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Banarsidas Chandiwala Institute

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Information Technology

Affiliated to GGSIP University,
Kalkaji, New Delhi.

Vision

"To be a World Class Institution and to nurture Value based Professionals."

Mission

"To be student Centric through innovation in Pedagogy, Research, Faculty Development, Collaboration with Industry, Institutions and High Quality Infrastructure."

From the Secretary's Desk

I welcome you all to this new edition of BCIIT Magazine. Banarsidas Chandiwala Sewa Smarak Trust Society is working with a mission "To provide yeomen service in the field of Health and Education". BCIIT was created by the Society to fulfill its mission and the societal needs of higher technical education in the developing discipline of Computer Science in 1999. The Society is aware of its responsibility to provide education to the youth of India.

The Society has provided a serene environment of teaching/learning at BCIIT with state of the art infrastructure comprising:

- Wi-Fi Enabled Campus
- MOU with MNC for scholarship
- SPOKEN Tutorial Center by IIT Bombay
- Air Conditioned Classrooms.
- Computer Labs equipped with latest computers and all legal software.
- Edu-sat and IEEE facility available.
- Air Conditioned Library with Digital Library with latest journals & magazines.
- On campus, well-furnished Hostel.
- Multi-Specialty Campus Hospital

The thrust areas of BCIIT are practical intensive teaching/learning and all round personality development of the students so that they may be ready to accept the challenges of contemporary professional life of IT industry. I am sure that students of BCIIT are well equipped with necessary skills to deliver what is expected from them by the industry.

Dr. Bhuwan Mohan

From the Director'sDesk

I welcome you all to this new edition of BCIIT Magazine. In the information age, science and technology are the corner stone's on which the structure of society rests. The rapid advances in Information and Communication Technologies (ICT) has made the world increasingly hyper- connected and competitive, offering new challenges and opportunities, thus bringing fundamental transformation in society. Globalization is now recognized as the most significant development in the world economy. Its contents, span and depth are no doubt taking the human society to greater heights of prosperity. The nations with slow growth to accept this change are bound to lag behind in prosperity.

Education is a key to this change in the globalization era. It can become effective only if it is wedded to the technological advances. Internet is one such dimension of knowledge and information. To promote advances in technology for e-learning and e-education, the Institute has taken a noble step forward by putting its creative thoughts on the website in the form of e-articles for anyone to read.

The Banarsidas Chandiwala Institute of Information Technology (BCIIT) has taken this unique initiative to encourage the innovative thoughts of its faculty and students to be put in the form of articles in e-magazine. These articles are put on the Institute website so as to be available to more people for their references, use and comments. This effort is a regular feature of the Institute for the past three years. Some of the faculties and students who ultimately wish to pursue the Ph. D program get lot of inspiration and initiate their research in the area of interest.

One of our dreams is to see that BCIIT stands tall among the other institutes of GGSIP University making an impact with value added contributions in the form of high standard and quality articles through its online endeavor. At our end we feel that we have highly experienced and inspired faculty and excellent and academically brilliant students who can contribute a lot in this manner.

I hope our humble effort will go a long way in putting the resourceful thoughts of our faculty and students in improving the quality of education through technology. It is the genuine and sincere attempt of our faculty and students who are constantly putting their heart and soul to achieve the results.

I pray and wish them good luck in their endeavor.

Dr. Ravish Saggar
Director, BCIIT

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Wireless sensor network

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***Abstract*— Wireless sensor networks (WSN) are currently receiving significant attention due to their unlimited potential. A wireless sensor network is a collection of nodes organized into a cooperative network. Each node has a processing capability and connected to a battery source. In this Paper, we focus on bringing out the architecture and applications of Wireless Sensor Networks. The paper concludes with highlighting the future scope of WSN. The network must possess self-organizing capabilities since the positions of individual nodes are not predetermined.**

***Keywords*— WSN, Sensor Networks, Mesh Network**

I. INTRODUCTION

An embedded system is a special-purpose computer system designed to perform one or a few dedicated functions.WSN is an example for embedded System. The emerging field of wireless sensor networks combines sensing, computation, and communication into a single tiny device. Through advanced mesh networking protocols, these devices form a sea of connectivity that extends the reach of cyberspace out into the physical world. The power of wireless sensor networks lies in the ability to deploy large numbers of tiny nodes that assemble and configure themselves. WSN provide a bridge between the real physical and virtual worlds. They allow the ability to observe the previously unobservable at a fine resolution over large spatiotemporal scales and have a wide range of potential applications in industry, science, transportation, civil infrastructure and security.

There is complete absence of any infrastructure like base stations or any centralized control. So, each node in the network acts as a router to forward the packets to the next node. It is an autonomous association of mobile nodes that interact and communicate with each other, to form a network.

Usage scenarios for these devices range from real-time tracking, to monitoring of environmental conditions, to ubiquitous computing environments. Environmental monitoring, warfare, child education, surveillance, micro-surgery, and agriculture are only a few examples. The nodes send their data to a base station which makes them available on the Internet. Since habitat monitoring is rather sensitive to human presence, the deployment of a sensor network provides a convenient way to gather and analyse the data. Another application is to monitor remote environments such as a chemical plant could be easily monitored for leaks by hundreds of sensors. These sensors can report the detection of any chemical leaks. Unlike traditional wired systems, deployment costs would be minimal. Wireless sensor networks also have the ability to dynamically adapt to changing environments. Adaptation mechanisms can respond to changes in network topologies or can cause the network to shift between drastically different modes of operation. Peer-to-peer networking protocols provide a mesh-like interconnect to transfer data between the thousands of tiny embedded devices in a multi-hop fashion.

II. ADVATAGES OF WSNs

An easy way to comply with the conference paper

WSNs do not require any fixed infrastructure for their implementation, unlike cellular networks and wi-fi networks, where base stations and hotspots are required. No such infrastructure is required for WS networks. Here the network is built between

different nodes wanting to communicate. This reduces the cost of cabling and expensive maintenance. Therefore, WSNs can be built with very low costs and can be a boon for automation and monitoring. MANETs offer several advantages over other networks. It makes a sound business sense, to invest in ad hoc networks, given the array of benefits, they offer. The investment cost of setting up ad hoc networks is minimal and includes the cost of sensor devices fitted with a transceiver. Such devices are readily available and cost only a few thousand rupees.

Advantages of Wireless Sensor networks:

- High security can be achieved, due to non use of any public network.
- Virtually free data transfer within the network. There is no limit or cost of any data exchange.
- Flexibility and ease of operation
- Virtually maintenance-free, as no cabling is required.
- Self-adaptable and self-configuring network.
- Low cost of implementation. Only cost is the cost of the mobile devices.
- Low administration or running costs.
- Network is scalable, which can support upto hundreds of nodes.

III. DESIGN FACTORS

A sensor network design has many considerations such as fault tolerance; scalability; production costs; operating environment; sensor network topology; hardware constraints; and power consumption.

A. *Fault Tolerance:*

The failure of sensor nodes should not affect the overall task of the sensor network. Therefore, reliability is of great concern to a WSN. Fault tolerance is the ability to sustain sensor network functionalities without any interruption due to sensor node failures. Individual nodes are prone to unexpected failure with a much higher probability than other types of networks. The network should sustain information dissemination in spite of failures.

B. *Scalability:*

Hundreds or thousands of nodes may be deployed in a WSN. This number may reach an extreme value of millions. WSN must be able to work with this number of nodes.

C. *Hardware Constraints:*

A sensor node consists of components such as sensing, processing, Communication, power, location finding system, power scavenging. All these units combined together must consume extremely low power and be contained within an extremely small volume.

D. *Sensor Network Topology:*

The node densities may be as high as 20 nodes/m^3. Deploying high number of nodes densely requires careful handling of topology maintenance.Must be maintained even with very high node densities.

III Components of WSN

A. Processing

Two key constraints for processing components are energy and cost. WSN are generally used for mass markets. Since the processing in a node has to address a variety of different tasks, these nodes have different types of processors: microprocessors and/or microcontrollers, low power digital signal processors (DSPs), communication processors, and application specific integrated circuits (ASICs) for certain special tasks.

B. Storage

Most sensor nodes have relatively small storage. They most often consist of standard dynamic random access memory (DRAM) and relatively large quantities of non-volatile (flash) memory. This storage is expected to increase in future, keeping in mind the applications.

C. Sensors and Actuators

Sensors are the devices which have special capability of sensing data through them. This data can be in many different forms like temperature, humidity, pressure, fire detection, chemical exposure level or images.

IV TOPOLOGIES OF WSNs

There are a number of different topologies for radio Communications networks. A brief discussion of the network topologies that apply to wireless sensor networks are outlined below.

A. Star Network (Single Point-to-Multipoint)

A star network (Figure 1) is a communications topology where a single base station can send and/or receive a message to a number of remote nodes. The remote nodes can only send or receive a message from the single base station; they cannot communicate directly with each other. The advantage of this topology is in its simplicity. The disadvantage of such a network is that the base station must be within radio transmission range of all the individual.

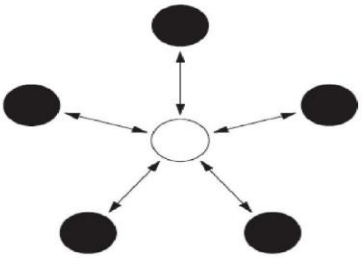

Figure 1: Star Network

B. Mesh Network

A mesh network allows for any node in the network to transmit to any other node in the network that is within its radio transmission range. This allows for what is known as multi-hop communications The Disadvantage of this type of network is in power.

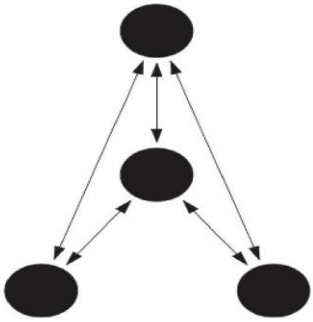

Figure 2: Mesh Network

C. Hybrid Star – Mesh Network

A hybrid topology is one between the star and mesh network. It provides for advantages of both topologies, while maintaining the ability to keep the wireless sensor nodes power consumption to a minimum. Some nodes on the network are enabled with multi-hop capability, which can forward messages to other nodes on the network.

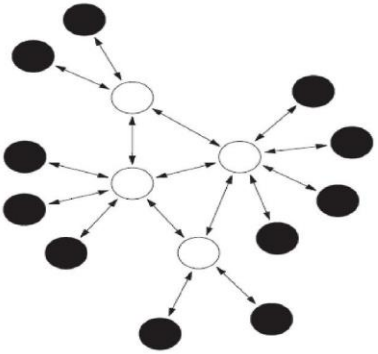

Figure 3: Hybrid Star-Mesh Network

V FUTURE DEVELOPMENTS

New standards are being developed, the focus is on optimization of sensor networks. One of the most important consideration in WSNs is conservation of resources such as processing power and the battery. Current research is also aimed at extending the life of their batteries as some WSNs operate in the most hostile conditions.

VI. CONCLUSION

WSNs have wide applications in scenarios, which were earlier were earlier not practically possible. New standards are being developed, the focus is on optimization of sensor networks. One of the most important consideration in WSNs is conservation of resources such as processing power and the battery. Current research is also aimed at extending the life of their batteries as some WSNs operate in the most hostile conditions. Sensor nodes can be imagined as small computers, extremely basic in terms of their interfaces and their components. Wireless sensor networks are an active research area with numerous workshops and conferences arranged each year. The future should see an accelerated pace of adoption of this technology.

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Evolution of Internet of Things

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Abstract— **Internet has been a revolutionary step, which has changed the world as we know it, from the way we interact, communicate, and even learn. Internet of things or IoT is the next evolution of the internet, it is the next advancement or step in that revolution, and like every new idea which dares to change the perspective of every individual it has to stand trails of acceptance, standardization, this article is about the latter. Though the mentioned have a long road to travel, research, in this new and yet rapidly expanding concept seems to be promising, hence in this article we would like to shed some light on existing standards and see if we are finally ready for the internet of things , also explore a solution to fragmentation.**

Keywords— **Internet of Things, Network of Things, protocols**

I. Introduction

To say the concept of IoT is new would be a false statement. Since the dawn of internet people have evolved, but it was not always so, internet earlier meant www, World Wide Web and its perception was limited to a PC, but it soon changed as a group of researchers were working on RFID, an emerging sensor technology, this event can arguably be stated as the seed of IoT, IoT was spawned or became a relative concept when the number of device, things exceeded the number of people on earth, 6.8 billion people and 12.5 billion devices that is roughly 1.84 devices per person according to math, [1] this is when the IoT was born, so question arise what is IoT, in lay man terms IoT is where when a device equipped with actuate sensors, generate meaningful data in collaboration with others similar devices without the intervention of people.

This Network of things must work together, this is one of the most important aspects, and this where the challenge starts as there are different standards backed by different organization, this very thing is advancing IoT to new level with better and new standards and the same thing is limiting its potential, an apt example of irony at play.

To discuss Internet of things, it is indeed important to first understand the term Internet of things itself. As the nomenclature for the much talked about internet of things is still awaited and with no specific definitions so far. We call it any system / node / object/ thing that is capable of communicating within heterogeneous environment on the existing infrastructure without human intervention. Till now we have seen many systems that are partial implementation of such an idea and exhibit only a particular solution to the entire problem. These are popularly known as Ubiquitous Computing, Pervasive Computing, and Ambience Computing. But none of them exhibits the machine to machine interaction without human intervention. The work in this domain is still evolving. There are IoT data model namely Device to Device, Device to Cloud, Cloud to Device and Back End Data Sharing. Any implementation of such model provides

support to the end user. There are various issues related to the IoT. One of the major issues is Security, Privacy, standards

Under 24x7 surveillance of the sensors, the privacy is bound to compromise. Also the lack of standards is a major problem IoT is going to face. Universal mapping of Hardware with software is important and should be seamless. For interoperability it is important to have standards which are widely acceptable for IoT implementation. The target of IoT is to gradually develop smart world then may it be developed or developing economy.

II. IoT APPROACH

There are many ways to approach the concept, with the advancements in other sectors of technology such as cloud computing, the question arise whether to follow centralize or de–centralize approach, in centralize approach all nodes, devices or things we call it, are bound to a central server or entity which puts the control in that centralized entity it can be depicted using a star topology. Another approach is to decentralize the structure, in which devices are free to communicate with each other without the need of the centralized entity. It can be depicted as mesh topology on a larger scale with help of actuator networks.

While either approach has its advantages and disadvantages, it's more viable to have a architecture where centralization and decentralization come hand in hand, giving better control approach over privacy and data, as well as enable us to harvest the advantages of the cloud technology, not only this hybrid structure enable us to have a network which doesn't need internet to function, but also it will leverage from the horsepower of backend when available and discouraging data mining and trading of user data keeping tabs on their privacy.

III. PROTOCOLS AND STANDARDS AT PLAY

Here we are going to classify the standards and protocols on the basis of the layer they function in OSI model, this will help us to better understand and compare the protocols.

A. Physical layer

These are the protocols which work on the physical layer, which is the most basic layer in OSI model [1]. We will be only investigating the wireless protocols since they are the most relevant and most suitable to our problem. The three major and only candidates are

- IEEE 802.11.x
- IEEE 802.15.4
- BLUETOOTH

The 802.11.x is the widely used and accepted WLAN network, over 450 million households worldwide currently have Wi-Fi networks set up in 2014 [2] hence it is fundamental to use the currently existing infrastructure to our advantage, same goes for BLE (Bluetooth), Virtually all mobile and smartphones already include *Bluetooth*® technology, allowing them to work with hands-free calling systems in the car, headsets, headphones, wireless speakers, and a huge array of other Bluetooth enabled devices [3] and by 2018, more than 90 percent of Bluetooth enabled smartphones are expected to be Smart Ready devices, the number of Bluetooth enabled passengers cars is expected to grow over 50 million (almost 70 percent of the market) by 2016 [3].

The 802.15.4 on the other hand is a relatively new protocol and has yet to match the success of WLAN or BLE, the 802.11.5 or WPAN which stands for wireless personal area network, operates in the unlicensed ISM band at 2.4 GHz [4] which is same as Bluetooth ISM band, further we will be discussing this new layer and routing mechanisms available for 802.15.4 as abundant research is already done on the other two.

Another worthy mention is the nrf24le, which operates on similar 2.4 bands [6] and is cheaper and battery friendly than its cousin 802.15.4, this changes comes with the cost of area of operation, but when coupled with right routing mechanisms, it may truly shine due to its cost effectiveness.

B. *Network and Transport Layer*

These are the layer which deals with the congestion control and is responsible for the routing of packets. In IOT there are few standards which do not entirely follow the IP standard which we are familiar with, one of the those standards is ZIGBEE [6], though highly popular lacks the support of IP, now filled with new specification ZIGBEE 3.0 [7] which supports LOWPAN, which acronym for IP for WAPN 6LOWPAN, although other standard still works [8] and is supported by Contiki-OS [9] which is an open source OS, it provides a small IPv6 stack for implementation and is available highly popular DIY platform Arduino with 180k memory foot print. 6LOWPAN compresses the header of IPV6. Further addresses the following issues:

- The IPv6 minimum MTU (Maximum Transmission Unit) size of 1280 bytes is much bigger than the maximum frame size of 127 bytes defined in IEEE 802.15.4 MAC specification. The excess of data in IPv6 header is a waste on WPAN [10]
- IPv6 addresses use 128 bits while IEEE 802.15.4 addresses use 64 bits for full addresses and 16 bits for short address , it compresses the header using some fixed option like class is always 0 [10]
- Routing approaches for mesh topologies are not defined in the IPv6 protocol, which is also addresses in 6LOWPAN [10]

LOWPAN networks are effective in constrained environment [11], and there interoperability with existing infrastructure unlike ZIGBEE which needs gateway for now to interact with the IP based networks, hence it is favourable to have 6LOWPAN as an open standard unlike ZIGBEE. Additional support for other MAC protocols for e.g. nrf24le is required. The desired protocol should be open nature and the OSI stack, which again in ZIGBEE is not possible due to its closed source code.

C. *Application layer*

The amount of work being done is substantial, which can be seen as the number of protocols being worked upon. STOMP, COAP, MQTT, XMPP, THREAD are just to name a few, however we will be talking about the most prominent and promising according to the author based on their acceptance and development.

COAP stands for controlled application protocol, it has its roots firmly planted in the arguably the most known protocol HTTP. It share the same GET/POST architecture optimized for sensor networks, it works on UDP and has header size of 4 bytes [13], it is fairly to implement and take a relative small footprint.

MQTT is the answer from IBM [14], unlike COAP it runs on TCP/IP and hence has built in reliability due to underlying protocol. MQTT has a 2 byte header [14] which is smaller than COAP and also support a datagram protocol e.g. UDP with a variation MQTT-SN[15], here SN stands for sensor and does not require IP stack to work, it may or may not be implemented with the existing standard, this gives a flexibility edge to MQTT, though it is better to follow the long followed standards rather than to reinventing the wheel. MQTT uses publish subscribe architecture as opposed to web oriented architecture of COAP, also the MQTT specifications are smaller than the COAP long specifications making MQTT arguably a simpler protocol.

Both MQTT and COAP are widely under development, MQTT has been around since 1999 and COAP is supported by open source OS such as Contiki OS [10], both support three level of delivery fire and forget, assured, only once and assured [15] [14] [13]. MQTT has a hierarchical topic system. Also it is a Many to Many architecture as compared to one to one architecture

of COAP. Both have advantages over each other. For e.g. one can use MQTT for purely event based response and leverage and COAP one to one architecture can be used to relinquish control over a central server or node, but all the protocols at our disposal. Is it truly enough…? This will be answered in the next section.

IV. ONE LANGUAGE TO RULE THEM ALL

It should now be clear that IoT will not compromise of single standard, it will be a mesh of different technologies and protocols. This is due to the sheer number of devices or things under operation, it is being predicted that the devices will grow approximately to be 26 billion by 2020, but the question remain the same how will they interact, here we have our part to play. Instead of focusing on the protocols to be used, one must define the premises, contexts in which one device might want to talk to another device, this will give us the general use cases from which one can build upon a language which doesn't rely on the underlying protocol and yet all the available devices should be able to talk to each other using this language. The language required to facilitate such scenario should be open to all. Application must be developed around it, also it should be domain specific and nodes are to be labeled with the domains, which are nothing more than the application area e.g. home, security, logistics, education etc. classifying nodes within a network for a better access.

CONCLUSION

From the current existing standards it would be MQTT, 802.11.X, 802.15.4 and HTTP with rest, with a global cross protocol language running on the protocol stack considered best for the implementation of IoT. To conclude, it's ability of nodes to work in harmony of each other is where the true potential of IOT lies. Although the first step have been taken for the next big thing for the internet i.e. mapping of the physical world with the world of web.

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Artificial Intelligence and its application

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Abstract— **People are used to technology to model them selves. About 400 years ago, human started to write about nature of thoughts and reasoning. Very first grandfather of Artificial intelligence was Hobbes (1588-1679), He started that thinking was symbolic reasoning. Artificial Intelligence is based on the assumption that process of human thought can be mechanized. The goal of this article is to formulate set of all challenges problems in this field. The main focus is on problems that can be solved in next 10 years or in future.**

Keywords— **PSS; NIDS;**

I. INTRODUCTION

AI is used to solve whole range of problems like

Game Playing: Most famous game is 2-Player game than can be played by using a machine. We can purchase a machine that can play master level chess for a few hundred dollars like Min-Max Problems.

Speech Recognition: In modern time machine is so smart that that can identify human voice and recognize them. It is possible to instruct a computer using speech and machine can recognize same voice or person.

- Understanding Natural Language
- Computer Vision
- Expert System
- Heuristic Classification
- Virtual personal Assistance: AI helps to find out useful information in day to day life also. For example when we ask or we can say" where is nearest north Indian restaurant?" AI apps help to find out this information regarding this problem. Assistance will give response by finding relaying information.

Smart Cars: you probably haven't seen someone reading the newspaper while driving to work yet, but self-driving cars are moving closer and closer to reality; Google's self-driving car project and Tesla's "autopilot" feature are two examples that have been in the news lately. Earlier this year, the Washington *Post* reported on an algorithm developed by Google that could potentially let self-driving cars learn to drive in the same way that humans do: through experience. The AI detailed in this article learned to play simple video games, and Google will be testing that same intelligence in driving games before moving onto the road. The idea is that, eventually, the car will be able to "look" at the road ahead of it and make decisions based on what it sees, helping it learn in the process. While Tesla's autopilot feature isn't quite this advanced, it's already being used on the road, indicating that these technologies are certainly on their way in.

Purchase Prediction
Fraud Detection
Online customer support
News generation

II. RESENT WORK IN AI

1. Application of Artificial Intelligent Techniques in Power system stabilizers (PSS) Design

PSS is a control system, which is applied as a part of an excitation control system. In the field of power system for performing operation computer programs are written and then executed. Programs are modified according to any variations. To deal with the high non-linearity of practical Systems Artificial intelligence (AI) is used. There are so many technology of AI like ANN (Artificial Neural Network), FL (Fuzzy Logic), ES (Expert System) are used for optimizing the problems of PSS.

2. Application of Artificial Intelligence Techniques in Network Intrusion Detection:

. It is a device or software that continuously monitors a network or system for malicious activity. If any violation is found then its report is to be forwarded to administrator or collected using security information and event management (SIEM) system. There are several different soft computing techniques and algorithms that can be successfully used to detect intrusions.

These techniques include

- Fuzzy logic
- Probabilistic reasoning
- Neural networks
- Genetic algorithms

Combinations of these can also be used. For example, genetic algorithms can be used to build a neural network and probabilistic reasoning can be built on fuzzy logic. Neural networks are the most common AI type for IDS.

3. Application of Artificial Intelligence Techniques in Medical Area

Computer technology in the field of medical area is known as Medical Decision Support System. The system deals with medical data and knowledge domain in diagnosing patient's conditions as well as recommending suitable treatments for the particular patients.

Artificial intelligence techniques have the potential to be applied in almost every field of medical area.

Fuzzy Expert Systems in Medicine: Fuzzy logic is a data handling methodology that permits ambiguity and hence is particularly suited to medical applications. It captures and uses the concept of fuzziness in a computationally effective manner. The most likely area of application for this theory lies in medical diagnostics and, to a lesser extent, in the description of biological systems .Fuzzy expert systems use the structure of a series of „if – then" rules for modelling

4. Application of Artificial Intelligence in Accounting Databases:

In exiting database System, there are some difficulties. The needs of decision makers are not met by accounting information. Humans do not understand or cannot process the computerized accounting databases. Systems are not easy to use. There is focus on the numeric data. Integrating intelligent systems with accounting databases can assist (either with the decision maker or independent of decision maker) in the investigation of large volumes of data with or without direct participation of the decision maker. Thus, the systems can analyze the data and assist the users understanding or interpreting transactions to determine what accounting events are captured by the system. With the artificial intelligence we store and retrieve knowledge in natural language. There are some artificial intelligence tools or techniques that help in the broader understanding of events captured by the accounting system. There is more emphasis on symbolic or text data rather than just numeric data to capture context. The artificial intelligence and expert system builds intelligence into the database to assist users.

AI is used to find out and extends data base system. An approach which is called "Event Approach", this approach is combined with classical support system to perform data base accounting operation in good manner. But event approach suffers some limitations as traditional counting data base.

III. Conclusions

This article is based on the concept of AI, areas of AI and uses of AI in various fields. There are a bright future and lots of work we can do for profitable results. Artificial Intelligence and soft computing will continue to play an increasingly important role in the various fields.

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Review Paper on Role of Plastic Money in Cashless Banking in India

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***Abstract*— Cashless Banking minimises the use of cash by providing alternative channels such as cheques, wire transfer, debit and credit cards, on line transactions and mobile banking for executing financial transactions. In India less than 5% of all payments happen electronically. This article aimed at understanding factors that are critical to the effective application of cashless banking in Indian context.**

***Keywords*— Cashless Society, Plastic Money.**

I. INTRODUCTION

The annual report of Reserve Bank of India (RBI) of 31 March 2016 stated that total bank notes in circulation valued to □ 16.42 trillion (US$240 billion). The currency notes in circulation are much higher than in other large economies. India uses too much cash for transactions which can be seen in ratio of cash to GDP is one of the highest in the world. After demonetisation on 8th November 2016, government of India is setting out a plan to encourage electronic payments and to enable India to move towards a cashless economy in the medium and long term.

The demographic statistics of the country may play a significant role in the said plan. In India Rural and Urban population distribution is 68% and 32% respectively with an overall literacy rate of 74%. Urban India house 32% of India's population and contribute 70-75% of its GDP.

After demonetization, the use of plastic money in India has raised to a significant level. A majority of people in the society finds it more convenient to carry a single card to make any payment rather than carrying notes. The concept of paying by cash has become almost standstill. Plastic money includes credit cards, debit cards, prepaid balance cards and smart cards that can be used for any kind of payment. In retail stores, the sale for various products declined.

II. CHALLENGES

Following are a few challenges for moving towards cashless society

1. Lack of basic infrastructure i.e. we are not equipped with required technology
2. Lack of Public awareness, Financial literacy, acceptability and response to switch to cashless system
3. Availability of operational bank accounts, Internet connection, e-Gadgets, e-Literacy, Cyber security and e- Grievance mechanism needs to be implemented.
4. Lack of resources available with majority of small retailers to invest in electronic payment infrastructure
5. Poverty, Illiteracy, lack of knowledge about modern banking and other online services, slow Internet speeds, Day to day needs of common man.
6. Indian markets are not advanced enough to provide these things via electronic payments.

III. ADVANTAGES

Cashless banking Experience a high degree of control as it is a part of well organised attempt to unify the world and control it through its currency and will be a big booster in bringing the economic uniformity in the world. It Enhance the globalisation that characterise our present time and minimise illegal trade, terrorism, corruption, black money and criminal activities. There is increased revenue for government and more informal economy and more sales tax in long term Monetary and fiscal policy can be more effectively

implemented. It reduces instances of tax avoidance as there are transaction trails. There is Universal availability of banking services to all and fake currency and its impact on economy can be avoided. There is Greater productivity in welfare programmes and money is wired directly into the accounts of recipients and payments can be easily traced and collected. It reduces cost of banking services and transaction costs across the economy come down. There is transparency in business operations and money transfers and Speed and satisfaction of operations for customers. Indirect benefits i.e. saving time and energy for payments and counting collecting change, less currency notes etc. Moreover risk of transferring diseases is reduced as cash has been identified disease carrier and medium of disease transmission.

IV. Solution

Urban India house 32% of India's population and contribute 70-75% of its GDP. Primary focus may be made to urban population as they contribute maximum percentage of its GDP and are equipped better than the rural population and its conversion will be a huge gain.

In the mean time we should focus on to make aware of Open Bank accounts in rural areas and urban population without banking and ensure they are operationalized. The basic infra facilities for cashless economy needed in the rural areas should be work out , To encourage cashless transactions policy of abolishment of government fees on credit card transactions, reduction of interchange fee on card transactions, Tax rebates for consumers for electronic payments and increase in taxes on ATM withdrawals may be implemented. Efforts to make electronic payment infrastructure completely safe and secure and Cybercrimes could be minimized to develop people's faith in electronic payment system. There is need to Create a culture of saving and faith in financial system among the rural poor. The government and Reserve Bank of India will have to come to terms with issues and strict policies but it is possible only after providing basic infrastructure for cashless economy. Strategy need to be made for migration to cashless for those using bank account and for those not having or using bank accounts. The centre, the state as well as the local governments have to work a lot to ensure that: First, every person is financially included in the mainstream. Second, there has to be the availability of the option of paying with cashless methods at the grass root level. Third, there is a need to ensure the safety and security of the cashless transactions. The idea of cashless economy itself is great but all these problems and potential threats have to be taken into account.

V. Conclusion

We should focus on urban population for early results and parallel emphasis should be given to develop rural infrastructure. Cashless payments are facilitated through machines which are not available everywhere in India. Promoting cashless payment in rural areas is a challenge due to lack of infrastructure, banking system and lack of knowledge on debit and credit cards. To successfully go cashless, we will need to take a step by step approach and first address the issues that could cause hindrance. Although the advantages of cashless economy cannot be downplayed but we need to realize that even those who have access to credit cards, debit cards and net banking are apprehensive to use that mode of payment due to fear of important details being stolen. We need a strong national encryption policy to ensure safety of smart card users.

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