.61
100	1.61	11.695	22.9	6.62
1000	1.19	17.85	20.9	6.68
10000	1.81	20.8	21.09	6.92
100000	1.61	9.65	21.13	6.70

Table 3 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. size of data

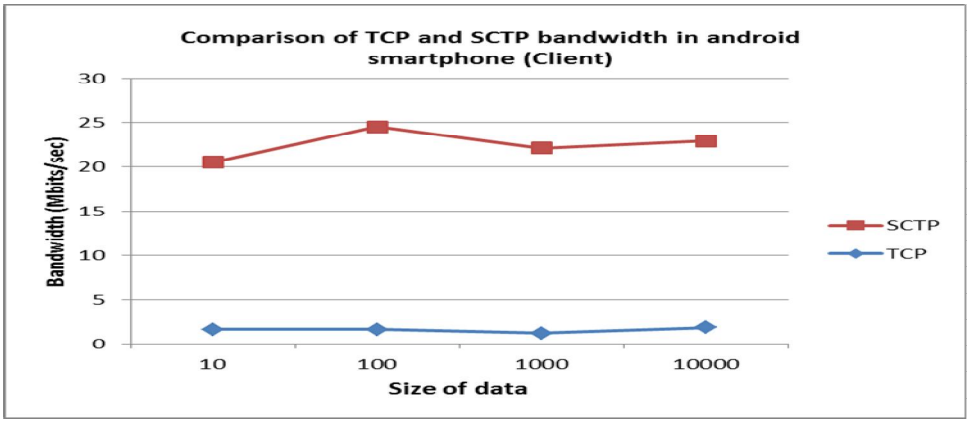

Fig.5 Comparison of client's bandwidth in TCP & SCTP bidirectional (sequential) w.r.t. size of data

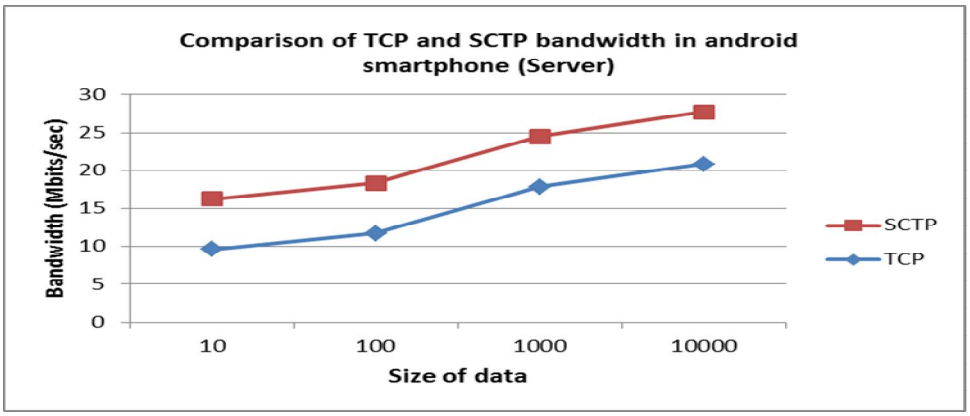

Fig.6: Comparison of Server bandwidth in TCP & SCTP bidirectional (sequential) w.r.t. size of data

INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth and there is a vast different between the bandwidths of TCP and SCTP.

Case II-b) Bidirectional (Sequential)-Changing the number of requests

No. of Requests	TCP		SCTP	
	Client (MbitsSec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
2	29.6	28.8	12.03	28.2
20	38.3	29.7	16.08	25.2
40	46.6	30.4	12.06	26.3
80	51.6	34.8	18.03	25.85
100	53.2	35.8	17.09	27.2
120	55.4	38.2	24.06	26.2

Table 4 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. no. of request

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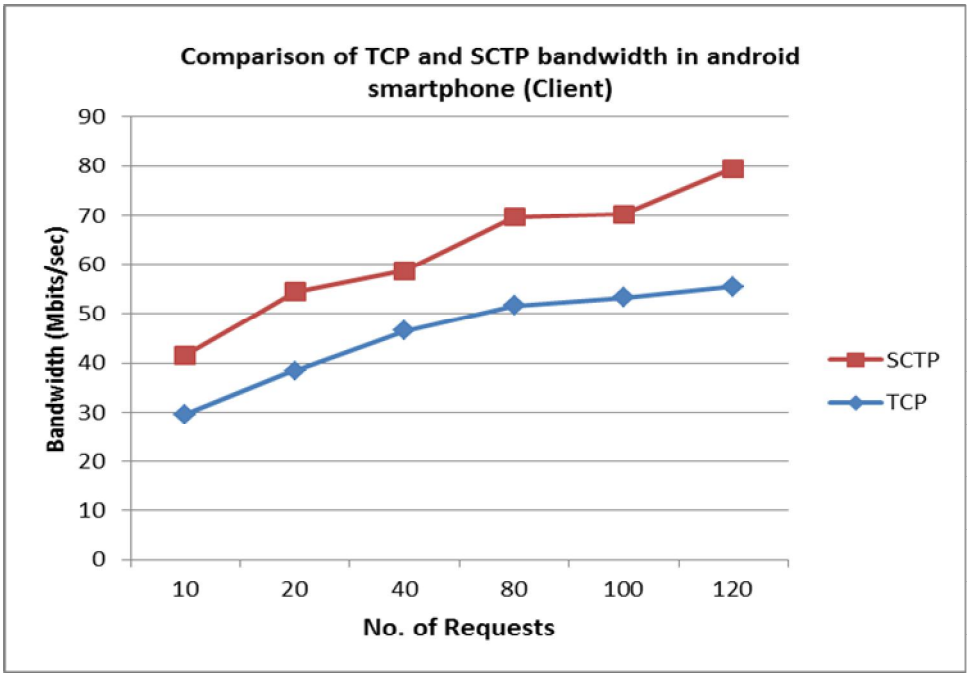

Fig.7 Comparison of client's bandwidth in TCP & SCTP bidirectional (sequential) w.r.t..no. of request

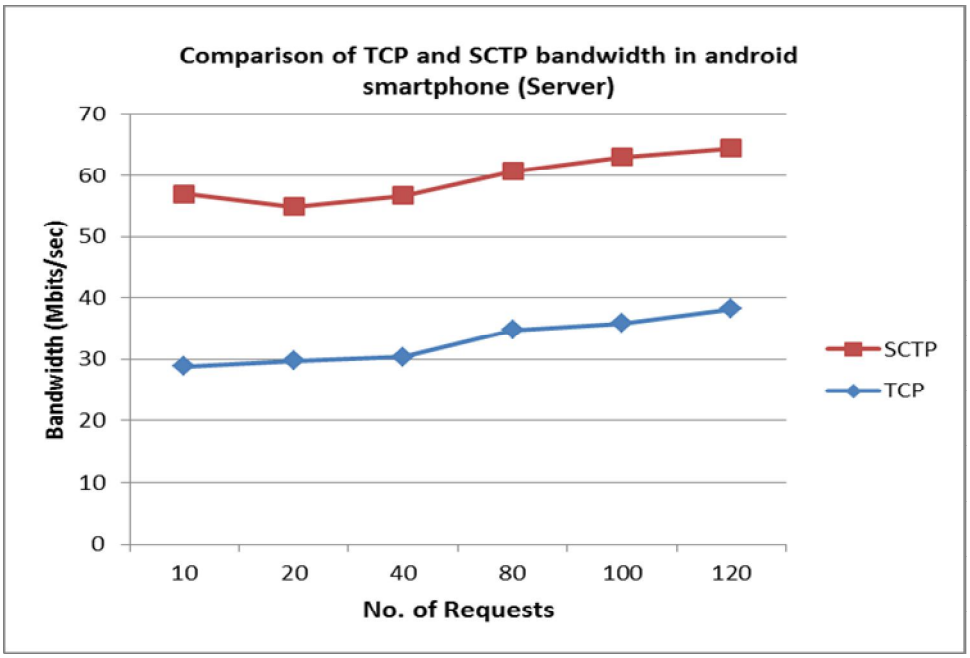

Fig.8: Comparison of Server bandwidth in TCP & SCTP bidirectional (sequential) w.r.t. no. of request

INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth.

Case III-a) Bidirectional (Parallel) -Changing the size of data

Size of data (in KB)	TCP		SCTP	
	Client (Mbits/Sec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
10	1.40	18.2	20.10	3.61
100	1.29	16.2	20.10	3.62
1000	1.54	16.3	16.6	3.68
10000	1.95	17.85	20.7	3.92
100000	2.01	17.95	20.7	3.87

Table 5 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. size of data

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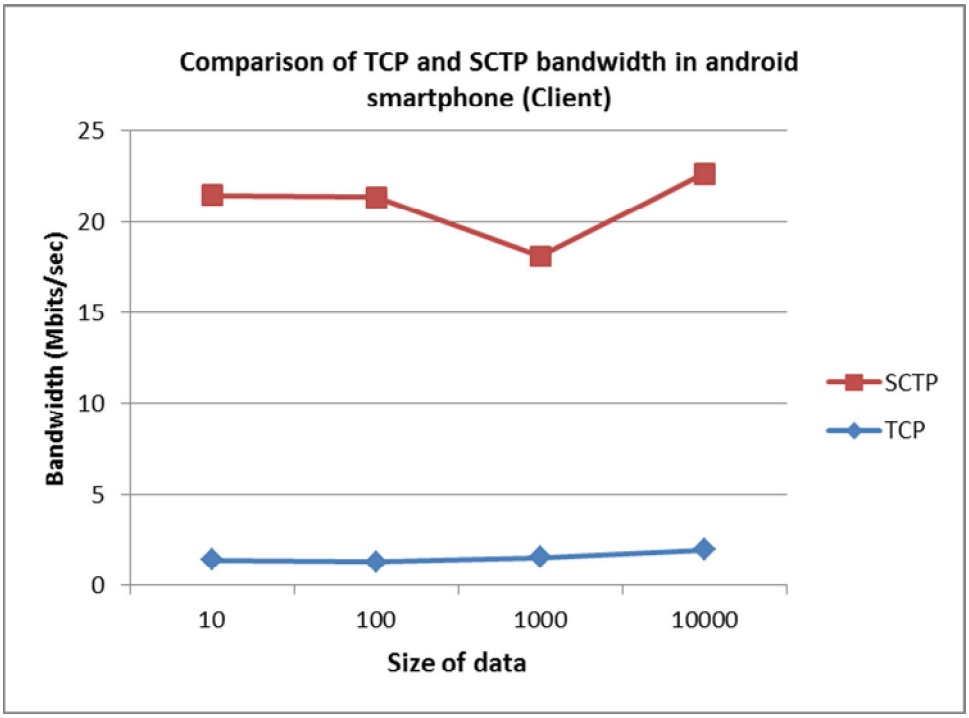

Fig.9 Comparison of client's bandwidth in TCP & SCTP bidirectional (Parallel) w.r.t.. size of data

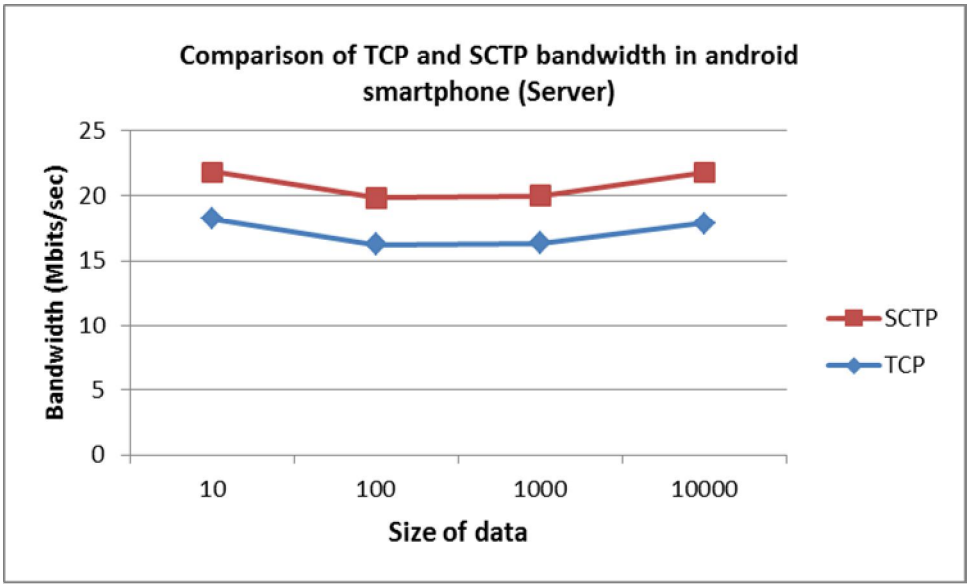

Fig.10 Comparison of Server bandwidth in TCP & SCTP bidirectional (Parallel) w.r.t. size of data

INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth and there is a vast different between the bandwidths of TCP and SCTP.

Case III-b) Bidirectional (Parallel)-Changing the number of requests

No. of Requests	TCP		SCTP	
	Client (MbitsSec)	Server (Mbits/sec)	Client (Mbits/sec)	Server (Mbits/sec)
10	20.8	16.2	11.06	2.03
20	37.0	15.2	10.04	2.05
40	41.7	14.3	10.03	2.03
80	44.5	12.85	10.05	2.05
100	43.7	16.2	11.06	2.07
120	56.7	16.2	10.05	2.03

Table 6 : Bandwidth of TCP and SCTP in android smartphones(unidirectional) w.r.t. no. of requests

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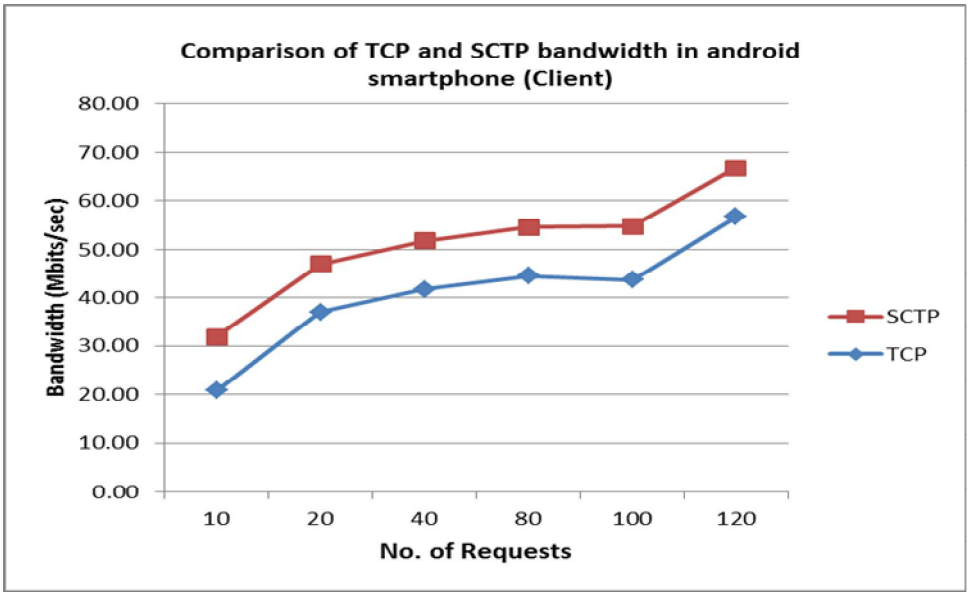

Fig.11 Comparison of client's bandwidth in TCP & SCTP bidirectional (Parallell) w.r.t.. no. of request

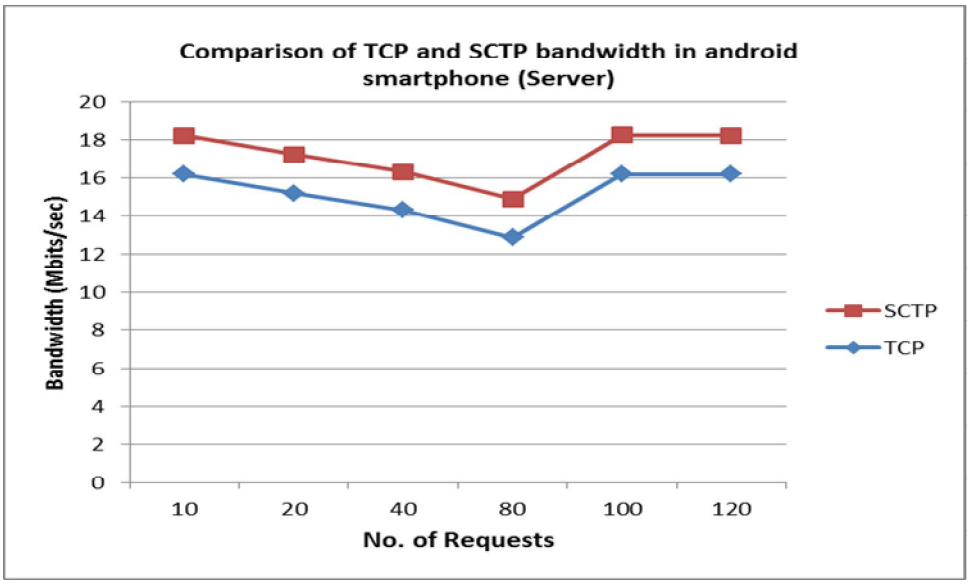

Fig.12 Comparison of Server bandwidth in TCP & SCTP bidirectional (Parallel) w.r.t. no. of request

INTERPRETATION

From the graphs above, it can be observed that TCP is utilizing less bandwidth and SCTP is utilizing more bandwidth.

8. CONCLUSION

From all the graphs above, it can be concluded that in both versions Server device is taking constant bandwidth whereas client device is either utilizing less or more bandwidth. Compared to TCP, SCTP is a better protocol as for some of the experiments, TCP protocol failed after the specific limit in every test but SCTP didn't get failed at all as the data is sent in terms of chunks, hence sometime differs in bandwidth but the data is sent surely.

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E-POLICE SYSTEM- FIR REGISTRATION AND TRACKING THROUGH ANDROID APPLICATION

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ABSTRACT
We do recommend to that amount technology has touched many spheres of our lives of India. There is technological know-how in business, within education, among socializing or maintaining ethnic relations, in purchasing, between agriculture, in banking, communication, and almost each and every section concerning our lives. This intrusion of technology has aided the employment in all this sections, then has proved beneficial, or age or pains saving. The solely foremost part about our class so much nonetheless remains majorly devoid of this luxury is the Indian Police Department. The Indian Police Department has constantly considering the fact that remained manually pushed because of near regarding its movements chores. The officials have been adopting the simple indispensable strategies regarding carrying outdoors the proceedings along the ordinary "pen and paper" method animal noticeably prevalent. These normal practices have been blissful between earlier days, so populace used to be far less, yet the iniquity fees had been also comparably minimal. But within today's India, so the evil elements over the society are of a growth yet consequently many instances life registered every day, that has grow to be a altogether aggravating challenge in accordance with manage the action and whole its related documents, manually. Digitization of Police department is the want about the hour. The standard approach concerning travelling a policeman rank for registering a gumshoe criticism then getting updates wishes in accordance with stand replaced along an on line process. Hence an E-police rule is animal raised who intention gather complainant's information thru a cell application, sends the information on according to the Police department over their net portal, or within this path the entire interaction happens online, with facts exchanges on the software and the internet portal.

Keywords: FIR Tracking, e-governance, android application, database, IMEI.

1. INTRODUCTION

This framework has been proposed remembering the troubles that individuals look amid enlisting protestation at any police headquarters. Above all else, the whole manual process is tedious as the complainant needs to physically go to the police headquarters various circumstances. The same likewise devours a mess of cash and vitality. Different disadvantageous variables incorporate, Fear of getting hurt from individuals against whom FIR is documented, Lodging FIR against exceedingly presumed individual is now and again troublesome errand . By enabling natives to hold up their protestations straightforwardly, this framework goes around cops who are frequently hesitant to enlist FIRs, especially in seizing and payoff cases. Conceivably, this could be a successful apparatus in fighting the endemic debasement and weight at the thana level.

We have proposed to build up a framework which gives an effectively open android versatile application which shapes the front end and a web-based interface for the police office. The protestations would be enlisted over the application. The complainant would top off the FIR frame, he would give the confirmations and points of interest identified with the complainant on the application. The client can transfer pictures, sound documents, and video documents as records. These subtle elements would then be gotten by the police authorities on the online interface. They will check the points of interest of the complainant and complete further procedures of the case. The cop will post the progressions put forth in the defense into the record of the complainant through the entryway. The client will get refreshes as warnings on his android telephone. In this manner the whole procedure would be completed on the web, without much manual intercession.

2. FIR REGISTRATION

2.1 Present Scenario

According in accordance with the Indian Jurisdiction and Law, a subject be able resort a complaint because a cognizable offence. For somebody certain offence, an FIR performs lie registered either with the aid of the sufferer regarding the offence or with the aid of anybody else over his/her behalf. The file may keep committed both orally then between literature in conformity with the police. FIR is a imperative first bottom toward bond on complaint because solely after the FIR has been registered the cop can begin care on the committed offence. The modern-day state of affairs is to that amount some individual whosoever has witnessed the commission about any certain offence, has according to skit in accordance with a Police Station between order in imitation of tell as regards the proceedings then hotel a complaint. A bodily switch of the character is required beyond the iota concerning guilt to the gumshoe station. Many a times such consequently happens as important points in

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regard to the offender is neglected abroad by way of the victim fit in imitation of this commute. Moreover the hassle resides in emergence concerning cop condition nearby, which might add on to the time between occurrence of the offence and investigation being started on it.

2.2 E-Police System over Present System

The accompanying are the upsides of E-police framework over the present manual framework:

1) Time and Energy Saving

The framework keeps the complainant from the need to physically go to a police headquarters to stop a grumbling. Utilizing the android application in his/her cell phone, one can without much of a stretch enroll the objection with the police. Likewise the complainant does not have to more than once go to the police headquarters for getting refreshes on his case as he/she would be told through the application.

2) Ease of Accessibility for Public

It is regularly watched that individuals shun setting off to the police headquarters. Many think it is tedious and that they would need to fix the police to complete the work, while many are essentially reluctant to hold up a protest because of societal components. This framework enables anyone to hold up grumbling and discuss straightforwardly with the police experts.

3) Promotion of E-Governance

With the current headway of Creation and Maintenance of police Database, Indian government is presently intending to keep up database of 1.5 Crore offenders. The E-Police System will be an extra office and will help this procedure of record upkeep with e-reports.

4) Secure and Transparent Process of Investigation and Tracking

Since just the researching officer can get to the specific FIR id, the data is private and secure. The procedure completing on the web, in full learning of the complainant guarantees straightforwardness.

5) Improving the requirements over Indian Police system

With dense nations like USA, Singapore or dense vile raised international locations into the ball in the meanwhile grudging a absolutely practical e-police system, India have to additionally advance up to the ball standards.

6) No delays in catering the FIR

As the gumshoe has in conformity with directly replace the complainant over the software respecting the complaints regarding the case, with proof, some delay in the labor is at once observed via the citizens and hence the scopes over disguised guarantees is fairly reduced.

3. INNOVATION USED

3.1 Android

Android is a working framework (OS) planned fundamentally for touchscreen cell phones. It depends on the Linux bit and at present being produced by Google. Android's UI permits coordinate control, utilizing touch signals, swiping, tapping and squeezing, to control protests on the screen, virtual console for literary information.

Applications that are all the more prominently known as "applications", broaden the usefulness of gadgets. They are composed utilizing the Android SDK (programming advancement pack) and generally utilize the Java programming dialect which gives finish access to the Android APIs.

3.2 Eclipse

Obscuration is fundamentally a coordinated advancement condition (IDE) that contains a base workspace and an extensible module framework that is utilized for altering the earth. Overshadowing is for the most part written in Java and consequently its essential utilize is for creating Java applications. Keeping in mind the end goal to create applications in other programming dialects modules are required.The toolbox of Java,called SWT, has graphical control components that are executed by Eclipse.It is seen that most Java applications make utilization of the Java standard AWT(Abstract Window Toolkit) or Swing. So as to give an incorporated domain to manufacture Android applications we have a Google-gave module called ADT(Android Development Tools),for the Eclipse IDE. It encourages the designers to make UIs, include Android Framework API based bundles, investigating choices utilizing SDK devices, and in sending out marked or unsigned .apk documents of utilizations to be utilized by clients.

ADT is a freeware.

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3.3 WAMP Server

WAMP server is Windows web advancement condition. It incorporates Windows, Android, MySQL and PHP(WAMP). It enables one to make web applications utilizing Apache2, PHP for making the dynamic site pages and MySQL for making the database. These innovations cooperate advantageously and give the server office. The web server Apache handles asks for by the program and sends data over the web to the program. PHP is a programming dialect that has been utilized for building numerous sites. It makes dynamic substance which is sent to the Apache server. MySql is the database which spares information for the projects. PHP is utilized to acess this database. WAMP utilizes MySQL authoritative device called PhpMyAdmin that permits to deal with the database utilizing web program.

3. FRAMEWORK INTERACTION

The framework enables the regular open to enroll a FIR with the police by utilizing the E-Police System's Android application. The complainant should make a record to get to the application. On formation of record on telephone application, the IMEI number of the telephone is recovered by the application and spared into the database. Once the grumbling has been enlisted the police authorities can see those on their side of the application. Cops too are required to have an exceptional record. The cases are doled out to the officers. They can make updations and give points of interest of the advance on a specific case. These subtle elements are accessible for the complainant on his application which he could register by logging with his record.

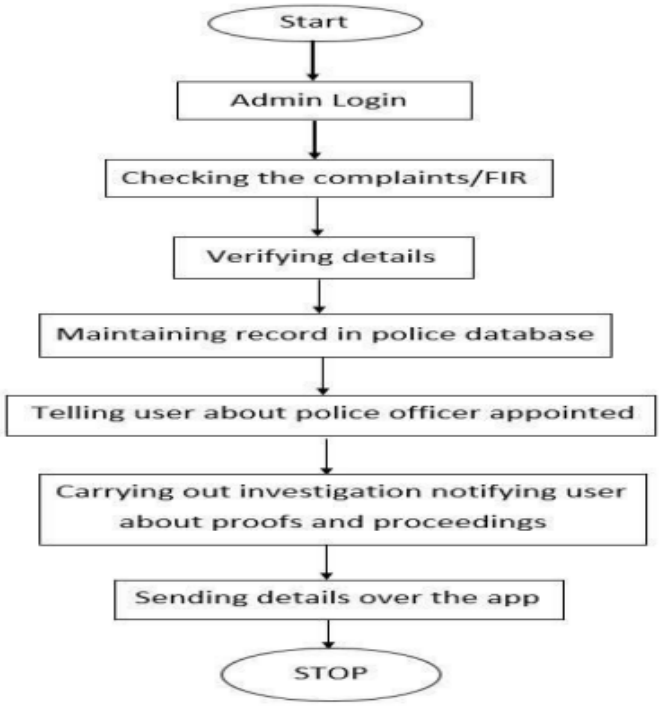

Figure 3.1: Flow graph for the officer

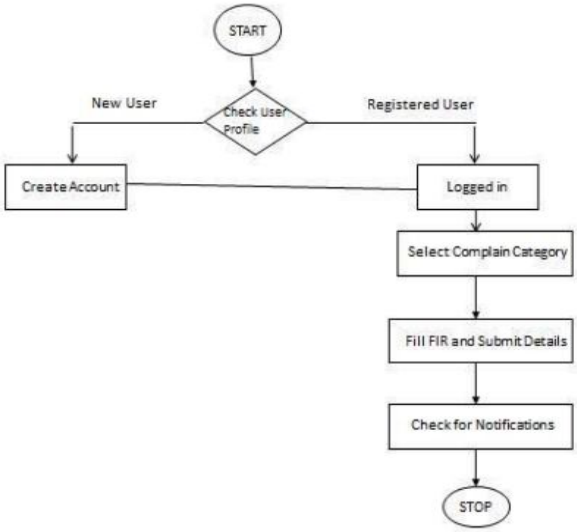

Figure 3.2: Flow graph for User

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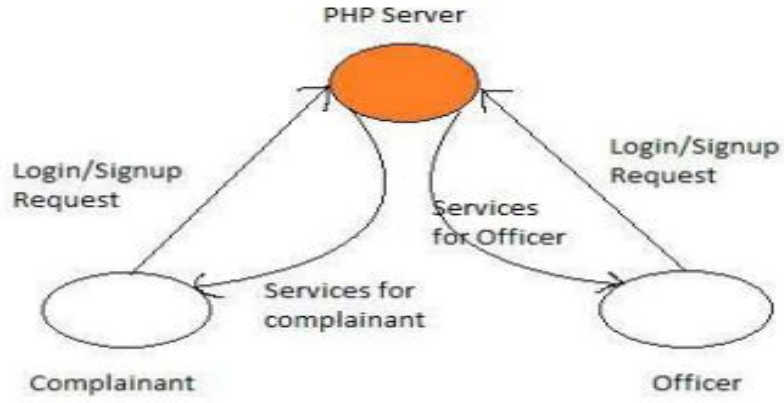

Figure 3.3: Flow graph for User

4. CONCLUSION

Indian Police System has stayed without web innovation, with most works being done on a pen and paper premise. This customary technique is inclined to deferrals and wastefulness. This paper proposes to improve and accelerate the procedure of FIR enrollment and following. With the progression and joining of web and web innovation into the Indian Police System, it will help up the procedures. This paper expects to help people in general and the cops alike. The updates about case points of interest are advised straightforwardly to the complainant through the application. The straightforward entry of the android application by the residents of India will empower a more legal and legitimate society.

4. AFFIRMATIONS

We might want to express gratitude toward Dr. Ujjwala Gawande, Head of the Office, Information Technology, YCCE, Nagpur for the significant proposals and data gave towards this undertaking. We might want to offer our thanks to our Guide Prof. Swati Kale for the consistent help and direction all through the improvement of the framework and amid the drafting of this paper.

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GRAPHICAL REPRESENTATION OF DETERMINISTIC FINITE AUTOMATA: AN APPLICATION APPROACH

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ABSTRACT
In the field of Theoretical Computation studies, the Deterministic Finite Automata plays a significant role. The graphical representation of the Deterministic Finite Automata is the widely used in many fields like Traffic Controlling, Pattern Recognition, Speech Recognition, Natural Language Processing, CPU controlling, Networking, Operational Research and many more. Traditionally graphical Representation of Deterministic Finite Automata is used the procedural programming language platform, which has some disadvantages. In the proposed methodology, the OpenGL Programming Platform is using which is Event Driven Programming language used for representing the Graphical structure. The current Research paper has categorized into III different sections. In Section I the Introduction of Deterministic Finite Automata and OpenGL Programming Platform has mentioned, in section II the proposed methodology for Graphical Representation of Deterministic Finite Automata has discussed and at last, in Section III the Conclusion based on proposed methodology is mention.

Keywords : Theoretical Computation, Deterministic Finite Automata, OpenGL

I. INTRODUCTION

According to some research, the graphical content is more preferable, faster and more understandable way then textual content [1]. The graphical representation of the Deterministic Finite Automaton is done through Transition diagram, which is comparatively more understandable and faster to learn then Transition table. In proposed research paper, the importance of the graphical representation of Deterministic Finite Automaton is discussed. In addition, the application-based representation is highlighted with the help of open source software called OpenGL, which is Event Driven Programming Platform for Graphical Structure design. Deterministic finite automaton accepts and recognizes the set of regular language. Which may useful for the lexical analysis, translation of languages, natural language processing, pattern matching, etc.[2].

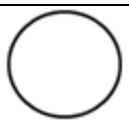
a. DETERMINISTIC FINITE AUTOMATA

The term automaton originated in Greek and after that is specified as Greek-Latin word in the 17th century[3]. The meaning of automaton is 'acting of itself' which is generally related to any mechanical tool or machine. In the study of theoretical computation, the consideration regarding mathematical modules of machines is the abstraction and simplifications,

How machines actually work, based on that mathematical module so Finite automat is the basic way to form the concrete answer. Finite automata or FA is one kind of mathematical model of finite state machine (FSM). The finite automaton represented by two ways first is Deterministic Finite automaton and second is Non-deterministic Finite automaton [4].

The meaning of Deterministic term "believes that everything that happens must happen as it does and could not have happened any other way"[5]. The DFA has some finite states with some input characters or alphabets. According to states and inputs, they generate some output, which is related with a Finite Automaton.

According to the meaning of Deterministic in DFA the applicability of input characters or alphabets on each state are only once if it is applicable more than one time or none of the time so it is considered as a non-deterministic finite automaton. There are two predefined ways to represent the DFA. One is through Transition table and secondly is through transition diagram or transition graph. The deterministic finite automaton has some graphical notation some of are listed in the Table 1 as a Graphical notation of DFA.

Sr. No.	DFA Graphical Notation	Meaning
1.		**States :** In DFA graphically States are denoted by a circle.

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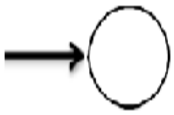
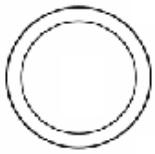
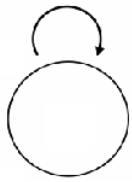
2.		**Transition arrow:** In DFA an arrow denotes the transition. With the help of this transition arrow, a transition-taking place from one state to another state, which carries any, inputted values.
3.		**Initial state or start state:** Transition arrow and state together denotes the initial state or start state.
4.		**Final state :** In DFA the double circle denotes the Final state. It helps to show the acceptance of the string which is also called as an ending state.
5.		**Self-looping state:** Self-loop denotes that the state is connected to itself.

Table - 1: Graphical Notation of DFA

Deterministic Finite Automation represented by 'M', which has five different tuples.
M = (Q, ∑, δ, q0, F)

Q = It is a finite non-empty set of States.

∑ = It is a finite set of input symbols.

δ = It is transition function that takes a state and an input symbol and returns a state $\delta : Q \times \sum \rightarrow Q$

q0 = It is a start state in ($q0 \in Q$).

F = It is a non-empty set of final states ($F \subseteq Q$)[6]

b. OPENGL PROGRAMMING PLATFORM

The process of developing and implementing various sets of instructions to enable a computer to do a certain task is called a programming. A programming is a specific set of ordered operations for a computer to perform. Which has mainly two types first is Procedural programming language which is a complete set of instructions and these instructions are inter-related and second type is Event Driven Programming language which execution is determined by the events occurred by the Interactive devices. In the proposed methodology, the OpenGL (Open Source Graphic Library) Programming has used. It is mainly considered an API (Application Programming Interface) that provide the large set of commands to manipulate the graphics [7].

II. PROPOSED METHODOLOGY FOR GRAPHICAL REPRESENTATION OF DFA

In this section, the graphical representation of DFA methodology is highlighted. For understanding the whole methodology the basic example of the DFA is mention which accepts the only those string which has ending with alphabet 'a' with the input alphabet 'a' and 'b'.

In the following UML Activity diagram, the proposed methodology is highlighted which has some steps. The first it accepts the number of states, number of input alphabet and then actual alphabets. After that, the start or the initial state of DFA is accepted

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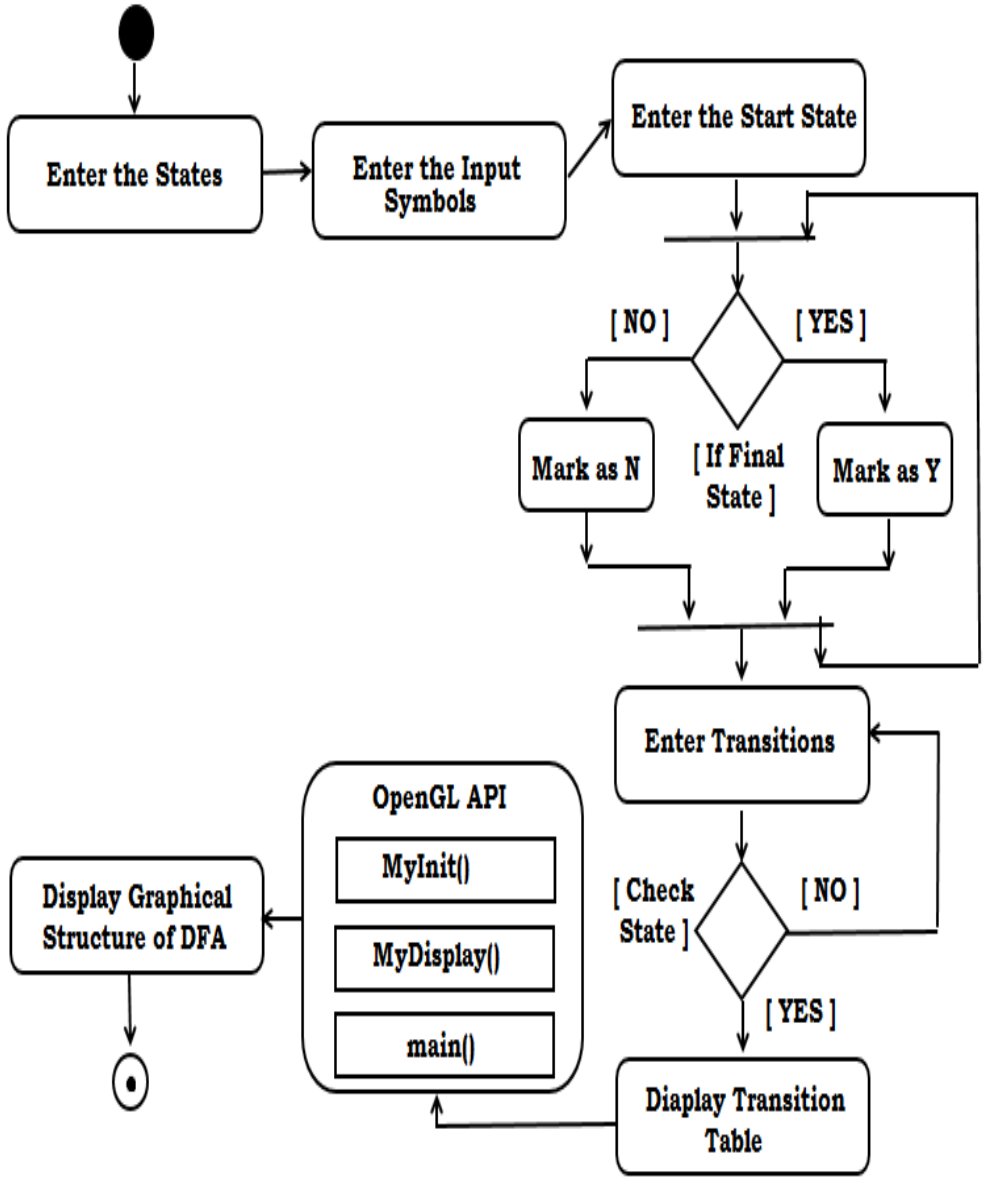

Fig -1: Proposed methodology for Graphical Structure of DFA

It is also checks whether it is final state or not this condition is check up to the number of states that entered at initial step. besides that, it displays the final transition table and passes this control to OpenGL API which is divided into three sections these are Myinit(), Mydisplay() and main(). Myinit() is used for Initialized the basic control of the display window, Mydisplay() is used for the display the primitive geometrical shapes based on transition table and finally the all functions work is combined in main() function.

III. CONCLUSION

As presented in the current research paper, for presenting the Deterministic finite automaton is the basic geometrical primitives are used which is used in various fields. The proposed methodology illustrates how an input converted into the geometrical shapes in Event-driven programming language. The reason for choosing the Event driven programming language is exactly representation of the graphical object on the current window. The current stage of research depicts that the Graphical representation of the Deterministic finite automaton will perform well for the limited character inputs only. There is a scope for improving the current system. Hence, a simple yet effective methodology for Graphical Representation of Deterministic Finite Automaton has been described.

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PAYMENT SYSTEM USING BIOMETRIC FINGERPRINT

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ABSTRACT
The rapid development of Internet services and growth of E-commerce has strengthened the digital payment system. Digital payment system allows people to pay by providing various cashless payment options including credit and debit cards, mobile wallets. The security concern is a barrier to the adoption of the mobile payment system. Both card and mobile have a risk of mislaid which leads hacking of bank account. In this paper, new concept of secured biometric payment system is presented, using unique identification. The proposed system is a secured payment solution over card payments.

General Terms :Feature Extraction, Pattern Recognition, Security, Biometric Payment

Keywords: Fingerprint, Biometrics, Payment Transaction, OTP, Aadhaar

1. INTRODUCTION

The Digital India campaign is launched by the government of India to empower the country. Demonetization also leads to making cashless transactions as far as possible. For all cashless transactions, there are many options like credit card, debit card, and online mobile application. The mobile application includes PayTM, PayPal, BHIM app etc. These mobile apps are directly connected to either wallet or credit and debit accounts with a PIN code. Hence the mobile has to be secured with password or pattern or fingerprint. Large numbers of payments are done with credit and debit cards. But Credit and Debit cards also have a risk of getting lost or mislaid. These cards, with a four-digit PIN, allow access to bank account. PIN codes are hacked easily. Financial fraud with ATM cards is increased rapidly and becoming more complicated day by day.

Many security algorithms and technologies are available to avoid the hacking of information. One of such technique is the biometric authentication, which provides more security for any task where authentication is necessary. Now days, the importance of biometrics has grown extremely with an increasing demand for security in accordance with the unique identification of individuals. There is no need to remember PIN numbers, with the advancement in biometric solutions; instead, our physical characteristics such as fingerprint, palm print, face, iris, and voice have rigorously strengthened the security of transactions. This research paper introduces the concept of biometric payment machine. Biometric payment machine helps to reduce the risk of financial fraud. As all bank accounts are connected with the Aadhaar information of the user, on one scan of fingerprint we get a list of accounts. Among those accounts, the user can select the account to make a payment. Also, appropriate message related to the transaction is communicated to the mobile number of the user.

2. LITERATURE REVIEW

Rushabh, Akhil, Nihar, Zakwan, and Rahul [1] proposed a concept of mobile payment system using Bluetooth. The article presented a secured system that allows the consumer to make payment via their phone through Bluetooth without carrying cash with them.

Zlatko Bezhovski[2] evaluated the current state, growth of mobile and electronic payment systems. It also examined the factors affecting adoption of mobile payment methods by the consumer, as well as analyzed various systems that provide electronic payment services, their security issues and the future of the mobile payment mode.

Jesus and Zeadally[3] proposed a Mobile Payment System that enables secured transactions among the organization, individual over a mobile network. Along with payments, it allows merchants to access customer information and target customer through attractive offers.

Karamjeet and Ashutosh**[4]** discussed various E-payment systems and security requirement of E-payment system. The advantages of adoption of Electronic and mobile payment systems are discussed.

Manjiri, Pallavi, Ankita, Jaya, and Dr. Prapti [5] proposed a model Online Cashless Payment System which is based on fingerprint biometrics stored in Aadhaar Card. This model will help to achieve security, reliability and easy to use.

Dr.Umamaheswari, Sivasubramanian, B.Harish Kumar [6] proposed a framework to provide security to online credit card transaction using biometric fingerprint recognition. It also introduced smart card-based biometric

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systems; and given a sample implementation on the e-ID system. The e-ID system provides high security and safety for both the customer and the merchant in local e-commerce systems.

3. METHODOLOGY

Aadhaar card is issued to all Indian residents based on their biometric and demographic data. The proposed system used the fingerprint details of the user to perform an authentication. And it also uses bank details of user and OTP to make payment.

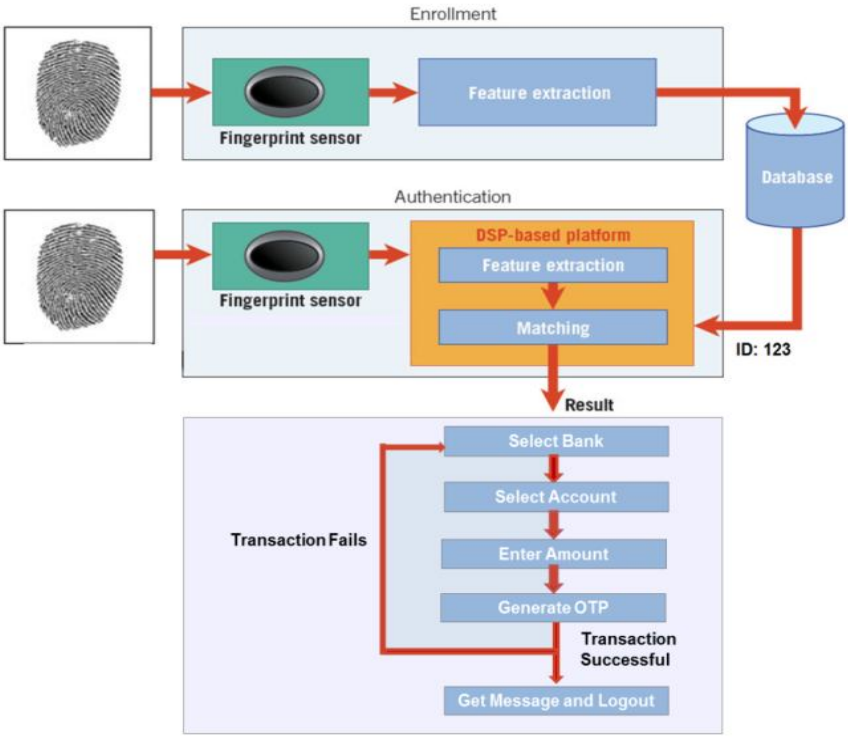

Figure - 1: Basic Architecture of System

This Payment System is divided into five different modules:

Enrollment: Initially the user information is entered into the system through enrollment. This information includes all important details like name, address, birth date, mobile number, email address, bank account details and most importantly fingerprint. The details of the user are verified by the verification process. Verification is carried out in one of the three ways: document based, introducer based, Head of Family (HoF) based. This process creates a new user as well as link his/her bank details with the system.

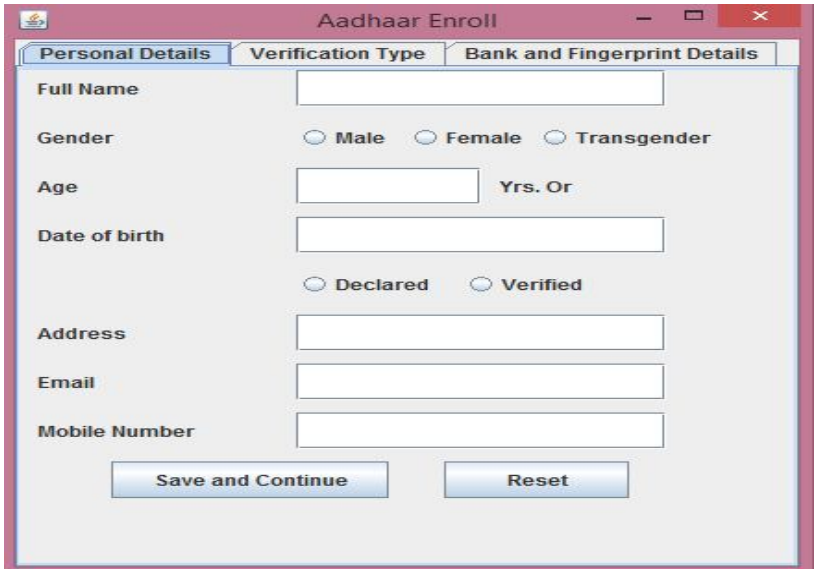

Figure - 2: Enrollment - Personal Details

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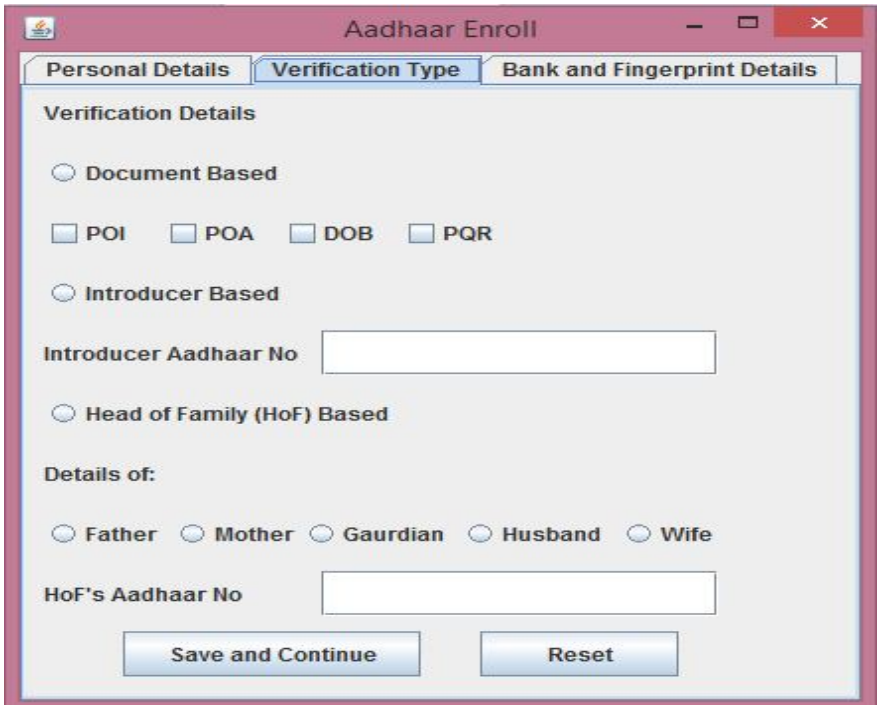

Figure - 3: Enrollment - Verification Details

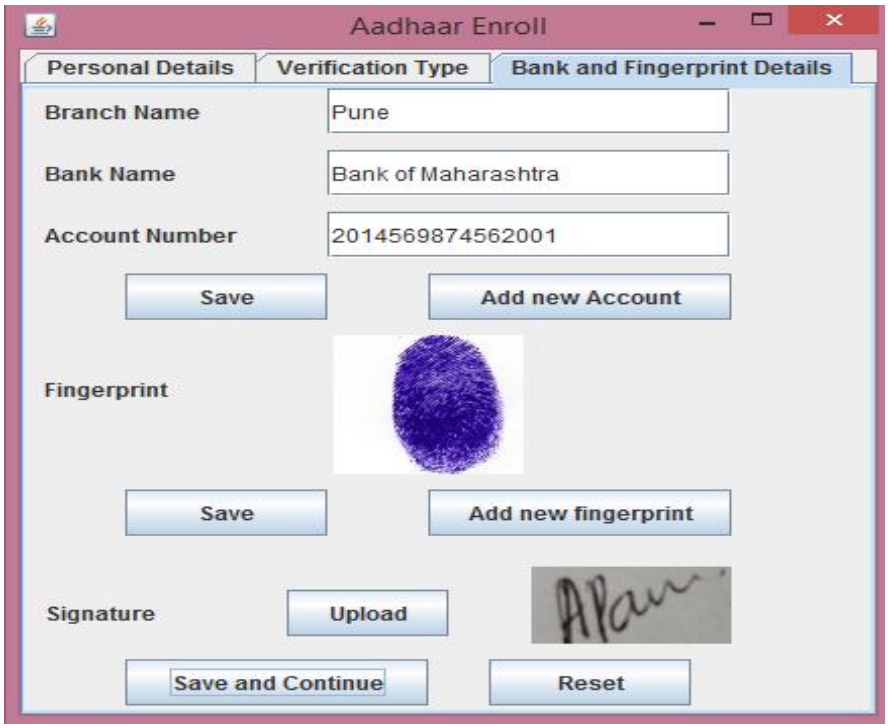

Figure - 4: Enrollment – Bank and Fingerprint Details

Login: To pay the bill the user logs in the system using a fingerprint. There is no need to remember the login id or password. All bank accounts will be accessible only on one fingerprint, which is always with us.

Authentication: The valid user is identified by the authentication process. The scanned fingerprint is matched with the fingerprint stored in the database by feature extraction and pattern matching. If the match is found, user id is returned.

Payment: Once the user logs in the system, the list of accounts is displayed. One of the accounts, from which the user wants to make payment, is selected. The bill amount is entered. To ensure safety and security of this transaction One Time Password (OTP) is generated and sent to user's registered mobile number. If the account has sufficient balance, then the bill amount is deducted from the balance and the appropriate message is sent to the registered mobile number of the user. If the account has insufficient balance then that account is disabled and the user is requested to select another account. This process continues until the payment is done.

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Figure - 5: Payment Transaction

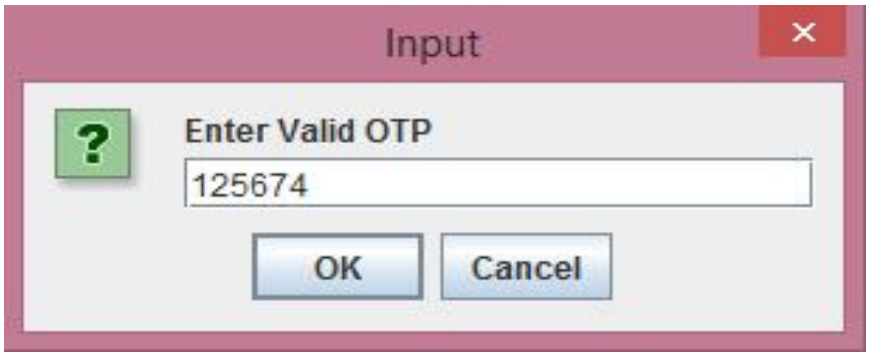

Figure - 6: Valid OTP

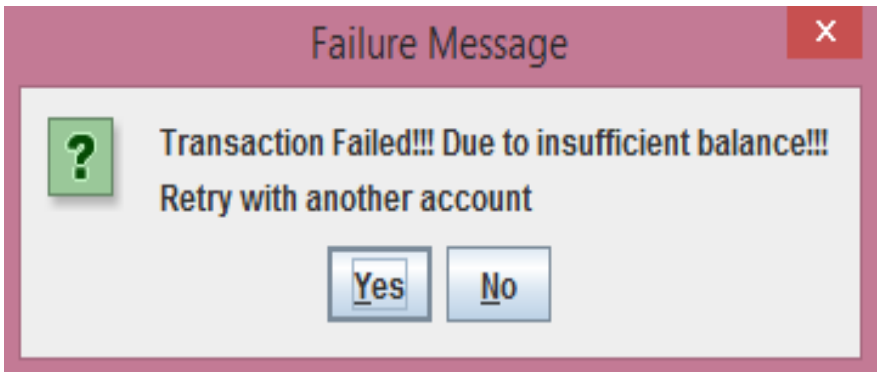

Figure - 7: Transaction Failed Message

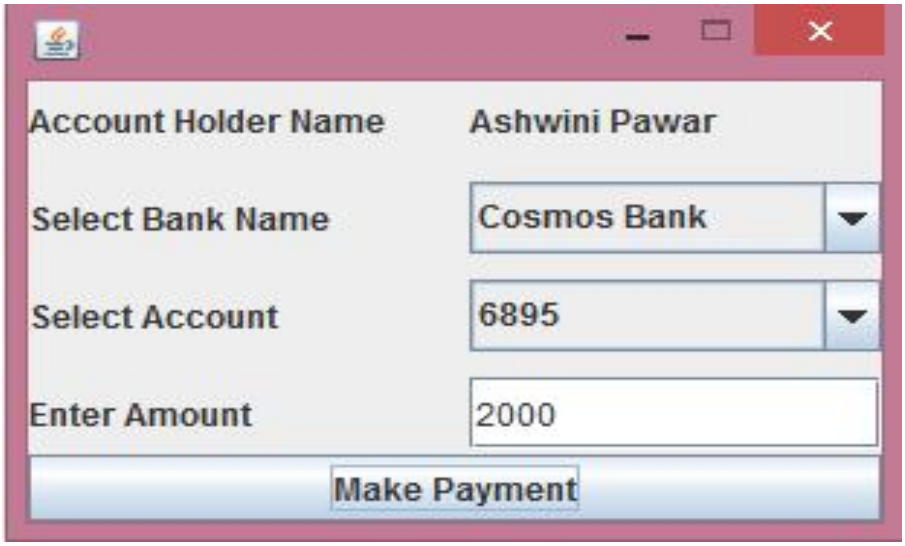

Figure - 8: Payment Transaction

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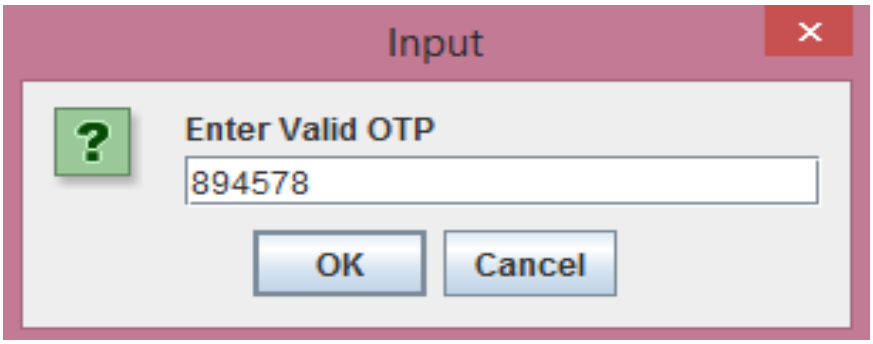

Figure - 9: Valid OTP

Figure - 10: Transaction Successful Message

Logout: After successful payment is made the user automatically logs out the system. But if the account has insufficient balance user can try with another account by following the same process again. If none of the accounts has sufficient balance, then "unsuccessful payment" message is sent and logs out the system.

4. CONCLUSION

Biometric authentication is extremely reliable as it is very difficult to duplicate or pirate the physical human characteristics than security codes, passwords, and other security systems. It is not mandatory for the user to carry physical cards or buy smart mobile phones only for purpose of payments. Banks will also be benefitted greatly due to lower frauds and chargeback rates. With the adoption of a biometric payment system, there will be a need for updating the infrastructure; that will provide new opportunities for device manufacturers & software providers. The proposed system promises a reduction in transaction fees, increased convenience, and enhanced payment security. With enhanced security involved in biometric transactions, banks may charge lower interchange and thereby may allow customers to pay lower interchange fees.

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ROLE OF ADVANCED COMPUTER SCIENCE AND INFORMATION TECHNOLOGY IN DATA SCIENCE

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ABSTRACT
The most successful person is the one who has the best information and the ability to apply it effectively. This remark summarizes the business of information technologies in the context of generation, storage, processing and use of information. Today, cutting-edge technologies such as computers, software and artificial intelligence, fiber optics and networking have an immense impact on information technology. Among the many applications of information technology, three of particular importances are traditional telephony, mobile cellular telephony, and data processing and communication. Advancement in information technology, affect many industries and society as a whole.

This research article discusses the effect of advanced computer science and information technology in the context of data science.

Keywords: E-Commerce, Data Science, Machine Learning, Data Analytics, SAS, SQL, Python, Exploratory Data Analysis, Confirmatory Data Analysis.

I. INTRODUCTION
In the past few decades there has been great revolution in computing and communication technology. One can book a movie ticket, shop online, transfer money via different commercial websites on a single click. Such a progressed transformation is due to advances in handy devices, digital media and geo-based technology. Such multi-channel shopping revolution has put the customer in control, convincing the retailers to look for a single, seamless approach that lets them interact with their customers anytime and anywhere, across any and all channels. E-commerce companies have now turned to Data Science for focused customer group targeting and evaluating campaign strategies., E-commerce companies are greatly using data science to push the customers to the wide range of products & sell it as per customer's purchasing power and concern. Use of Data Science plays an important role in tracking the entire journey of a customer, from entry to exit on a particular commercial website. An average online shopper may not realise that every click is being monitored and that all purchases being made are captured from beginning to end. Due to this the customers get easily divided into different sectors based on the combination of their purchase patterns and demographic details . This not only provides an interactive and richer experience to customers, but also improves the retailer's ability to increase sales through cross-sell and up-sell.

II. WHAT IS DATA SCIENCE?
Data science, also known as data-driven science, is an interdisciplinary field about scientific methods, processes, and systems to extract knowledge or insights from data in various forms, either structured or unstructured. Data science is a "concept to unify statistics, data analysis and their related methods" in order to "understand and analyze actual phenomena with data". It employs techniques and theories drawn from many fields within the broad areas of Mathematics, Statistics, Information Science and Computer Science.

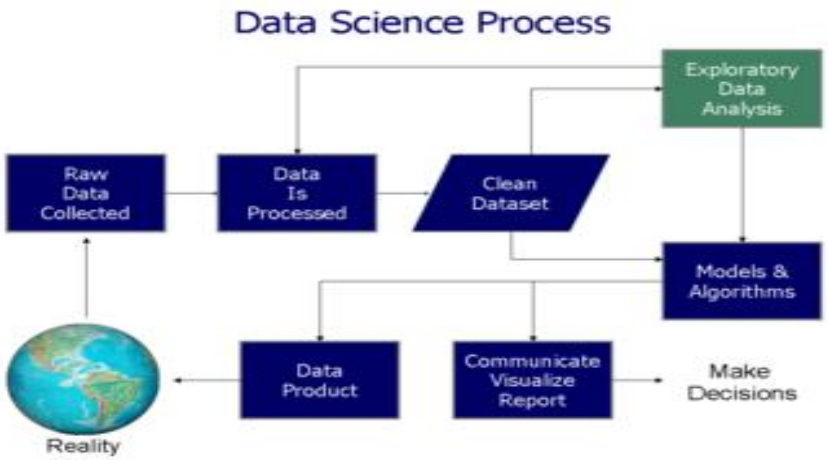

Fig.1: Data science process flowchart -"Doing Data Science", Cathy O'Neil and Rachel Schutt, 2013

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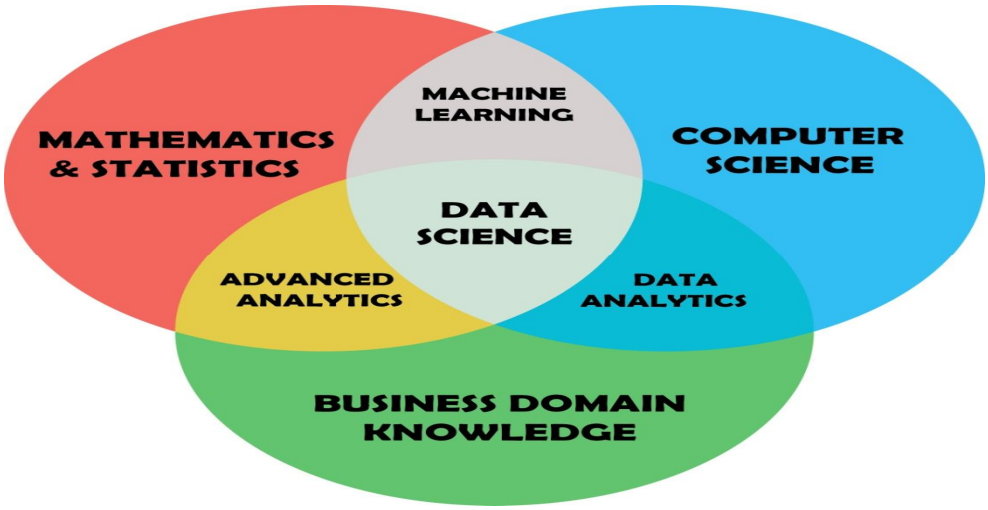

Fig. 2 : Data Science as in Venn Diagram

The above venn diagram elaborates Data Science as the combination of fields such as Computer Science, Mathematics and Statistics .The domain knowledge about the particular business also plays vital role in Data Science. Machine learning and Data Analytics are the blends of aforesaid fields.

• Machine Learning

The term machine learning means the automatic detection of significant patterns in data. Since last couple of years it has become a common implement in almost any task that requires essence of information gathered from large data sets. The search engines like Google, Yahoo are nothing but machine learning based technologies which are used to bring us the best results by placing worthwhile advertisements. The anti-virus software are also machine learning based technologies which filter our email messages, credit card transactions are secured by a software that learns how to detect frauds. Digital cameras learn to detect faces and voice commands given by us are recognized by intelligent personal assistance applications on smart-phones . The accident prevention systems in cars are built using machine learning algorithms. Machine learning is also widely used in scientific applications such as bioinformatics, medicine, and astronomy. Thus Machine Learning tools give us programs with the ability to "learn" and adapt.

• Data Analytics

Data Analytics is the science of inspecting raw data with the purpose of locating patterns and drawing inferences about the information by applying an algorithmic or mechanical process to derive insights. Data analytics methodologies consists of two types of techniques :

i) Exploratory Data Analysis (EDA) - It is applied to find patterns and relationships in data.

ii) Confirmatory Data Analysis (CDA)- It involves use of various statistical techniques to determine whether the claims stated about a data set are proper or not.

An eminent statistician John W. Tukey says- "EDA is often compared to detective work, while CDA is akin to the work of a judge or jury during a court trial"

III. APPLICATIONS OF DATA SCIENCE

• Web browsing

The web search engines like Google, Yahoo, AOL, Ask, Bing etc. deliver the best results for our online search queries in fraction of seconds using the data science algorithms.

• Targeted Digital Advertisements

Traditional advertising is now well complimented by the Digital advertising / marketing field due to effective use of Data Science. Display banners & advertisements on various websites and social media sites, digital bill boards at airports, are decided by use of data science. This has significantly helped to increase Click Through Rate (CTR) of digital advertisements. This is the reason why one sees ads of job/ immigration opportunities while his/her friend sees ad of kitchenware products in the same place at the same time.

• Recommender Systems

A lot of companies like Amazon, Twitter, Google Play, Netflix, LinkedIn have aggressively used this system to promote their products / suggestions in accordance with user's interest and relevance of information. The recommendations are made based on previous search results of a user.

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• **Image Recognition**
Social media websites automatically helps to tag your friends when you upload your photos there. Such tagging is done using Image Recognition .It also gives you a suggestion to connect & find new friends through mutual networks. This automatic tag suggestion feature uses face recognition algorithm. Similarly, while paying or transferring money, one can scan a barcode or QR code in web browser using mobile phone. It uses image recognition.

• **Airline Route Planning**
Airline Industry across the world is known to have heavy losses which are attributed to various reasons. Maintaining occupancy ratio and operating profits. High fluctuation in air fuel prices and need to offer heavy discounts to customers have further made the situation worse. Use of data science has tactically provided the solution and areas of improvements. Now using data science, the airline companies can predict flight delay, decide which class of airplanes to buy, whether to directly land at the destination, or take a halt in between, decide the air fares based on passenger density on a given route and effectively drive customer loyalty programs etc.

• **Fraud and Risk Detection**
Data Science is also applied in Finance sector. Finance companies were losing their profits because of amount overdue by customers and losses every year. However, they had a lot of data which were collected during the initial paper work while sanctioning loans. They decided to practise data science in order to liberate them out of losses. Hence banking companies learned how to collect the data via customer profiling, their past expenditures and other essential variables to analyze the probabilities of risk and default. Moreover, it also helped them to push their banking products based on customer's purchasing power.

Apart from the applications mentioned above, data science is also used in Marketing, Finance, Human Resources, Health Care, Government Policies and every possible industry where data gets generated. Using data science, the marketing departments of companies decide which products are best for Up selling and Cross selling, based on the data related to customer's choice. In addition, predicting the wallet share of a customer, which customer is likely to churn, which customer should be kicked for high value product and many other questions can be easily answered by data science. Finance (Credit Risk, Fraud), Human Resources (which employees are most likely to leave, employees performance, decide employees bonus) and many other tasks are easily accomplished using data science in these disciplines.

IV. SKILL SET AND SCOPE FOR BEING A DATA SCIENTIST

Data Scientist have a huge scope in India, for experienced as well as fresher who want to make a career in data science. These are some of the top Indian companies that hire data scientists –

Service-based company –
Fractal Analytics, Mu Sigma, Citi, HCL, Uber, Goldman Sachs, IBM, CapGemini , Accenture.

Product-based company- Amazon, Flipkart, Paytm, Haptik etc.

The skills needed to be data scientists:

- In-depth knowledge of SAS and/or R. For Data Science, R is generally preferred.
- Python coding: Python is the most common coding language that is used in data science along with Java, Perl, C/C++.
- SQL database/coding: Preferred candidates can write and execute complex queries in SQL.
- Working with unstructured data: It is extremely important that a Data Scientist is able to work with unstructured data—whether from social media, video feeds, audio or other sources.

V. CONCLUSION

Today, developments in Information Technology have changed the socio-economic status of the society in terms of flexibility in computing, communication and business. It has generated n number of job opportunities in the fields of computer science as well as E-Commerce. People with exact domain knowledge and proper skill set regarding a particular job profile gets absorbed immediately with impressive salary structure. This indicates a positive sign to the growth of Indian Economy.

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A SURVEY OF POSSIBLE ATTACKS ON TEXT & GRAPHICAL PASSWORD AUTHENTICATION TECHNIQUES

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ABSTRACT
The process of verifying a user's identity is typically referred to as user authentication. Information Security and Authentication is now a basic issue in the world. Gradually end users of Internet improved. General uses of the Internet are searching, e-mail, social networking, e-banking, e-governance, etc. User Authentication is the process of determining whether the user should be authorized to access information or not. Alphanumeric or text passwords are mostly used mechanism for authentication. But these are susceptible to a dictionary, brute force and guessing attacks. Resolution is to use Graphical Password, is more secure, reliable technique for authentication. Graphical passwords allow users to remember pictures/images instead of text which helps them to remember the passwords easily. But these are also vulnerable to the dictionary, brute force and guessing attacks. In this paper, Text-based password and graphical password techniques for Authentication are just discussed, and possible attacks on them are summarized.

Keywords: Phishing, bots, OCR, PIN

INTRODUCTION

Passwords are the way used most frequently for authenticating computer users, but this method has often shown insufficient in preventing unauthorized access to computer resources when used as the only means of authentication. In public and private computer networks including the Internet, authentication is done through the use of Login IDs (user name) and passwords. User authentication means that allows a device to verify the identity of someone who connects to a network resource.

NATURES OF AUTHENTICATIONS

There are three basic methods for authentication –

a. Knowledge-based authentication

b. Token-based authentication

c. Biometric-based authentication [7,11,6].

For authentication, Knowledge-based authentication technique uses something the user knows (e.g., text passwords, graphical passwords, etc.), Token-based authentication technique uses something the user has (e.g., smart card) and Biometric based authentication technique uses who you are? Single, measurable characteristic of an individual (e.g., Iris, fingerprint) [15,5].

Among the three techniques, the knowledge-based technique is widely used for authentication because it is well known to all areas of users and easy to implement.

Token-based and Biometric based authentications are more secure than knowledge-based authentication but, those techniques have their limitations. In the case of Token based authentication, the token should always be carried for locating the service, and there is a possibility of missing the token or the token being stolen by somebody. To bypass the usage of stolen tokens, an expansive token based authentication uses PIN (Personal Identification Number) in addition to tokens for authentication. Biometric authentication is not but adopted for all applications because of the expenditure involved in maintaining the special devices.

In common, the three techniques can be used for various types of applications based on the security requirements. In the present situation, every user has to maintain the number of user accounts either for office work or private work. Biometrics or Tokens can be used for applications with high-security requirements, and knowledge-based authentication can be used for other applications.

The traditional method used for knowledge-based authentication is textual passwords.

1. TEXTUAL PASSWORDS

A textual password is a conventional method used for user authentication. It remains the most widely used method because it is simple, inexpensive compared to other techniques and easy to implement [8,2]. Users are likely to select short and straightforward passwords to remember easily. It is effortless for the interloper to break these simple passwords. Random and lengthy passwords are hard to remember. The main problem with

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the traditional textual method is that passwords selected for many applications are either weak and memorable or secure but difficult to recognize [13,9]. Some users even use the name of the system as password [12]. The lengthy passwords provide more security but, it is difficult to remember several such long passwords. It is a tendency that users use the same password for many accounts to reduce the load on the memory which makes interloper's job easy [1,3]. It is easy to capture the textual password either by shoulder surfing or by malware. So the textual passwords are vulnerable to dictionary, (personalized) guessing and capturing attacks. To address the problems of textual passwords, Graphical passwords are introduced.

2. GRAPHICAL PASSWORDS

Graphical passwords can be categorized into three methods recognition based; recall based and cued recall based on the cognitive load on the user in retrieving the passwords from memory [16, 15, and 6].

Recognition based techniques are useful in memorability; users can remember and recognize the passwords successfully. The server has to maintain the large number of images or faces and for every round of authentication server has to prepare the challenge set for every user. Due to the limited number of images in the challenge set and few rounds used for authentication, the password space is less in recognition based techniques and turn these are vulnerable to password guessing attacks. The Password capturing attacks require multiple logins to get the complete portfolio of the user. The password creation time and login times are more, compared to recall based techniques.

Recall based techniques have large password space and are secure against password guessing attacks. There is no need to maintain a large number of images or faces by the server and no requirement of forming the challenge set. The Password creation and login times are less than the other two techniques. The recall based techniques are vulnerable to password capturing attacks because in a single session or by only observation the intruder may get the password. The password complexity depends on the number and the length of the strokes in the password. But it is difficult to remember the order of the multiple strokes in random shape passwords. Drawing a password with the mouse is inconvenient.

Cued recall systems are useful in memorability. Cues help the users to retrieve the passwords from memory without writing anywhere. The security of passwords in cued recall system depends on the image selected for authentication. Images will be having the limited number of clickable points for password selection which reduces the password space, and in turn, passwords are vulnerable to password guessing attacks. These are vulnerable to password capturing attacks because entire password or user's portfolio will be displayed for every login which can be observed by the intruders. Password creation and login times are more compared to recall systems.

II. LITERATURE REVIEW

Security of passwords can be specified in relations of resistance to various types of attacks. An attack is an attempt to deed vulnerabilities in the passwords.

Attacks can be categorized into password guessing attacks and password capturing attacks. Password guessing attacks include brute force, dictionary and (personalized) guessing attacks. Password capturing attacks include shoulder surfing, hidden camera, social engineering and malware attacks. Password guessing attacks has been resisted by having a large password space and strong passwords. Password capturing attacks can be resisted by introducing authentication techniques which depend on the secret entered by the user as well as the login interface. Security may be increased by adding multiple rounds in the authentication technique at the cost of usability. Though it is desirable to have higher values for security and usability, due to the tradeoff between them, an optimal solution will be selected depending on the application.

I. ATTACKS ON TEXT AND GRAPHICAL PASSWORD

A. Brute Force Attack

Success of this attack depends on the set of predefined values. If it is larger, it will take more time, but there is better probability of success. However, GUA proves to be more resistant to brute force attacks since the attack software needs to produce all possible mouse motions to imitate passwords especially when trying to recall the graphical passwords [4].

B. Dictionary Attack

This creative attack uses words found in the dictionary to check if any were used as passwords by the users. Many users use weak passwords which make it easier for attackers to guess the password using the graphical dictionary attack [10]. Because of graphical password method of using mouse input type recognition, using the dictionary attack on GUA would be a waste of time. Dictionary attacks against recognition and cued-recall graphical password systems require more effort than against text passwords or recall-based graphical

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passwords, since attackers must first collect one or more of a set of images. Images referred from one system Images cannot be used in attacks for another system, unless both systems use the same image set. During the recall, it is more difficult and complicated to use the automated dictionary method to produce all possibility of a single user click of an image than a text-based attack [10,14,17].

C. Spyware Attack

This attack uses an application installed on a user's computer to record raw data during mouse movement or key press. This form of malware secretly store this information and then reports back to the attacker's system. With some exceptions, these key-loggers and listening spyware are unproven in identifying mouse movement to crack graphical passwords. Even if the change is recorded, it is still not certain in identifying the graphical password. Other information is needed for this type of attack namely window size and position as well as the timing [18].

D. Shoulder-Surfing Attack

As the name implies, passwords can be identified by looking over a person's shoulder. This type of attack is more common in crowded areas where it is not uncommon for people to stand behind another queuing at ATMs. There are also cases where the ceiling and wall cameras placed near ATMs are used to record keyed pin numbers. The best way to avoid pin numbers being recorded or remembered by attackers is to adequately shield the keypad when entering the pin number [19,20].

E. Guessing attack

As many users try to select their password based on their private information like the name of their pets, passport number, family name and so on, the attacker also attempts to guess passwords by trying these possible passwords. Password guessing attacks can be broadly classified into online password guessing attacks and offline dictionary attacks. In an online password guessing attack, an attacker tries a guessed password by manipulating the inputs of one or more visions. In an offline dictionary attack, an attacker exhaustively searches for the password by managing the data of one or more visions.

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II. Popular tools for brute-force, dictionary and cryptanalysis attacks:

S. N.	Tool	Description	Website
1	Aircrack-ng	Popular wireless password-cracking	http://www.aircrack-ng.org/
2	John the Ripper	Automatically detect the type of hashing used in a password	http://www.openwall.com/john/
3	Rainbow Crack	Generates rainbow tables for using while performing the attack.	http://project-rainbowcrack.com/
4	Cain and Abel	cracking passwords by performing brute-forcing attacks, dictionary attacks, and cryptanalysis attacks	http://www.oxid.it/cain.html
5	L0phtCrack	Known for its ability to crack Windows passwords.	http://www.l0phtcrack.com/
6	Ophcrack	cracks Windows password by using LM hashes through rainbow tables	http://ophcrack.sourceforge.net/
7	Crack	Password-cracking tool for the UNIX system.	http://www.crypticide.com/alecm/software/crack/c50-faq.html
8	Hashcat	Be the fastest CPU based password cracking tool, supports various hashing algorithms LM Hashes, MD4, MD5, SHA-family, Unix Crypt formats, MySQL, Cisco PIX. It supports Brute-Force attack, Combinator attack, Dictionary attack, Fingerprint attack, Hybrid attack, Mask attack, Permutation attack, Rule-based attack, Table-Lookup attack and Toggle-Case attack.	https://www.hashcat.net/
9	SAMInside	It supports various attacking methods including Mask attack, Dictionary attack, Hybrid attack and Attack with Rainbow tables.	http://www.insidepro.com/
10	DaveGrohl	This tool supports both dictionary attacks and incremental attacks	https://github.com/octomagon/davegrohl
11	Ncrack	Password-cracking tool for cracking network authentications	https://nmap.org/ncrack/
12	THC Hydra	Crack passwords of network authentications	https://www.thc.org/thc-hydra/

CONCLUSION

In this paper Text & Graphical based authentication techniques are discussed also discussed the possible attacks on these authentication techniques .There is scope for future researches to develop new authentication techniques which avoids above possible attacks.

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BIG DATA & BUSINESS ANALYTICS USING HADOOP

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ABSTRACT
This paper concentrates on the big data analysis,techniques,security and its applications using various keys such as hadoop,map & reduce, &security.The large sized data-sets need to be handled in efficient way.To achieve this goal various systems and companies use mainly Hadoop as a tool to manipulate the big data.Most IT companies are emerging to use it.Big Data Analytics examines large amount of data to uncover the hidden patterns,correlations and other insights.With today's technology it's possible to analyze your data and get answers from it almost immediately-an effort that's slower and less efficient with more traditional business intelligence solution's.The volume of data with the speed it is generated makes it difficult for the current computing infrastructure to handle big data.In this research paper it suggests various methods for catering to problems through map-reduce framework over hdfs.Understanding the whole data.Addressing the data displaying meaningful results are the main aims of big data applications.

Keywords: Big data, Hadoop,new products & services,Security,Applications

1.1 INTRODUCTION

The concept of big data has been around for years,most organizations now understand that if they capture all the data that streams into their businesses, they can apply analytics and get significant value from it.But even in 1950's,decades before anyone uttered the term "big data,"businesses were using basic analytics to uncover insights and trends.Big data analytics helps organizations harness their data and use it to identify new opportunities.That in turn leads to smarter business moves,more efficient operations,higher profits and happier customers.IIA Director of Research Tom Davenport interviewed more than 50 businesses to understand how they used big data.

3 LAYERED ARCHITECTURE

Application layer

↓

Computation layer

↓

Infrasrtucture layer

Byte

Kilobyte

Megabyte

Gigabyte

Terabyte

Petabyte

Future considerations-zeta-byte

BIG data is emerged due to social media and many other sources.FACEBOOK daily produces 500 TB of data.To handle such type of data Hadoop system is used. Big Data system architecture consist of 3 layers - Application Layer consisit of Query,Clustering,Classification,recommendation which is used to process,analyze the query through classification. Computing Layer consist of Integration,Management,Programming model which is considered through file-system, SQL. Infrastructure Layer consist of Big Data came into picture in 2004.Big data is the data that exceeds the capacity of existing database system.

Big Data is classified into various formats - Bit Storage of data,computation of data-sets and the holistic network.

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THE BIG DATA CONCEPT IS SIMILAR TO "BIG BANG OF UNIVERSE"

Through 1990s,the primary IT challenge for most organizations was enabling and recording more faster transactions for business productivity.Today in the age of internet more focus is on faster delivery of information(eg.documents,files,sensor data streams,gene sequences etc..).In today's IT marketplace,Big data is often used shorthand for a new generation of technologies.

The network (both within the data-center and across the WAN)will play a critical role in enabling quick sustainable expansion.Big data solutions aim to provide data storage and querying functionality for situations such as this.They offer a mechanism for organizations to extract meaningful,useful,and often vital information from the vast stores of data they are collecting. BIG DATA IS GROWING 60% PER YEAR.IDC'S DIGITAL UNIVERSAL STUDY PREDICTS THAT BETWEEN 2009-2020 THE DIGITAL DATA WILL GROW 44-FOLD TO 35ZB PER YEAR.

BIG DATA

RDBMS

STORAGE

HADOOP

NETWORK INTELLIGENCE

In terms of storage it has the ability to carry diverse traffic,including fibre channel,fcoe,iscsi,nas over a ethernet connection.It provides scalability.

Scalability Multenant architecture

Machine-to-machine traffic

2.1 HADOOP

.Map Phase

.Reduce Phase

Overview of Hdfs architecture-

Application process

Client code

Name node process

rpc

HOLISTIC NETWORK

-Ability to minimize duplicate costs and support workload on network

-Centralized big data projects

-DAS<SAN<NAS

rpc

application code

Client code

Streaming protocol

rpc

Data node processes

Big data will require 10GbE-40GbE switch capacity,10GbE server connectivity.

BIG DATA

Application click stream social

Virtualized event data

Cisco unified fabric

Job Tracker-keeps track of all process and assign task to particular node.Hadoop was developed by Google's Map reduce that is a software framework where the application break down into various parts or chunks.Hadoop file system mainly consists of

.File System

.Programming(Map reduce)

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2.1.1 MAP-REDUCE

Map-reduce is the heart of hadoop.Allows massive scalability across hundreds of services in hadoop cluster. It provides the capabilities you need to break big data into manageable chunks, process the data in parallel on distributed cluster and then make data available for user consumption or additional processing.

Mapper Function-(shuffling-splits /mapping)

The mapper is applied to every input key-value pair to generate an arbitrary number.It maps the key-value pair.

Map: (a1,b1)->[(a2,b2)]

Reduce Function-(shuffling,reducing)

Reduce function takes the mapper function as input and splits the data-set into various pairs such as a1->b1, a2->b2 etc….

Reduce:(a2,[b2])->[(a3,b3)]

Data analysis tools such as hadoop, map-reduce data minning, data retrieval are efficient ways to process large amount of data used in various companies that require large data-sets.

2.1 SECURITY

Security is the major concern related to Big Data. Security threats that can happen to Big data are-

-DATA from social media

-Facebook,twitter,whats-app,etc..

-log files,system files,temp files

-transactional data

-Hard problem,Trojan Horse Attack,Trap Door problem.To overcome all these problems we need parallel remedies to solve it.

4 TYPES OF BIG DATA THAT REALLY AID BUSINESS

.perspective- Reveals what actions should be taken

.predictive-what might happen?

.diagnostic-look at past reference

.descriptive-what is happening?

Hadoop is like a miracle for large Mnc's to small startup's.Helps business store & process massive amount of data.

8 big trends in bug data analytics-

Analytics in cloud

The new enterprise data operating system

Big data lakes

More predictive analytics

Sql on hadoop: faster & better

More better no sql

Deep learning

In-memory analytics

4.2 ENCRYPTION & DECRYPTION

Encryption a process of encoding a message.

Decryption a process of decoding a message.

Basic opeartions-

Plaintext to ciphertext- C=E(P)

Ciphertext to plaintext- P=D(C)

Requirement-P=D(E(P))

Plaintext->encryption->ciphertext->decryption->origi nal plaintext

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3.1 NEW PRODUCTS AND SERVICES

With the ability to gauge customer needs and satisfaction through analytics comes the power to give customers what they want.Some companies are unprepared to handle big data.How big data companies handle data?-For every data-item a strategy is determined prior to system storage by data governance committee and security strategy as a practice within the organization. Big data in central banking - The data is recieved from customer and then it is classified in different sections and evaluated parallely.

4.1 APPLICATIONS

Access network

Gateway

ISP1

Internet Backbone

Intra-Inter network

Intra-center network

ISP2,WIFI AP,Sensor big data

Banking & security

Communication,media &entertainment

health-care center

education

government-social security admin(SSA)

Food & Drug Admin(FDA)

5. CONCLUSION

There is a potential for marketing faster advancements in scientific discipline for analysing the large amount of data.The technical challenges are most common across the large variety of application domains,therefore new effective cost and faster methods must be implemented to anaylse the big data.Other different components of hadoop are apache pig,H-Base, hive,big top,oozie.

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DESIGN OF MINIMAL STATES DETERMINISTIC FINITE AUTOMATON USING EVENT DRIVEN PROGRAMMING PLATFORM : A GRAPHICAL REPRESENTATION APPROACH

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ABSTRACT
In the field of algorithm design or framework, design Finite state machine (FSM) plays a significant role. In addition, the Finite state machine technique is applicable in many of other fields like Pattern Recognition, Natural language processing, Image processing etc. The Deterministic Finite Automaton also represents the Finite state machine, which accepts the infinite number of strings. These strings are accepted on the finite number of states, sometimes the group of states is behavior similarly so this states can reduce by applying the specific method. The given Research paper is Proposed Minimal states DFA Graphical representation using OpenGL platform. The current Research paper has categorized into III different sections. In Section I the Introduction of Minimum states Deterministic Finite Automata and OpenGL Programming Platform has mentioned, in section II the Methodology for Graphical Representation of Minimum states Deterministic Finite Automata has discussed and at last, in Section III the Conclusion based on proposed methodology is mention.

Keywords : Finite State Machine (FSM), Deterministic Finite Automata, OpenGL

I. INTRODUCTION

a. MINIMUM STATE DETERMINISTIC FINITE AUTOMATON

A deterministic finite automaton (DFA) considered as a basic computational device. It is also known as deterministic finite acceptor and deterministic finite state machine. Deterministic finite automaton is a finite state machine, which accepts/reject the string of symbols, apply the procedure on it and then produces a unique computation for each input string. It considered as deterministic because it refers to the uniqueness of the computation. Deterministic Finite Automation represented by 'M', which has five different tuples.

$M = (Q, \sum, \delta, q0, F)$

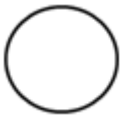
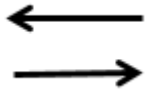
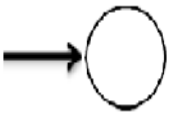
Q = It is a finite non-empty set of States.

$\sum$ = It is a finite set of input symbols.

δ = It is transition function that takes a state and an input symbol and returns a state $\delta : Q \times \sum \rightarrow Q$

q0 = It is a start state in where q0 is a element of set Q.

F = It is a non-empty set of final states where F is an element of set Q [1].

Sr. No.	DFA Graphical Notation	Meaning
1.		**States :** The circle is represent the States in DFA
2.		**Transition arrow:** With the help of this transition arrow, a transition-taking place from one state to another state, which carries any, inputted values like alphabet, numbers or any special characters.
3.		**Initial state or start state:** Initial state or start state is denoted by Transition arrow and state together for represent the starting of the DFA.

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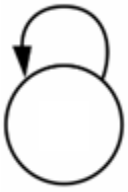
4.		**Final state :** Double circle denotes the Final state in DFA. It helps to show the acceptance of the string which is also called as an ending state.
5.		**Self-looping state:** Self-loop denotes that the state is connected to itself and form the single or multiple transitions.

Table -1: Graphical Notation of DFA

Table 1. is deposit the different graphical notation that used for drawing the Deterministic finite automaton and Minimized Deterministic finite automaton [2].

Minimization of DFA is the process of converting a given deterministic finite automaton into an equivalent DFA that has minimum number of states. Minimizing a DFA increases efficiency by reducing the number of states. It can also check whether two States are behaving similarly or not on the basis of final and non-final states pair, if they satisfied the condition behaving similarly based on final and non-final states then merge these two states and represent the final minimized Deterministic finite automaton.

b. OPENGL PROGRAMMING PLATFORM

OpenGL (Open Graphics Library) is an application to render 2D and 3D graphics images. OpenGL is a software interface that allows a programmer to communicate with graphics hardware. OpenGL consists of a specific set of functions. It describes these set of functions and the precise behavior that they must perform. All these functions can be implemented to draw 2D or 3D graphics. OpenGL's basic operation is to accept elements such as points, lines, and polygons and convert them into pixels. Also for drawing, it can accept the dimension of geometrical shapes from the end user. OpenGL is widely used in CAD, virtual reality, scientific visualization, data simulation and video game development.

It is worked on the three libraries of OpenGL these are Basic GL which is responsible for handling the graphical primitives shapes, GLU is Graphic library utility which is responsible for handling the high-level functions, and third is GLUT i.e. Graphic library utility toolkit which is responsible for managed the all input/output interaction as well as window-related functions. OpenGL is device independent application program interface (API) which gives the more strength to do the interactive task[3].

II. METHODOLOGY FOR GRAPHICAL REPRESENTATION OF MINIMIZED DFA

In this section of Research paper, the methodology of minimized deterministic finite automaton is described. The whole methodology is categorized into three sections. In the first section the acceptance of input like number of states, number of input symbols, start state, final state and respective transitions are accepted also in this section the whole transition table with the respective start, final states, and transitions table is displayed. The second section of the methodology is the responsible for the calculation of the minimized state based on previous steps transition table. In this section, the pair of states is created, like (Qi, Qj) then after this these pair are checked whether they are satisfied the condition of ($Qi \in F$) and ($Qj \notin F$) or vice versa for all the pairs of transition table of the Deterministic finite automaton. If it is satisfied, the condition then marked as '1' if not then marked as a '0'.

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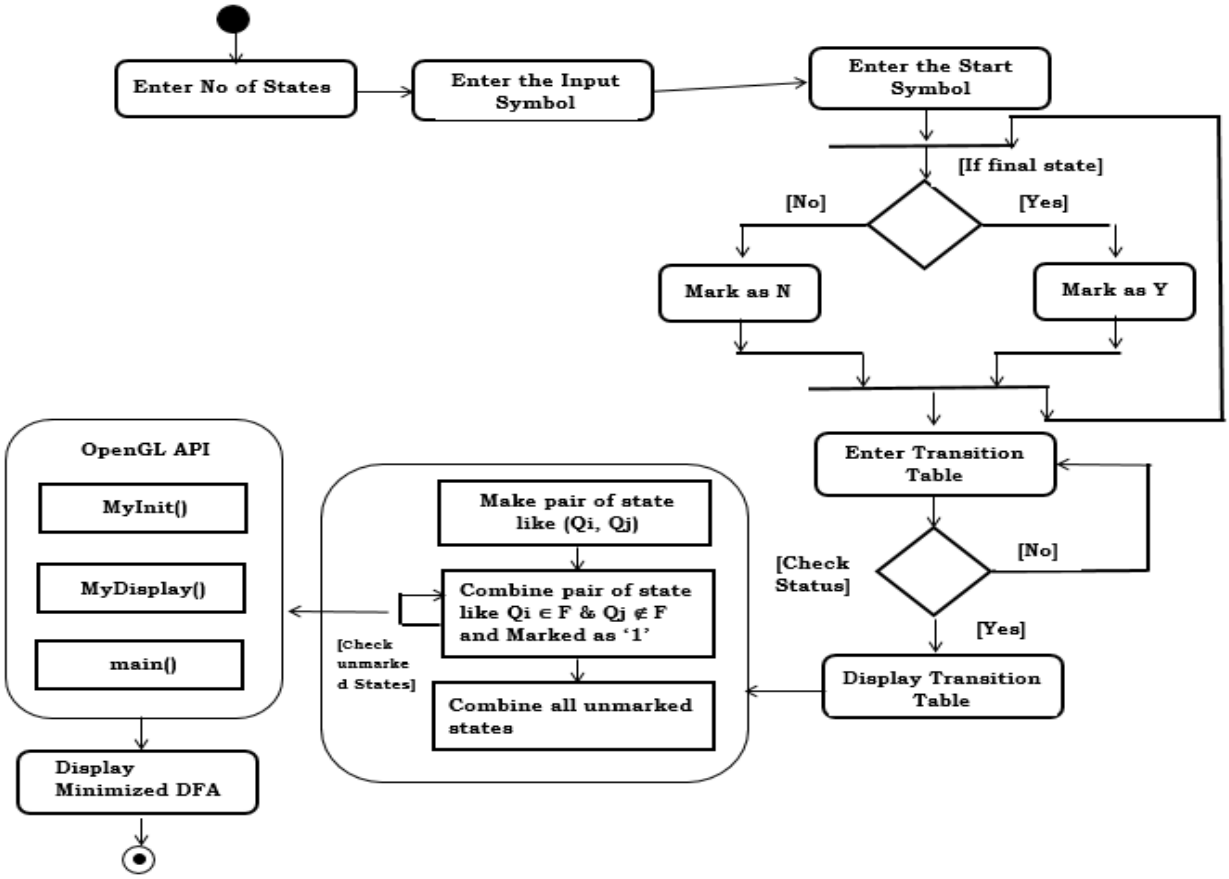

Fig. 1: Proposed methodology of minimum state DFA

At the end of this section combined all the states pair whose are marked as '0' and merged them it considers as both states are behaving same and stop the calculations and pass the control to the third and last section of the methodology. In this section, all control of the merged and individual states are collected and based on the transitions the appropriate geometrical shape is selected. Based on the operation this control is transfer to the OpenGL API sub-functions like MyInit(), MyDisplay() is executed and combine these function in main() function. The Diagram show the proposed methodology of the minimum state deterministic finite automaton.

III. CONCLUSION

As described in the proposed research paper, the Deterministic finite automaton is used in various fields, like pattern recognition, image processing, natural language, machine learning and related fields. There may be chance that Deterministic finite automaton based methods unnecessarily use the large storage space and which states behave similarly. Therefore, by applying minimizing state deterministic finite automaton approach, it helps to achieve the objective of space storage reduction and smooth working without any conflicts. This research paper also focuses on the methodology of a minimized state Deterministic finite automaton and OpenGL, which is, represented the DFA graphically on the current window.

The current phase of research illustrates that the Graphical representation of the minimum state Deterministic Finite Automaton will perform well. It could have a scope for improving the present system. Hence, an effective and uncomplicated methodology for graphical representation of minimum state Deterministic Finite Automaton has been elucidating.

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DEVELOPING EASY APPROACH FOR EXECUTING OPTIMAL BINARY SEARCH TREE (OBST) WITH MINIMUM COST ANALYSIS

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ABSTRACT
There are various methods to trace standard algorithm of OBST but to trace standard algorithm steps are lengthy and it becomes time consuming process while calculating minimum cost of the tree. The Proposed approach computes the minimum cost of the Optimal binary Search Tree (OBST) easily from the computation table itself which is based on standard algorithm without performing calculations manually stepwise mention in the algorithm. This approach is easy to calculate minimum cost of OBST and finding root of the OBST from last calculation using standard algorithm by making some observations and applying some easy steps to build a calculation table which is in shape of ɛ (Reverse L). This method gives a tree optimally with simple way in minimum time.

Keywords: Optimal Binary Search tree (OBST), cost, root, computation, minimum

INTRODUCTION
For searching a word from online dictionary and for every required word there is need of looking up in the dictionary then it becomes time consuming process. To perform this look up more efficiently it is necessary to build Binary Search Tree (BST) of common word as key elements. Again to make this BST efficient by arranging frequently used words nearer to the root and less frequently words away from the root. Such a BST makes our task more simplified as well as efficient. This type of BST is called OBST.

Tree with minimum cost is called as OBST. Its implementation concept used in Symbol table. An online dictionary heavily depends on the facilities which are given by optimal binary search trees. As the number of users increases by whom dictionary is used then it assign weights (frequencies) to the corresponding words according to their frequency. This approach is useful to provide quick answer by which search time gets decreases whenever storing word into binary search tree (BST).Normally in Word Prediction there is a problem of guessing next word in a sentence which is being entered and change this prediction as the word is entered. Word prediction implies both 'Word Completion and Word Prediction'. Word completion is defined as provide a list of words to the user after a letter has been entered by the user. While Word Prediction is defined as providing a list of probable words to the user after a word has been entered or selected which is based on previous word rather than on the basis of letter. It is easy to solve the problem of Word Completion since knowledge of some letters provides the predictor an opportunity to eliminate many of irrelevant words.

Now a day's Word prediction application are becoming increasingly popular which is implemented with the help of OBST through which word having highest frequency nearer to the root means on the top side of the dictionary or symbol table for example when you start typing a what's App message on your mobile or when you start typing any query in Google search a list of probable entries almost instantly appears because of this one can easily understand or getting idea what exact word required for their search which helps the user to avoid grammatical mistakes which increases productivity and text entry.

RELATED WORK
In routine method if user trace standard algorithm manually step by step to calculate minimum cost of optimal binary search tree then it becomes time consuming process which made the algorithm so difficult to trace and construct calculation table to calculate cost, weight and root of the tree. In some methods to calculate these values there is a use of 3 different tables for weight (frequency), cost and root. Its results in wastage of calculation time. In following algorithm frequency of particular Input symbol or a keyword is also considered.

ALGORITHM OF OBST
OBST(pi,qi,n)

Given n distinct identifiers $a_1<a_2<$ ------- $<a_n$ and probabilities $p_{i,L} \leq i \leq n$ and $q_{i,0} \leq i \leq n$ this algorithm computes the cost of optimal binary search trees T_{ij} for identifiers a_{i+1},-----,a_j.It computes r_{ij}, the root of T_{ij}. W_{ij} is the weight (frequency) of T_{ij}

for i:=0 to n-1 do

a) $(w_{ii},r_{ii},c_{ii}):=(q_i,0,0)$ //initialize

b) $(w_{i,i+1},r_{i,i+1},c_{i,i+1}):=(q_i+q_{i+1}+p_{i+1},i+1, q_i+q_{i+1}+p_{i+1})$ //optimal trees with one node

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End loop

$(w_{nn},r_{nn},c_{nn}):=(q_n,0,0)$

for m:=2 to n do //find optimal trees with m nodes

for i:=0 to n-m do

a) j:=i+m

b) $w_{ij}=w_{i,j-1}+p_j+q_j$

c) k:= a value of L in the range $r_{i,j-1} \le L \le r_{i+1,j}$ that minimizes $c_{i,L-1}+c_{L,j}$

d) $c_{ij}:=w_{ij}+c_{ik-1}+c_{k,j}$

e) $r_{ij}:=k$

End loop

End loop

End OBST

If user trace algorithm manually which is mention above to calculate minimum cost of OBST then it is lengthy because there is repetition using loops and while executing loops if user made any mistake in incrementing counter then all the calculations will go wrong. One more statement is difficult to understand in above algorithm is as follows

c) k:= a value of L in the range $r_{i,j-1} \le L \le r_{i+1,j}$ that minimizes $c_{i,L-1}+c_{L,j}$

From this user cannot decides value of k properly which is link with further statements.

PROPOSED WORK

Proposed work developing easy approach to construct table of calculations of Optimal Binary Search Tree and find out the OBST having minimal cost by applying some tricks on algorithm steps and using calculated values of first row for second row and so on from the table itself which saves calculation time means there is no need to refer the standard algorithm later. Following steps avoids repetition by the loops.

PROPOSED STEPS TO COMPUTE THE COST OF OBST

Consider n number of nodes and $a_1,a_2,a_3,$------,a_n which are the labels denotes the keywords in the given data and $p_1,p_2,p_3,$------,p_n and $q_0,q_1,q_2,q_3,$------,q_n are the probabilities. This data can be classified into the text keywords, individual characters or digits.

Steps to calculate Computation Table

1. While building a computation table for each row increment row(i) and column(j) number by 1 for each individual cell horizontally and for each column keep row number same and increment column number by 1 for each individual cell vertically. for example in first row (first cell is w_{00}, second cell is w_{11}……., last is w_{nn} horizontally) and in first column(first cell is w_{00},second cell is w_{01}……,last is w_{0n} vertically) and deduct one cell calculation from each row as mention in the computation table given below.
2. Calculate the weight (frequency), cost and root as from w_{00} to w_{nn},c_{00} to c_{nn} and r_{00} to r_{nn} in first row and assign values of q_0 to w_{00}, q_1 to w_{11} upto q_n to w_{nn} and in this row values of cost and root for every column assign to zero like table given below.

   $w_{ij},c_{ij},r_{ij}:=(q_i,0,0)$ (Initialize first row using this formula) in this i means row number and j means column number.

3. From first row we can easily calculate second row and assign values as follows.
   $w_{ij}=w_{ij-1}+p_j+q_j$

   $c_{ij}=w_{ij}$

   $r_{ij}=j$

   for example

   $w_{01}=w_{00}+p_1+q_1$

   $c_{01}=w_{01}$

   $r_{01}=1$

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4. For next row use following formulas till last row calculation which is single cell and this is optimal cost and from this we will obtain root value.

   $w_{ij}=w_{ij-1}+p_j+q_j$

   $c_{ij}=w_{ij}$+select value of k from above two root valuesof current c_{ij} which is going to be calculate and minimizes value of c_{ij}(calculate value after selecting k using this $\{c_{ik-1} + c_{kj}\}$

   r_{ij}=k that minimizes $c_{ij.}$

EXPERIMENTAL RESULTS AND DISCUSSIONS

Based on knowledge of proposed work OBST for textual word is going to be constructed by taking standard algorithm as base logic is rewritten in order to reduce repetition.

Ex.Let n=3 where nodes are (a_1,a_2,a_3)=(if,read,while) and probabilities are (p_1,p_2,p_3,p_4)=(3,3,1) and (q_0,q_1,q_2,q_3)=(3,1,1,1) .Initially we have $w_{ij}=q_i,c_{ij}=0$ and $r_{ij}=0$, $0 \leq i \leq 3$.

Soln:- Perform proposed steps to calculate minimum cost of OBST .

1.From step 1 it is clear that to calculate first row increment row number as well as column number by 1 horizontally means w_{00},c_{00} and r_{00} in first cell,w_{11},c_{11},r_{11} in second cell and so on upto w_{nn},c_{nn} and r_{nn} as per given in the table below.

$w_{00}=q_0=3$

$c_{00}=0$

$r_{00}=0$ and so on…..

2. For second row keep row number same and increment column number by 1 vertically and increment row and column number by 1 horizontally for each cell and deduct one cell from each row means perform calculation from w_{01} to w_{23} as mention in the table.

$w_{01}=w_{00}+p_1+q_1=3+3+1=7$

$c_{01}=w_{01}=7$

$r_{01=}1$

3. For third row

$W_{02}=w_{01}+p_2+q_2=7+3+1=11$

To calculate c_{02} select k first which minimizes value of c_{02}

Select value of k from from above two roots value of c_{02}

1.root r_{01}=1 means k=1 and assign r_{02}=1(k)

where {i=0,j=2 and k=1} calculate

$\{c_{ik-1} + c_{kj}\}$ means $\{c_{00}+c_{12}\}$=5

2.root r_{12}=2 means k=2 and assign r_{02}=2(k)

where {i=0,j=2 and k=2}calculate

$\{c_{ik-1} + c_{kj}\}$ means $\{c_{01}+c_{22}\}$=7

Take minimum from $\{c_{00}+c_{12}\}$=5 and $\{c_{01}+c_{22}\}$=7 that is 5 for c_{02}

$C_{02}=w_{02}+5 =11+5=16$ (5which minimizes c_{02})

$R_{02}=1$ means k (which minimizes c_{02})

Apply above step 3 to calculate rest of the cells upto last which is minimal cost of OBST as shown in the computation table.

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j → / i ↓	0	1	2	3
0	$w_{00}=3$ $c_{00}=0$ $r_{00}=0$	$w_{11}=1$ $c_{11}=0$ $r_{11}=0$	$w_{22}=1$ $c_{22}=0$ $r_{22}=0$	$w_{33}=1$ $c_{33}=0$ $r_{33}=0$
1	$w_{01}=7$ $c_{01}=7$ $r_{01}=1$	$w_{12}=5$ $c_{12}=5$ $r_{12}=2$	$w_{23}=3$ $c_{23}=3$ $r_{23}=3$	
2	$w_{02}=11$ $c_{02}=16$ $r_{02}=1$	$w_{13}=7$ $c_{13}=10$ $r_{13}=2$		
3	$w_{03}=13$ $c_{03}=23$ $r_{03}=1$			

Figure - 1: Computation Table

Root of tree $T_{03}$is $r_{03}=1$(i.ei=0,j=3,k=1) means root is a_1(if) and frequency means weight($w_{03}=13$) of root a_1 is highest than other nodes.

To decide left and right subtree node of root

To decide left subtree=r_{ik-1}

Right subtree=r_{kj}

Hence the left subtree is r_{ik-1}i.e $r_{00}=0$ means no left subtree and the right subtree is r_{kj}i.e $r_{13}=2$ means a_2(read), left subtree of a_2(i=1,j=3,k=2) is r_{ik-1} that Is $r_{11}=0$ means left subtree of a_2 is empty & right subtree of a_2(i=1,j=3,k=2) is r_{kj} that is $r_{23}=3$ means a_3(while) for a_3(i=2,j=3,k=3) left subtree is r_{ik-1} i.e. $r_{22}=0$ means empty and right subtree of a_3 is r_{kj}i.e $r_{33}=0$ means empty then optimal search tree is as follows.

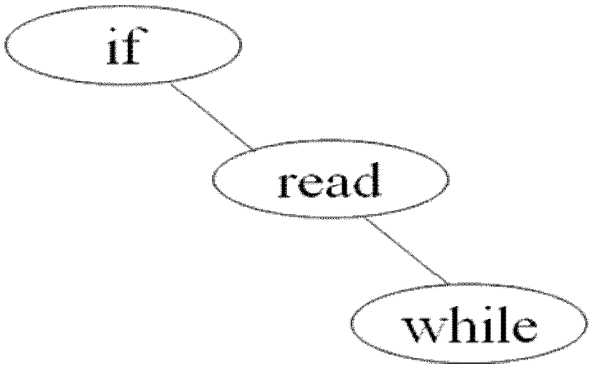

Figure – 2: OBST (Optimal Binary Search Tree)

CONCLUSION

Drawback of standard algorithm is that it is complicated and lengthy to trace manually and it takes more time to calculate computation table for minimum cost proposed approach is very useful in removing redundancy and later as it save manual tracing time. Above Optimal Binary Search Tree prove that node having highest weight means frequency is at root position (i.e. $w_{03}=13$ of $a_1$means of node if) and node having frequency $w_{13}=10$ means a_2 (that is read)nearer to the root and node having lowest frequency $w_{23}=7$ means a_3 away from the root as per the principle of OBST.

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ROLE AND FUNCTIONS OF STATISTICS

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INTRODUCTION

Statistics is in use from the time when man began to count and measure. In ancient days the role of statistics was limitated to data collection and interpretation. The word statistics carries several meaning. Many times statistics is considered as statistical data, which contains numerical information of a characteristic under study. Indian statistician P.C.Malanobis, P.V.Sukhatme, V.S.Huzurbazar and C.R.Rao have made valuable contribution to statistics.

DEFINATION

"Bowley define statistics as a science of counting or statistics may be called as science of averages."

"Webster define statistics as the classified facts representing the condition of people in the state, especially those facts which can be stated in a table or tables of numbers or in any tabular or classified arrangements."

Statistics performs number of function such as:

1) Identifying the question.
2) Designing a study
3) Data collection
4) Analyze the data
5) Making conclusions and decision limitations.

FUNCTIONS OF STATISTICS

1) We can represent the things in their true form with the help of figures but without a statistical study, our ideas would be unclear or indefinite or doubtful. The facts should be given in a definite form. If the results are given in numbers, then they are more convincing.
2) The statistics are presented in a definite form so that the facts can be condensed into important figures. So statistics helps in simplifying complicated data to simple to make understandable. The data may be presented in the form of a graph, diagram or through an average.
3) Comparison is one of the main functions of statistics. After simplifying the data, it can be correlated as well as compared. The relationship between the two groups is best representated by certain statistical quantities like average or coefficients.
4) Statistical methods help to draw conclusions about the information they contain.
5) Statistics help us for predicting the future course of action of the phenomena. We can make future policies on the basis of estimates made with the help of statistics.
6) Statistical methods help in planning, controlling and decision making. With help of statistics we can frame favorable policies.

ROLE OF STATISTICS IN DIFFERENT FIELDS

1) **Government statistics:** The government uses statistics to measure going economic indicators that greatly affect business and industry.
   i) CSO brings out monthly abstracts of statistics, statistical pocket book of the Indian Union, annual survey of industries.
   ii) NSSO collects data regarding prices, wages, consumption, production, agriculture etc. NSSO conducts sample surveys in the registered industrial sectors.
2) **Marketing and sale forecasting statistics:** Companies can use statistics to measure market share and market potential. Also statistics are a core component of marketing research techniques.
3) **Insurance Statistics:** Life insurance companies rely on statistics to assess whether to give coverage and how much to charge. Life expectancy statistics help determine the cost of life insurance premiums. Life table or mortality rates play keyrole in life insurance policies. In order to decide the premium, insurance company has to use mortality rates which are determined using statistical methods.

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4) **Economics:** Much of economics depends on statistics. Economist use statistics to collect information analyze data and test hypothesis. National income accounts are multipurpose indicators for the economist and administrator. Statistical methods are used for preparation of these accounts. Even relationship between supply and demand and import and export are found using statistical information.

5) **Astronomy:** Astronomy is one of the oldest branches of statistical study. It deals with the measurement of distance, size and density of heavenly bodies by means of by means of observations. During these measurements errors are unavoidable so most probable measurements are founded by using statistical methods.

6) **Banking:** Statistics play an important role in banking. The banks make use of statistics for a number of purposes. The banks work on the principle that all the people who deposit their money with the banks do not withdraw it at the same time. The bank earns profits out of these deposits by lending to others on interest. The bankers use statistical approaches based on probability to estimate the numbers of depositors and their claims for a certain day.

7) **Social Sciences:** Bowley says that "Statistics is the science of measurement of social organism, regarded as a whole in all its manifestation". Statistics plays a vital role in social sciences. In social sciences we need to test association between two variables such as (i) education and criminality (ii) education and marriage adjustment score (iii) sex and education etc.

8) **Statistics and computer science:** Both are together useful in providing solution to the problems in various fields. Particularly whenever data analysis techniques are employed to large data, use of computer becomes indispensible. Conjectures supported by statistical data have sound ground of approval. Now-a-days several statistical software packages like MINITAB, MATLAB, SPSS, SAS etc. are used for data analysis.

9) **Education:** Statistical methods are useful to great extent in the field of research in education.

10) **Psychology:** In the field of psychology human traits are interrelated. The powerful technique of measuring such dependence is correlation. The use of statistics in this field is to a great extent.

11) **Medical Science:** In the field of medical sciences statistical methods are used to test various claims such as (i) whether growth of baby is normal, (ii) is a particular vaccine useful in controlling a particular disease? (iii) is there any correlation between age and BP? etc.

12) **Agriculture:** Analysis of agricultural experiments makes heavy use of statistical methods known as Design of Experiments. Main advantage of this statistical technique is testing the interaction effect. For example, the interaction effect of fertilizer and irrigation. Also effect of alkanality of water, hardness, and impurities in the water on growth of plants which receives such water can be tested using statistical test.

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ARTIFICIAL INTELLIGENCE: ROBOTS REPLACING HUMANS

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ABSTRACT
Artificial Intelligence is something worth praising these days. All what evolution is currently been taking place is all because of AI. AI is simply a new technology in which we make machines capable of doing assigned tasks by their own by using previously used situations. It is simply making machines think and act according to the situations. AI is considered to be future of Modern World.

INTRODUCTION

These Days, we are constantly hearing about the Technology, inventions, new smartphones in market with less cost and higher specifications than yesterday. With each passing new day we are getting familiar with new stuff and we are the one who are accepting these changes and using them in our day to day life. All these changes are taking so fast that one cannot even imagine but now we have to accept these changes in order to compute the world. Artificial Intelligence i.e. AI is also a new term we. Today we reached till Mars and now looking for another shelter in near future in case of any questions on our survival. This all has become possible because of both Human Intelligence and the Machines. The way Human Powers are limited up to a scope and from there on we look for machines, at the spot we know that particular work in not possible with help of some third thing we know that now we need some machines for that work. And in this way we have invented millions of different machines to do different tasks. We humans are surrounded by machines we cannot even survive single day without machines. So here we come to our main topic Artificial Intelligence. It is simply making machines think and to do work *accordingly*.

A. History of Artificial Intelligence

The first step towards AI was taken by Warren McCulloch and Walter Pitts. At start they started studying on three different sources :- 1) knowledge of philosophy 2) analysis of logic 3) Turing's theory of computations. They made a model of Artificial Neurons of brain in which each individual neuron is characterized as a "ON" and "OFF" conditions where ON condition showed active state which it used to pass next as a activate signal. By this they showed that signals can be passed from one active state to another active state. AI embedded Human capabilities like self-improvement, creative, use of resources and languages which makes is a separate field from other fields.

B. Words of Wisdom

Herbert Simon use to say these lines about AI as many scientists including him were used to predicate many things about AI.

"It is not my aim to surprise or shock you—but the simplest way I can summarize is to say that there are now in the world machines that think, that learn and that create. Moreover, their ability to do these things is going to increase rapidly until—in a visible future—the range of problems they can handle will be coextensive with the range to which the human mind has been applied."

By the word visible future, he meant that nearly after 10-20 years computers will be doing almost each and every task of humans. In that time he used to say that computers will be chess champion and his words came true when IBM's DEEP BLUE beat World Chess Champion Garry Kasparov by 3.5 to 2.5 and after that in some interview Garry said, "it was some kind of new intelligence he was computing with". And this is how Intelligence of human brains used to beat Humans.

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Fig. 1: Capability of Human Brain

WHAT AI CAN DO TODAY?

Proper answer to this question is difficult since AI contributing today in almost every activities and sub-activities. Some of the few are explained below.

Robotics: Robots are simply man-made machines with our interacting abilities which work on human interactions and environment. Robotics is branch of AI which altogether works with Mechanical, Electricals and Computer Engineering in which Robots are designed in particular shape accordingly, programmed to accomplish a specific task without getting bored and distracted like us and without making any errors or continuing copy of one assigned work from first till last as it is, freeing resources and manpower and reducing time, load, errors and sometimes cost. Robots generally work on some input which may be provided through humans or may be it picks it up through environment and they operate it in real world and perform. Main parts of any Robots are sensors, actuators, reactors, wires and batteries. Robots have vision of analyze and extract certain events and gather data to situations summarize and use it to certain events in future. Major applications of Robotics are Military, Entertainment, Medicines and Industries. Modern Robots have ability to learn by itself, these Robots learn from a certain events, store information about this event and produce successful desired result next time. The next step of Robots will be surely Cyborgs i.e. Humans integrated in machines itself, may be in near future people will connect their brains to machines and will handle all the things with it.

Fig. 2 : Sophia: Robot with Brain

Some of famous robots are

Battle Bots which are used during war like situations

Industrial Robots which works to do a specific task

Bomb defusing Robots which used to avoid explosion and human death

NASA's Mars Rover as well

Honda's ASIMOV which walks like a human

Current Google Brain which used to do almost anything in this world.

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Fig. 3: ASIMOV: Robot which walk like Humans

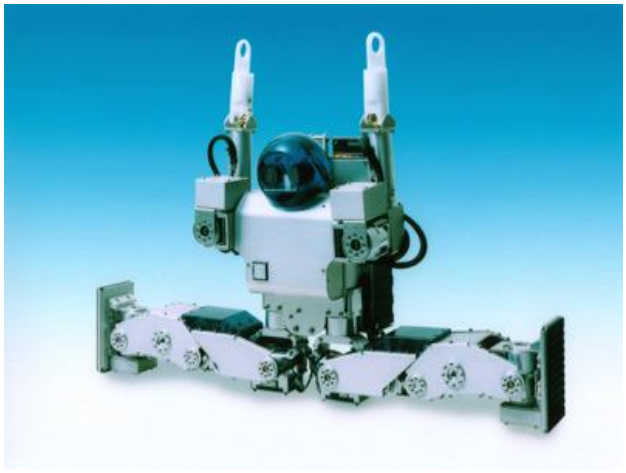
Fig. 4: Fujitsu's HOAP-1 Robots

- **PLAYING GAMES**

AI plays an important role in development of fascinating games which counts decision making and behavior, where humans are computing with machines and many times machines beating Human brains. AI should be designed by using different algorithms so that logic can be applied to many games. Earlier games were not much graphical and user friendly like today but they were simple games with certain rules and single player and objective defined to play with but with the AI, games today are much with user interactions and to play without any rules and some of games are built to help researchers to delimit capabilities of computers and to be played by multiplayer and online as well and its simply needed to keep track of all the moves of each player while playing the game and AI provides many resources to add ideas from different sources into it.

- **Logistics Planning**

This field includes planning for various intelligent systems which makes use of AI to develop proper planning and scheduling algorithms for finding logistics solutions to the problems, decision making, interactions. Simple frame of planning for any solution leads to analysis, decision making, extraction and reach to a proper and permanent solutions.

- **Machine Translation**

It is simply translation of text or speech to some language or it can be from one language to another language. Basically it just puts another word for a word from desired language but it is not useful to convert it into phrases and hence for translation proper mechanism is required. "Machines translation uses technique based on Linguistic Rules which means each word will be translated in linguistic way means in most suitable way". Current software allows translation only on customization basis and this is more useful in informal languages. Translation mainly takes place in two steps 1.Encoding Source and 2.Decoding the Encoded format. Encoding source is an eternity process which uses AI to understand the text properly and the knowledge about the languages is also necessary knowing grammar, syntax, semantics and idioms of language and also the tuning of speaker in which input is given and after doing all this successfully the decoding format is also necessarily plays an important role in decoding the format. Software which uses AI helps input to be translated into desired in same ways while in encoding understanding language efficiencies. This works more fast and accurate without human interactions and produces quality target language.

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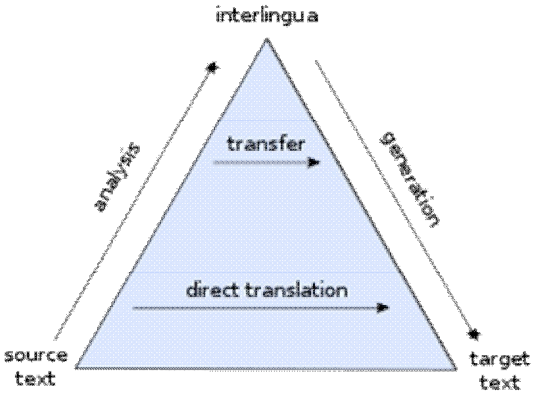

Fig. 5 : Translation of Speech to Command

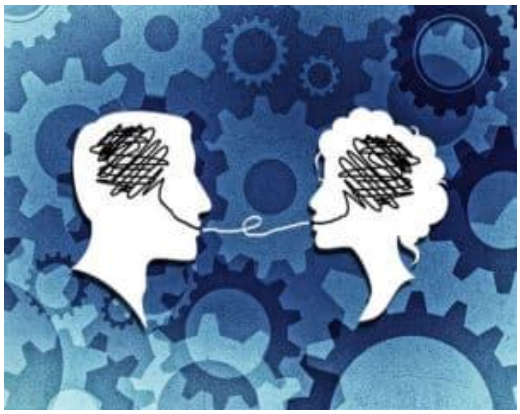

Fig.6: AI between every 2 different Communcation

- **Robotic Vehicles**

Robotic Vehicles means simply vehicles either with Robots or vehicles fully automated with all the control which will be operating it like a fluent skilled driver. As Robotics field is totally included with AI hence automation of vehicles. As the way automation field is making its way, we can probably say that we can see vehicles with Robots by end of 2025. These vehicles will not be remote controlled but they will be fully automated with all the skills required and which will even think like we Humans do in emergency situations to avoid accidents and loss. The major problem in self-driving cars will be flow of traffic, movement of folks, others driving cars and most important situations in which they will be driving. Moving towards AI, deep learning is set of algorithms which it will use to study and analysis of situations around and these will be stored and will be used in future uses. NVIDIA's Drive works on Deep Neural Network which is programmed and trained to understand how to drive a car. In older self-driving cars one used to use coded algorithms to major predefined roads and to control the vehicles but with AI, today with DNN we can make car think of its path, navigations, traffic rules to drive safely. Google's self-driving project is now working in open allowing people to take ride on busy streets of cities or any county-yard roads or any mountains.

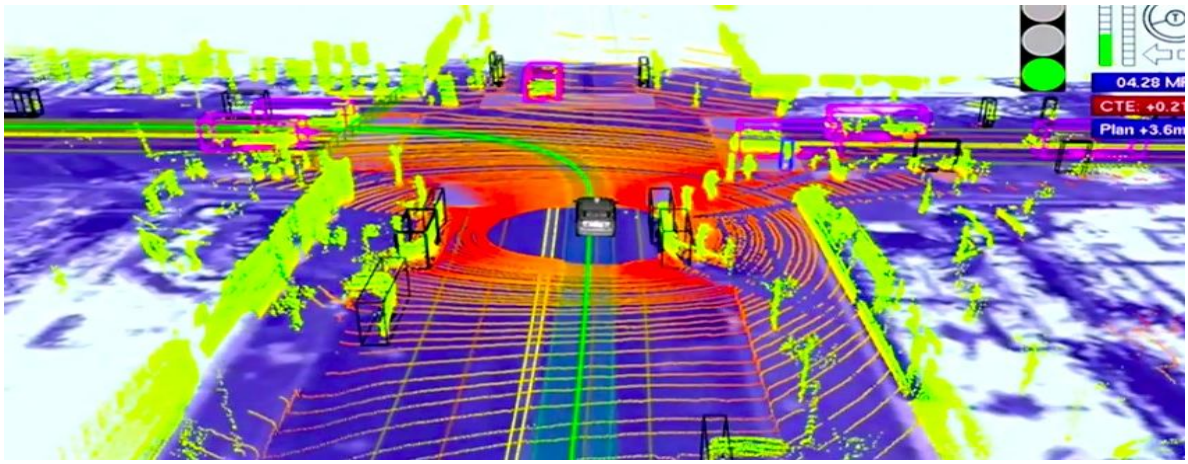

Fig. 7: Google's Self-Driving cars use 3D images to know actual sitiuation

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Fig. 8: Robots driving Cars in Future

- **SPEECH RECOGNIZATION**

Speech recognization is a simple technology where machine act as automated interface and someone is behind it, which is operating it but in reality there is no one such and this machine is operating by itself and there have been many advancements in this from symbolic to statistical approaches. This really works as an automated chat-bots which responses to queries from its previous data stored or mechanism stored into it, this is simply like our personal assistant in our cell phones. Eg SIRI of iPhones and GoogleAssistant who helps us in our queries.

There are certain types of these bots:

1. Bots that look for information
2. Bots that look for information to do task
3. Bots that are made for social abilities and social tasks.

When third category will be implemented, machines will be communicating in between to return desired results and bot-to-bot systems will be something that would be future of any commercial outlets.

Fig. 9: Humans commanding to Machines to do work n machines responding through Artificial Brain

Some of other uses of AI are as follows:

1. Healthcare
2. Identity Detection for Security
3. Image processing
4. Web based applications
5. Hybrid Systems
6. Education

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CONCLUSION

Artificial Intelligence is what we are constantly hearing these days, in simple terms AI means making machines capable of doing assigned task by themselves, without any human interactions and making them produce same output when handled by humans. Machines can't think we all know this but according to situations, we can make it capable of taking decisions by using data stored about its previous instances, loaded knowledge and cognitive artificial brain. In course of time, we, Humans are making progress so fast that even we wouldn't have imagined and this is all possible because of AI. In every field today use of AI has increased without any limitations. By use of AI we can do almost everything in technology and without any hesitation we can say all this progress is because of AI.

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HADOOP MAPREDUCE : FUTURE OF STOCK PRICE ANALYSIS

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ABSTRACT
Stock Market trade a lot many shares on daily basis. The prices of a stock are fluctuates each minute. Lot of data is being generated on daily basis. Beside many technical aspects like PE, EPS, dividend etc. many indirect factors may influence the market price of shares corresponding to a particular company or particular sector of companies. These may include weather forecasting for rainfall, past record of stock performance data, markets of neighboring countries, list of competitors, volume of shares traded, feedback from various surveys etc. So this huge data due to various indirect factors also be need to analyze and predict the price of a particular share in the future. In addition to the huge volume of data that is generated on daily basis, data fetched from various sources may be structured or unstructured like messages regarding shares from a from websites dealing with shares, news articles etc. It is important to analyze this data to identify patterns, trends and predict the future prices. This can be done using, big data analysis using Hadoop Mapreduce ecosystem tools. This paper discusses the Hadoop tools that can be used in analysis of prices of stocks and thus predict which shares to buy and at what time.

Keywords: Big data, Hadoop, Stock market analysis, Pig

INTRODUCTION
A large number of people invest in shares either directly or indirectly using their fund managers, SIP etc. Many investors need various kinds of reports, charts and answer to various queries to predict the future stock prices. The stock prices data and various other data is usually available from stock exchanges like NSE web sites is structured and can be analyzed using existing tools like SPSS etc. But quite often we need to analyze data over a period of 25 years and more. Analysts may also want to consider data such as stock prices in neighboring countries of similar sectors, weather forecasting to predict effect on agriculture, and many other factors. In addition in future due to Internet of Things, many devices will also be used to provide data. Such huge volume of data being structured may also be unstructured as it may be fetched from various other sources. This data can be termed as big data due to its 5V's – Volume as huge volume of data is to be analyzed, Variety as data may be of different types, Velocity as data is generated on daily basis, Value as it is important to find correct meaning of data, Veracity as in some cases there may be uncertainty and inconsistency in data.[3,4] Big data extracts and organizes the valued information from the rapidly growing data sets collected from multiple and autonomous sources in the minimal possible time, using several statistical and machine learning techniques. [5] The big data real time analysis can be done using the Hadoop Mapreduce ecosystem in a quick and efficient way. Moreover, as most of the tools are open source so cost is not an issue for analyzing data as compared to other proprietary tools available.

To practically analyze big data, various tools that are part of Apache Hadoop ecosystem can be used. Hadoop is a framework that enables applications to work on large amounts of data on clusters in parallel and distributed fashion. Some tools are (a) Flume used for ingesting unstructured/semi structured data from social media sites into HDFS. (b) Scoop used for ingesting structured data from social media sites into HDFS. (c) HDFS which is a distributed file system that stores the data on various computers called nodes, enabling a high bandwidth across the cluster. To implement a parallel computational algorithm, MapReduce, is used. It divides the main task into small chunks. These small chunks are mapped by processing parallel thereby increasing efficiency. The results obtained are combined into a final output, the reduce stage.[1] (d) YARN (Yet another resource Negotiator) used for processing big data. (e) Hive which is developed by Facebook and used for analytics. It uses hive query language (Hive QL) which is similar to SQL. (f) Apache PIG, programming language is configured to assimilate all types of data (structured/unstructured, etc.). It is comprised of two key modules: the language itself, called PigLatin, and the runtime version in which the Pig Latin code is executed [8] (g) Apache Spark which is an open source real time processing engine used in big data analytics. (h) Apache Mahout and Spark MLib used for machine learning . (i) Zookeeper allows a centralized infrastructure with various services, providing synchronization across a cluster of servers. Big data analytics applications utilize these services to coordinate parallel processing across big clusters [8] (j) Apache Ambari for management and coordination of Apache Hadoop Cluster (k) HBase is a column-oriented database management system that sits on top of HDFS. It uses a non-SQL approach. (l) Cassandra is also a distributed database system. It is designated as a top-level project modeled to handle big data distributed across many utility servers. It also provides reliable service

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with no particular point of failure and it is a NoSQL system.[8] (m) Apache Storm for real time computation. (n) Kafka used to handle real time data feeds. (o) The Lucene project is used widely for text analytics/searches and has been incorporated into several open source projects. Its scope includes full text indexing and library search for use within a Java application. [8]

Generally, Hive is the most frequently used. It uses Hive QL which has similar syntax as SQL. So one can leverage the SQL capabilities of Hive-QL.

The advantages of using Hadoop are many. Some of these include huge volumes of structured and unstructured data can be handled in safe and cost effective manner for analytics. Besides being cost effective, it is scalable. As it allows generating value from all of the data that can be accessed by them so it is flexible also. As it is distributed, file system and using the concept of parallel processing faster processing of data can be accomplished. In addition, MapReduce has the ability to quickly recognize faults that occur and then apply a quick and automatic recovery solution. Being open source and many tools allows real time processing; this makes it the best choice for data analysis.

Conventional data warehousing systems are based on predetermined analytics over the abstracted data and employ cleansing and transforming into another database known as data marts – which are periodically updated with the similar type of rolled-up data. However, big data systems work on non-predetermined analytics; hence, no need of data cleansing and transformations procedures. [5] Big data organizes and extracts the valued information from the rapidly growing, large volumes, variety forms, and frequently changing data sets collected from multiple and autonomous sources in the minimal possible time, using several statistical and machine learning techniques. Hortorn works[9] has suggested the steps in performing analysis.

a) The raw stock data is collected from various stock exchange sites.

b) After that, these reports are transferred to HDFS.

c) A script written with the R language starts pre-processing data. (Based on the Map Reduce principle, it unifies heterogeneous information collected by the system.)

d) On the first clustering run, all strategies are sorted according to the statistics criteria (for instance, the current bid, the amount of stocks, and hundreds of other parameters).

e) On the second clustering run, the system performs qualitative analysis: it measures the results each strategy demonstrates and compares the strategy against the state of the market at different periods. This big data analysis differs from routine analytics only in that the techniques are scaled up to large data sets.

f) Data is prepared in the appropriate format. Like in the pre-processing stage, a script created with R upon the Map Reduce paradigm also performs this task.

g) The results are retrieved from HDFS and are ready for future usage by the customer.

LITERATURE REVIEW

Jay Mehta et.al in their paper entitled Big Data Analysis of Historical Stock Data Using HIVE [2] discusses how he has used Hive in order to analyze stock information of NYSE to determine top 10 stocks with highest volume in a particular sector. Hadoop, along with Hive, is also the foundation of the large library of surveillance analysis patterns that analyze trade sequences and relationships over different time periods to identify instances of non-compliance or market manipulation. Similarly, if we want to analyze stocks on National Stock Exchange, we can collect data to be analyzed from *https://www.nseindia.com /products/content/all_daily_reports.htm?param=Derivative* we can similarly analyze various queries (a) List top ten companies with highest rate of daily volatility for last 10 years in particular sector. In this case, we can download thousands of .csv file from the available reports and combine them using shell command. We convert that data into table and then apply HIVE queries to fetch the required data. Similarly, we can perform other queries on the data.

R. Lakshman Naik et.al in their paper entitled Prediction of BSE Stock Data using MapReduce K - Mean Cluster Algorithm [7] developed a novel framework that can achieve parallel time series prediction using Hadoop. They took data from the Bombay Stock Exchange and provided it as an input of Hadoop MapReduce. To cluster this aggregated data, the *k*-means algorithm was implemented using the R language. This algorithm groups objects by coordinate proximity. The output was the company's closing bids. This was then passed to the ARIMA model for the series of calculation, and determined the companies' similarities.

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PROPOSED MODEL

A prediction model using Hadoop map reduce technique is proposed. Hadoop has been taken as a framework for developing the prediction model. In this model the input is splitted, mapped, arranged, reduced. In this system multiple input raw data is input from the stock exchange site and analyzed. A prediction model is developed, that will predict how the top ten traded stocks in terms of volume for a month will behave based on historical data collected from daily reports in .csv format.

The hardware requirements will be Intel I3 quad core or above. The data is acquired from *https://www.nseindia.com/products/content all_daily_reports.htm.* (BhavCopy file). It is a structured data set that contains daily stock data of a company which includes attributes – Symbol, Series, Open, High, Low, Close, Last, Prevclose, TottrdQty, Tottrdval, Timestamp, Totaltrades, ISIN. These fields of data set are self explanatory. The software requirements will be Unix terminal that can run hadoop commands.

PROBLEM STATEMENT AND IMPLEMENTETION

We are given a data set that is acquired from *https://www.nseindia.com/products /contentall_daily_reports.htm*. (BhavCopy file). We shall use Pig to analyze this so as to get top ten companies traded by volume, find the top ten stocks traded by volume. Pig uses its own language called Piglatin which is quite similar to SQL. Pig also contain various operators for joining, filtering large data. [3] We have created input and output directories named – input and output where all results will be stored. In order to implement it we assume hadoop and pig are installed

1. First put all .csv files into input directory so that HDFS can use it. The command will be $ hadoop fs –put cm19JUL2017bhav.csv inputdirectory.
2. Next open Pig by typing $ pig And the prompt changes to grunt>
3. Now load data set into pig using grunt > Intermediatedata_variable = load ‘inputdirectory/ cm19JUL2017bhav.csv’ using PigStorage(‘\t’);
4. To see the contents of variable type grunt> dump Intermediatedata _variable
5. To filter the required contents type grunt> dump Volumetopten_variable = for each Intermediatedata_variable $0 as Symbol, $8 as TottrdQty;
6. To see the contents of variable type grunt> dump Volumetopten_variable _variable Similarly we can determine other for other files requirements and predict based on data fetched.

RESULT

From the analysis, it is found that top ten companies based on traded quantity remain consistently almost the same. So it is noticed that data is analyzed with no much cost involved for the analysis. In this way data fetched on applying various queries in Pig Latin is used to plot charts and to provide results to the perspective clients.

FURTHER SCOPE

Everyone wants to make the best out of investments. With falling rate of interests on fixed deposits, everyone is interested in investing in stock market. If such open source data analysis tools are available, many fund houses and recommendation agencies can correctly analyze and prematurely determine the future of stock prices using tools of the Hadoop ecosystem. Various queries can be applied to fetch the data graphically. We can expand the already existing work. We can consider data from surveys conducted by stock related websites, data from other stock exchanges around the world, data from social media websites. We can apply similar pattern to determine results from various stock exchanges around the world and get results to see whether similar results appear for other stock exchanges. We can also ask for queries from various people who want to invest.

CONCLUSION

Stock market is very complex system. In this, people either gain money or lose their entire life savings. So it is important to analyze the data. Hadoop is the future of stock prices analysis. Hadoop is flexible, reliable, opensource and scalable. Whenever data size is increasing, you can just add some more nodes, configure into Hadoop and that’s all. If sometime any node is down, then even other nodes are ready to handle the responsibility due to data replication.

The analysis of data using any tools of the Hadoop ecosystem will evolve. In near future, many agencies will be made that will be provided to the perspective and existing stock market clients, that will be used to better explain graphically why should one invest in a particular stock.

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KNOWLEDGE MANAGEMENT SYSTEM (KMS) FOR AN ORGANIZATION & BUSINESS

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ABSTRACT

The System used for creating, sharing, evaluating, retrieving and managing the knowledge and information of an organization are known as Knowledge management system (KMS). It is an approach for achieving organizational goals where the best use of knowledge was made. It mainly blurs on various organizational objectives such as improved performance, competitive business model, business intelligence, the sharing of lessons, integration and continuous improvement of the organization and many more. Due to this progress in KMS it becomes easy to handle the organizational goals and strategies. This leads KMS as enabler of organizational learning.

Keywords : Knowledge management system, Artificial intelligence, KMS Architecture, Dimensions, Strategies, Motivations

INTRODUCTION

A knowledge management system (KMS) is a system which is designed to help the collection and utilisation of knowledge. Knowledge management system recognises the overall knowledge inside the organization, which includes executive, operational and strategic management. Therefore the KMS has all the information required to help company representatives to convert the information into knowledge. The development of KMS includes complex process and therefore requires a careful planning before selecting the tasks for developing the KMS.

Dimensions

1) Knowledge can be exists in two dimensions the tactic and explicit. One cannot be aware of this knowledge because this exists in the form of personalized and context specific. The tactic knowledge resides in human mind, perception and behavior .Mainly this knowledge is used by members of organization in their duties. Since this knowledge is Job specific, through conversation transferred or narrative, not captured by formal education or training and may capable of becoming explicit knowledge. It is deeply rooted in action, procedures, commitment, ideals, values and it can only be indirectly accessed. Oppositely explicit knowledge is formal and systematic. Its main focus is on data rather than a person. It can be codified, collected and stored. It can be easily formalized and documented in word. Organizations can easily adopt this knowledge in operating technologies, databases, repositories so that they can be shared.

The content perspective of knowledge represents the easier storage since it may be codified. In relational perspective the knowledge is difficult to share outside its defined context.

Early research suggested that KM needs to convert internalized tacit knowledge into explicit knowledge to share it, and the same effort must permit individuals to internalize and make personally meaningful any codified knowledge retrieved from the KM effort. Specifically, for knowledge to be made explicit, it must be translated into information (i.e., symbols outside our heads).

2) In organization, it can be said that organizational knowledge is embodied and embroiled in the staff, embedded in routines/common tasks, and cultured among the staff, and encoded in manuals, guidelines and procedures. Davenport and Prusak (2000) says that in organizations, knowledge becomes embedded not only in documents or repositories, but also in organizational routines, processes, practices, norms and cultures Organizational knowledge is therefore the sum of the critical intellectual capital residing within an organization.

3) A creation of "new knowledge verses the transfer or exploitation of "established knowledge" differs within a group, organization or community. Knowledge transfer or creation can be done using various social tools or communities.

STRATEGIES

Knowledge can be acquired from the following three steps namely: before, during, and after KM-related activities. Organizations have tested knowledge gathering activities, which includes making of content submission mandatory and incorporating rewards into efficiency calculation processes. However the moderate controversy exists over whether such activities work and no consensus has emerged.

- Push strategy - KMS includes the active management of knowledge. In this case, individuals try to explicitly encode their knowledge into a shared knowledge repository. Also the codification includes the collection and storing codified knowledge in to electronic databases to make it accessible. Therefore the codification refer to both tacit and explicit knowledge

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- Pull strategy includes individuals making knowledge requests of experts associated with some particular subject on a temporary basis. In this case, the expert individual provides details to requestor (personalization), which inspires individuals to share their knowledge directly. Here, an Information technology plays a small role, since it is only used for communication and knowledge sharing.

Other KMS strategies and instruments for organizations are:

- Knowledge sharing (sharing of information)
- Arrangement of knowledge as a means of transferring explicit knowledge
- Individual project analysis
- To make KMS as a key component in employees job description
- Knowledge database (a database of knowledge repositories within a company which can be accessed by all)
- Expert repositories (to enable individuals to reach to the experts)
- Expert systems (Individuals can responds to one or more particular questions to reach to the knowledge in a repository)
- Use of best practices
- Knowledge hubs
- Competition management (a systematic management of competence of all organization members)
- Proximity & Architecture (constructive or obstructive condition of employees towards knowledge sharing)
- Relationships between: Master- Apprentice, Mentor – Mentee and job shadowing
- Collective software technologies (Wikipedia, blogs, social networks etc.)
- Knowledge databases and bookmarking engines etc.
- Measuring and reporting intellectual capital like a way of making explicit knowledge for companies.
- Knowledge providers (Some members of the organization take responsibility for specific 'tasks' and act as first references on a specific fields)
- Transfer of inter project knowledge

MOTIVATIONS

Different motivations leads organizations to consider KMS, which typically includes following topics

- Making best use of available knowledge in the development of products and services
- Targeting small development cycles
- Properly managing innovation and organizational business skills.
- Providing expertise's across the organization
- Increasing the connectivity between internal and external individuals
- To manage business and provide employees relevant insights and ideas related to their work
- To solve complicated and intractable problems
- Effectively managing intellectual capital and workforce in the organization.

1. CHARACTERISTICS

The design of system architecture should match the organizational culture and business requirements. KMS is the simple file structure until it includes complex business intelligence system which is based on advanced data visualization and artificial intelligence. We have studied many KMS architectures which are used for supporting knowledge management processes and co-operation in the management. It is seen that there are many different architectures in terms of functions and services but most of the components of the architecture are comparable. The general form of KMS architecture is proposed by Tiwana [Tiwana].Where he shown that the KMS consists of following four major components, viz. collaborative platform, network, culture and repository

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- The collaborative platform incorporates with pointers and supports distributed work, experts' locators, skills databases and informal communication channels.
- Networks consist of physical networks and social networks which helps the communication and conversation. The 'hard' network is referred by physical network for instance intranet, shared space etc. Social network is specified as soft network such as associations , working groups , CoPs
- Encourage sharing and use of KMS is possible only through the Culture. According to the previous research 'changing people's behavior' is the major difficulty in KM and the recent biggest barrier in knowledge transfer is 'Culture'.
- Elucidate formal and informal knowledge is held by repository, which is the kernel of KMS. The main goal of repository is to store and retrieve knowledge for future use. The declarative, procedural, casual knowledge and context are the main contents and repository

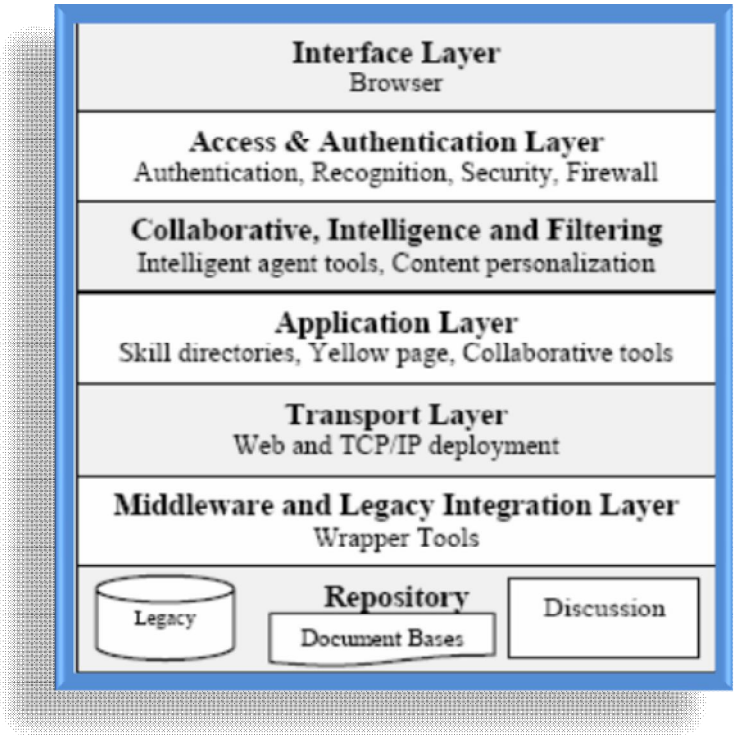

Figure : Seven layers KMS architecture [Tiwana]

Fig. shows that most important module that make up rule based knowledge management system

The KMS architecture is a similar to the OSI model consisting seven layers each layer in this architecture specifies the function and tools of KMS according to the knowledge passed through it. The complex system requiring network and data manipulation are supported to this architecture.

2. ADVANTAGES OF KNOWLEDGE MANAGEMENT SYSTEM

2.1 ROLE OF KMS IN AN ORGANIZATION

When all the key point at their proper place, using KMS is will be luminous and beneficial. Here are some benefits that can help you understand how effective knowledge management systems can ensure quality and may even increase revenue:

- Every person in the company has access to management and business knowledge
- New technologies are easily supported and new knowledge is captured for future use.
- Information is quickly available according to the employs requirement because of existing knowledge database.
- Create knowledge base articles using the real-time HTML editing tools
- All member of IT organization stay updated on different and changing technologies.
- Reduces IT costs without having to compromise quality service to internal and external customers.

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- Participation and communication of staff member will be improved.
- Measurement and accountability will be delivered for the benefit of organization.
- Helps in delivering better measurement and accountability

2.2 ROLE OF KMS IN BUSINESS

The business can have many different advantages when the strategic KMS model is adopted which promotes knowledge application and knowledge communities that support the knowledge management. Consider the following top benefits of Knowledge Management to improve and streamline your business operations:

- **Information, Content Governance**

The KMS focused on community outcome and knowledge requirement to get that outcome. When properly managed and implemented, knowledge management is useful to improve information and content governance .because of that the organisation can avoid content lounge ,in which data become larger than it can be managed as a result it becomes disorganised, is connected and insufficient or even unusable source of knowledge (share point, databases etc)

- **Emphasis on Outcomes**

The idol outcome of focus due to the successful KMS efforts. This helps key teams to meet critical business goals .firstly the difficulty in objectives are identified and then KMS is implemented. these critics depend on personas and multiple roles it include individuals, categorized and corporate outcome, which result in an emphasis on work processes, information management methods and knowledge retrieve procedures.

- **Developments in Workforce Behaviours**

The best use of knowledge management system is more than focus on technological solutions .the KMS also focus on the improvement of behavioural changes in the organization this kind of efforts provides many opportunities to improve members or staff collaboration with each other and their interaction with work related documents and information.

- **Priority to Business Needs**

The first focus of a strategic knowledge management system is always the needs of business. while a new KMS is implemented, the needs and goals of the community of employs are first identified. which makes it easy for the business to determined which technological solution will supports those needs and goals other than allowing them to determined the outcome.

- **Implicit to explicit Knowledge**

Organizational knowledge's is mainly divided into two categories implied knowledge's(what people know)and tacit knowledge's (what is searchable).users cannot easily grapes or use it. with help of KM organization can captured critical project, team and departmental knowledge through explicit tools. Transferable implicit knowledge is useful in making data resources more reusable and maintainable.

- **Clarified team roles**

The knowledge management encourage more specified types of roles for the important team which saves the advanced knowledge management. This includes the critical role such as Team Administrator, knowledge manager, community administrator, power users and other. When everyone is aware of their role in the organization and in the knowledge management system they can give more attention on their tasks and responsibility with effective asses the information they need to be successful.

- **KMS supports top down supports**

KMS supports top down approach, which is important for working of KMS. due to top down approach architecture manager at all levels lead by example, knowledge community are membership, and strived to keep team organised to get ideal outcome.

- **Improve efficiency of technological Investments**

The organizations are required to optimized and improved technological investments after the implementation of compressive and strategic KMs model. The knowledge management optimised investments in technology by replacing the old adage of 'the technology is solution'. This kind of approach serves to allowed technology to determine the business outcomes.

3. DISADVANTAGES OF KNOWLEDGE MANAGEMENT SYSTEM

- Capturing and recording business knowledge to ensure your business has processes in place to capture and record business knowledge.

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- Sharing information and knowledge requires developing a culture within your business for sharing knowledge between employees.
- Without clear goals or a business strategy in place for the knowledge gathered the information will be of no use to your business.
- These systems can be costly and complex to understand but when utilized properly can provide huge business benefits. It is important that staff is fully trained on these systems so that they collect and record the right data.

CONCLUSION

In this paper we have studied various researches done in the field of knowledge management system. Here in this paper we have pen down few characteristics and the need of the knowledge management system .It is true that knowledge management system is playing a vital role in business & organization management, but at same time there are many issues and challenges that are to be addressed for smooth functioning of KMS. That is to be implemented for its learners and staff members. Working of KMS is best ,when the knowledge is generated, stored and shared to others by the same persons. These system must be managed by the people who can implement the known knowledge.

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OVERVIEW OF DATA WAREHOUSE WITH IMPLEMENTATION AND SIGNIFICANCE OF METADATA

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ABSTRACT
In spite of complexity of query languages DW gives a flexible solution to the user, to use tools, like Excel, with different user-defined queries to explore the database more efficiently. The significant benefit from this solution of information and knowledge retrieval in databases is that the user does not need to possess knowledge concerning the relational model and the complex query languages. In our daily routine Data warehousing are used in a wide variety of contexts. With huge amount of knowledge and data, decisions must be taken rapidly and correctly with rapid increase in database in reasonable amount of time

This paper shows the introduction of data warehouse, why it is important now a days it will also describe implementation and significance of metadata

Keywords: Data Warehousing, OLAP, meta data

1. INTRODUCTION

The main task of data warehouse is to take large data from heterogeneous sources and format them in known format for making decision making process more smart and easily understood. The main benefit of DW is it saves our time with clean and sufficient amount of information to help achieving strategic business objectives.

Read-only database that is capable of storing historical data for operating was suggested. It offers a variety of integration tools. Users can find and query what they want for supporting decision. Time-variant, non-volatile, integrated and subject oriented are the four key attributes of data warehouse. With the presence of different attributes, data is encapsulated in "subject oriented" attribute, which is build and is combined in multiple angles. Warehouses (DW) integrate data from multiple heterogeneous information sources and transform them into a multidimensional representation for decision support applications. Data ware-houses provide access to data for complex analysis, knowledge discovery and decision-making. Though it evolves a complex and heterogeneous data sources, voluminous logical schema with a detailed physical design for making permanent design and for correct actions against errors.

The overall design and different administration tasks are grouped together to form evolution phase. It will be the final stage. The business rules of an organization change, new data are requested by the end users, new sources of information become available, and the data warehouse architecture must evolve to support decision making process within that organization. The metadata repository and all the components of data warehouse, it's processes should be properly tracked and administered.

2. ARCHITECTURE OF DATA WAREHOUSE

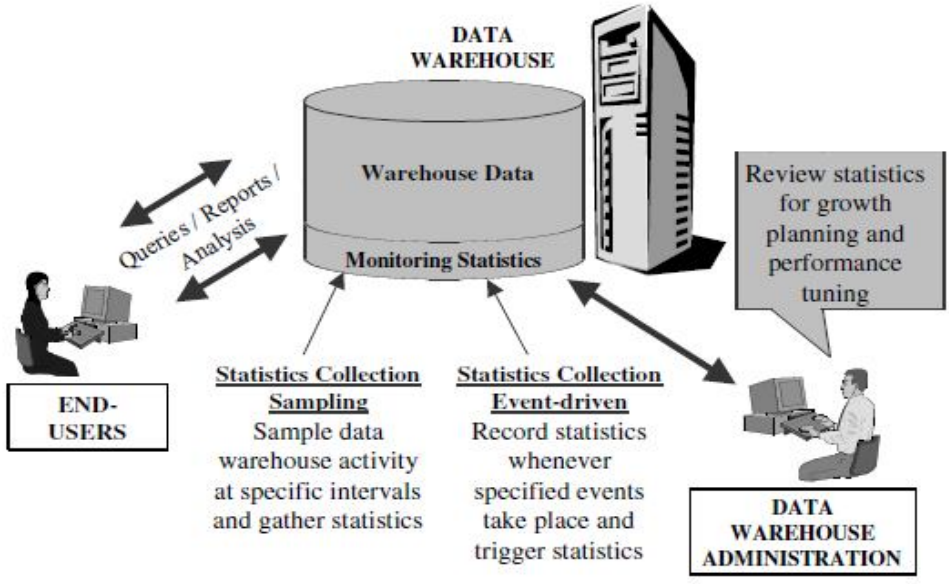

Fig 1 : Architecture of data ware house

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Data warehouse adopt a three-tier architecture, these are

2.1 Bottom tier
It is a warehouse database server in which data is fed using back end tools and utilities. Data extracted using programs called gateways. It also contains meta data contatory.

2.2 Middle tier (OLAP server)
A multidimensional OLAP (MOLAP) model in this data is stored in optimized multi-dimensional array storage. These tools generally utilize a pre-calculated data set referred to as a data cube.

2.3 Top tier (front ends)
The clients can operates through top tier which may contains different queries and analysis tools, reporting tools also different data mining tools.

3. BACK END TOOLS AND UTILITIES
A tool kit for data extraction and data cleaning tools is used to load and refresh utilities for populating various warehouses.

Data Cleaning
Decision making is an important aspect of data warehouse so that data in the data warehouse should be correct. The data may contain high percentage of errors and anomalies as these data are collected from different sources. So data should be cleaned through different tools to detect and correct those missing data and different anomalies present in given data.

Load
Before loading loading data into warehouse it has to go phases like extracting, cleaning and transforming. In addition to populating the warehouse, a load utility must allow the system administrator to monitor status, to cancel, suspend and resume a load, and to restart after failure with no loss of data integrity.

Refresh
The warehouse can be refreshed time to time (periodically) that may be daily, weekly or monthly. If there is any OLAP query which needs current data for e.g., the minute stock quotes then only it demands current updating in the database. The data warehouse administrator is the most responsible person who decides the refresh policy according to time depending upon users needs and traffic in the warehouse and it may vary from databases as different data bases are from different sources.

3.1 Online analytical processing (OLAP)
It is an approach to answering multi-dimensional analytical (MDA) queries swiftly in computing. OLAP covers a larger portion of business intelligence which also includes data mining, report writing, and relational database. Typical applications of OLAP include business reporting marketing, management reporting , business management (BPM), budgeting and forecasting, financial reporting and similar areas, with new applications coming up, such as agriculture.

OLAP is like next version of the term online transaction processing (OLTP). Over the years, the council has worked on OLAP standards for the Multi-Dimensional Application Programmers Interface (MDAPI) and has come up with revisions. Several OLAP vendors, platform vendors, consultants, and system integrators have announced their support for MDAPI 2.0

4. DATA AREHOUSE IMPLEMENTATION PHASES
Basic data warehouse (DW) implementation phases are [1]:

- Current situation analysis
- For analysis selection of interested data from existing database
- Apply filtration process for reducing size of data
- Convert and extract data into stable state
- Make use of appropriate schemes, *dimensional* tables and fact table.
- Selection of different warehouse methods, measurements and percentage of aggregations
- Create and make use of cube

4.1 Performance Evaluation
For making data warehouse a viable option and it is important to show that there will be a big improvement in query time. It's a tedious and time consuming job to run report because of high complexity of views and

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multiple joins with other tables. For better performance of system, as datasets are on a larger scale, if there is repetitions of queried data and reported upon all day.

In other words, metadata provides decision-support oriented pointers to warehouse data, and thus provides a logical link between warehouse data and the decision support application. There should be one mechanism that maintains the metadata repository and metadata is the entry point for all access paths to the data warehouse. One should not have direct access to the data warehouse. Meta data definitions are the only way to access data from data warehouse.

5. SIGNIFICANCE OF METADATA

Information about the contents and details of structures can be given to developer by Metadata. So that it becomes easy and convenient way to end-users and make its contents easy to read and understand.

TYPES OF METADATA

There are three main categories into which metadata is divided

- Operational Metadata
- Extraction and transformation Metadata
- End-User Metadata

Operational Metadata

As you know, data for the data warehouse comes from several Operational systems of the enterprise. These source systems contain different data structures. Data warehouse contains data elements of various lengths and heterogeneous data types. In selecting data from the source systems for the data warehouse, you split records, combine parts of records from different source files, and deal with multiple coding schemes and field lengths. When you deliver information to the end-users, you must be able to tie that back to the original source data sets. Operational metadata contain informational details about operational data sources.

Extraction and Transformation Metadata

Extraction and transformation metadata contain data about the extraction of data from the source systems, namely, the extraction frequencies, extraction methods, and business rules for the data extraction. This phase contains details about all the transactions that take place in data stability area

End-User Metadata

The navigational map of the data warehouse is nothing but end-user metadata. It makes easy and efficient for end users to find information from the data warehouse. The end users can use their own business terminology and get the intended information they are searching for running their business smoothly.

6. CONCLUSION

Maintenance is an important aspect in the data warehouse domain. Typically, data warehouse systems are used in a changing environment thus the need for evolving systems is inevitable. Founded on basic data warehouse concepts, the levels of data warehouse maintenance are introduced. Data warehouse structure may change on the schema (i.e. dimensions and categories) and instance (i.e. dimension members) level. Not only the structure elements themselves, but also the relations between them may change. Also to decide whether to use an evolutionary or versioning approach. Metadata plays an important role in data warehouse. The main characteristics of data warehouse includes subject- oriented, integrated, non-volatile and time variant.

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USE OF ICT TO SOLVE PROBLEMS FACED BY INDIAN AGRICULTURE INDUSTRY

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ABSTRACT
Agriculture is the backbone of Indian economy. India accounts for 7.68% of total global agricultural output. Contribution of Agriculture in Indian GDP is about 16-17%. Agriculture sector is also the largest employer in India. It employs around 60% of India's workforce.

Many Indian farmers have committed suicide as they could not get proper help on time. In 2014, around 5650 Indian farmers committed suicide. This problem is an urgency & needs to be solved.

Taking into consideration, importance of this sector, This paper aims at listing problems faced by Indian farmers & use of Information & Communication Technologies (ICT) to solve those problems.

India is leader among IT service providers. Using ICT, India can provide better services to its farmers & can solve most of their problems. ICT is similar to information technology but focuses primarily on communication technologies such as the internet, wireless networks, cell phones & other communication media.

ICT can reduce the time taken for tasks such as time to purchase agricultural goods, getting agriculture related information etc. Farmers can see sustainable growth & prosper well through ICT. This paper consists of information regarding many portals & mobile applications which work towards betterment of farmers.

1. INTRODUCTION

Agriculture
Agriculture is the heart of the social development of our country. Agriculture is much vital because it provides livelihood for majority of the population, most contributing to national income, gainful employment. Agriculture is a source of livelihood for 86% of rural people in India and it provides 1.3 billion jobs for small-scale farmers and landless workers. So it is important to concentrate more on agriculture sector.

Agriculture plays a vital role in the Indian economy. Agriculture is an important sector of Indian economy as it contributes about 17% to the total GDP and provides employment to over 60% of the population. Indian agriculture has registered impressive growth over last few decades. The food grain production has increased from 51 million tonnes (MT) in 1950-51 to 250MT during 2011-12 highest ever since independence. So it is indispensable to concentrate more on agricultural sector.

Information Technology
One of the identified agents through which the world will constantly experience change is technology. In the business of trying to make information available in the right form to the right user both at the personal and organizational levels, and at the right time, the bid to cope with great flood of information has led to the need for a more sophisticated way of handling information faster and better.

According to Anyakoha (1991), information technology is "the use of man made tools for the collection, generation, communication, recording, re-management and exploitation of information. It includes those applications and commodities, by which information is transferred, recorded, edited, stored, manipulated or disseminated". Hawkridge (1983) describes information technology as a revolution which has penetrated almost all fields of human activity, thus transforming economic and social life. UNDP (2001) asserts that even if sustainable economic growth facilitates the creation and diffusion of useful innovations, technology is not only the result of growth but can be used to support growth and development.

Information and Communication Technology
Information and Communication Technology (ICT) is an umbrella term that encompasses all the technologies for the manipulation and communication of information. It comprises the various devices, services and applications such as Radio, Television, Cellular phones, Computers, Tablets and Networking Hardware and Software, Satellite systems.

Information and Communication Technologies (ICT) refers to technologies that provide access to information through telecommunications. ICT is similar to Information Technology (IT), but focuses primarily on communication technologies such as the Internet, wireless networks, cell phones, and other communication media. Keeping in view the first men in the food production process i.e. farmers, he has to be enabled to make use of the most benefits of ICT.

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ICT in Agriculture

Technology for agriculture, This was dream, but it is translated into a reality because of ICT tools are proliferated for the nurture of agriculture. ICT tools should be utilized for accelerating the agriculture sector which automatically changes the economical growth of our country.ICT in agriculture helps to make the right decisions at right time and to bring out best possible solutions in the field of agriculture.ICT in agriculture is used to nurture the farmers and to reduce the travails of farmers, it is indispensable of applying the technology in agriculture.

PROBLEMS FACED BY FARMERS IN INDIA

Cold storage misallocation and Inefficiency

Misallocation of cold storage facilities in India. Regular power cuts hamper the performance. A 2013 report by Emerson illustrates that 60% of India's cold storages are located in just 4 states – Uttar Pradesh, Gujarat, West Bengal and Punjab. Out of the 30.11 million metric tonnes of cold storage facility provided by the 6,300 cold chain warehouses in the country, Tamil Nadu has access to only 0.0239. India has a gap of 3.28 million tonnes of cold storage facilities for fruits and vegetables.

Transportation problem

Indian villages have no all weather roads. Most of the Indian farmers reside in villages. An average farmer in India travels 12 km to reach the market. 60% villages are without roads in India. Less than 0.1 percent of the national income is spent on the maintenance of roads in India.

Lack of water management

Indian Agriculture heavily depends on rains. There is less infrastructure available for irrigation. Ground water levels are falling due to poor rain. incomplete projects, cost-time overruns, under-utilization are some of the problems faced by irrigation facilities in India. India has population as much as 15% of the world's population but has only about 4% of the world's fresh water resources. Much of these are unevenly distributed.

Less no. of agri-commerce sites

Commercialization of agri produce is important in India. We have e-commerce sites in abundance. We need more no. of agri-commerce sites to give justice to produce by Indian farmers & supply them quality material.

Small and fragmented land holdings

The problem of small and fragmented holdings is more serious in densely populated and intensively cultivated states like Kerala, West Bengal, Bihar and eastern part of Uttar Pradesh where the average size of land holdings is less than one hectare and in certain parts it is less than even 0.5 hectare.

Rajasthan with vast sandy stretches and Nagaland with the prevailing 'Jhoom' (shifting agriculture) have larger average sized holdings of 4 and 7.15 hectares respectively. States having high percentage of net sown area like Punjab, Haryana, Maharashtra, Gujarat, Karnataka and Madhya Pradesh have holding size above the national average.

ICT Illiteracy

Most of the farmers in India are illiterate. ICT Illiteracy is also high as compared to other countries. Most of the Farmers reside in the villages. A recent government study estimated that 32 percent of India's rural population is illiterate, compared to 15 percent in urban areas. For farmers, that percentage may be even higher.

Poverty among farmers

Most of the farmers in India are poor. While the prices of crops have been pushed down - often even below the cost of production - the prices of inputs such as seed, fertilizers and pesticides have gone up. *f* With limited resources, farmers depend on borrowed money to purchase seeds and other inputs and to farm their land. A drop in their farm income could quickly lead to farmers owing more than they own. In India, one farmer committed suicide every 32 minutes between 1997 and 2005.

Poor quality seeds

Most of the times farmers get poor quality material, then their yield are also of poor quality. So, it becomes a circle & farmers remain poor.

Electricity issue

Around 240 million Indians have no electricity. 50 million rural homes are without power. It creates infrastructural hurdles to employ ICT.

Less internet penetration in rural area

According to report released at the 'India Mobile Congress 2017', Internet penetration in India is 33 per cent, it is only 16 per cent in the rural areas.

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Lack of advisory services
Most of the rural farmers are uneducated. They need advice on farming practices. In India, As compared to total population of the farmers, there is deficiency of advisory service providers. Those who provide; they fail to provide timely services.

Rising costs of agriculture material like seeds, fertilizers, labor & equipments
Costs of agricultural raw inputs are rising. In comparison, costs of farm produce may or may not give fair returns. In this case, proper guidance to the farmers & use of technology is necessary.

Unawareness with regard to natural calamities & future problems
Unseasonal showers affect cereal and vegetable crops in several parts of the country. Most of the times, farmers are unaware of the natural calamity in the near future. Use of technology for weather forecasting & disaster management is a must.

Inadequate information about sales & distribution
For many years, farmers in India have had little freedom in choosing markets and buyers for their produce. Most of the states in the country mandate that marketing and selling of farm produce must be routed through state-owned mandis, retail markets where middlemen squeeze farmers to increase margins.

Lack of relevant & updated content
Farmers should be aware about new farming practices & current technology used for farming. Most of the Indian farmers are not aware about these farming practices. Due to these, they generate losses.

ROLE OF ICT IN SOLVING PROBLEMS FACED BY INDIAN FARMERS

- New production techniques are often necessary to increase productivity as well as to ensure that the commodity meets market demands. Small scale farmers are frequently reluctant to adopt new technologies because of the possible risks and costs involved. So, Small scale farmers can go for Contract farming and corporate farming.

  These are the new initiative for reorganizing the agriculture production system. Contract farming means working with small land holders. It is a contract between producers/suppliers and buyers for the production and supply of agricultural or horticultural products. Corporate farming is a term used to describe companies that own or control farms and agricultural practices on a large scale. This includes not only corporate ownership of farms and selling of agricultural products, but also the roles of these companies in influencing agricultural education, research, and public policy through funding initiatives and lobbying efforts.

  To manage large scale of land the precision farming system is very much proficient. The precision farming is based on WSN for monitoring the large land without human surveillance. It caters information about pest & disease control periodically. It provides facilities to the farmers to make out the soil traits, humidity of the soil and temperature using sensors. Green house monitoring system using WSN may be implemented for the optimal production.

- Farmers shall be taught to use ICT through motivational lectures within local communities. Farmers also being trained by using ICT tools/media such as Multimedia, Web based systems, radio dial-up and Broadcast. It is necessary to encourage farmers to know more and more about ICT applications for agriculture. Some of the ICT projects like e-Arik, e-Krishi Kendra, Tata Kisan Kendra, e-Agro, Digital Green, e-Krishi and e-Velanmai provide training for farmers.

- It is necessary to provide timely and adequate credit to farmers for better agriculture production. Government of India, Reserve Bank of India(RBI), and National Bank for Agriculture and Rural Development(NABARD) started Kisan credit card system in 1998-99. It uses ICT to provide affordable credit for farmers in India.

The Kisan Credit Card allows farmers to have cash credit facilities without going through time-consuming bank credit screening processes repeatedly.

- Kisan Call centre is an expert advisory system and the farmers need to call the toll free number 1800-180-1551 to seek expert advice on different matters related to agriculture and allied sectors.

- Organic farming system in India is not new and is being followed from ancient time. It is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for

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increased sustainable production in an eco friendly pollution free environment. If it is practiced properly then it will reduces the input costs for fertilizers, pesticides and seeds, dramatically improves farmer health and enhances the fertility and resilience of their land.

- Water management can be done by using crop irrigation system. Mobile is playing a big role in monitoring and controlling crop irrigation systems. Farmer can control his irrigation systems from a phone or computer instead of driving to each field. Wireless Sensor Networks and GSM can be used to control irrigation system such as drip irrigation system.

  Hydrawise: A healthy, beautiful garden needs just the right amount of water to thrive. Hydrawise automatically adjusts watering based on highly accurate, internet-sourced local weather data. The system looks at the forecast and past history to ensure that just the right amount of irrigation is applied. This is accomplished via advanced Predictive Watering, which fine-tunes watering based on the weather data. This leads to significant water savings from your sprinkler system, saving you both time and money.

- Various farmer friendly applications (apps) are being launched by companies, which helps farmers in discovering prices for their products, delivering their product, getting soil report, etc. ITC's e-choupal initiative is facilitating the lives of rural farmers to a great extent. It has provided internet access to rural farmers where they can sell their produce, get market & weather information, buy essential material such as fertilizers at competitive rates. They get updated information on farming practices. Around 4 million farmers have been benefitted till date.

- m-KRISHI is developed by TCS. It is a mobile & sensor network based agro advisory system. The mobile phone is equipped with multiple features like sensor, camera, GPS & microphones which has enabled farmers to interact with agri experts.

- There are various agri-commerce sites such as BIGHAAT, KISAN POINT which are helpful in trading the farm output. BigHaat has adapted multichannel strategy to reach out growers across India and addressing their Agricultural Input needs.

CONCLUSION

Government must provide subsidies for getting ICT tools. Efforts should be taken at national level to literate the farmers about ICT tools. The agriculture projects which promote ICT services should update their content regularly and should provide services of global standards. Use of ICT tools in agriculture is sure key to success.

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ANALYSIS OF UNSTRUCTURED DATA HANDLED BY BIG DATA: A TECHNOLOGY OVERVIEW

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ABSTRACT
The amount of data that's being created and stored on a global level is inconvincible and manageable, and it just growing day by day in large scale. That means there's need to manage this data in order to process it in natural form – yet only a small amount of data is actually analyzed in response to actual data being generated. Big Data is concept of structuring data and process it or storing it in any available format.

I. INTRODUCTION

Data these days is considered to be one of the most precious things in our day today life. Each and every thing today is based on data. Each technology evolved today is because of availability of data provided. Data can be in any form, may be images, files, documents, audio, video etc. This data is very important in handling any computer events or for doing any activities. Sometimes it becomes hectic to handle different types of data where type of data is different from rest. So here comes new Concept of BIG DATA. Data can be structured or unstructured according to activities and processes. This term Big Data is relatively new and which handles all types of data which is produced through any form of activities, processes or say events. It has mechanism to handle each form of data available.

History

While Big Data term is quiet new to us but its simple approach of gathering data, analyzing and storing it for further references. This concept of Big Data is evolved in early 2000's when industry analyst Doug Laney introduced this new concept against the three V's. Volume, Velocity, Variety.

II. WHAT IS BIG DATA?

Big Data means really Big Amount of Data, it is collection of large volume of database which cannot be processed through general methods or techniques. Big Data is not only just a concept but it is a new approach which involves various tools, techniques and framework. It involves data which is produced from different applications and machines.

Fig. 1: Big Data

A. Fields under Big Data

1. Black Box Data: It is one of the parts of jets, submarines which stores data of pilot, voices of radios, decision taken at risks and crew recording. This data is used when certain planes crashes to find out reasons of crash and other information related to it.
2. Stock Exchange Data: In this, data from different stock investors are stored and information of customers in form of BUY and SELL is stored.
3. Social Media Data: Here data from different social media platforms such as facebook, twitter, instagram are required where users post millions of data each day and managing such a huge amount of data is very important and necessary.
4. Transport Data: Transport data includes information about total transport, route, maps, distance and availability of resources.

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5. Search Engine Data: This data is generated by different user queries applied on a particular search engines like google. This data is been generated on user requests and proper result to that is returned back to them.
6. Power Grid Data: Power Grid stores information of different nodes of base stations.

Fig.2: Fields Of Big Data

B. Concept Of Data Mechanism

- Volume: Organizations collect data from different sources, which is in unstructured form and sometimes data comes from social media, research centers, various machines. In past it would have been difficult to store such data but today it will be easier to store data in structured form by use of current technologies. So the varied volume of data may be stored without any problem.
- Velocity: Sometimes large amount of data comes in continuous and asynchronous format and to handle such data we need proper mechanism or data will be out of control and hence loss of data. Today, data is handled real time so that there's no loss of any data.
- Variety: Data comes in all types of format, may this be in structured, numeric, files, emails, audio, databases etc. This data is been handled by applications such that data is at stable state all the time.

For BIG DATA we consider another two new dimensions

- Variability: As data these days is available in large amount, type of data is also in variable form. Data is periodic, daily or it can be seasonal so accordingly Big Data stores and manipulates data and most importantly this data can be in unstructured format.

Complexity: Since data comes from different sources so data may be very complex to match, link and to understand to store it in proper way. It is necessary to connect and correlate data into different relationships, hierarchies and multiple data linkages.

C. Categories Of Big Data

Since Big Data include high volume, velocity, variety and in variable and complex form, generally there are three types of data which is categorized as follows:

1. Structured Data: Relational data, Database.
2. Semi-structured Data: XML files.
3. Unstructured Data: Media, google search.

- Structured Data: Any type of data that can be stored, accessed, processed in some fixed form then it is called as structured data. Over period of time, data is been stored in this approach and processing this data is easy even if data is in huge volume. Relational data is also structured.

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RELATIONAL DATABASE IS ALSO STRUCTURED DATA

Table - 1

E_ID	E_Name	Gender	Department	Salary
1001	Aditi	Male	Finance	500000
1002	Abhinav	Female	Admin	550000
1003	Ruchika	Male	Admin	550000
1004	Amar	Male	Finance	500000
1005	Simran	Female	Finance	50000

- **Semi-structured Data**

Semi-structured Data can contain both forms of data. In this type, data is semi-structured.

Eg. Data stored in XML

<Emp><E_id>1001</E_id><name>Aditi</name><sal>50000</sal></Emp>

<Emp><E_id>1002</E_id><name>Abhinav</name><sal>55000</sal></Emp>

- **Unstructured Data**

Any type of data which is in unknown form or structure is termed as unstructured data. Generally, unstructured data is in huge volume and hence maintenance of such data is one of the big challenges as well. Result returned by Google search, media are types of unstructured data.

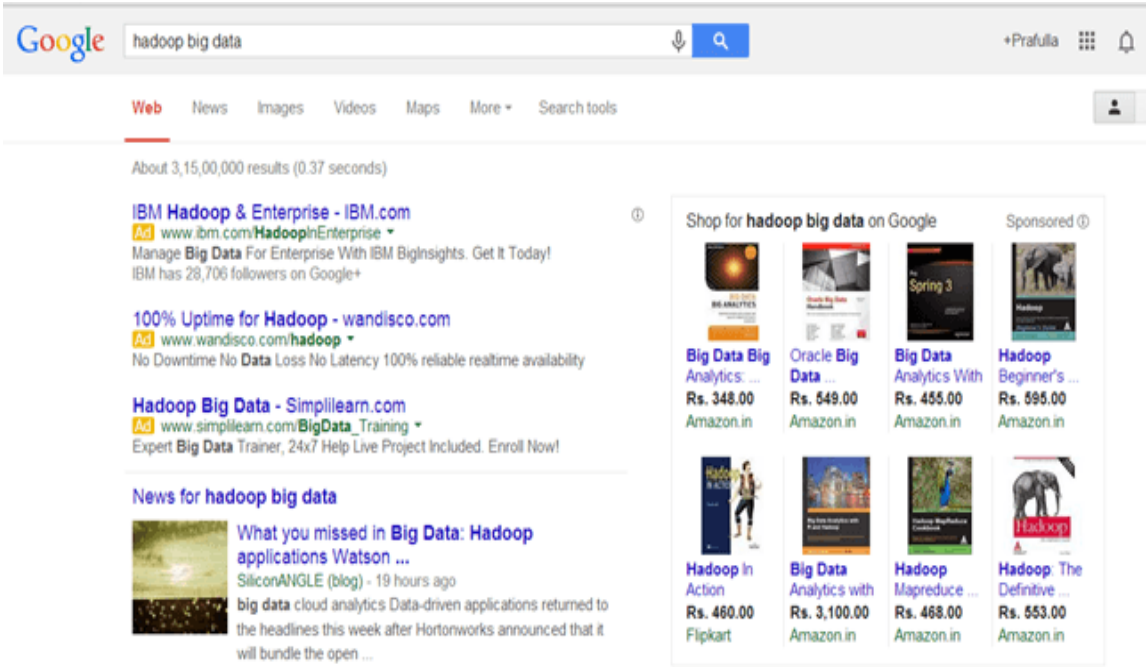

Fig. 3: Unstructured Data

Fig 4 : Production of Unstructured Data

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D. Importance Of Big Data:
Importance of Big Data doesn't revolve around how much data we have and how much data we need. We take data from different sources and analyze it to do the following

1. Cost Reduction
2. Decision Making
3. Product Development
4. Optimization of Time.

When Big Data is combined with high performance analysis, we can accomplish these tasks.

1. Detection of error and defects
2. Determination of failures
3. Calculation of risk
4. Increasing performance

E. Big Data Management:
The goal of Big Data Management is to provide high level of data quality and accessibility for large scale industries and large applications. Government, Corporate both tend to store data in structured format so that data should be available whenever necessary as data may be in some terabytes or petabytes. Most of Big Data Environments go beyond just relational databases and traditional storages which is suitable for storing and processing large amount of data.

III. HOW TO CATEGORIZE BIG DATA

Big Data is used for collection of data which is in huge volume and unstructured format, sometimes data is in some terabytes or more. Data being in such huge format leads to some complexity, error and storage problems. Generally, unstructured data management and storing it is a challenge. Here are some technologies which are used to store and access Big Data.

Fig 5 : Big Data Resources

- Apache Hadoop: It is a JAVA based free software framework which stores large amount of data in cluster. This works on parallel clusters and has ability to process data across all the nodes. Hadoop Distributed File System(HDFS) is system of Hadoop which split data and stores it in clusters.
- NOSQL: NOSQL(Not Only SQL) is unlike SQL which stores data in unstructured format. It stores data with no any particular schema. Here, each row can have its own set of column values. It gives better performance in storing data and there are many open sources to analysis of Big Data.
- Hive: This is another file system of Hadoop. It supports query like operations to access data i.e. HiveSQL. This is primarily used in data mining process.
- Sqoop: This tool helps connecting Hadoop with various other relational databases to transfer data.
- Big Data in EXCEL: As many are comfortable using EXCEL database, we can also connect Hadoop with EXCEL 2013. HortonWorks is primarily working in Hadoop, providing an access to Big Data which is stored in their EXCEL.

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Fig 6 : Future of Humans and data is a part of it

IV. CONCLUSION

Here we are in 2017, and with each passing day we are creating data in huge amount which is in the form of audio, video, pictures, files, scan documents and so on. What data is been created each day is in semi-structured or unstructured format and hence managing such data, storing, accessing when required and storing it becomes very difficult and hectic. But this data has to be stored for future uses, and hence here comes the need of such a mechanism of storing unstructured data. Big Data is solution to this problem, which stores data in any format and arrange it so that it can be used in future like the user wants. It is helpful in many applications where data is different forms and hence Big Data Technology is being very famous as it handles each data. In recent years to come this technology will be in huge demand and it will establish a new future data storage option.

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ANALYTICAL STUDY OF DIABETES CONTROL THROUGH DAILY MEAL PLANNING AND EXERCISE

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ABSTRACT
Nowadays we all hear about many people are suffering from diabetes. When your sugar is more than 140 after breakfast you are said to be diabetic. If your age is 45 then sugar after breakfast should be 100+45=145. If you plan your meals properly you can control your sugar levels. Diabetic patient should take medicines, meals and exercise at regular time. They must follow their routine as per the timetable given by the doctors. Proper medication in time, daily exercise i.e. 45 minute's walk in morning and evening and food intake with no sugar will easily control your diabetes. Patient should take food with more proteins. Also higher weight people are more prone to diabetes. So weight loss is must. If you loose your weight by 10kg your blood sugar also gets controlled.

Keywords: Carbohydrates, Proteins, sugar level, exercise, meals

INTRODUCTION

Whatever you put in your mouth becomes important, as soon as you are diagnosed with diabetes. Meal planning in diabetes can be a challenging task, but with good nutritional knowledge food does not have to be a problem, it can be the solution

EXPERIMENT

A good diabetic meal plan can be approached on three levels: **what to eat, when to eat and how much to eat.**

2.1 What to eat: Micronutrients are of three types: carbohydrates, proteins and fats Carbohydrates have highest impact on blood sugar. They are the main contributor to your blood glucose. But it does not mean you need to restrict your carb intake. Low carbohydrates diet is not recommended in diabetes. American Diabetes Association recommends that people with diabetes eat no less than 130 grams of carbs daily as carbs are not only provide you with energy but are good source of vitamins, minerals and fibers-all are essential for good health. Both type (simple or complex carbs) and amount of carbohydrates ingested affects glycemic response.(Table 1)

'Food pyramid 'also called a nutrition tool, generates a model for healthy eating with diabetes. To have a positive impact on blood glucose levels, blood pressure and lipid levels**, eat more from the groups at the base of pyramid and less from the group at the top.(Fig 1,2,3)**

Actually there is no such thing as diabetic diet. A diabetes plan requires same nutrients as everyone else. A healthful eating plan includes all the food groups. It's important to include all the food groups as no single food group meets all of nutritional requirements.

Unrefined cereals like whole wheat flour, whole meat bread, and whole grain breakfast cereals like oats and muesli, brown rice, whole wheat pasta, millets etc. should form bulk of your diet. **Healthy carb intake, essential vitamins, minerals, antioxidants and fiber are present in starchy and nonstarchy vegetables(Table 1) above the base of pyramid.** The recommended carbohydrates are 55-60 percent of total calories. So if a person is on a 1500 Cal diet, 900 calories should come from carbohydrates (225 gms of carbs) spread over the day.(Fig 1,2,3)

Dairy products should come from skimmed or low fat varieties. The pulse group should include more of husked dals and legumes. Both these groups provide body building nutrients. Fruits are low in calories and loaded with vitamins and fiber, which is very effective in controlling blood sugar and cholesterol. Including them in moderate amount shows good effect in sugar control. Food items at the top of the pyramid should be used rarely: oily foods, sweets, alcohol, unrefined carbohydrates used to be consumed in limited quantities.

3. FRUITS&VEGETABLES

3.1 When to eat: Meals regularity is very crucial for a diabetic patient. Eat at least two meals with snacks spaced throughout the day. Eating a consistent amount of carbs each meal, each day can help your blood sugar more constant. Do not skip the meals (For very high weight persons you can avoid one meal by replacing it with protein powder).Diabetics on medications or insulin need to match their doses with their meals. Waiting too long for meals after insulin can lead to hypoglycemia. One way to keep track of your intake and medicines is to maintain your own log book.(Table 2)

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4. EATING PORTION SIZE

4.1 How much to eat

Many people have difficulty in judging how much food they eat. They end up eating much more than their actual needs. Due to that weight increases and it makes diabetes control difficult. Even healthy food can cause problems if you eat too much of them. Portion control and learning what a service size looks like is critical part of meal planning. The tools that can help you to consume right amount of foods include

a) Measuring cups b) Measuring spoons c) Food scale d) Nutritional facts label on food packages can guide on how much food is there in one serving.

Initially weighing foods can be a little tricky, but with practice one will be cable to visualize correct portion sizes. A very simple visual tool to estimate portion is a plate method. It is very useful for people who have just been recently diagnosed with Diabetes and want a simple meal plan. All you need is a9" inches plate. Divide into three sections. (Table 3)

1)Ensure half the plate is covered with nonstarchy vegetables like spinach, lettuce, fenugreek, other green ,carrot,cabbage,green beans,broccoli,cauliflower,pumpkin,bottleguard,bitterguard,ritchguad,tomatoes,onIon,cucumber,okra,mushrooms,peppers,turnip.(Fig 7)

2) One quarter of the plate should contain protein such as lean meats,fish,low fat cheeses,eggs or vegetarian protein choices like pulses ,soya.(Fig 4, 5,6,)

3) One quarter of the plate should contain starchy foods like chapatti, rice, whole wheat bread

4) A fruit and dairy product complete the meal.This meal planning approach is easy to use at home. But when you go to restaurants it is difficult to measure the foods.

Another tool to gauge a healthy serving size is to use your hands. People can use their hands to estimate the correct portion size of the food that they should eat. This simple nutritional strategy can be adopted when eating away from home. Based on average size woman hand, the amount may vary from person to person, but it is a good approximation.

SOME MORE TIPS FOR PORTION CONTROL

1) While eating, Do not multitask
2) Stick to regular or standard sizes of foods and beverages instead of large or oversized meals
3) Large plates and bowls cause portion sizes to increase. So use smaller plates, bowls and spoons.
4) Learn to say"NO"to second helpings. If hungry take fruits and vegetables.
5) Eat slowly and savor your meal.
6) Don't go for shopping or for family event too hungry. You will end up with overeating. Take fruit or a small snack before leaving.
7) Restaurants usually serve large portions. Split meals with friends or relatives, when eating out

Non-Starchy Vegetables ½ cup cooked or 1 cup raw = **25 calories**	**Starchy Vegetables** ½ cup cooked or 1 cup raw = **80 calories**
Carrots	Beans
Asparagus	Pumpkin
Greens (turnips, collard, kale, mustard, spinach, swiss chard)	Sweet Potatoes
Broccoli	Potatoes
Brussel Sprouts	Yams
Cauliflower	Green Peas
Celery	Butternut Squash
Cucumber	Corn
Eggplant	Acorn Squash
Mushrooms	Beets
Lettuce	Parsnips
Zucchini	Lentils
Peppers	Plantains

Table 1: Starchy vegetables& Nonstarchy vegetables

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Figure :1

Figure:2

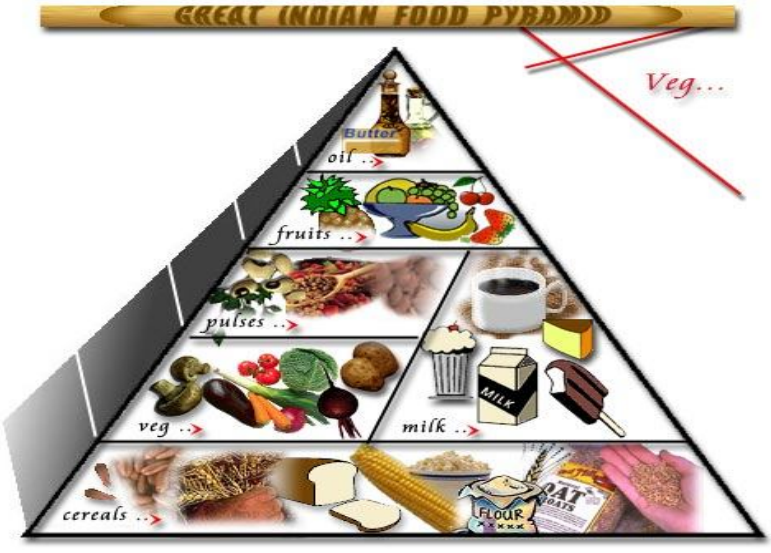

Figure: 3

Figure 1,2,3 :Indian food pyramid for vegetarians/nonvegetarians

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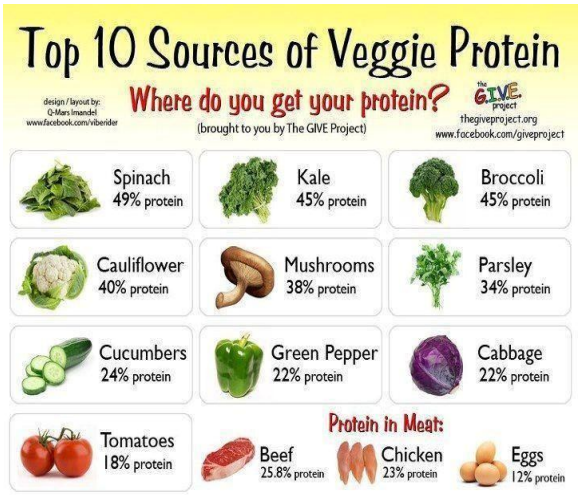

Figure 4: Sources of Veg Protein

Date	**1.1.2018**
Time	Exercise: Walking: Yogasana: Pranayam: Fasting sugar: Sugar 1hr after breakfast :
6.00AM	Lime water+walnut 2+Cinnamon powder ¼ spoon
7.00AM	GreenTea/Milk
8.30AM	Breakfast
10.30AM	Fruit/buttermilk/coconut water
12.30PM	Dinner(green veg+salad+dal+sprout in large amount)
3.00PM	Green Tea
5.30PM	Khakra
8.30PM	Lunch(green veg+salad+dal+sprout in large amount)

Table2: Log Book

Figure 5: Different vegetables

Figure 6: Different Fruits

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Figure7: Healthy Plate

4.2: GUIDE TO SENSIBLE SERVING SIZES

is same as 3 ounces / 1 serving of meat,chicken,turkey,fish

is same as 1 tablespoon / 1 serving of salad dressing/cream cheese

is same as 1 teaspoon / 1 serving of butter/oil/mayonnaise

5. CONCLUSION

Remember , a diabetes plan is a healthy eating plan that encourages portion control and eating a wide variety of nutritious food. So eat wisely and control your diabetes.

With meal control you should follow the exercise, yoga sana, walking (daily 45 minutes) and time to time medicine given by your doctor

is same as 1 ounce/ 1 serving of snack food/cheese

is same as ½ cup/ 1 serving of fruit/potatoes/pinto beans/rice/noodles

is same as1 cup / 1 serving of cooked veg/salads/milk/stews

Table 3: Eating portion size

Also weight control or losing weight up to 10-15 kg help to control diabetes

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ANALYTICAL STUDY OF LIGHT FIDELITY (LIFI)

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ABSTRACT
LI-FI is Abbreviation of Light Fidelity. It works similar to Wi-Fi but with higher security and higher data transmission speed. It provides the ability to transferring data through the light i.e. it uses LED's for visible light communication rather than radio waves. It provides security through rays of light which cannot pass through the walls. Also Li-Fi provides good bandwidth, efficiency and availability. In Li-Fi the rate of data transmission depends on flickering rate of LED's.

I. INTRODUCTION
Now a days it is need of new era to have internet network, this network can be wired or wireless. But considering today, there is more of scope for wireless networks since usage of portable devices such as mobile, laptops, tablets etc. Wireless communication can be done by using the Wi-Fi, Wireless LAN & Bluetooth and many more. But we eliminate Bluetooth due to its speed, Wi-Fi due to security, so solution to this problem is communication through visible light and named as Li-Fi. Li-Fi is Light Fidelity it is secure wireless connection. This Li-Fi term was introduced in 2011 by Mr. Harald Haas who is the professor of Mobile Communication. He is German Professor from University of Edinburgh.

Basically Li-Fi is wireless network that uses LED light i.e. Light Emitting Diodes for sending data. The idea behind the Li-Fi is introduce by the disadvantages of Wi-Fi. Wi-Fi uses radio waves that easily passes through the wall if it is not secure then it can be easily hacked. In Li-Fi light cannot passes through wall then it cannot be hacked by anyone. The data rate transmission is depends on flickering rate of light and this flickering rate is very high since human eyes cannot detect so provide high speed. Li-Fi provides speed of 224gbit/s. Since access depend on area covered by the rays of light.

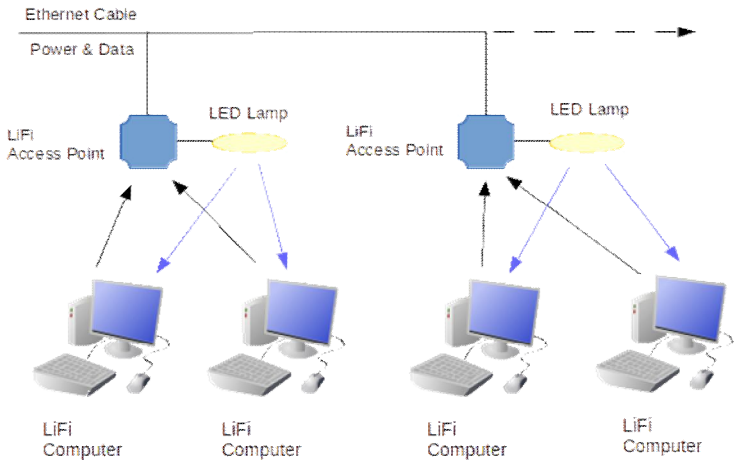

Fig. 1: Li-Fi Wireless Access Point System Could Work Using Room Lighting

II. VISIBLE LIGHT COMMUNICATION (VLC)
There may different choices of rays but they have some disadvantages.

1. Gamma rays are harmful for human.
2. X-rays affects human body.
3. UV rays are dangerous for human body.
4. Radio waves can passes through wall so security issue arises.

Fig. 2: Different rays

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Hence visible light is better choice for communication. Data communication is done through visible light and this visible light ranges from 400 to 800 THz (780-375nm). Visible light refers to an illumination of source (light bulb) which in addition sends information using the same light signal.

VLC = Illumination + Communication

Visible light uses fluorescent lamps and photodiode. To transmit the signal it uses fluorescent lamps and to receive signal from light uses photodiode. Avalanche photodiode is for sensitive response and image sensor for image acquisition and data reception.

III. CONSTRUCTION

The basic elements of Li-Fi are:

1. Bright LED light which work transmission source

2. Silicon photodiode for receiving source

LED light generate the integration of 0's and 1's by the "ON" and "OFF" activity of LED. Flickering speed of LED can generate data as LED's are source to generate data. High speed transmission upto 100 Mbps and can be used as fast speed network, multiplexing.

Li-Fi source contains 4 parts.

i. LED Bulb

ii. Radio Frequency Power amplifier

iii. Printed Circuit Board

iv. Enclosure

Printed Circuit Board handles electric input and output of light, microcontroller manage its functioning. A radio-frequency signal is produced by the solid state PA and which is combine into an electric field. The high energy in the electric field vaporizes the contents of the bulb to a plasma state at the bulb‘s centre, this controlled plasma generates an intense source of light.

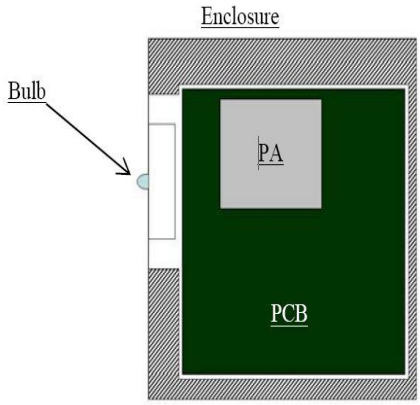

Fig. 3 : Block diagram of LIFI source contains 4 parts

Bulb is embedded in dielectric material. Dielectric material serves two purposes, acts as waveguide for Radio Frequency energy transmitted by PA and also it acts as electric field concentrator that focuses energy bulb. Energy from dielectric field rapidly heats material in bulb which release light of high asperity and spectrum.

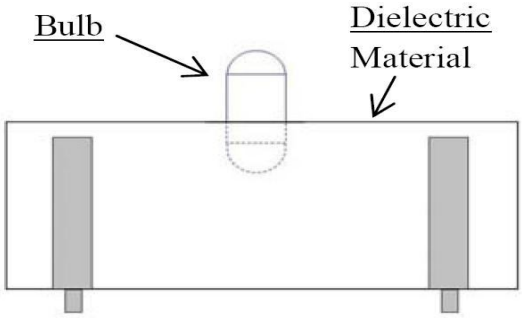

Fig. 4: Bulb sub-assembly of LIFI

This mechanism is robust without typical degradation and failure of materials involved.

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IV. WORKING

The working of Li-Fi is done by using the Light Emitting Diodes (LED) that is it uses white LED's which generate high brightness by applying constant current. The logic behind the working of Li-Fi is simple and easy to understand. If the LED bulb is switched ON then digital 1 is passed and if LED bulb is switched OFF then digital 0 is passed. Due to the switch ON and OFF activity of LEDs gives an opportunity of sending data through the light. In working of Li-Fi, light emitter is placed and LED

and photo detector is placed next to light emitter. When LED is ON the photo detector transmit binary 1; and a binary 0 when the LED is OFF.

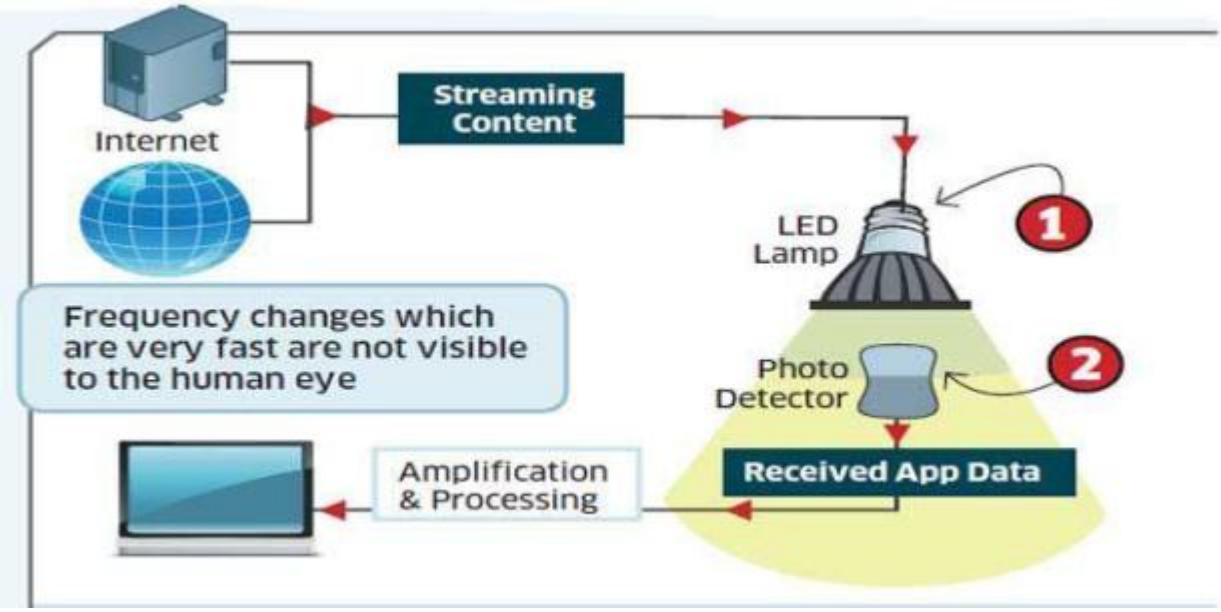

Fig. 5 : Block diagram of Li-Fi system

In above figure 5 block diagram of Li-Fi system the data can be converted in from light by the flickering rate of LED at which the LEDs switch ON and OFF to generate different strings of 0s and 1s. The asperity of LED is modulated very fast so that human eye cannot notice, so the light looks constant to human eye.

The ON and OFF switching action of LED bulb which looks invisible human eye that enables data transmission using binary codes:

LED switching ON is consider as logical '1' and switching OFF is consider logical '0'. By

Varying the rate at which LEDs switch ON and OFF, by using different combinations of digital 0s and 1s the data can be converted in form of light. This system uses quick pulses of light to transmit data wirelessly so this term is called as Communication through Visible Light, though it is called as "Data Transmission Though Light".

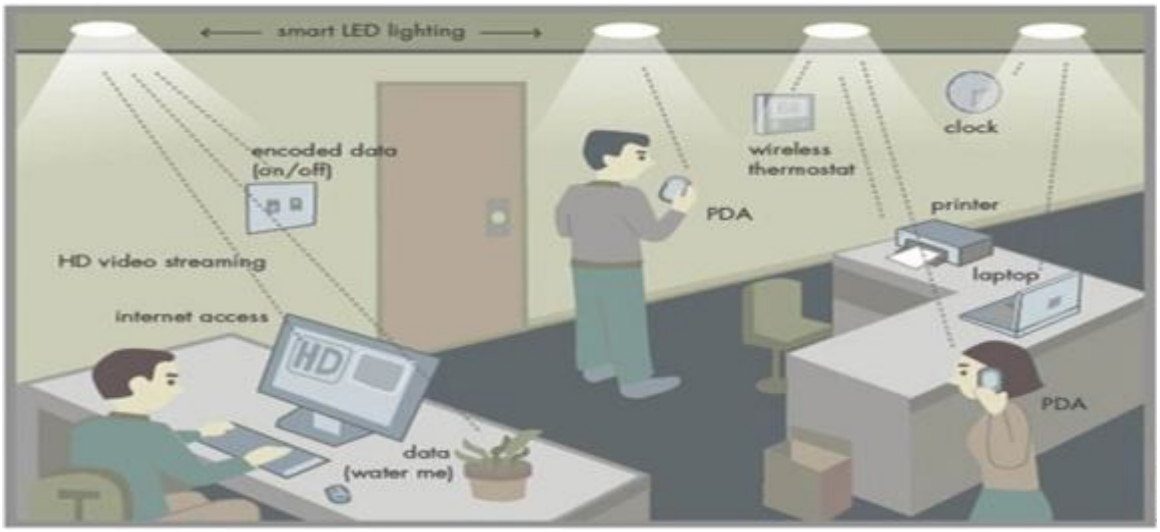

Fig. 6 : Li-Fi system in a small area

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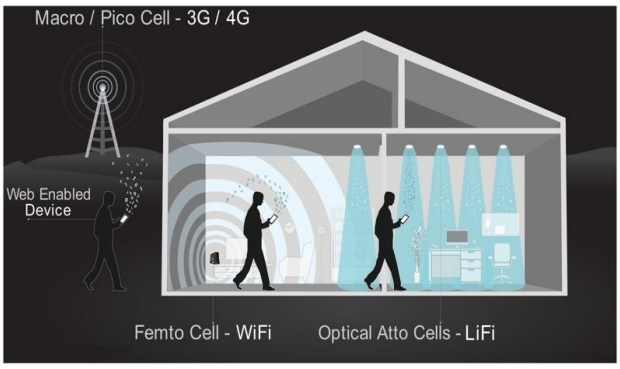
In above figure 5 show the Li-Fi system in small geographical area in this there are persons in office uses the Li-Fi system in room. In this room the Smart Li-Fi LED is used, the light of LEDs is falls down due to that they can use wireless transmission of data. The area covers LED light only that much area is used for wireless transmission.

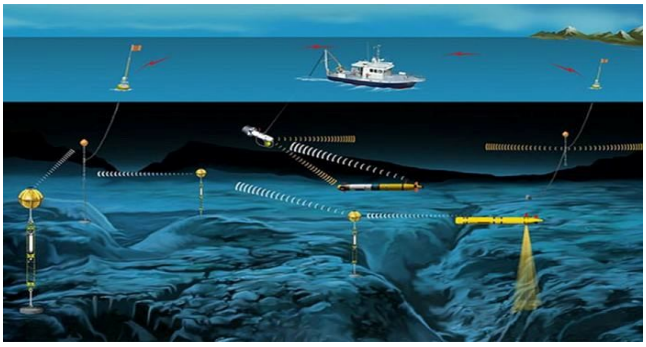
V. APPLICATION AND ADVANTAGE

1. Secure: In Li-Fi data Transmission done by using light and this light cannot travel through wall or door so this make more secure it means Li-Fi cannot be hacked. Range of Li-Fi is limited to device in room.

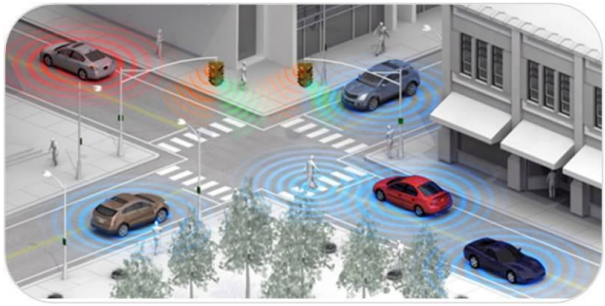


2. Medical Application: In operation theatres Wi-Fi is deny because of radiation. Use of Wi-Fi at hospital create barrier for the signal of medical equipment's. So it may causes dangerous for patient's health. To overcome this problem Li-Fi can be used.

3. Underwater Application: We can use Li-Fi underwater were Wi-Fi fails because radio waves cannot travel through water. Therefore it is useful for military / navigation.



4. Traffic Management: Li-Fi can be used in traffic management. The LED of Li-Fi can contact with LED of vehicles to handle the traffic. LED of vehicles can awake to driver, when other vehicles are near so it can reduce the number of accident.



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5. Airlines: In airlines we can use Li-Fi system. Wherever we are travelling from airways we suffer from many problems because the whole airline system communication is done by using radio waves so overcome this problem we can use Li-Fi.

VI. CONCLUSION

From the above study we can conclude that Li-Fi is forthcoming and developing technology which is challenging for different technology**.** In practically if we use Li-Fi system then every blub can be used as hotspot. Li-Fi can provide high speed and can be wireless so it is beneficial in many ways. This technology can overcome the shortage of radio frequency bandwidth. Li-Fi can be implemented to various stages and various platforms of human life.

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ANALYTICAL VIEW OF THE FUNDAMENTALS OF PROGRAMMING FOR SLOW LEARNERS

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ABSTRACT
The main purpose of this paper is to simplify the Basics of programming for Slow Learners, using very day today life examples.Resembling simple tasks to remember the steps for writing the program are considered.Use of elaborative block diagrams to define the structural flow is followed.To learn programming, conceptual understanding is needed.The analytical view is explained in the format of question, answer & outcomes are discussed, to make the task simple.The main objective is to reduce the number of repeatations required for slow learners to get the core cocepts.The instructor may have to take extra efforts for theseprerquisites before actual programming starts.This analytical view may prove one of the guideline to achieve this.

Keywords: Slowlearner, analytical, prerquisites, guideline, instructor

INTRODUCTION
A slow learner is a child of below average intelligence, whose thinking skills have developed significantly more slowly than the norm for his/her age. This child will go through the same basic developmental stages as other children, but will do so at a significantly slower rate[1].Research shows that a 'slow learner' is not a diagnostic category, rather a student who has the ability to learn necessary academic skills, but at a rate and depth below average with same age peers. In order to grasp new concepts, a slow learner needs more time, more repetition, and often more resources from teachers to be successful.[2]The description here, is just one effort to help the instructor.When a student is identified to be a slow learner, it becomes a hard task for the Instructor to explain the things related to programming language.If basics are clear, it will make next steps more easy to learn & program further, for such a slow learner.The typical and traditional explaination may seem hard for him.So following may be a useful pathway towards grasping the fundamentals of programming.

METHODOLOGY
Even if many online resources are available to learn, finding the one that will suit the individual needs may vary.It is tedious task also to scroll through so many resources.Even the choice may vary depending on the learner.This methodology has the structure of sections, each one handling a question, its answer & corresponding outcome from it.

IMPLEMENTATION
Q.1. What is Program?
Answer:It is like a Salad receipe which gives you step by step instruction to prepare the Salad.[3]

Outcome:Receipe=Program=step by step instructions written for specific purpose.

Q.2.How to write a program?
Answer:To write a program,go throughthe fundamental block diagram of a computer program.

Here is description of receipe for Salad preparation example in Figure 1.

Outcome: Clearing the concept of program structure.

Q.3.Can these steps be actually made applicable?
Answer:Yes.Application is elaborated as the following:

Goal/Purpose :Write a program to add 2 numbers & display the result.

Steps to think :
0.What is the expected outcome (the receipe)=output of the program.(Addition/Sum of 2 numbers)

1.To prepare the receipe,someIngredients are required = Program needs inputs->numbers to add will be the input here.

2.How many Ingredients are required?= no. of inputs->2

3.Let's put each ingredient in one bowl/jar =Placeholders for inputs.

3.1. Placeholders(memory locations where we can store values to add)->Let's give names to memory locations of 2 numbers as 'number1','number2'.

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3.2 Why bowl/jar?As per the type of the ingredient , take the container.What may be the type of value hold by two input numbers ? ->Type may be integer, fractional/character.

3.3 Declaration of inputs ->Data Type followed by name of the Placeholders.

4.Set aside a serving bowl/jar for final outcome=Placeholders for output/outputs.

4.1 Placeholders(memory locations where we can store output/outputs)->Let's give name toresult of addition as 'sum'

4.2 Why bowl/jar?As per the type of the ingredient , take the container.What may be the type of value hold by addition result? –>Type may be integer, fractional/character.

4.3 Declaration of output/outputs ->Data Type followed by name of the Placeholders.

5.Start mixing all the ingredients as per the instructions=Process the values of inputs(Perform addition)->sum=number1+number2.

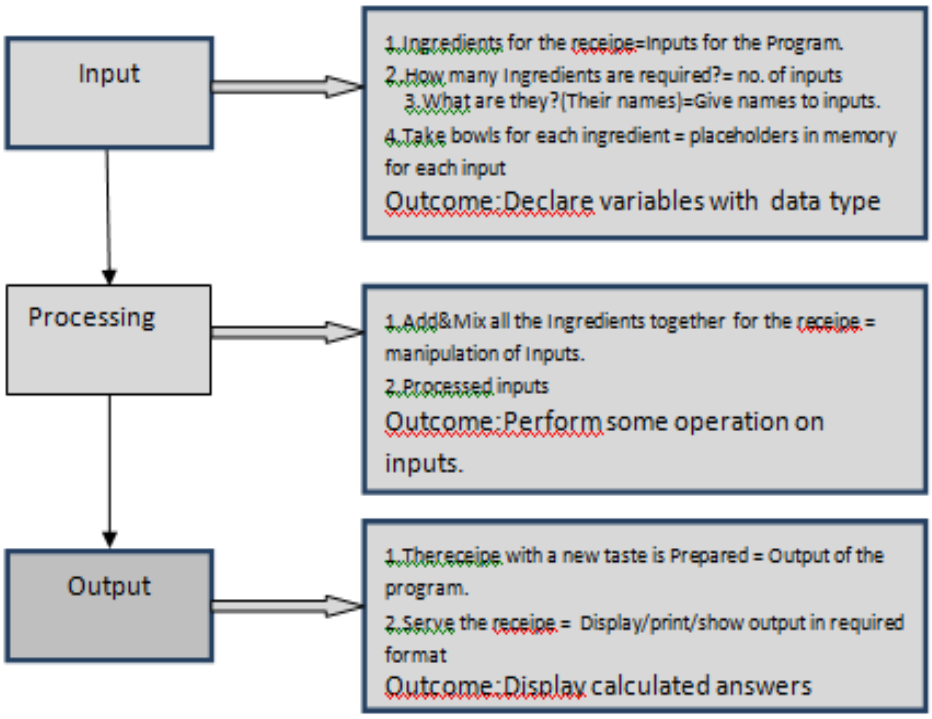

Figure 1: Steps for receipe of Salad Preparation

6.Put the preparation in serving bowl/jar for presentation=Put calculated/processed result in placeholder of output/outputs of required type, to display->sum.

Purposefully, the serial numbers for steps are started from 0 as many times programs need initialisations which generally(not necessarily always) starts from 0.

Outcome: Synthesizing concepts with actual implementation.

Q.4. How to write first program?
Answer: Follow the steps above & write the program instructions stepwisein notebook, for the specified task.Tryevaluationg contents of each placeholders(values)after each stepexecution.Check if they are as expected else make proper changes.Get it checked by the instructor.Type the program ineditor.Take help of the instructor to compile &run.Try different input values & crosscheck the results.

Outcome: Gaining confidence to write a program.Even if instructor is helping, it is the need for the first program.Instructor may also get the points where the slow learner may get confused while demonstrating to others.

CONCLUSION
With the help of above steps, thinking process can be made easy for a slow learner.What is a data type, its formal definition now can be remembered easily.However,it is a great achievement from the viewpoint of a slow learner to complete first program successfully.

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ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS IN DIFFERENT AREAS

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ABSTRACT
This review has or includes the meaning of artificial intelligence. Also it considers various applications of AI in gaming, weathers, industries, expert systems. It also has the advantages and disadvantages of AI. It is popular in many fields and has been beneficial to humans in many ways. It also has given a growth to the expert systems, which is helpful in solving some complex problems. An increase in the capability is seen by using AI.

Keywords : Strong AI, Weak AI, Artificial Intelligence.

1. INTRODUCTION

What is exactly artificial intelligence? It is the study of how to make computers do things, which at the moment people do better. It is the study of intelligent machines and software's, which can collect the necessary information and communicate the objects. It makes computer behave like humans and also it takes much less time than humans that is access is quicker. It has two parts strong AI and weak AI. Strong AI's are equivalent to human intelligence. It is a goal to make computer understand but some terms remain or we can say they are not defined, so there is no such measure of success in this field. The aim is to minimize the efforts of humans or to stop their dependence and take the decisions on the spot. Example of strong AI is chat robots that talk to humans. Weak AI's are seen in the games where a person plays with the computer but it does not know that another person playing is not computer but it is a person who has developed the moves with the help of algorithm. Instead of expecting machines to turn into humans, we must ask them to perform complicated tasks. For example, it is used in different companies and by engineers who require robots to perform tasks. Similarly, other work which can be completed by entering the information or data in the machines with the help of programming languages.

2. AREAS OF ARTIFICIAL INTELLIGENCE

2.1 Language understanding

When we use the term understanding, it means one representation is transformed into another, where the other representation or we can say second representation has some available actions that can be performed and contains mapping which has been designed so that an action is performed for each event. It also means conversion or translation of a spoken language into some written form. Image and speech understanding is very important in construction of standalone programs to solve one particular task. It also plays an important role in the larger field of robotics.

There are four things that cause difficulty in understanding problem. They are as follows:

- The type of mapping which can be one-one, many-one, one-many, or many-many.
- The presence of noise in the input to the under stander.
- Complexities in the target representations.
- The level of interaction of the components of the source representation.

2.2 Learning

Learning covers a wide range of phenomena. We see at one end skill refinement. Simply practicing, people can get better at tasks. For example, the more you play a game, the better you get. At other end lies the knowledge acquisition. Knowledge acquisition includes organizing, framing knowledge from a source. Machines should be able to learn new things and adapt to new situations rather than doing something they are told to do. This is the most heard disapprovals of AI. Machines cannot be called intelligent until they learn new things. Another way of learning is taking advice from someone which is similar to rote learning. In case of data caching, we store computed values so that we do not need to recompute them later. When this computation becomes more expensive, this strategy can save a significant amount of time. In AI we use caching for improvement in the performance and such caching is called as rote learning. We also learn through self - problem solving experience so the next time we solve such problems more efficiently. Practically learning can be the difference between solving a problem rapidly and not solving them at all. In addition, problem solving experience may be able to come up with better solutions in the future.

2.3 Games

Two reasons contribute in exploring the machine intelligence in games. First is they provide a structured task. In this it is easy to measure a success or failure. Second is they solvable by direct search from starting to target

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or winning states. As a result, they do not require any large amounts of Knowledge. For example, in chess both knowledge and search is used. The deeper the search, the less knowledge is required and vice versa. Human players use a more knowledge and a little amount of search. On the other hand, computers are able to evaluate millions of branches. Two examples of high rated chess machines are HITECH and DEEP THOUGHT. Other games seen are Checkers, Go, Backgammon, Othello. Every game like every artificial intelligence task requires the combination of search and knowledge.

2.4 Perception

Perception interprets the vision, smell, touch and sound. Two important senses of humans are vision and spoken language. With the help of these we can gather most of the Knowledge that helps us in solving a problem. A visual image consists of thousands of pixels. We can perform operations like pattern recognition, image understanding, analysis, etc. In these, image understanding is more complicated operation so it has been the subject of more study in AI. Some difficulties are:

1. When image is created, some information is lost because the image is two-dimensional whereas the world is three-dimensional.
2. The pollution in the air, the source of light, the color of the object, the angle and distance of camera can affect the values of pixels.

For example, we may imagine a circle as a disk or dome or a sphere.

2.5 Expert systems

The problems solved by human experts are solved by expert systems. To solve such problems efficient systems should be build. They represent the artificial intelligence in a broad manner. This representation follows some rules. It performs two important tasks reasoning and to have new knowledge and modifications of old knowledge. The program steps must be understandable and the explanations should be generated, so reasoning is very important task. The second task says that the knowledge should be accurate. This can be achieved by interacting with the human experts. An expert system is divided into three parts. First is knowledge base which has all the data required to build the system, second is inference engine it contains analyses of query and the correct solution that a human expert would have given. Third is rule which is a conditional statement that links conditions to final solutions or the final output.

3. APPLICATIONS OF ARTIFICIAL INTELLIGENCE

3.5 Applications of artificial intelligence in Accounting Databases

To solve some problems of accounting databases we use AI. Humans cannot understand the computer based accountings and the systems are very difficult to use. For representation of AI's we use natural language. There are also some tools of AI's which help in understanding the accounting databases. They help the users in building intelligence into databases. They help the users to sort large amount of data.

3.6 Applications of artificial intelligence in MRI

MRI stands for magnetic resonance imaging. In MRI, the patient is placed in a powerful magnet where short pulses of radio waves are passed into the human body. The responding radio pulse is transmitted by patient tissues which produce two dimensional images of tissues. It is a boon to medical and astronomy.

3.7 Applications of artificial intelligence in Medical

In medical, AI is helps the doctors for treatment of cancer. There are many medicines for treating a cancer. So it makes the doctor confused on which to use or to make a right choice of medicine for the patients. Currently, a machine called "HANOVER" is being developing which stores all the necessary information about the cancer and helps with the appropriate medicines. Another use is to monitor high risk patients, and this is done by asking many questions to the patients based on data gathered from live doctor to patient interactions.

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3.1 Applications of artificial intelligence in Automotive

AI has made a growth in the creation of self-driving vehicles. It provides lane changing, braking, collision prevention, mapping, etc. The vehicle is pre-programmed of the area where it will driven. It makes the system aware about the surroundings like the street lights or curves. Some self-driving vehicles do not have brakes so an research is made which focuses on the safety of passengers by understanding the speed and driving conditions. So as we have stated above, the safety of passengers is important and also it should avoid hitting the pedestrains. In such cases the programming of car becomes very difficult or crucial.

4. ADVANTAGES AND DISADVANTAGES

The main advantage of AI is that it does not stop in between that is there are no breaks. They perform their work continuously without getting tired. There are less chances of error. More accuracy is seen. Robotic pets help the patients with depression. Also AI are useful in medical for the doctors to understand the right cure and medicines. They help us in dangerous tasks. Fraud detection is possible. It is also seen in mobile phones while correcting spelling errors of humans. The main disadvantage of AI is that cost is more. The maintenance is difficult. The programs need to be updated according to the conditions. Intelligence is a gift of nature. So we need to think whether we should replace ourselves with AI's. They will perform repetitive tasks but they won't have experience as humans do. Machines may not be efficient as humans in altering their responses depending on the changing conditions. Also if we see that if the robots will be in hospitals they won't show any care as humans do. Also if they replace humans, it will lead to unemployment. If machines are given in wrong hands it may lead to destruction. So we must develop artificial intelligence according to human's convenience by understanding its pros and cons or humans may destroy themselves.

5. CONCLUSION

Artificial intelligence will create machines in a more advanced way then today. There will great future in health for improving the patients care. It will also take lot of time for creating the machines more intelligent than human beings. It will also have human brain features. Robots will be able to do all the work of humans more efficiently. Thus we cannot predict whether our future will be affected positively or negatively by artificial intelligence.

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A STUDY OF ENCRYPTION ALGORITHMS AND FUSION TECHNOLOGY FOR INFORMATION SECURITY

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ABSTRACT
With the development of information technology, information exchange has become the important means of modern social work and livelihood. Network communication, as a reliable and efficient data transferring methods, plays more and more important roles. Information that can be read or copied by unauthorized users is called loss of confidentiality. Confidential information should be stored properly so that they cannot be disclosed. Credit card numbers, bank records, medical records, social security etc are example of this kind of information. Cryptography is the art of achieving security by encoding messages to make them non-readable. Cryptography is the practice and study of hiding information. In modern times cryptography is considered a branch of both mathematics and computer science and is affiliated closely with information theory, computer security and engineering. Cryptography is used in applications present in technologically advanced societies; examples include the security of ATM cards, computer passwords and electronic commerce, which all depend on cryptography.

Fusion technique provides integration of Blowfish and RC6 together to achieve the high level of data security in web application. In addition to this the proposed algorithm to provide higher security because the key size in this algorithm is relatively large so it is difficult for attacker to break the key. By applying fusion algorithm such as Blowfish and RC6 together, we succeed in secure data transmission through web application and generating the encrypted text called as cipher text and decrypting the cipher text to get the same plain text sent by sender.

Keyword : Encryption, Hacker, Decryption, Public key, Private Key, Symmetric Key, Asymmetric Key, key size, Throughput.

INTRODUCTION
In recent years, a lot of applications based on internet are emerged such as on-line shopping, stock trading, internet banking and electronic bill payment etc. Such transactions, over wire or wireless public networks demand end-to-end secure connections, should be confidential, to ensure data authentication, accountability and confidentiality, integrity and availability, also known as *CIA triad* [1]. During this time when the Internet provides essential communication between tens of millions of people and is being increasingly used as a tool for commerce, security becomes a tremendously important issue to deal with. There are many aspects to security and many applications, ranging from secure commerce and payments to private communications and protecting passwords. One essential aspect for secure communications is that of Cryptography. The concept of securing messages through cryptography has a long history. Indeed, Julius Caesar is credited with creating one of the earliest cryptographic systems to send military messages to his generals. Cryptography is the science of using mathematics to encrypt and decrypt data. Cryptography enables you to store sensitive information or transmit it across insecure networks (like the Internet) so that it cannot be read by anyone except the intended recipient. While cryptography is the science of securing data, cryptanalysis is the science of analyzing and breaking secure communication. Classical cryptanalysis involves an interesting combination of analytical reasoning, application of mathematical tools, pattern finding, patience, determination, and luck. Cryptanalysts are also called attackers. Cryptology embraces both cryptography and cryptanalysis. A cryptographic algorithm, or cipher, is a mathematical function used in the encryption and decryption process. A cryptographic algorithm works in combination with a key a word, number, or phrase to encrypt the plaintext. The same plaintext encrypts to different cipher text with different keys. The security of encrypted data is entirely dependent on two things: the strength of the cryptographic algorithm and the secrecy of the key. A cryptographic algorithm, plus all possible keys and all the protocols that make it work comprise a cryptosystem. "Cryptography" derives from the Greek word kruptos, meaning "hidden". The key to hiding data is to devise a hiding (encryption) mechanism that is very difficult to reverse (i.e., to find the original data) without using the decryption key. Usually, the harder it is to discover the key, the more secure the mechanism. In symmetric (also called "secret-key" and, unfortunately, "private key") encryption, the same key (or another key fairly easily computed from the first) is used for both encryption and decryption. In asymmetric (also called "public key") encryption, one key is used for encryption and another for decryption [7].

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EXPERIMENTAL DESIGN

We implemented the algorithms according to their standard specifications in Java jdk 1.6 with Windows-7 environment and a tool has designed, which calculates the encryption time decryption time in ms (milliseconds) of each algorithm .The text file have been encrypted and decrypted with the designed tool and their execution time is calculated. Also required the symmetric key algorithms (Blowfish and RC6). The Short description as follows.

BLOWFISH

Block algorithms are, in terms of both design and implementation, generally more complex than stream ciphers. Bruce Schneier's Blowfish algorithm is a very good example of a block cipher and illustrates some important design concepts. Blowfish combines an non-invertible *f* function, key-dependent *S*-boxes, and a Feistel network to make a cipher that has not yet been broken. It is relatively simple to implement. CAST, another cipher of high repute, is very similar to Blowfish in overall design [2].

RC6

RC6 is Ronald Rivest's AES submission. Like all AES ciphers, RC6 works on 128 bit blocks. It can accept variable length keys. It is very similar to RC5, incorporating the results of various studies on RC5 to improve the algorithm. The studies of RC5 found that not all bits of data are used to determine the rotation amount (rotation is used extensively in RC5); RC6 uses multiplication to determine the rotation amount and uses all bits of input data to determine the rotation amount, strengthening the avalanche effect [2].

PERFORMANCE METRICS

The performance metrics are encryption time (milliseconds), decryption time (milliseconds) and throughput (Mb/sec.). The performance metrics analyzed and discussed by the researchers regarding encryption algorithms are discussed below:

Encryption Time: It is the time that an encryption algorithm takes to produce a cipher text from a plain text. Encryption time is used to calculate the throughput of an encryption process. In other words, it indicates the speed of the encryption process. The encryption time is generally calculated in milliseconds. It is the time taken by an encryption algorithm to encrypt the data. Less is the encryption time; more will be performance of that algorithm [4].

Decryption Time: It is the time that an encryption algorithm takes to produce a plain text from a cipher text. Decryption time is used to calculate the throughput of a decryption process. In other words, it indicates the speed of the decryption process. The decryption time is generally calculated in milliseconds. It is the time taken by an encryption algorithm to decrypt the data. Less is the decryption time; more will be performance of that algorithm.

Throughput: The throughput of the encryption scheme is calculated as the total plain text in encrypted in Kbytes divided by the encryption time in milliseconds. The unit of throughput is MB/Sec. More is the throughput; more will be the performance. The throughput of the encryption scheme is calculated as the ratio of total plain text by encryption time [3][5][6]. Throughput of Encryption Algorithm = Tp (Kbytes)/ Et (Milliseconds)

Where;
Tp: Total Plain Text (Kbytes)

Et: Encryption Time (Milliseconds)

The following table 1 shows the Encryption and Decryption Time for Blowfish Algorithm

Data (KB)	Encryption Time (In Millisecond)	Decryption Time (In Millisecond)
100	31	31
200	63	47
300	94	63
400	109	78
500	124	78
600	141	109
700	156	110

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800	172	112
900	172	125
1024	203	125

Table 1: Encryption and Decryption Time

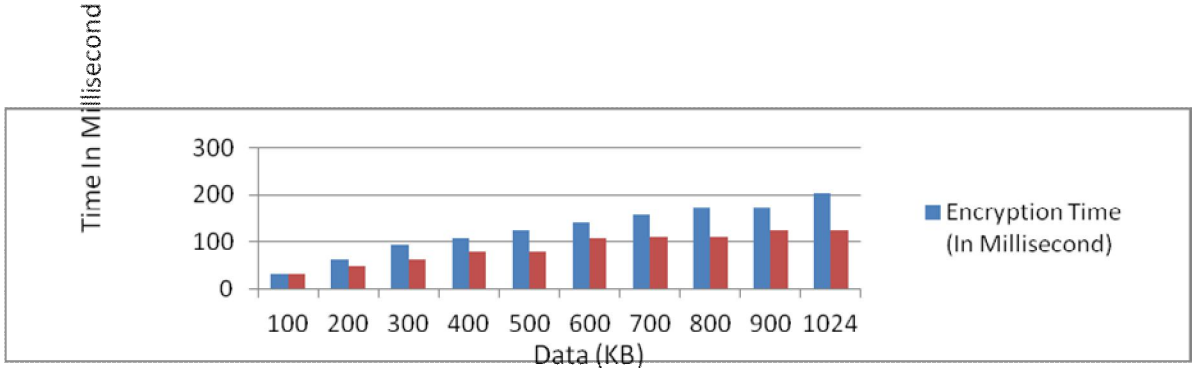

Figure 1**:** the Encryption and Decryption Time for Blowfish Algorithm

The figure 4.9 has shown the encryption and decryption time of Blowfish algorithm.

The following table 2 shows the Encryption and Decryption Time for RC6 Algorithm

Data (KB)	**Encryption Time (In Millisecond)**	**Decryption Time (In Millisecond)**
100	31	31
200	47	46
300	78	47
400	93	62
500	110	94
600	125	94
700	140	109
800	141	125
900	156	125
1024	171	140

Table 2: Encryption and Decryption Time

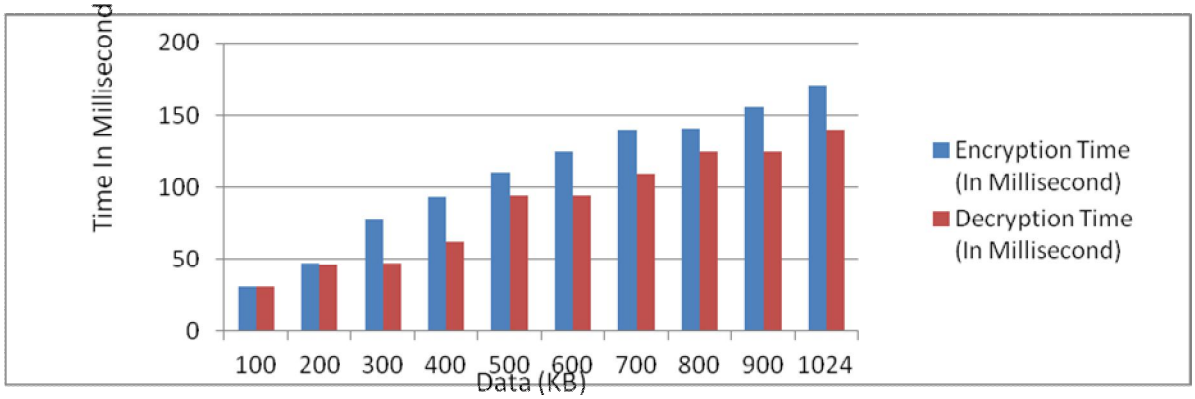

Figure 2: the Encryption and Decryption Time for RC6 Algorithm

The following table 3 calculates the Encryption Time for Fusion BlowfishRC6 Algorithm

Data (KB)	**Encryption Time Blowfish (In Millisecond)**	**Encryption Time RC6 (In Millisecond)**	**Total Encryption Time Blowfish+RC6 (In Millisecond)**	**Total Encryption Time Fusion BlowfishRC6 (In Millisecond)**
100	31	31	62	**32**
200	63	47	110	**46**
300	94	78	172	**78**

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400	109	93	202	**93**
500	124	110	234	**109**
600	141	125	266	**124**
700	156	140	296	**156**
800	172	141	313	**156**
900	172	156	328	**187**
1024	203	171	374	**218**

Table 3: Encryption Time

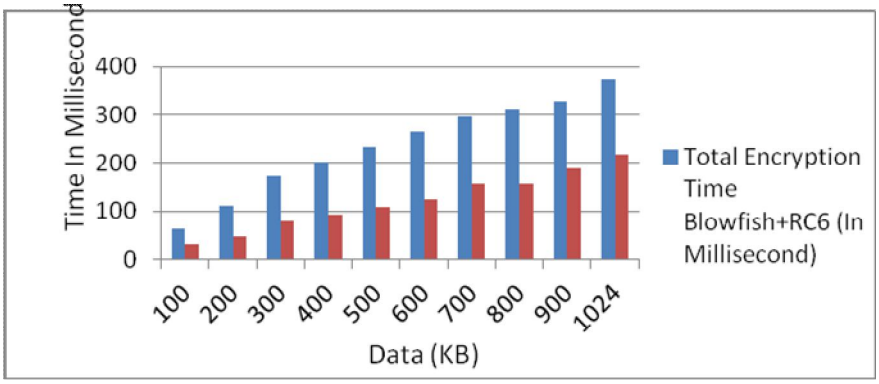

Figure 3: Encryption Time for Blowfish+RC6/Fusion BlowfishRC6 Algorithm

The figure 3 has shown the Encryption time of Blowfish+RC6 and Fusion BlowfishRC6 algorithm.

The following table 4 calculates the Decryption Time for Fusion BlowfishRC6 Algorithm

Data (KB)	**Decryption Time Blowfish (In Millisecond)**	**Decryption Time RC6 (In Millisecond)**	**Total Decryption Time Blowfish+RC6 (In Millisecond)**	**Total Decryption Time Fusion BlowfishRC6 (In Millisecond)**
100	31	31	62	**31**
200	47	46	93	**32**
300	63	47	110	**62**
400	78	62	140	**78**
500	78	94	172	**94**
600	110	94	204	**109**
700	110	109	219	**124**
800	112	125	237	**141**
900	125	125	250	**156**
1024	125	140	265	**172**

Table 4: Decryption Time

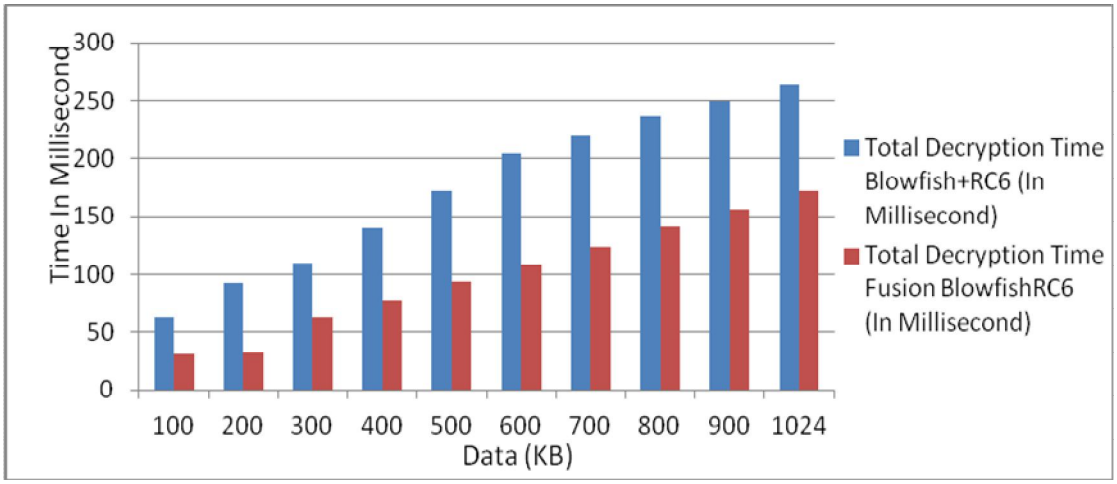

Figure 4: Decryption Time for Blowfish+RC6/Fusion BlowfishRC6 Algorithm

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The figure 4 has shown the Decryption time of Blowfish+RC6 and Fusion BlowfishRC6 algorithm.

SNAPSHOT OF THE BLOWFISH RC6

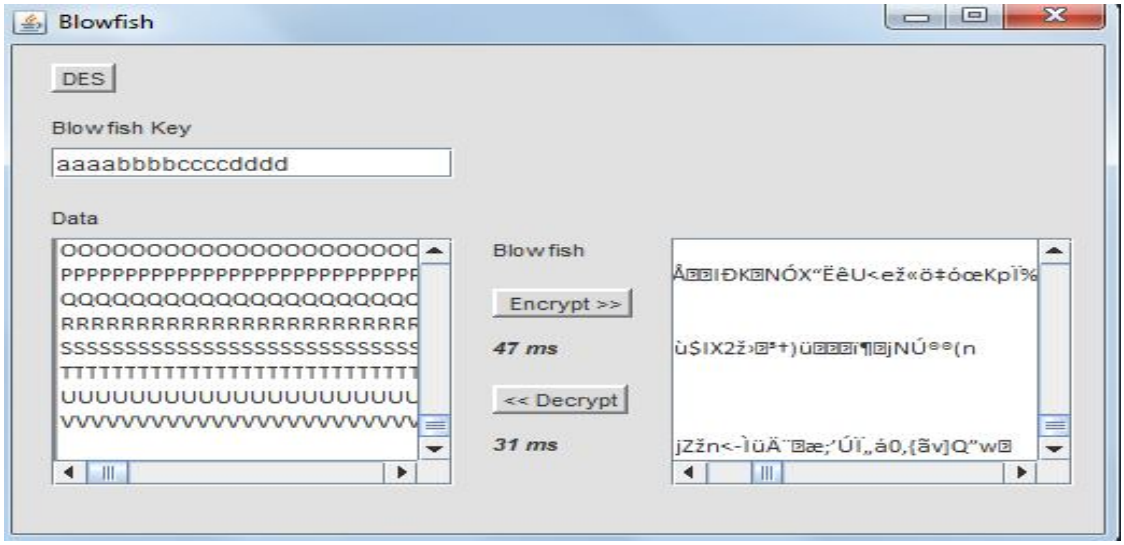

Figure 5 : Blowfish Algorithm

In the figure 5 Blowfish algorithm has converted into Plain text to Cipher text.

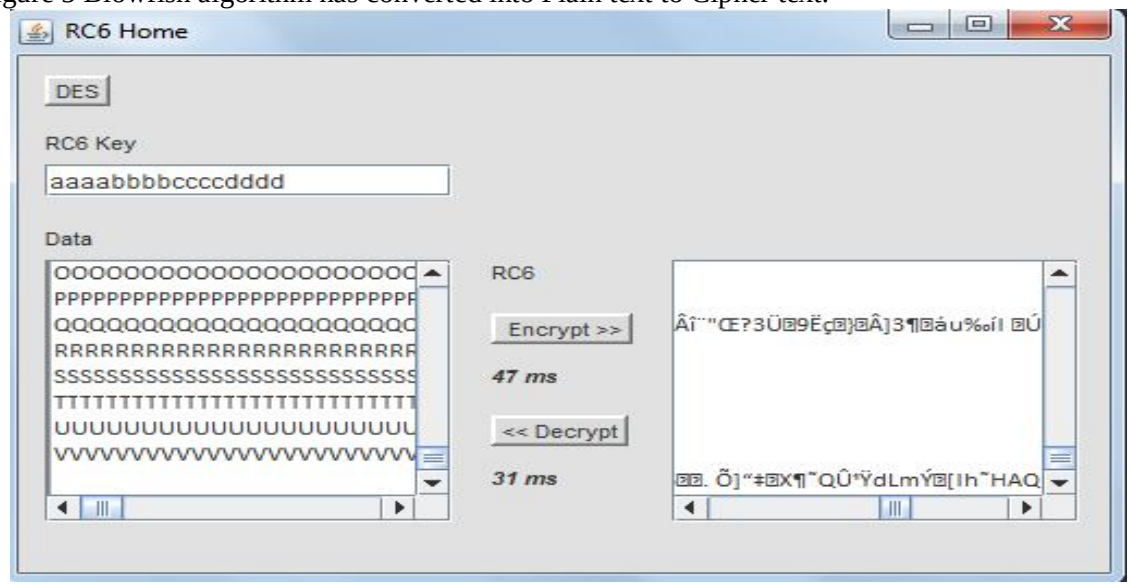

Figure 6 : RC6 Algorithm

In the figure 6 RC6 algorithm has converted into Plain text to Cipher text.

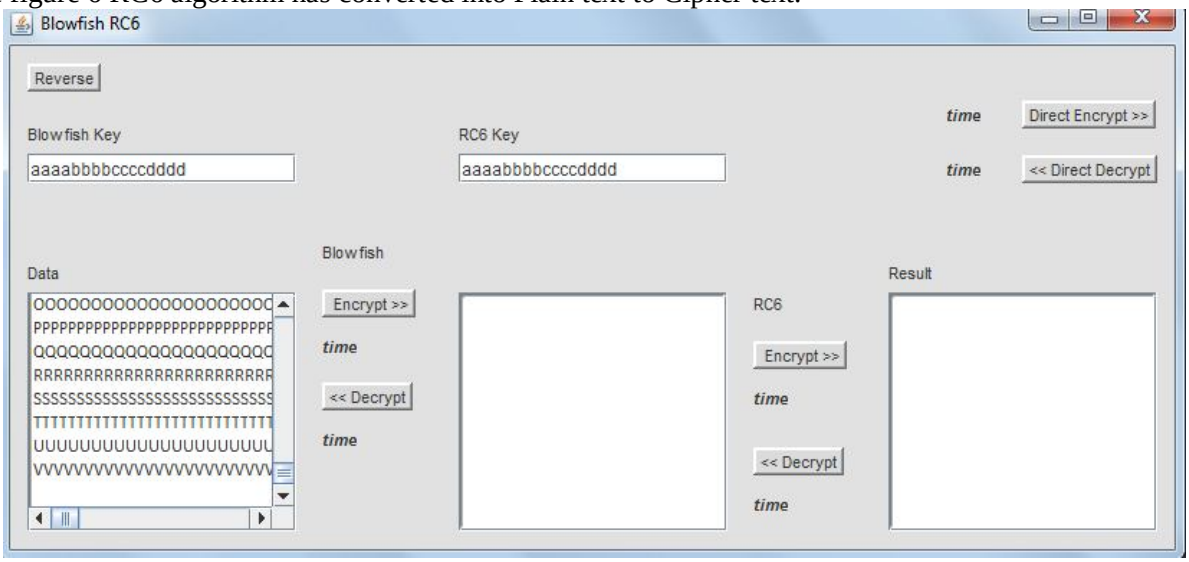

Figure 7 :BlowfishRC6 Algorithm

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The figure 7 combine BlowfishRC6 algorithm.

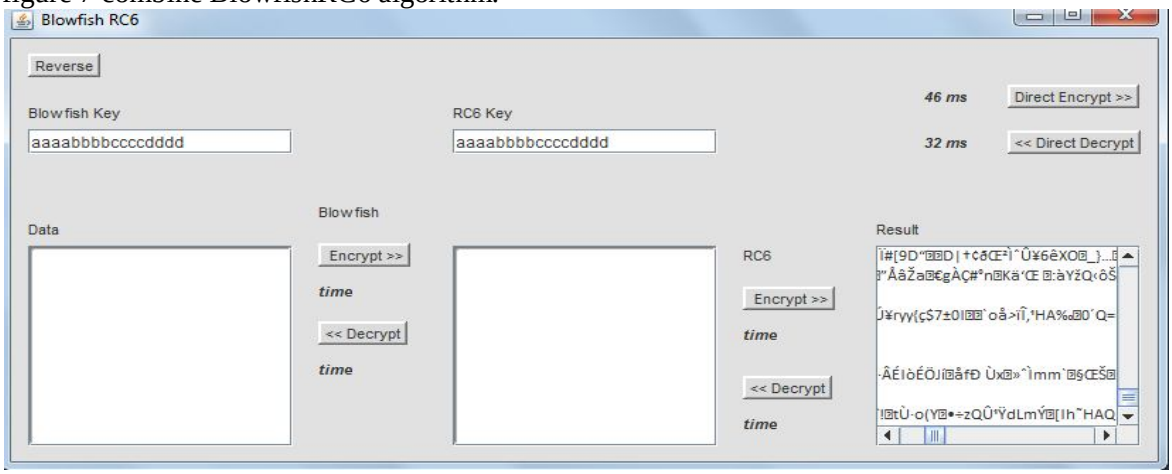

Figure 8: BlowfishRC6 Algorithm

In the figure 8 shows the RC6 algorithm has converted into Plain text to Cipher text.

Throughput of Encryption and Decryption Time:-Propose Fusion BlowfishRC6 Algorithm

Data (KB)	**Throughput of Encryption (Kb/Millisecond)**	**Throughput Decryption (Kb/Millsecond)**
100	3.125	3.23
200	4.34	6.25
300	3.85	4.84
400	4.30	5.13
500	4.58	5.31
600	4.84	5.50
700	4.48	5.64
800	5.13	5.67
900	4.81	5.76
1024	4.69	5.95
Avg.time	**4.4145**	**5.328**

Table 5: Encryption and Decryption time

Throughput of Encryption and Descryption for Fusion of BlowfishRC6

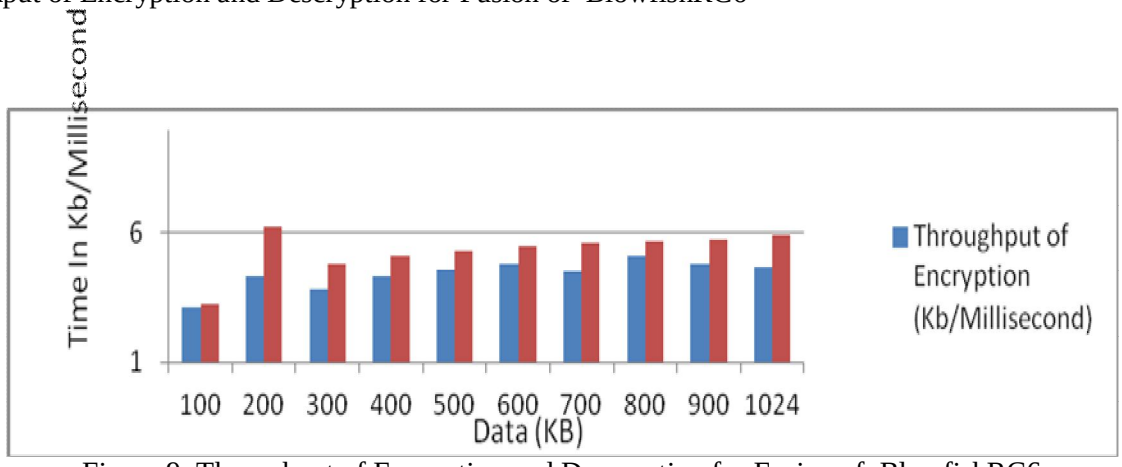

Figure 9: Throughput of Encryption and Descryption for Fusion of BlowfishRC6

The result of propose fusion algorithm BlowfishRC6 has developed in Java. Blowfish has key size of 128 bits (variable length), block 128 bits and 16 rounds. RC6 has key size 128 bits (variable length), block size 128 bits and 18 rounds. So RC6 has variable length of key size. If the key size increases the security also increases.

The result suggests that the decryption time and the throughput of decryption time for BlowfishRC6 is better. Due to its minimum decryption time and maximum throughput it gives better performance. It is shown graphically in above figure 9.

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CONCLUSION

The original Blowfish and RC6 implementation has some weaknesses to overcome the most of weakness the Enhanced Fusion BlowfishRC6 algorithm is designed. The Designed system improved the security power of original Blowfish and RC6. The only drawback of Enhanced Blowfish and RC6 is extra computation is needed but the today's computer have parallel and high speed computation power so the drawback of the Enhanced Blowfish and RC6algorithm is neglected because our main aim is to enhance the security of a system. By using the Enhanced fusion BlowfishRC6 algorithms the security is very tight and approximately impossible to crack and break the Enhanced BlowfishRC6 algorithm.

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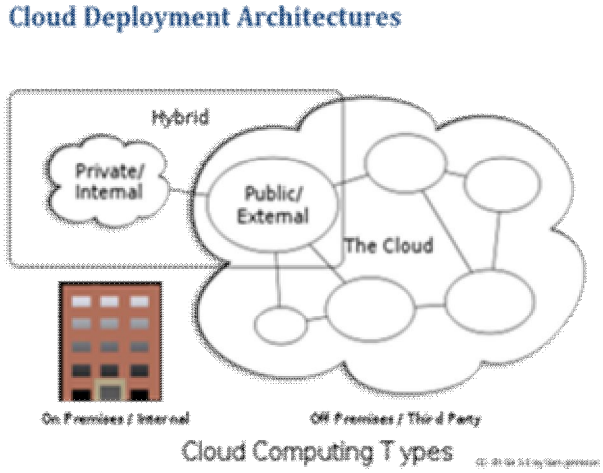
AES ALGORITHM FOR CLOUD DATA SECURITY AS SAAS

Satish Ambike, Smita Dhongade, Girish Joag and Dr. Anil Jadhav

ABSTRACT
Cloud computing offers many services to end user via internet. Storage in clod is more require in company and private users. But data security is most important issue and how overcome on it .In this paper we have proposed secure and strong architecture by implementing AES algorithm to protect data from unauthorized users. (IJPTT)

INTRODUCTION
Cloud Computing is service provided to end user through network. In cloud data is store in remote place, Cloud computing is the technology which provides storage services on the internet. It gives of resources on large scale anywhere within low cost. Cloud computing provided three levels of services such as infrastructure as a service (IaaS)- hardware and software , (ii)platform as a service (PaaS)-having integrated environment to deploy customer applications.,(iii) software as a service (SaaS)- in which software are remotely hosted by an application.

DEPLOYMENT MODELS



Public cloud

Public cloud (off-site and remote) describes cloud computing where resources are dynamically provisioned on an on-demand, self-service basis over the Internet, via web applications/web services, open API, from a third-party provider who bills on a utility computing basis.

Private cloud
A *private cloud* environment is often the first step for a corporation prior to adopting a public cloud initiative. Corporations have discovered the benefits of consolidating shared services on virtualized hardware deployed from a primary datacenter to serve local and remote users.

Hybrid cloud
A *hybrid cloud* environment consists of some portion of computing resources on-site (on premise) and off-site (*public cloud)*. By integrating public cloud services, users can leverage cloud solutions for specific functions that are too costly to maintain on-premise such as virtual server disaster recovery, backups and test/development environments.

Community cloud
A *community cloud* is formed when several organizations with similar requirements share common infrastructure. Costs are spread over fewer users than a *public cloud* but more than a single tenant.

Cloud has many issues regarding security ie. Data crime, privacy and loss. Security of the cloud,cloud sercive provider and consumer such as data, privacy, security issue. (TPID 29)

ABOUT CLOUD COMPUTING
Cloud Computing is an important concept in computer development in today's life. This is use to storage of computers and servers over the Internet. Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Cloud services are social networking sites,

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webmail, online business applications and file storage. Cloud computing provides a shared pool of resources like data storage space, user applications etc. On-demand self-service which allows management of once services without having interaction with service provider such as email or server service Resource pooling and Elasticity Capabilities can be elastically provisioned and released, in some cases automatically.

ABOUT SECURITY

Security issues for cloud computing as there are many technologies including networks, databases, operating systems, virtualization, resource scheduling, transaction management, load balancing, concurrency control and memory management. Cloud take care of services that the customer does not face any problem for loss of data. Four types of issues are raise in Security of a cloud like 1. Data Issue 2. Secrecy Issues 3. Infected Application 4. Security Issue

DATA ISSUES

Confidential data in a cloud computing is major issues of security in a cloud system. Data is on a cloud, anyone from anywhere anytime can access data, and it may be common, private and sensitive data in a cloud. There is a need of data integrity method , data stealing is a one of serious issue in a cloud computing environment ,Data loss is a common problem in cloud computing. The data can be lost or damage or corrupted due to illegal operation. Data location is also major issues, Physical location of data storage is very important. It should be transparent to user and customer.

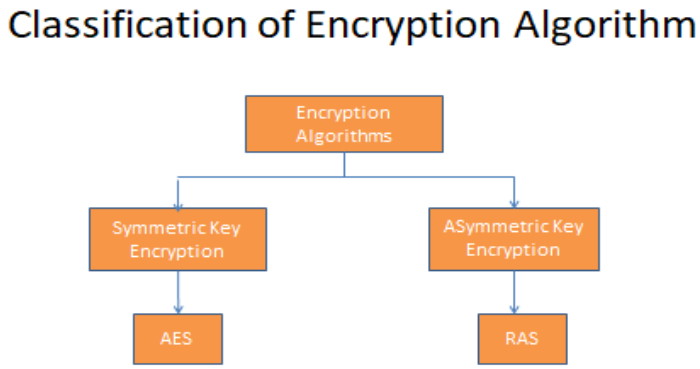
SECURITY ISSUES

Two types of security levels in Cloud computing ie. Provider level and user level. Cloud computing service provider has provided a good security layer for the customer and user. User should make sure that there should not be any loss of data or stealing for other users who are using the same cloud due to its action.

CRYPTOGRAPHY

Cryptography is a method of storing and transmitting data in a particular form so that only those for whom it is intended can read and process it. However, in today's computer-centric world, cryptography is most often associated with scrambling plaintext (ordinary text, sometimes referred to as cleartext) into ciphertext (a process called encryption), then back again (known as decryption). Individuals who practice this field are known as cryptographers.

SYMMETRIC AND ASYMMETRIC KEY ENCRYPTION



Symmetric Encryption

Symmetric encryption is the oldest and best-known technique. A secret key, which can be a number, a word, or just a string of random letters, is applied to the text of a message to change the content in a particular way. This might be as simple as shifting each letter by a number of places in the alphabet. As long as both sender and recipient know the secret key, they can encrypt and decrypt all messages that use this key.

Asymmetric Encryption

The problem with secret keys is exchanging them over the Internet or a large network while preventing them from falling into the wrong hands. Anyone who knows the secret key can decrypt the message. One answer is asymmetric encryption, in which there are two related keys--a key pair. A public key is made freely available to

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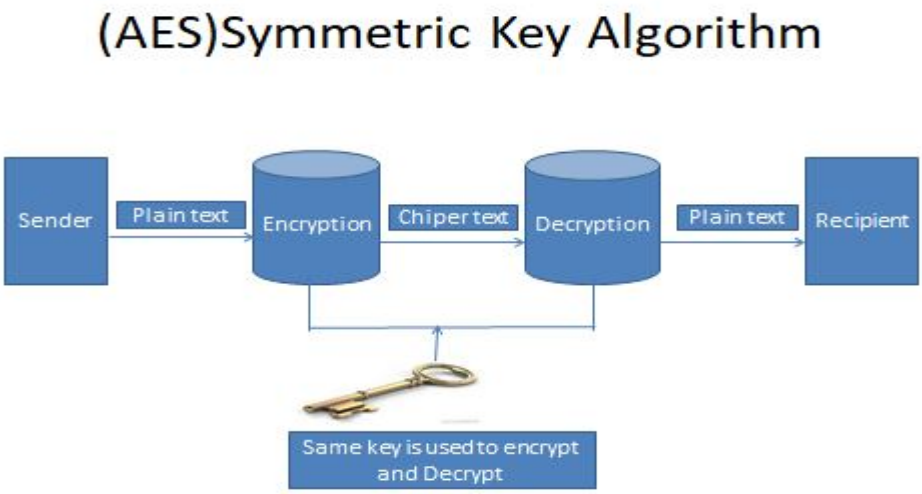
anyone who might want to send you a message. A second, private key is kept secret, so that only you know it. Any message (text, binary files, or documents) that are encrypted by using the public key can only be decrypted by applying the same algorithm, but by using the matching private key. Any message that is encrypted by using the private key can only be decrypted by using the matching public key.

This means that you do not have to worry about passing public keys over the Internet (the keys are supposed to be public). A problem with asymmetric encryption, however, is that it is slower than symmetric encryption. It requires far more processing power to both encrypt and decrypt the content of the message.

AES



PROPOSED WORK

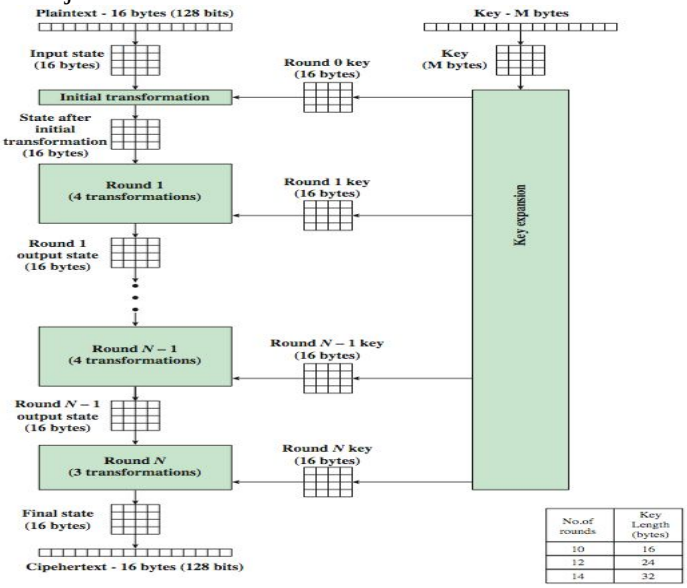
AES is a variant of Rijndael which has a fixed block size of 128 bits, and a key size of 128, 192, or 256 bits. The key size used for an AES cipher specifies the number of repetitions of transformations rounds. The number of cycles of repetition is as follows

• 10 cycles of repetition for 128-bit keys.

• 12 cycles of repetition for 192-bit keys.

• 14 cycles of repetition for 256-bit keys.

AES is a symmetric encryption algorithm published by the National Institute of Standards and Technology (NIST).The algorithm was developed by two Belgian cryptographers Joan Daemen and Vincent Rijmen. It is useful to encrypt a confidential text into a decrypt. The decryption of the chiper text is possible only if we know the correct key. It is based on 'substitution–permutation network'. In AES algorithm encryption key size is of the order 128, 192 or 256 bits which results in maximum permutations and combinations. storage Security in cloud computing is important objective.



Add Round Key

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Each of the 16 bytes of the state is XORed against each of the 16 bytes of a portion of the expanded key for the current round. The Expanded Key bytes are never reused. So once the first 16 bytes are XORed against the first 16 bytes of the expanded key then the expanded key bytes 1-16 are never used again. The next time the Add Round Key function is called bytes 17-32 are XORed against the state.

The method for deriving the expanded key is described in section 6.0

Substitute Bytes

a simple substitution of each byte

uses one table of 16x16 bytes containing a permutation of all 256 8-bit values

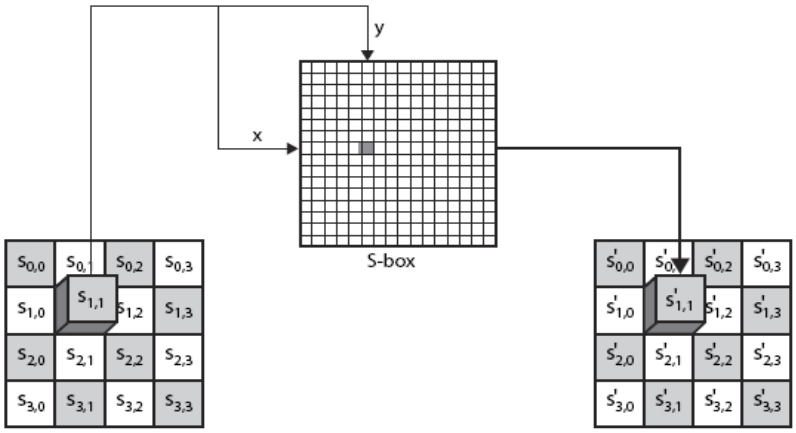
each byte of state is replaced by byte indexed by row (left 4-bits) & column (right 4-bits)

eg. byte {95} is replaced by byte in row 9 column 5

which has value {2A}

S-box constructed using defined transformation of values in GF(2^8)

designed to be resistant to all known attacks



As this diagram shows, the Byte Substitution operates on each byte of state independently, with the input byte used to index a row/col in the table to retrieve the substituted value.

Shift Row

Arranges the state in a matrix and then performs a circular shift for each row. This is not a bit wise shift. The circular shift just moves each byte one space over. A byte that was in the second position may end up in the third position after the shift. The circular part of it specifies that the byte in the last position shifted one space will end up in the first position in the same row.

Example

The state is arranged in a 4x4 matrix (square)

The confusing part is that the matrix is formed vertically but shifted horizontally. So the first 4 bytes of the state will form the first bytes in each row.

So bytes 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Will form a matrix:

5 9 13

6 10 14

7 11 15

8 12 16

First row is never shifted. Each row is then moved over (shifted) 1, 2 or 3 spaces over to the right, depending on the row of the state.

Row1 0

Row2 1

Row3 2

Roe4 3

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The following table shows how the individual bytes are first arranged in the table and then moved over (shifted).
Blocks 16 bytes long:

From	To
1 5 9 13	1 5 9 13
2 6 10 14	6 10 14 2
3 7 11 15	11 15 3 7
4 8 12 16	16 4 8 12

During decryption the same process is reversed and all rows are shifted to the left:

From	To
1 5 9 13	1 5 9 13
2 6 10 14	14 2 6 10
3 7 11 15	11 15 3 7
4 8 12 16	8 12 16 4

CONCLUSION AND FUTURES COPE

In these paper security algorithms, AES is implemented with details of Rijndael, which shows the performance of algorithms. AES is more secure and only authorized user can access data. AES algorithm has a very high security level because the 128, 192 or 256-bit key are used. In future, more enhance in the AES algorithm to increase the performance.

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DNA STORAGE OF INFORMATION

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ABSTRACT
In minimum possible time and space, we have always been eager of accessing more and more information. In the recent years new generation technologies in computers and high speed of internet over the network has become famous and have boomed throughout. To innovative and successful achievements like the transformation and transition from the huge CPU, hard-drives to the pen-drives, flash-drives which made private data and information storage efficiently handle able and manageable we all have been a proof witness. Since when it comes to handle huge information, the important necessary data of the world as whole, the present data storage technology evolved is now able to be manage it efficiently. The study of Deoxyribonucleic acid(DNA) is seen as a capable channel for information storage, archieval and retrieval purposes since it is quite alike and equivalent to the consecutive code of 0's and 1's in a computer like in digital medium communication. The investigated data from the researchers proved that just four grams of DNA can store all the data and information that the world produces per duration year. Here, this topic of 'Data Storage in DNA' is explains what is DNA data storage, its history, its feature , its technique, example of existing technology, their advantages and their flaws, and how it will be used in future shortly .

Figure 1.1: Output Devices

INTRODUCTION
DNA data storage can be define as any process that stores electrical information in the base sequence of DNA. Illustrated DNA which is made using bartering accessible oligonucleotide synthesis widget is used for storage and DNA sequencing machines techniques is used for retrieval. Due to the data frequency of the DNA is high this type of storage setup is more dense and tight than current magnetic tape or hard drive storage setup. Presently 215 petabytes(215 million gigabytes) was stored in 1 gram of DNA was likely reported. As long as the DNA is gripped in chilled ,baked/bare and dull conditions it has high capability for longevity, DNA is a global and basic data storage mechanism in biology since it is shown and proved by the research of wolly mammoth DNA from up to 60,000 years ago, and for resistance to obsolescence.

Figure 1.2: Simple DNA Figure

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HISTORY OF DATA STORAGE IN DNA

The idea and the general considerations about the possibility of recording, storage and retrieval of information on DNA molecules were originally made by Mikhail Neiman and published in 1964–65 in the Radiotekhnika journal, USSR, and the technology may therefore be referred to as MNeimONics, while the storage device may be known as MNeimON (Mikhail Neiman OligoNucleotides). In 2007,a device was created at the university of Arizone, using addressing molecules to encode mismatch sites within a DNA strand. On August 16,2012,the journal science published research by George Church and colleagues at Harvard University, in which DNA was encoded with digital information that included an HTML draft of a 53,400 word book written by the lead researcher, eleven JPG images and one JavaScript program.

FEATURE OF DNA WHO USES IT AS AN INFORMATION STORAGE DEVICE

DNA can be easily synthesized, has stable storage and is long - lived storage mechanism of storing data. No active maintenance and physical maintainance is needed for it. For thousands of years, digital files without electricity can be stored on DNA. In one gram of DNA 2.2 peta bytes can be stored. DNA is highly reliable.

DNA DATA STORAGE TECHNIQUE

Nature's Storage Medium

Researchers have stored a large amount of audio and written data, including an phonic clip of Dr. Martin Luther King Jr. 's 'I Have a Dream' speech on any strips of DNA and then retrieved them with near –perfect fidelity, suggesting how DNA might one day be used as an effective storage medium for exploding amounts of digital data.

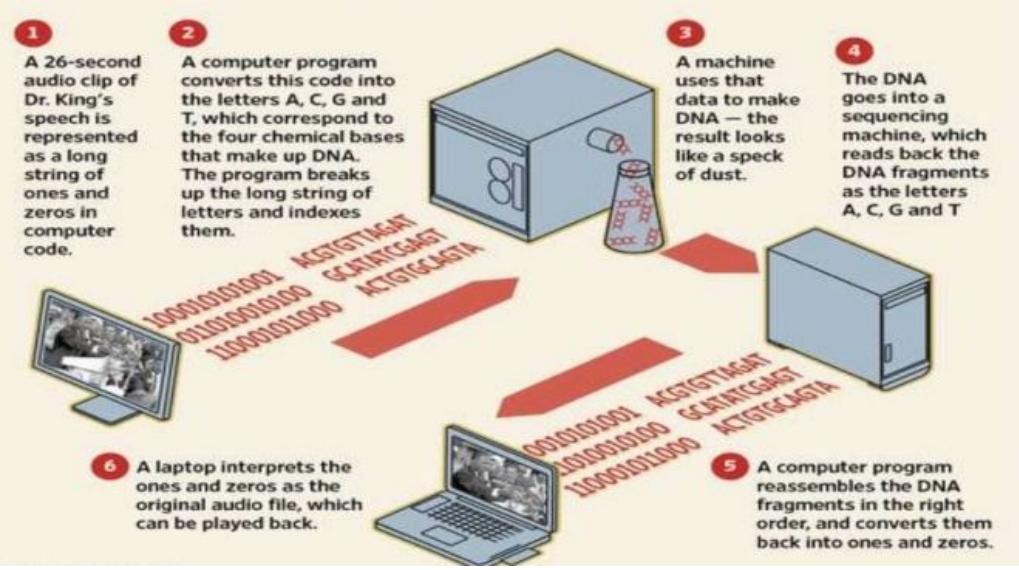

Figure 1.3: Coding system in DNA

CODING system in DNA

In DNA the coding system takes place in following manner:

Encoding table → Quaternary number system → DNA sequence → Compression

Example for coding of information

First we should use numbers to represent the letters in ASCII code.

From ASCII table

V=86

V=86

I=73

T=84

Change to quaternary numbers

86=1112

86=1112

73=1021

84=1110

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Use " A , T, C & G "to represent numbers

0=A

1=T

2=C

3=G

VVIT 1112111210211110
TTTCTTTCTACTTTTA

When repetitive base sequences is encountered, so using T, G, A, C sequence we can avoid any of the reading errors. To avoid any errors which occurs during synthesis or read-out, the file is break down into smaller part or chunks rather than to synthesis the whole one long string DNA to code for an entire data item of information. Providing 100% accuracy and perfectability the broken chunks are then read in appropriate manner or protocol.

Case study of current technology : DNA chip

On a glass substrate, a microchip which contains thousands of distinct DNA probes were created by a California based company through adapting methods of microprocessor manufacturing company called Affimetrix. The glass was coated with a grid of tiny spots probably of 20mm in diameter, where each spot containing millions of copies of a short sequence of DNA. Each DNA sequence and its location was tracked by a computer. After the information was encoded into the DNA, drops of DNA were attached to microarray chips for storage. For three months, the chip was kept at 4 degree Celsius and then dissolved and sequenced.

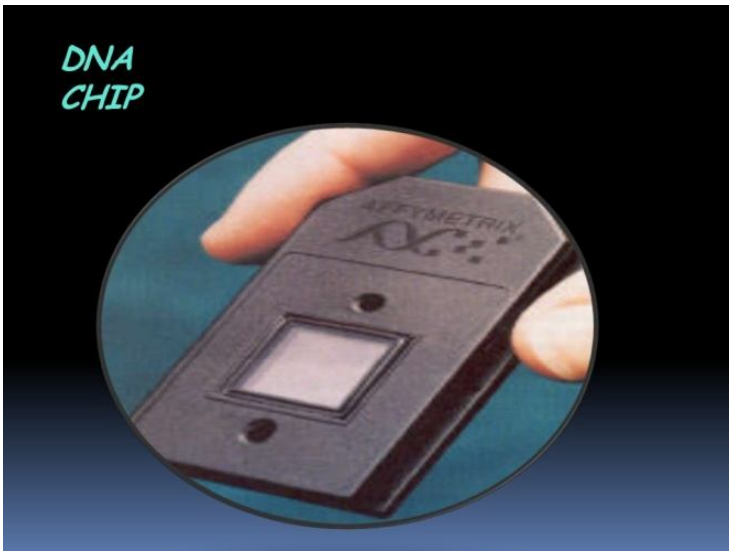

Figure 1.4: DNA chip

ADVANTAGES

There are many features of DNA as data storage device which allows us to create such a data storage medium which is highly secure, compact, easy to carry and capable of storing large amount of data. The currently present data storage devices are unable to provide such pleasing features and qualities.

DISADVANTAGES

DNA has a half life. Before the end result is found and computed the solution could dissolve away. There is 95% chance a particular DNA molecule will compute correctly during an operation. With a large amount of operations and data it causes a large problem.

CONCLUSION

Especially for medical field/purposes as well as data processing applications DNA computers show enormous potential and development. DNA computers are now used to overcome many issues. Still a lot of work, research and resources are required to develop DNA data storage technology into a fully fledged product. Miniaturization of data storage. Massive amount of working memory. To realize its full potential and purposes the huge trial, threat and protest has to be faced by DNA-based data storage technology. All the information that is produced by any mankind can be stored in grams of DNA. Digital data storage in DNA technology show immense progress, because the reading and writing can be stored ten times per year than Electronic or digital technology.DNA data storage has a greater advantage over printed text and electronic media since it is easy to maintain for longer time because it is stable.

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ARTIFICIAL INTELLIGENCE: A COMPLETE SOLUTION ON GLOBAL ISSUES

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ABSTRACT
This article is a try to characterize the challenges regarding to global issues such as food yield and their productivity, healthcare, transportation these are a set of key decisional issues that need to be addressed for a cognitive robot to effectively share space and tasks with a human. We identify first the needed individual and collaborative cognitive skills: geometric reasoning and situation assessment based on perspective-taking and affordance analysis; acquisition and representation of knowledge models for multiple agents situated, natural and multi-modal dialogue; human-aware task planning; human–robot joint task achievement. The article discusses each of these abilities, presents working implementations, and shows how they combine in a coherent and original deliberative architecture for human–robot interaction for betterment of human races. Supported by discussion, we eventually show how explicit knowledge management, both symbolic and geometric, human-level semantics within the robot's deliberative system.

Keywords: Artificial Intelligence (AI), coginitive robot, semantics, transportation, healthcare.

INTRODUCTION
Indisputably, over the next few decades, artificial intelligence (AI) will begin to shape the world as Industry 4.0 prevails. One of the most powerful businessman in the world Musk claims that Artificial Intelligenece is a “elementary risk to the subsistence of civilisation”. At the same time Mark Zuckerberg who is a claimed businessmen is presenting more of aoptimisticattitude.This claim may prove to be true or not, as the use of AI marks on civilization further, time will expose its benefits and shortcomings.Expectantly not before it is too late, as some report that skill is now growing more rapidly than humans are adapting to it.This article will investigate some artificial intelligence solutions to a number of the most burning issues that are globally concern.

TRANSPORTATION
World’s economy has enjoyed post recessionary growth over the last nine years.As Population is Increasing Road traffic has increased as to increase the demand for goods and service. The Department for Transport reports that car traffic on the roads has grown 1.5% on average over the last four years and miles travelled by vehicles is 1.7% higher than the year 2010. This all leads to increased congestion, delays on our roads and increased air and sound pollution.

Real time analysing road traffic so that traffic light systems work as efficiently as possible sounds credible. Manchester is to trial smart traffic lights to help reduce congestion and air pollution on their roads using Artificial Intelligence. Known as Simplif AI the technology can analyse data much faster than humans and send the best signals to traffic lights over the City. In the US, Pittsburgh has used AI traffic signals which have “reduced travel time by 25%, braking by 30% and idling by 40%”.

Self-driving vehicles will considerably change the way people transform and travel. This will require both trust and sound judgement in Artificial Intelligence. In a report conducted by Stanford University, self-driving cars could help to reduce the amount of road injuries and deaths. Peer to peer transportation could reduce the amount of parking spaces needed in cities. They could also help to alleviate the pressure on demand for public transportation.

PRODUCTIVITY AND YIELD OF FOOD
In18th Century ,the British Agricultural Revolution brought about many improvements to farming. With Industry 4.0 the extent for further efficiency and innovation in this industry will be enthralling. In the 18th Century, Thomas Malthus’ Malthusian Theory of Population predicted that population growth is geometric whereas food growth is arithmetic so that population growth would outgrow food production. Malthus wasn’t exactly correct in his prediction as advancements in technology have helped food production increase faster than that of population growth in many parts of the world. Nevertheless, he also wasn’t incorrect in many ways and perhaps his theory is simply only postponed. One of The United Nations goals is to end hunger, accomplish food security, advancement nutrition and promote sustainable agriculture. There are 795million people in the world hungry and by 2050 there will be an additional 2billion to feed globally. There is certainly a requirement for more competent food production. So how does ArtificiaI intelligence help?

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In the rising world, a model called Nutrition Early Warning System (NEWS) uses big data and machines to predict when food shortages and crises could occur, giving advanced warnings to farmers. The technology would look for "early cipher of potential crop failures, drought, rising food prices, and other factors that can generate food shortages". The International Center for Tropical Agriculture (CIAT) has already had success with a machine which studied crop and weather data. This predicted a drought in Colombia which saved farmers millions in costs due to the advanced warning.

HEALTHCARE

An ageing and increasing population demands prolong illness cures and increases pressure on A&E departments. To help improve the demand for health professionals, the NHS has announced a plan to trial an NHS app on a million people using AI. It has been likened to WhatsApp whereby basic health information and symptoms are logged and the robot app will respond accordingly.

This could be the end of patient-doctor relationships as they are known. Patients could however still go to their GPs pre-diagnosed which would completely defeat the purpose of the app if it advised against seeing a GP. AI in healthcare has a long way to go because many patients will demand human compassion. One of the other primary issues for AI in Healthcare will be how can a computer show human judgement. A study by the Institute of Medicine found that when compared doctors actually outperform algorithms. There has also been discussion of a new Health Bill of Rights because of the increased amount of digital data which will be held. However, the use of Mobile AI in the developing world could provide access to basic healthcare in the poorest regions of the world.

POVERTY AND INEQUALITY

The potential benefits for AI in this area could be incomparable for paucity reduction. AI has the scope to help in the long term. Many of the funds which are channelled towards food crises currently are reactive to when crises occur not proactive to avoiding them much in advance. However, economists such as Amartya Sen have alluded to the encumbrance which corrupt governments have on worsening the severity of a starvation. The scope of advantage AI will bring will very much depend on the political regime and investment afforded to agriculture.

Technology such as Drone imagery is being utilised to determine diseases in plants in the UK. If developing countries aren't afforded admittance to this type of AI technology, this is further motivates that AI could increase global inequality. However, if countries with a comparative advantage cannot export to other countries freely through international trade, how beneficial will AI be? It willinstigate, how much of this product will be exported and to be paid to where it is most needed?

CONCLUSION

Artificial Intelligence definitely has the extent to help undertake the above issues but a big challenge will be to ensure that developing countries are given the same opportunities. AI has the opportunity to help lessen poverty and scarcity in the poorest parts of the world and there needs to be more investment in this area. As AI is used more in our day to day lives.TheGovernments in the developing world need to be held answerable to channelling funding towards AI alongside relief agencies.

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IMPLEMENTATION OF WEB BASED DSS USING SPRING MVC FOR SELECTION OF BEST CLOUD SERVICE PROVIDER AND MIGRATION

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ABSTRACT
The key issue in transferring multi-part undertaking applications to Clouds is stipulating the best combination of VM pictures and Cloud establishment affiliations. To overcome this test, we exhibit the non-particular recommender format Cloud Genius and an exemplification that impact unmistakably and get a handle on varied -Performa decision generating system Analytic Hierarchy Process to robotize the decision method considering a model, portions, and QoS necessities related to colossal business applications.

Keywords: Cloud migration, decision-making, Cloud Service Selection, Multi-dimensional Trust Evidence, Trust and Reputation Evaluation.

INTRODUCTION

The heraldry of Cloud figuring [3] over the range of recent years is conceivably one of the bounce forward advances ever. Circled handling point of view is moving enrolling from physical apparatus and furtively oversaw programming drew in stages related to virtualized Cloud-supported associations. Scattered figuring aggregates extensive structures of virtualized associations, equipment associations (process associations, stockpiling, and system) and framework associations (e.g., web server, databases, message lining structures, checking frameworks, and so forth.). Cloud suppliers including Amazon AWS, Microsoft Azure, Rackspace, GoGrid, and others give clients the choice to send their application over a pool of in each pragmatic sense boundless assets with all around that truly matters no capital hypothesis and with tenuous working expense in appreciation to the bona fide use. Flexibility, money saving purposes of premium, and plenums amounts of points of interest move discrete relationship to move their attempt applications to Clouds.[4]There are two application demarcated layers for register privileges: an) item resource, where a creator shapes applications using APIs gave by the Cloud. An item resource (moreover implied as a mechanical assembly or VM picture) is a pre-outlined, virtualization-engaged, autonomous, and pre-built Virtual Machine (VM) picture that can be fused with other impeccable VM pictures for architecting complex applications. Genuine suppliers at this layer fuse the cloudmarket.com, 3Tera Applogic, and BitNami; and b) Infrastructure as a Service (IaaS) (hardware resources), where a fashioner runs programming applications on figure organizations, using the APIs provided for footprint on other base organizations. A VM event is essentially a touch of virtualization programming (e.g. Xen, KVM, etc.) running on physical Cloud servers. It is the most generally intuitionmed framework for revealing the computational power (e.g. CPU focuses, physical memory, stockpiling point of confinement, etc.) to programming applications. Amazon EC2, GoGrid,and Rackspace are among the prodigious suppliers of virtualized hardware resources as organizations Circulated figuring is a gradually creating enlisting organization vantage point where base and programming resources are given over the Internet as versatile and on interest (Web) organizations [5]. In a disseminated registering environment, there are a profusion of organization suppliers that make and glide on organizations to external customers. With cloud environment ending up being more inveigled and inconsistent, cloud organizations are not for the most part reliant, and the Service Level assertions (SLAs) may not gratify customer's requirements. On the other hand, in a cloud space, it is unerringly required that customers acquiesce their physical control to their applications and the cardinal operations may be clear to them. The previously stated issues brought on the unfeigned belabored cloud organization customers, which can be terminated as takes after: (1) whether the cloud organization suppliers, conspicuously those new comers, can be relied or not. Customers need covenanted that the cloud suppliers won't see their data or propound them to their adversaries. In addition, the cloud confederacy suppliers should bulwark their data and applications from any technique for damage; (2) whether the organizations are accessible all the time or not, as customers distinctively consider the property of fitting and play, for the most part as the applications which are equipped on close-by circles; and (3) whether other non-utilitarian requirements, for instance, Quality of Services (QoS), are given by cloud according to SLA. Thusly, customers will have a vigorous time believing a cloud advantage just considering one segment, however for a few properties they perturbation, that is, the reliant affirmation should be multi-dimensional to react unmistakable parts of the execution of the cloud organizations.[7]

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1. Provocation of Orthodox Application Deployment Enactments

A. Compounded systems and ever Stemming business essentialities

B. Ever stemming datasets.

C. Unforseeable traffic constitutions.

D. Rapid retaliation stints.

E. Encapsulation for peak load pertains to underuse of the resources.

F. Perils to encase opportunities to the competition

2. Evolution of Application Deployment Practices

a. Much discharged application deployment best enactments over last decade

B. Highly scalable cloud solutions proffering benefits like:

1. Close to zero upfront infrastructure investment
2. Mission controlled Infrastructure
3. Systemized Resource Utilization
4. Parlance based costing
5. Reduced time-to-market
6. Programmable Infrastructure
7. Auto-scaling

Provocations related to Stemmed Application Deployment Practices:

A. Evaluation of ALL the options available from Cloud Service Providers

B. Determining the most fit option aligning with Business Goals

C. Multiple requirements & criteria contributing to the decision making

D. Evaluation of the options of cross provider cloud solution

I. RELATED WORK

The Cloud Genius recommitted structures that stems Cloud organization resolutions from manual monotonous scripting to a technique that is protean, and to a magnanimous intensify robotized. It gives a blooming process and tries application planners to pick best resource mix at both programming and IaaS layers over supplier limits. We assume that Cloud Genius framework leaves space for an extent of enhancements and, yet, gives an amiable approach. To the extent anybody is concerned no present technique has tended to the issue of between conditions trying to programming and IaaS layers while selecting programming and gear resources for Cloud-based working of huge business applications [4]. An essential issue in Cloud organization decision is the range of the chase space (i.e. the finish of VM pictures and Cloud organizations database), the yards ticked records, and the quality and precision of measured qualities. To perorate these issues, we will concentrate on coordinating existing benchmarking administrations.[6]A minimum amount of information on VM pictures and IaaS level administrations may be picked up by assimilating existing databases. Further, we go for defraying on information choice and client particular, as e.g. indolence estimations. The paper investigates numerous essential issues that emerge when authorizing access control in a situation where information are put away and requested to customers by an outside server[10]. We then evinced a novel information outsourcing access control engineering for supporting adaptable applications, fortifying security and captivating the client.

III. EXISTING APPROACH

Clearly identifying the most important criteria relevant to the selection of the best Cloud Services from Provider(s), remains the biggest challenge to be addressed by the businesses. Factors contribute to the magnitude of the above stated problem:

A. Enormous options to find out best mix of VM Images and Computing Services from so many Providers.

B. Wide-spanned selection criteria, requiring order of significance, and weightages.

C. Complex dependencies of the components of the applications.

D. Compatibility of components and the solutions available.

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IV. OBJECTIVES

To focus on the problem stated earlier and widen the applicability, this work proposes 'An approach for construction of the Selection Decision Support System (SDSS)'for Cloud Service Providers, in the context of Web Applications involving multiple connected Components.

SCOPE

1. Algorithm zing the component essentialities.

2. Algorithm zing the selection criteria and the attributes for juxtapositions.

3. Selecting the best-fit mix of VM Images and Computing Services using

A. Multi-Criteria Comparison Method for Cloud Computing (MC2)2 framework

B. Analytic Hierarchy Process (AHP)

4. Present the mathematical model and the expropriate algorithms in identifying the best-fit mix

5. Calculation of computational complexity.

6. Maximizing the computation using Genetic Algorithm (GA)

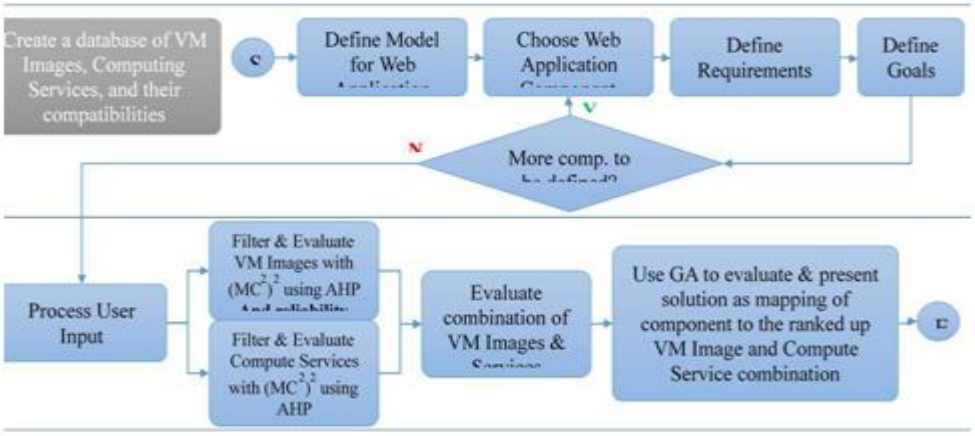
V. OVERALL APPROACH TO PROBLEM SOLUTION

(MC2)2 framework using AHP: Translates cloud service selection steps into multi-criteria decision-making problems, which yields the most expedient VM images and compatible compute services.

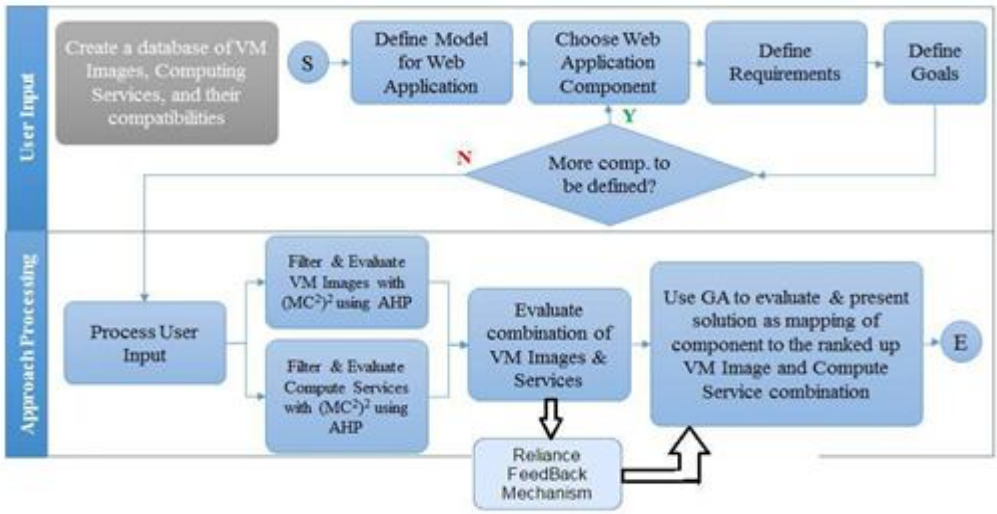
Genetic Algorithm (GA): Maximizes the computational complexities in a growing market of cloud service offerings.

Parallel Genetic Algorithm: Addresses the challenge of approach becoming unsolvable, by AHP + GA together, with a potentially infinite number of alternatives.

Existing Architecture



Proposed System



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a. MULTI-COMPONENT CLOUD MIGRATION PROCESS

The process is divided in two lanes: (1)user input lane with domain experts such as application engineers proffering input and (2)Cloud Genius lane where steps are completed by an implementation of the framework. The process allows for a loop authorizing a component-wise migration and cycles for step-wise, incremental furtherance of every component's migration. Within the cycles engineers have to define requirements and preferences and Cloud Genius appertains the (MC2)2 resolution-making framework to recommend a ranked VM image and Cloud service combinations for a certain component.

VI. MODIFIED ALGORITHM USED

RELIANCE FEEDBACK ALGORITHM

1. User sends his/her service request to the cloud resolution service application, which
2. Selects the services of which the type function meets the desire of the service user.
3. Elicit the active user's nonfunctional requirements to the service, that is, the key attributes concerned by the user.
4. Elicit trust evidence of all the service.
5. Explore the services reputation value.
5. Resolve the services trust values by the active user.
6. Resolve the aggregated trustworthiness of services.
7. Select the optimal service.
8. Collect the feedback assessment from the user.

VII. MATHEMATICAL MODEL

Cluster Modeling

1. Model Web Application as a Cluster
2. Add components of cluster setup, ch, to set C.
3. Define components interconnections in set I, as component pairs.
4. Collect the incoming and outgoing data in terms of bytes, in the sets Nin and Nout respectively, by discussing with domain experts.
5. Add the components multiple times, if required, for scaling or distinct requirements and goals for fault tolerance
6. Assign a category to software.

Components Requirement Modelling

1. Essentialities formulation comprises setting constraints on attributes of VM images and compute services with fixed value boundary vr, or be included or excluded
2. Essentialities type can be as shown in the table aside:
3. Essentialities of VM image attributes need to be defined in a set Rch,A, for services in set Rch, Sand for

Combinations in set Rch, X

1. Define goal hierarchy preferences, as required by AHP
2. Define weight of the cloud VM image (wa), compute service (ws), and the combination (wattr), thereof in the total value of a solution.
3. Define weights for the prominence of a component within the cluster in wch

VM Image and Compute Service Attributes Modeling

1. Attributes of VM images, compute services, and their combinations are applicable to filters for components of all feature categories
2. The attributes could be numerical or non-numerical and do correspond to the goal/criteria hierarchy
3. VM Image and Compute Service Attributes

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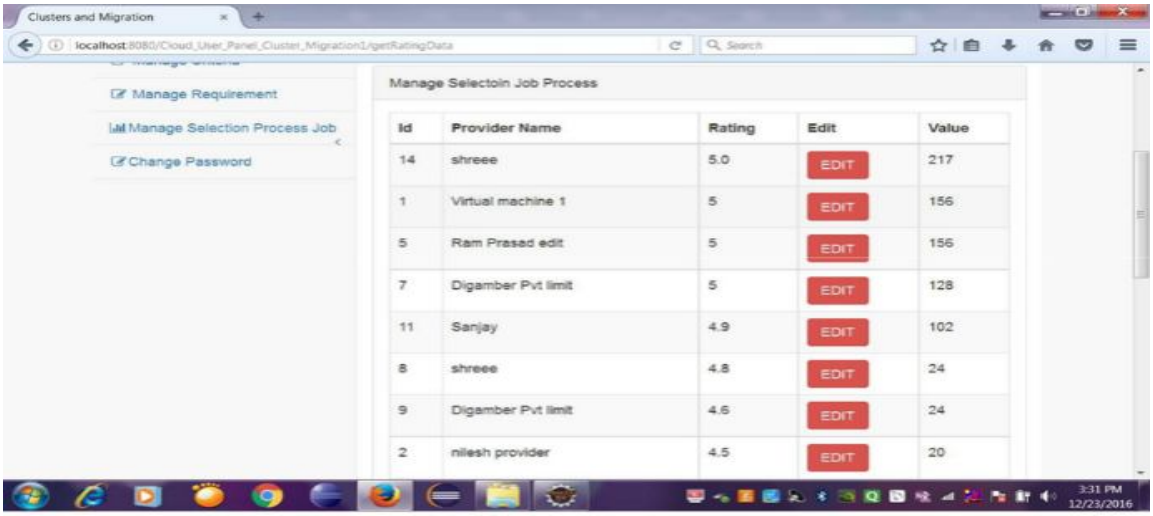
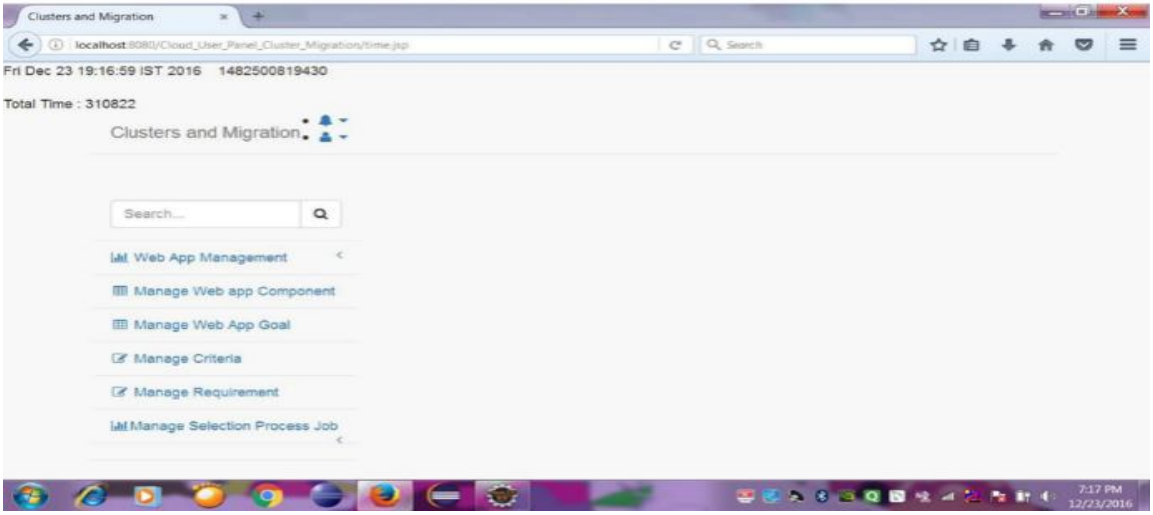
VIII. EXPERIMENTAL SET UP AND RESULTS

The Cumulus Genius java library offers a data structure that engrosses the appraisal of VM scenarios, Cloud structure organizations and best mixes naturally. A Web frontend that patronages the structure's technique and gives a database of VM pictures and Cloud organizations of the present Cloud supplier scene is starting now a work in advancement. We attempted our execution Cumulus Genius in trials on a test machine with Intel Core i7 2.7 Hz and 8 GB of RAM.

IX. IMPLEMENTATION AND RESULT SCREENSHOTS





IX. FUTURE SCOPE

1. Database building for decision making can be enhanced with integration of cloud benchmarking approaches, and existing databases such as Cloud Harmony, bitnami, and thecloudmarket.com can be done.
2. Improvements in the implementation of GA and Hadoop setup might reduce computation times and increase solution quality to a yet unknown degree.

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CLASSIFICATION OF CHARACTER RECOGNITION ENGINE HANDLING FOR PRE AND POST IMAGE PROCESSING PHASES ON HANDWRITING IMAGES

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ABSTRACT
Image fusion of Character Recognition Engine integrates different modality images to provide comprehensive information of the image content, increasing interpretation capabilities and producing more reliable results. There are several advantages of combining multi-modal images, including improving geometric corrections, complementing data for improved classification, and enhancing features for analysis...etc. This project develops the image fusion idea in the context of two domains: material scan images of Handwritings, type writer imaging. The proposed methods include image modeling, image indexing, image segmentation, and image registration. The common theme behind all proposed methods is the use of complementary information from multi-modal images to achieve better registration, feature extraction, and detection performances.

Keywords: Object Recognition, OCR, Image fusion, EGDLM, CNOM.

1. INTRODUCTION

In the last four decades, handwriting recognition has been a very active area of research. Previous work on this topic can be divided into four major areas, depending on whether the recognition units are characters, words, phrases, or longer bodies of text. Some of the previous work and problems are discussed in this project through the division. Cognitive research on human word perception and decision making that could be applied to the development of our recursive recognition model is also reviewed.

(a) "Character recognition" deals with the problem of classifying pre-isolated character images within a given alphabet set. Useful reviews are found in [11] [12] [13] [14] [15] [16] [17]. Most researchers have adopted the classical pattern recognition approach in which image pre-processing is followed by feature extraction and classification.

(b) "Feature extraction" is an important step in achieving good performance for a character recognizer. Extracted features must be invariant to the distortions and variations that can be expected in a specific application. The size of the feature set is also important in order to avoid a phenomenon called the dimensionality problem [98].

(c) "Feature extraction" methods using topological features can generally reconstruct the image from the feature set. Features are obtained from coefficients of various orthogonal decomposition methods by the representation properties of the image data. *Fourier descriptors [20] [21], geometric moment invariants [25] [28], Zemike moments [24], Wavelet descriptors [29] [30]* are the examples of reconstructive feature extraction methods. Reconstructive features generally have a multi-resolution property within the feature composition.

(d) "Handwritten Chinese document" for Chinese character recognition in which the "recognition objects" will be distinct Chinese characters (Lee and Liu, 1997 & 1998);

2. OCR IN 3D MODEL-BASED OBJECT RECOGNITION

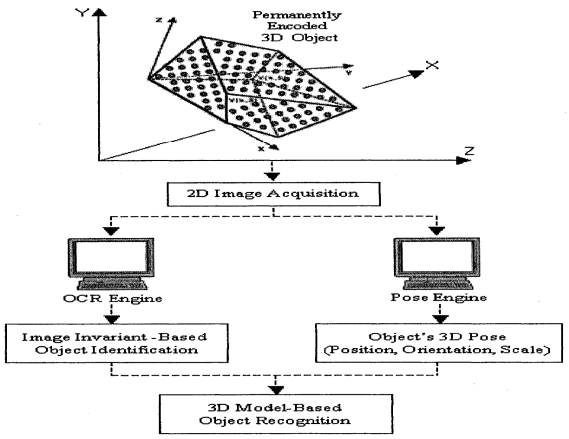

Figure 2: The OCR engine in the 3D model-based object recognition system.

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OCR can play a very important role in 3D Model-based object recognition systems as Figure 1.1 shows. Two basic operations are included in 3D Model-based object recognition: identification and location [34]. Identification determines the identity of the imaged objects by the comparison of the image data with a database of models. Location determines the location of the 3D imaged object in the space.

A practical and rapid method for visual recognition of 3D objects is the use of surface encoding with Pseudo Random Binary Array (PRBA) and feature matching with the model database [36]. After the object is visually recognized, a pose engine provided with tactile sensors can find its positional parameters.

The PRBA code is Braille-like symbols embossed on the object surface. The shape of the symbols is specially designed for easy visual and tactile recognition. For efficient pattern recognition, the particular shapes of the binary symbols were selected in such a way to meet the following conditions [36]:

1. There is enough information at the symbol level to provide an immediate indication of the grid orientation.

2. The symbol recognition procedure is invariant to position and orientation changes.

3. The symbols have a certain peculiarity so that other objects in the scene will not be mistaken for encoding symbols.

One key problem of symbols recognition is that the appearance of the symbols depends on imaging conditions like viewpoint and orientations. If we can find image features that do not change with imaging conditions, the problem would be solved.

The image invariants can be described as functions of geometric configurations which do not change under a certain class of image transformations. The OCR engine based on image invariants supports direct, feature-based model indexing, and therefore well-suited to identify the specific subsets of the PRBA codes embossed on the object's surfaces. However, one basic limitation of image invariants is that they are only invariant to a certain class of image transformations. Defining useful invariants for all image transformations is not easy at all. In this thesis, we consider only scaling, translation and rotation/orientation of the geometric image transformations.

2.1.2 OPTICAL CHARACTER RECOGNITION

Optical character recognition (OCR) is an important research area in pattern recognition. The objective of an OCR system is to recognize alphabetic letters, numbers, or other characters, which are in the form of digital images, without any human intervention [25]. This is accomplished by searching a match between the features extracted from the given character's image and the library of image models. Ideally, we would like the features to be distinct for different character images so that the computer can extract the correct model from the library without any confusion. At the same time, we also want the features to be robust enough so that they will not be affected by viewing transformations, noises, resolution variations and other factors. Figure 2.1.2 illustrates the basic processes of an OCR system.

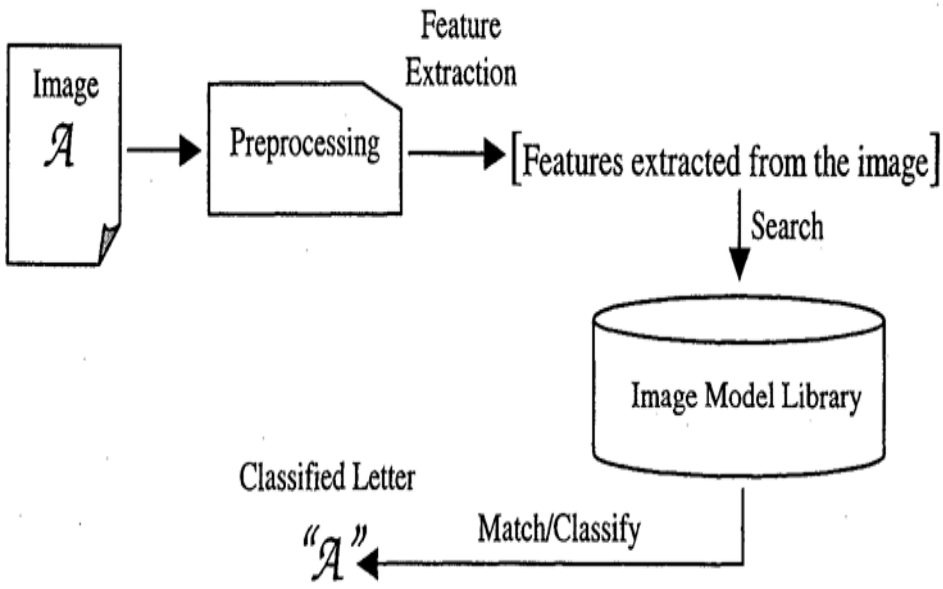

Figure 2.1.2: The basic processes of an OCR system

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2.1.3 Different Families of Character Recognition

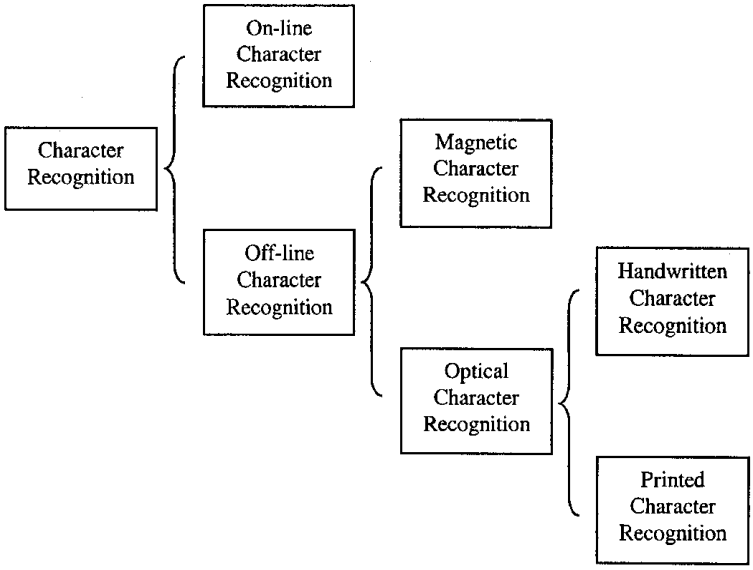

Figure 2.1.3: The different families of character recognition

Figure 2.1.3 shows the different families of character recognition. Two different families are included in the general term of character recognition [13]:

• On-line character recognition

• Off-line character recognition

On-line character recognition deals with a data stream which comes from a transducer while the user is writing. The typical hardware to collect data is a digitizing tablet which is electromagnetic or pressure sensitive. When the user writes on the tablet, the successive movements of the pen are transformed to a series of electronic signal which is memorized and analyzed by the computer [29].

Off-line character recognition is performed after the writing is finished. The major difference between on-line and off-line character recognition is that on-line character recognition has time-sequence contextual information but off-line data does not. This difference generates a significant divergence in processing architectures and methods.

The off-line character recognition can be further grouped into [41]:

• Magnetic character recognition (MCR)

• Optical character recognition (OCR)

In MCR, the characters are printed with magnetic ink. The reading device can recognize the characters according to the unique magnetic field of each character. MCR is mostly used in banks for check authentication.

3. OBJECTIVES

The handwriting recognition task involves several subtasks such as separation of the image into meaningful units, recognition of the separated units, and decision making based on the recognition results; in addition, the task requires global system organization to maximize system performance. There are many problems that arise from these subtasks that should be solved to build an efficient and optimal system. In this section, following the above mentioned motivation, several problems related to character, word and phrase recognition processes are addressed. Character recognition is basically related to recognition of pre-isolated character images and most research has focused on finding the best feature set and classification method in a static architecture.

A method which achieves maximum separation among classes in a selected training set that is closest to the application is chosen as the optimal recognizer. A decision step follows recognition to accept recognition result within the desired performance. In this sequential and unidirectional process, feature extraction is passive and classification involves inflexible resource usage to provide the best results regardless of image quality. Also, the decision algorithm usually has a uniform criterion for acceptance. This static approach is lacking in adaptability to the input diversity and injection of dynamic operation into the processing flow is difficult.

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An "Elastic Graph Dynamic Link Model" (EGDLM) has been constructed and presented in this thesis to provide a feasible solution to tackle/solve the abovementioned problems. In order to provide a generic vision object recognition scheme for different problem domains, different image pre-processing and object segmentation schemes [such as Active Contour Model (ACM) and Composite Neural Oscillatory Model (CNOM)] have been integrated into the proposed model (EGDLM).

The main reason of this type of restriction is to focus our attention on vision object recognition that is generally associated with machine perception, a branch of artificial intelligence. This involves a wide range of problems such as:

a) Determination of object boundaries (or object segmentation).

b) Location of single object instance.

c) Object classification within a scene of different objects.

d) Object matching or identification from a cluttered scene.

3. METHODOLOGY

The template matching method utilized by *Tausheck's* reading machine is a fairly standard image processing technique. Although simple, template matching has some obvious limitations. One template is only capable of recognizing characters of the same size and position. On the other hand, template matching is also very vulnerable to noises and small variations that occur among characters from the same class.

Pre-processing:- The purpose of the pre-processing phase is to prepare a given image for the isolation phase primarily to make it easier for the isolation phase to determine where character glyphs begin and end.

Post-processing:- Post-processing attempts to construct text from the output provided by the identification phase. The output might include spacing and formatting.

Isolation: - The isolation phase analyzes the cleaned image data from the pre-processing phase in an effort to locate and isolate pockets of text. These pockets are then further broken down into lines and, finally, into single glyphs.

Identification: - The identification phase examines the isolated glyphs and attempts to classify each of them as a particular character.

Meanwhile, in image processing, since the template matching needs to compare every input character to all of the templates from pixel to pixel, this method demands a lot of computation power and time.

Specifically, this project makes the following contributions:

(a) Method of "Pixel Classification" is one of the most traditional, simplest and straight-forward applications of the feature-space strategy.

(b) "Object recognition" by this method involves a "metric" or "similarity" measure will reflect how well the image data are matched to the pre-defined templates.

(c) Combined strategies by refining matches using Resegmentation;

(d) Combined strategies by refining matches using Template Matching;

(e) Combined strategies by refining matches using Flexible Model Matching;

(f) Combined strategies by Elastic Graph Dynamic Link Model (EGDLM)

4. AIM OF THE RESEARCH AND CONCLUSION

The main contributions of this Project are

1. The design and implementation of a tool for OCR applications, data reduction is usually confined to reducing a gray scale or color image to a black and white (binary or bi-tonal) image. This reduction is accomplished by calculating a level of intensity against which individual pixel values are compared. Which detects almost all character in an image and determines the pixel, calculate value of character, numbers and symbols to be detected.

2. A comparative analysis of contemporary image datasets available for research in an object-attribute method examines a particular attribute of an object (in this case, a glyph) and utilizes some specific feature of that object to perform a function.

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3. The design and execution of experiments that test the capabilities of the projection profile technique projects the document at different angles, Handwriting Recognition is interpretation of data which describes hand written objects. The goal of handwriting recognition is to interpret the contents of the data and to generate a description of that interpretation in the desired format.
4. Investigated the sensitivity to salt and pepper noises for Fourier descriptors and Hu's seven moment invariants. The image features are collected and plotted from image samples with different noise intensities.
5. Developed a generic OCR engine which can be used for different purposes. This OCR engine includes two basic functions: feature extraction and image recognition. It integrated Fourier descriptors and Hu's seven moment invariants together. The users can use this OCR engine to evaluate and compare their overall performances on gray level "JPEG" images and "TIFF" images.

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THE KOTLIN PROGRAMMING LANGUAGE: INTRODUCTION APPROACH

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ABSTRACT
This paper focuses on the latest programming language for android development Kotlin with its features, advantages over Java, etc. There are currently huge numbers of different languages in use by Software Developers with most job requiring the more skills such as Java, JavaScript, PHP and C#. However as software demands evolve and grow, new and less widely accepted languages are gaining in prominence, offering developers the right tool for certain jobs. Predicting which languages will eventually rise to the top is difficult. One of language is "kotlin".

INTRODUCTION
When we are talking about Android development most propably people talk about the language is Java. Not all the android apps are written in Java. You can write code for android apps in any language that can compile and run on Java vitual machine. One of this JVM compatible language is Kotlin. Kotlin is statically typed language from JetBrains. Now the question arises that what is statically typed language. A programming language is said to be statically typed when type checking is done at compile time. Types are associated with variable not values.

Google also announced that kotlin will be the official language for android development. Kotlin is not the replacement of Java but it will work together.

BACKGROUND
Kotlin is designed by JetBrains and developed by JetBrains and source contributions. Kotlin was first appeared in 2011. But it released in 2016 with stable version v1.0. Currently 1.1.2 is the latest version of kotlin which is available. Kotlin works on JVM, bytecode and JavaScript source code platforms. JetBrains is a software development company formally known as IntelliJ. JetBrains has given us the products like IntelliJ, Android Studio, Appcode, Clion and now Kotlin. Kotlin is the third language that fully supports for Android development after Java and C++. IntelliJ has plug-in support for the kotlin.

FEATURES OF KOTLIN
Kotlin has all the advantages that required in modern language that are follows:

1. Open Source: It is open source language in fact Android announced kotlin is a first class language for developing android apps.
2. Performance: A application developed in Kotlin runs as fast as one developed in Java. It is because of similar bytecode structure.
3. Interoperable with Java and Android: Kotlin s 100% interoperable with Java. It means that all your Java and android code works with kotlin.
4. Concise and Expressive: Use of Kotlin allows you to reduce the lines of code up to 40%. It is expressive means that its human understandable as well as compilers can easily understands it.
5. Compilation Time: Kotlin supports efficient incremental compilation, so while there's some additional overhead for clean builds, incremental builds are usually as fast or faster than with Java.
6. Easy to learn: Learning Kotlin is easy if you are familiar with Java, Scala, C# etc.
7. Safe: Kotlin focuses on removing dangers of null references which is a big headache in Java. Because of it is statically typed it provides the ability to catch more errors at run-time.

JAVA vs. KOTLIN
Java is powerful no doubt but there are some drawbacks in it which are overcome in the Kotlin.

1. Java has been in use around 22 years so that there are some features that can't be implemented due to Java's massiveness.
2. Java requires long code combinations to be written.
3. Code written on Java takes quite a while to compile.

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REASONS TO USE KOTLIN

1. Kotlin requires less code to write: At least 20% less. 22-year old Java is a bit outdated with every update it becomes harder to include some new features consequently the amount of code to write also increases. On the contrary Kotlin provides the ability to reduce the lines of code.
2. Less Crushes occur on Kotlin: Kotlin JVM has much fewer issues as often called "One Billion Dollar Mistake" the issue of NullPointerException is preventable there. NullPointer is yet present in every programming language but the ways of working is different.
3. Kotlin is type safe: In Kotlin every class is a function. It has optional types which are used in safety checkups.
4. Kotlin saves time: As previously said kotlin reduces the code it results in less bugs as well as less time for whole coding process.

Comments in kotlin are same as Java. Package keyword works same as in Java. Declaring variables in kotlin is done by two keywords "var" and "val". Methods, classes are same as in Java but little bit diiference in syntax otherwise it works same as Java.

CODING CONVENTIONS FOR KOTLIN

If in doubt default to the Java coding Conventions such as:

1. 1.Use of camelCase for names and avoid underscore in names.
2. types start with upper case.
3. methods and properties start with lower case.
4. use 4 space indentation.
5. public function should have documentation such that it appears in Kotlin Doc.

CONCLUSION

Kotlin deserves at least a try if you are coming with Java background and interested in android development with Kotlin. This language have good features than scala. And also overcomes the drawbacks of Java which wil give good experience to you while coding in Kotlin.

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AN ELECTRONIC ATTENDANCE SYSTEM TO RECORD STUDENT'S PRESENCE IN THE COLLEGE USING ARDUINO UNO

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ABSTRACT
Attendance is one of the work ethics which is valued by most employers in educational institution. Attendance of the students and academic success are co- related. Therefore, there is a need of proper attendance management systems as well. Most of the educational institute and government organization in the developing countries still use paper based attendance systems.

Our project aims to design the student's attendance system which could effectively manage attendance report of the students in the institute like "Modern College of Arts, Science and Commerce, Ganeshkhind". Fingerprint is considered to be the best and fastest method for biometric identification. The experimental result suggest that many fraudulent issues can overcome using fingerprint based attendance system and improves the reliability of the attendance records.

Keywords: Biometric, Fingerprint, Attendance, Optical Sensor, Arduino

INTRODUCTION
Attendance of the employees is an important factor in the organizations like educational institutions, industries, hospitals etc. In the manual method attendance is recorded on a paper. In the colleges student's everyday attendance record is maintained on paper by taking their signature in the class. This method is cumbersome and time consuming. a lot of researchers and designers have come up with various other methods in taking attendance. Some of these methods include: Web-Based**,** Smart Board, Mobile devices**,** RFID chips and Biometric based attendance system [4]. Comparison of different biometric techniques has shown that fingerprint biometric is a reliable, mature and legally accepted biometric technique]. Therefore, Fingerprint based attendance system can be used for identification of large number of students in universities [8].

A solution to overcome this problem is an Electronic attendance system that will record the attendance automatically by taking just a fingerprints of the present students. This paper present a fingerprint based biometric system that records the attendance automatically. The system consists for a fingerprint sensor which is used to detect the person's identification. For Example, in educational system, the student needs to place their finger on fingerprint sensor to obtain their attendance. By making use of this system, we overcome this issue such as proxy signatures, so no student can give attendance for their friend who is absent. At the end we can generate the reports for the further analysis.

From manually marking the attendance in attendance registers to using high-tech applications and biometric systems, these systems have improved significantly. It can also be designed using RFID and AVR microcontroller, 8051 and raspberry Pi. In this project, In the present study fingerprint Module and Arduino are used to take and keep attendance data and records. By using fingerprint sensor, the system will become more secure for the users. Following sections explains technical details of making **a fingerprint based biometric attendance system using Arduino.**

SYSTEM OVERVIEW
Required Components
1. Arduino.
2. Fingerprint Module.
3. Push Buttons.
4. L.E.D.'s.
5. Resistor (1K, 2.2K).
6. Power Supply.
7. Connecting Wires.
8. 16*2 LCD.
9. RTC Module.

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FINGERPRINT SENSOR

Fingerprint sensor module captures finger's print image and then converts it into the equivalent template and saves them into its memory as per selected ID by Arduino. All the process is commanded by Arduino like taking an image of finger's print, convert it into templates and storing as ID etc.

This is optical fingerprint sensor module with TTK UATR interface for direct connection to microcontroller. the user can store the fingerprint data in the module and can configure it in 1:1 or 1: N mode for identification of person. The Finger Print module can directly interface with 3V or 5V microcontroller.

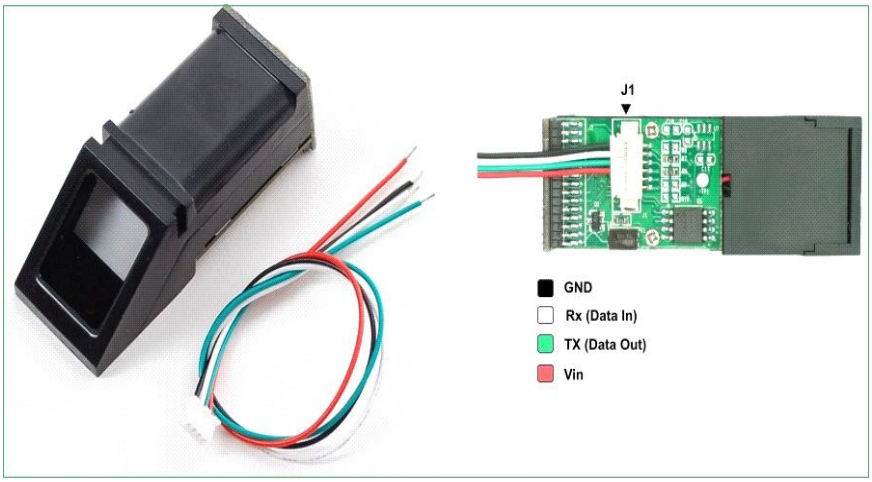

Figure 1

ARDUINO UNO MICROCONTROLLER

Arduino is an open source computer hardware and software company, project and user community that designs and manufacture kits for digital devices.

The present work is based on family of microcontroller design primarily by smart projects, using various 8-bit Atmel AVR micro-controller or 32 bit Atmel ARm processions. These systems provide deter of digital and analog inputs, outputs pins. That can be interfaced to various extension board and other circuits. The board feature serial communication interface, including USB on some models for loading programs from computer. For programming the micro-controller, the Arduino platform provides integrated developing environment (IDE) based on the processing project, which include support for C & C++ programming language.

Figure 2

ARDUINO UNO MICROCONTROLLER

A Light Emitting Diode is a two lead semiconductor light source. It is P-N junction diode it emits light when activated. When a suitable voltage applied to the leads, electrons are able to recombine with holes within the device, releasing energy from photon's.

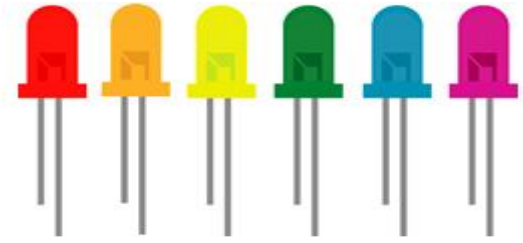

Figure 3

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JUMPER WIRES

The wires are used for connecting the fingerprint sensor to Arduino and from Arduino to bread board. Only through these connecting wires power is supplied to the system and simultaneous operation are performed.

Figure 4

LED DISPLAY

It is the message for the user after performing the corresponding action. It is used as an indicator to show the communication between User and the sensor LCD display shows the acknowledgement of the given presence.

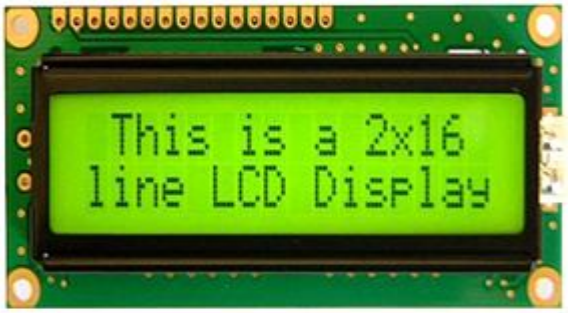

Figure 5

BLOCK DIAGRAM OF PROJECT

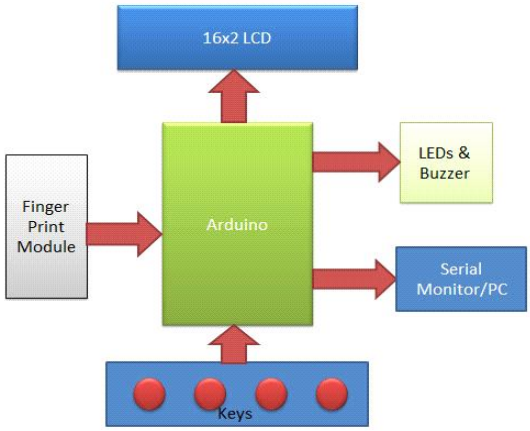

Figure 6

DETAIL CIRCUIT DIAGRAM

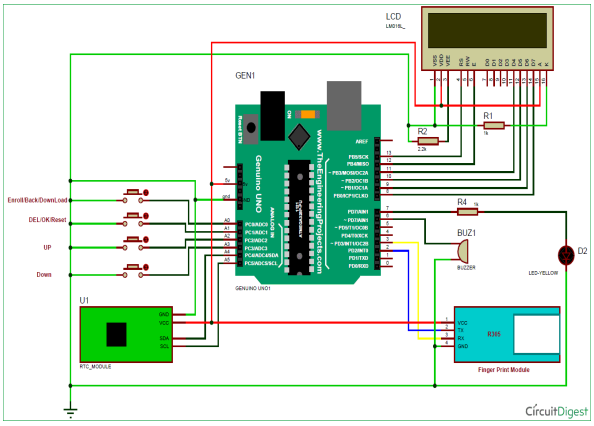

Figure 7

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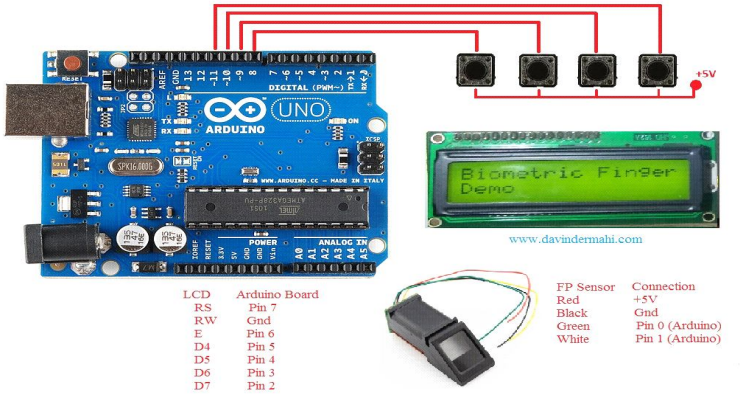

Figure 8

4.1 EXPERIMENTAL SETUP

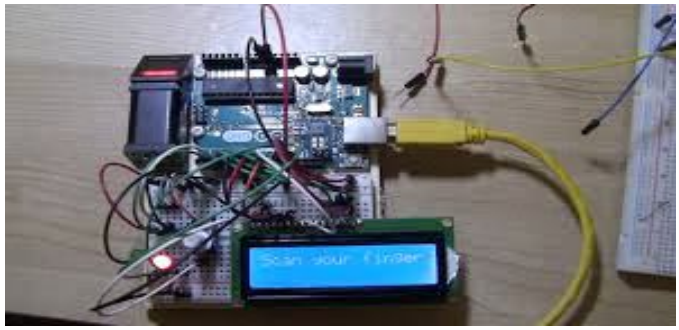

Figure 9

WORKING

Working of this fingerprint attendance system is fairly simple. First of all, we need to enroll fingerprint of the user with the help of push buttons. To do this user need to press ENROLL key and then LED asks for entering ID for the fingerprint to save it in memory by ID name. So now user needs to enter ID by using up/down keys after ID. User needs to press OK key (DEL key). Now LED will ask to place finger over the fingerprint module and then module takes finger image.Now the LED will say to remove finger from fingerprint module and again to place finger again. Now user needs to put his finger again and module take image and coverts it into templets and store it by selecting ID into fingerprint module. Now the user will be register and he/she can feed attendance by putting their finger over fingerprint module. By the same method, all users will be resister into system.

Whenever user places his finger over fingerprint then fingerprint module capture finger image, and search finger image, and search if any ID is associated with this fingerprint in the system. If fingerprint ID is detected, then LCD will show match found and in the same time buzzer will be once and LED will turn OFF until system is take input again.

WORKING ATTENDANCE SYSTEM FLOWCHART

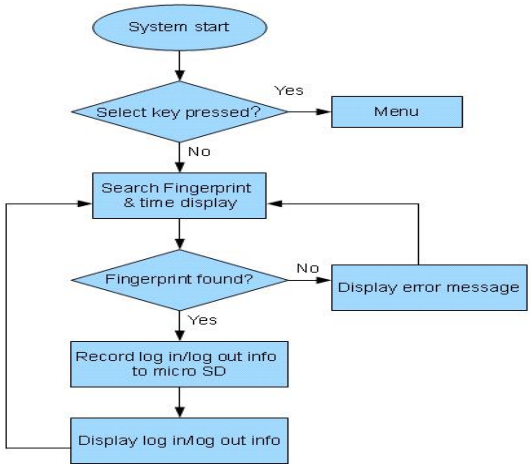

Figure 10

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FUTURE SCOPE

The attendance management system can be improved by adding the feature that indicate if the employee or student is late. Some of the future enhancement for this are to be extended

1) Details of the student like Full name, Roll number,.Semester, Gender.

2) The system can be enhanced to track the arrival and exit time of the student for additional monitoring.

3) It provides accuracy and reliability.

4) Easy way to communicate with the management team.

5) Eliminates errors and saves time.

6) Spend less time on calculating payroll of each

CONCLUSION

Biometric technology is an effective tool to verifying identify and detect fraudulent issues. Analysis confirmed that the biometric data can be set and confirm the identity of the user. Expanding the user of biometric will be enhance the ability to detect fraudulent issues in the presence of the student in the class or employee in an organization. In terms of efficiency and performance, the present work has provided a comparison with the traditional method attendance system. By using the flash memory, the data is well structured. This system is user friendly and very reliable. Therefore, that can be implemented either in organization or educational institutions

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LEARNING C PROGRAMMING: GAME APPROACH

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ABSTRACT
Computer languages are becoming more technology oriented. Logic development is the basic need of any programming language. The first programming language is C programming that student should learn at beginning. C programming is called as basic language to learn and understand other programming languages. Terms in language like loops, constructs, file handling should be understood well first then other constructs in that language should be understood very well. Game approach is useful to teach and learn C programming. Game approach gives satisfaction and happiness to students if a critical concepts is explained through game.

Keywords: C Programming, Games

INTRODUCTION
The need of 21st century is anyone must use computers by any way in day today life tasks. C programming language is called as basic programming language. Computer Softwares are having two parts. Application softwares and system softwares. Application software can be understood or learned by own and using them regularly. On WWW a lots of material is available for learning application softwares [1]. Same is true for system softwares. But unless and until user write progamme and run program itself the programme cannot be understood well [3].

GAME APPROACH
As logic development is important step in learning any programming language, the constructs of the language should be understood very well.

The important constructs in C programming language are as follows. We will see how game approach is useful for clear understanding of each construct.

1) Loops- There is three loops in C programming language.
   a) for loop
   b) While loop
   c) do-while loop
2) Functions- Functions are basic building blocks of programming language.
3) Pointers- They are variables storing address of another variables.
4) File Handling – Files can be used as storage of data.

To understand above concept well parallel programming approach is used [3] [4]. The programme written using for loop is also written using while loop and do-while loop. As the syntax is different but the basic working is same for all the three loops. Same progrmme is written three times means using three loops.

A big card sheet is created with three partitions. One for while loop another for while loop and another for do-while loop. The statements required are created as small units and students are requested to complete programme within given time period. 3 groups of two students are created. There is rush which group will complete the programme with given time limit and with correct syntax. The group which will finish early will be declared as winner. This concept is applied for minimum 10 examples so that minimum 60 students can participate in this game.

To understand functions again parallel programming concept is used. Black board is divided into four parts. One programme is written in simple way and another programme is written by calling function in main without passing parameters. In the third part function is called with parameters and in the fourth part function is called with parameters and function will return value which is accepted and printed in main.

For using game approach 4 groups of each size 2 is created and one programme is given. Every student is requested to complete the programme within given time limit. The group which will complete the programme with correct syntax will be the winner.

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To understand pointer concept by parallel programming two parts of blackboard is created. The first part contains programme without using pointer concept and the part contains programme with using pointer.

By using game approach group of two peoples is created. One group will write the programme without using pointer and another will write with using pointer. The group which will completer the programme with correct syntax will be the winner.To understand concept of file handling no parallel programming approach is used. Only game approach is used. In the game approach one student will tell the steps and another student will write the programme.

CONCLUSION

It is seen that by using game approach students understands concept very well. This also shows increase in their result. Students will understand data structure and C++ programming language well.

ACKNOWLEDGMENTS

Our thanks to the FY Computer Science and BCA Science Modern College Ganeshkhind, students those took part in playing game and gives satisfaction to us by understanding concepts of Basic programming language.

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DATA MINING IN BUSINESS INTELLIGENCE

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ABSTRACT
Business Intelligence is a term that is used in many ways, that's why is really hard to define it. But many times it is used not properly for IT professionals that for ignoring the right concepts around it end up thinking that everything that has some reference to Business Intelligence is indeed Business Intelligence. This paper seeks to clarify some of the most important concepts about Data warehouse, data mining, Business intelligence, regarding some process involved in the implementation of Business intelligence, stages of data mining in BI.

General Terms: Our submitted material is base on Pattern Reorganization. Data mining is a technique which is used in BI.

Keywords: Definition of Data Warehouse, Data Mining and its applications, BI, use of data mining in BI.

INTRODUCTION

1.1 Data Warehouse

A database is a collection of one or more interrelated files that we have to stored on a computer. In large organizations, for security purpose instead of storing data in all computers of employees, data are store on server, which provide service over network. Server consists of one or more computer. So only authorized person can get access to the server. Server is residing in room with access control to other device.

Data warehouse is a process in which multiple databases integrate to generate new data which are useful in business for decision making.

Data warehouse helps for making decision base on integrated data from multiple databases. Data warehouse works as decision support system using various tools.

After storing data the next step is how to communicate with data? How to retrieve data from database?How to manipulate data. The answer is Database programming language. Using Database programming language like SQL we make operations on database.

1.2 Data Mining

In large organization the amount of data is very large. Manage and retrieve data from such large data is very tedious job. Some time there is also a loss of data.

Data mining is the process of filtering data through large data; analyze data into patterns of different categories to produce useful information.

Now days in business application data mining techniques are very useful. This is achieving using complicated algorithms.

1.3 Business Intelligence

Business Intelligence is a term that is used in many ways, that's why is really hard to define it. But many times it is used not properly for IT professionals that for ignoring the right concepts around it end up thinking that everything that has some reference to Business Intelligence is indeed Business Intelligence.

HOW DATA MINING IS USED TO GENERATE BUSINESS INTELLIGENCE

Process that is really important in business intelligence solutions is made after gathering all those different data in one data source, and it is called data mining; where the data is processed under statistical based algorithms that could retrieve useful information from it.

Dealing with the significance of amounts of data, instead of single information, is a very familiar activity to every form of human knowledge. In that way, using statics as basis for data analysis becomes more and more relevant for generating profitable and helpful knowledge in business. Data mining is the faculty of applying rational analytical process - statically techniques - to amount of data in order to make patterns emerge.

Data mining takes advantage of computational ability to dive deeper in meaning of patterns than pure statics. When allied with a data warehouse storage capability and the concepts of BI, data mining can give to a business or company, precision and security while having to make decisions. Large amounts of data, like a census of a country or the profile of clients of a big company, would be almost impossible to extract reasonable information

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without the help of precise techniques and processes. Understanding the dimensions of problems like these, wise dealing with this data demands proper data mining processes.

DATA MINING PROCESSES

It consists of six phases intended as a cyclical process as the following figure:

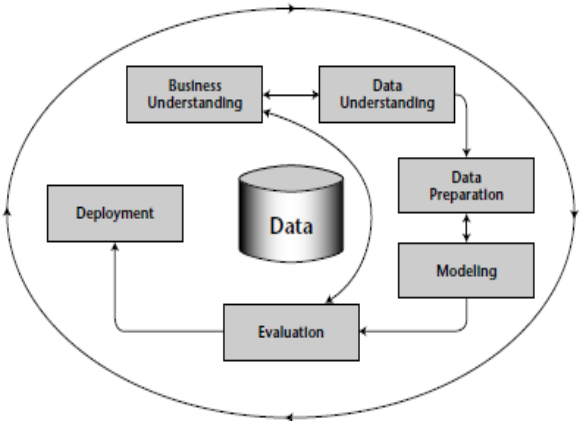

Figure -1: Cross-Industry Standard Process for Data Mining (CRISP-DM)

3.1 Understanding Business

- In this phase first we have to understand business purpose and the resources to accomplished business goals.
- Next, we have to study the existing situation and important elements which should be examined such as assets, presumption, restrictions, task, set the schedule etc.
- Then, with current situation and business purpose we create data mining aim to fulfill business aim.
- At last, we create a blueprint which clearly describes the dada mining goals and business goals.

Understanding data

- This phase start with basic data gathering to understand data. this activity contains collaboration and storage of data
- Next is, Gathered data is to be examining in more details and recorded.
- Then, the data needs to be explored by tackling the data mining questions, which can be addressed using querying, reporting, and visualization.
- there is a need to explored data by asking different type of questions related to data mining such as
- Finally data quality is tested, whether the data values is missing? Or data values are incorrect?

Preparation of data

- This is a lengthy activity because it require lots of time (90%) to complete this phase.
- This activity performs data analysis based on gathered information.
- Data gone through different phases like select data, polished data, assemble data and arrange or organize data to make zero defect data
- Based on business understanding we decide different patterns on that data and arranging that data into desired pattern

Modeling

- Using different modeling techniques dataset are prepared.
- generate test cases to ensure the quality and model reliability
- Once the data set is prepared, create n numbers of models using modeling techniques.
- Finally, created models is verify by stakeholders whether as per their business need model is prepare or not and provide feedback for evaluation.

Evaluation

- Evaluation is an iterative process.

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- In this phase we decide whether to move to the next phase (deployment) or not.
- Because of new factors or updated business need, regenerate new patterns and models for dataset.

Deployment
- In Deployment phase the data which is generated using data mining process is furnish to the stakeholders.
- When Stakeholders want they use that data.
- Stakeholders give review based on their experience.
- These reviews are used to maintenance and improved for future enhancement. .

DATA MINING APPLICATIONS

Following are the applications of data mining in real life:

Data Mining Applications in Sales/Marketing
- To maximize the profit and to promote the business the data mining is used in sales/marketing.
- For example, in food mart customer want to buy sugar and same time customer want to buy tea powder. If these product are place in different department they may missed the product. Using data mining techniques we arrange this product in one data set so we encourage customers to purchase both things.
- Next example, we give offer to customer like buy one get one free we give such offer to customer then customer will purchase this product and using this we increase the efficiency of the business.

Data Mining Applications in Banking/Finance
- Data mining techniques is used to identify where the customer is faithful. Purchasing information such as what he purchases? When he purchase? Amount he played. Based on this information the customer score is calculated. Highest the Score customer is more faithful.
- Data mining is used to find out credit card customer. To retain credit card customer the bank launch special to that customer.
- Data mining is used to find out credit card fraud.

Data Mining Applications in Health Care and Insurance
- Used in claims to determine claim scheme.
- Predict the customer to purchase policy
- Used in insurance companies(for identify insurance package to unsafe customers)

Data Mining Application in Transportation
- used in deciding different types of packages to customer

Data Mining Applications in Medicine
- Data mining is used to classify patient examining patient activity
- Identify successful therapies perform on diseases

CONCLUSION

- Data mining- Exploring a large amount of data and finding useful patterns.
- Data mining technology have bright future in business application, making a possible new opportunity by automated prediction of trend.

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ONLINE VOTING SYSTEM

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ABSTRACT
This paper deals with the testing, building and constructing Voting System that facilitates to voter, candidate who stands in election in their respective area. Election Commissioner give facilities to the user and voter to register then he will e-Verify the registration details and confirms the registration of voters as well as candidates. This voting system is easy to use for the users. It also creates and manages voting and election details ofl the user by providing login to each user. Every user has userID and Password and allows candidates to register vote. This will increase the voting percentage in India. By applying high security it will reduce false work.

Keywords : PHP, CSS, HTML, PSQL, Online Voting System

INTRODUCTION
In early days Voting was done by using Paper Ballot, Punch Card, Electronic Voting Machine etc. This voting system provides security to user to register his/her vote. Online Voting System provides some characteristics different from traditional voting technique. It also provides improved features of voting system over traditional voting system such as privacy, accuracy, flexibility etc. Voter can cast their votes from anywhere in the country without visiting to voting booths, in highly secured way that makes voting fearless of violence and that increases the percentage of voting.

SCOPE OF STUDY
The project will use Aadhar Number and OTP to register/vote on the voting site, through this all the details of voter are saved in the database. And it will act as the main security to the voting system. Advanced Technology: It increases the internet knowledge of the user which is necessary for current generation.

1.3 : BACKGROUND
a. Voters and candidate information are stored in the database

b. Voters and Candidates have login ID and Password

c. Voters votes are stored in the database

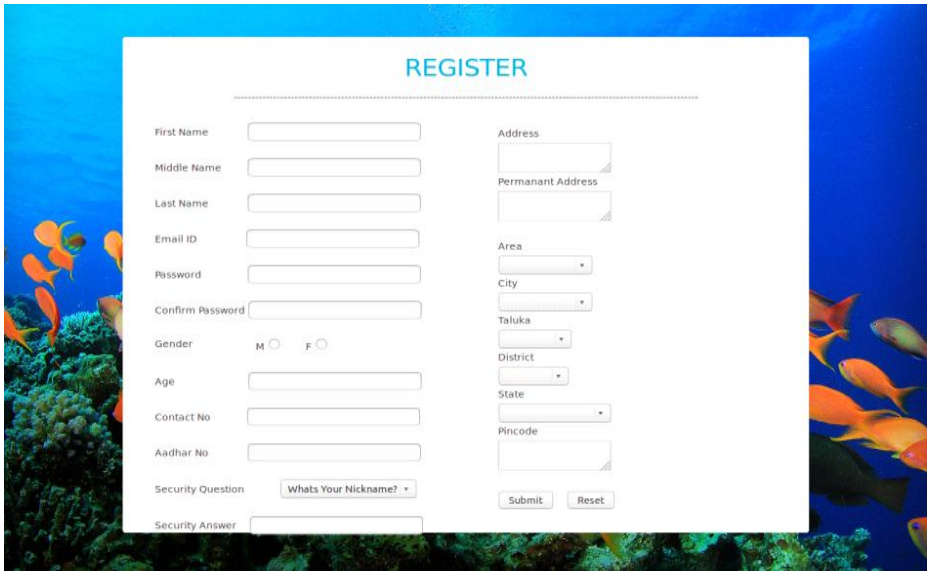
d. Calculation of total number of votes

e. Area wise voting

f. Voters list and candidates list can be generated

SALIENT FEATURES

Registration Page



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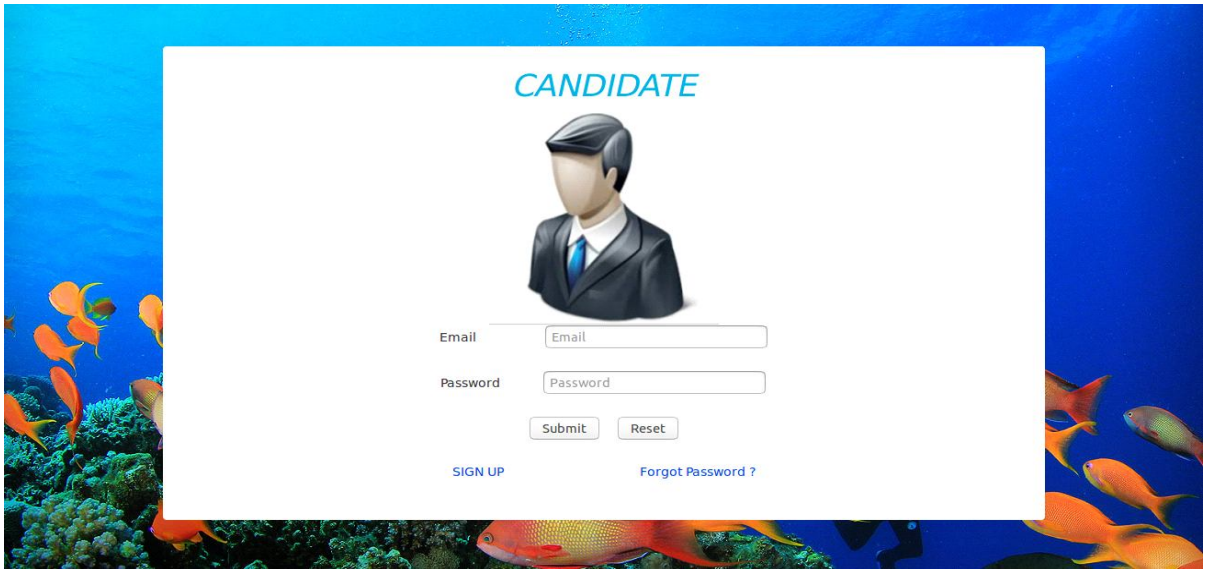
Login Page

Home Page

Candidate Login



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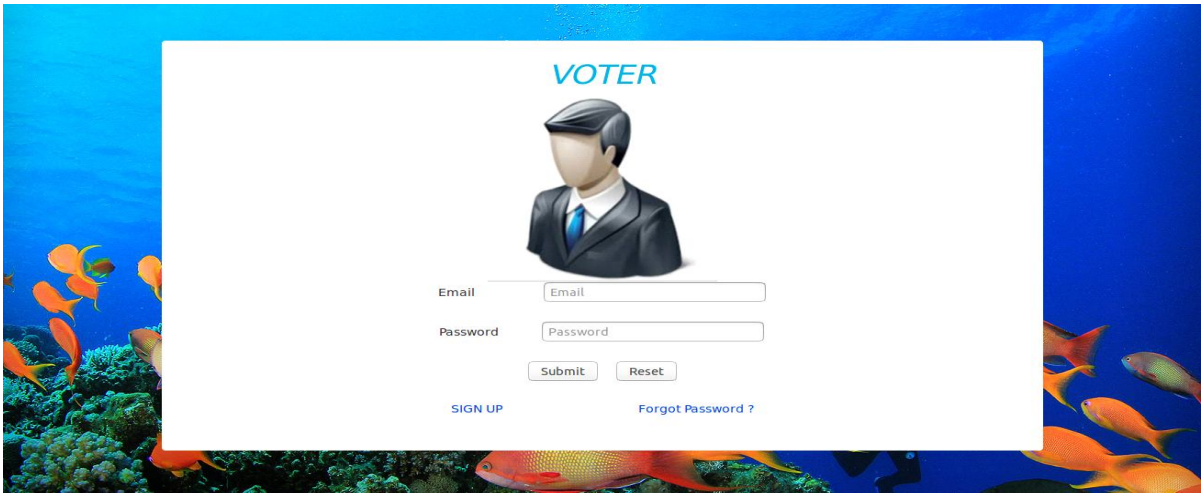
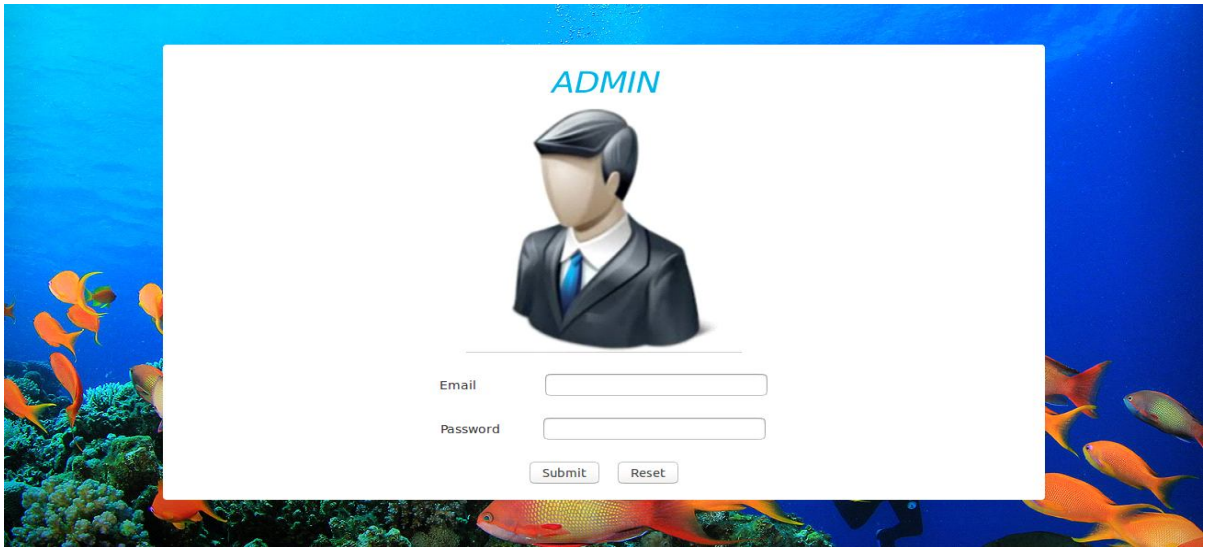
Voters Login



Admin Login



Voters List

VOTERS LIST

Id	First Name	Middle Name	Last Name	Address	Gender	Aadhar	Section
1	Swati	Anil	Amrale	Pune	F	846845677348	Delete
2	Priyanka	Saudagar	Mane	Pune	F	846658866745	Delete
3	Priyanka	Saudagar	Mane	Pune	F	847758994885	Delete
4	Priyanka	Saudagar	Mane	Pune	F	987456213124	Delete

Candidates List

CANDIDATES LIST

Id	FName	MName	LName	Gender	Education	Party	EducationArea	FIR	Visions
1	Narendra	Damodardas	Modi	M	B.A	BJP	Kothrud	N	Good Roads
2	Sharad	Govindrao	Pawar	M	B.A	NCP	Kothrud	Y	Good Roads,Jobs,Education
3	Rahul	Rajiv	Gandhi	M	M.Phil	Congress	Kothrud	N	Good Roads,Jobs,Education
4	Mamata	Promileshwar	Banarji	F	M.A	TrinamoolCongress	Kothrud	N	Jobs
5	Vidya	Sopan	Devdhar	F	B.com	Independent	Kothrud	N	Jobs

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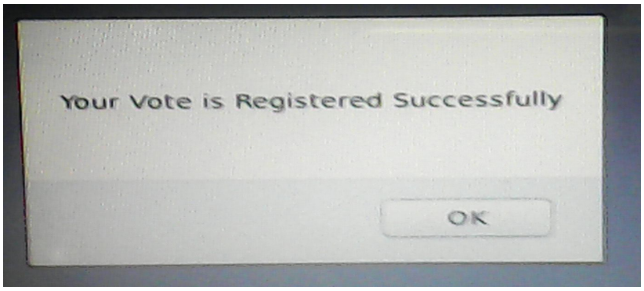
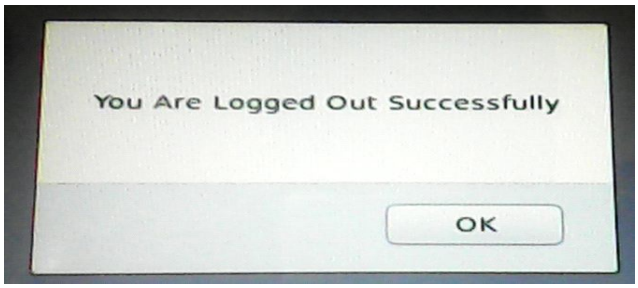
Vote Page

First Name	Last Name	Party	
Narendra	Modi	BJP	○
Sharad	Pawar	NCP	○
Rahul	Gandhi	Congress	○
Mamata	Banarji	TrinamoolCongress	○
Vidya	Devdhar	Independent	○

Vote Message



LogOut



Resources

- Front End:- PHP
- Back End:- PSQL,HTML
- Design:- CSS(Cascading Style Sheet)
- Validation:- JavaScript

Problem Background

- In case of insecure internet.
- Illiterate people who doesn't know about the internet.

CONCLUSION

- Problems of EVM machine cannot happen in this system
- Faster vote calculation Process.
- Outstation people can use it
- Handicapped persons, old age people can vote through this system.
- Easy To Use
- Easy to modify address change etc

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- http://punchscan.org
- http://votehere.net

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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.

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Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code:Student edition 2010.* Aurora, ON: Canada Law Book.

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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.

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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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