



CSI Communications

Knowledge Digest for IT Community

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INTERNET OF THINGS



INVITED ARTICLE

Titbit from the History of Computing-9 **06**

COVER STORY

Taxonomy and Architecture of Internet of Things: An overview of Disruptive Technology **08**

TECHNICAL TRENDS

Assistive Devices for Persons with Autism spectrum Disorder (ASD) using Internet of Things (IoT) **16**

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IoT for functional optimization of Cyclist **29**



Springer

6th International Conference on Emerging Applications of Information Technology (EAIT 2020)

During - Nov. 27-29, 2020 : University of Kalyani, Kalyani, India

Theme : Advanced Techniques for IoT Applications

The Proceedings will be published in the book series "Lecture Notes in Networks and Systems".
(<https://www.springer.com/series/15179>)(Confirmed)



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The Computer Society of India (CSI) has been instrumental in guiding the Indian IT industry since its formative years. The mission of CSI is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community.

Encouraged by the earlier responses and keeping the tradition CSI Kolkata Chapter is organizing the Sixth International Conference on Emerging Applications of Information Technology (EAIT 2020) during November 27-29, 2020 at the Department of Computer Science & Engineering, University of Kalyani, Kalyani, West Bengal, India. The University of Kalyani is a NAAC A Grade University imparting quality education and research in Engineering, General Science, Arts & Commerce and Education(www.klyuniv.ac.in, <http://www.kucse.in>). A Pre-Conference Tutorial will be held on 27th November, 2020 at IIIT Kalyani. Topics (not limited to the followings):

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- ✓ Expert Systems
- ✓ Image Processing
- ✓ Computer Vision
- ✓ Applications in Biomedical Engineering
- ✓ Natural Language Processing

• Machine Learning, Data Mining

- ✓ Artificial neural networks
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- ✓ Evolutionary optimization
- ✓ Rough sets
- ✓ Data mining
- ✓ Web intelligence
- ✓ Intelligent agent technology
- ✓ Virtual reality and visualization

• Big Data and Analytics

- ✓ Business Intelligence
- ✓ Web Analytics
- ✓ Business Informatics

• Information Security and Privacy

- ✓ Network security
- ✓ Privacy and protection
- ✓ Physical, cyber and system security for smart grid

• Wireless and Sensor Networks and IOT

- ✓ Smart communications and
- ✓ Embedded Systems and IOT Applications
- ✓ Sensing, communications and smart infrastructure
- ✓ Diagnostics, self-healing and reliability of smart systems

Submission Guideline

The papers must be submitted ONLINE through Microsoft Submission Link. Please follow standard author instructions of Springer conference for paper format. Submission deadline: 30th June 2020; Notification of Acceptance: 30th September, 2020; Submission deadline for revised paper: 31st October, 2020; Registration of authors: 31st October 2020.

Paper Submission Link: <https://cmt3.research.microsoft.com/EAIT2020>

Publication

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Editorial



Prof. (Dr.) S. S. Agrawal

Chief Editor

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Editor

Dear Readers

"The Internet of Things is not a concept; it is a network, the true technology-enabled network of all networks."

- Edewede Oriwoh

The above quote By **Edewede Oriwoh**, independent cyber-physical security researcher highlights how the internet of things promises to make our lives online. Simply explained, IoT is an expanding and growing network of internet connected things that we can use in our daily lives and control them from plausibly anywhere.

We dedicate this issue to understanding and appreciating how IoT technology is altering the computing practice and applications. Continuing with our invited series Titbits from the History of Computing –IX by the legendary Prof. V. Rajaraman, this issue discloses, "**India's First Dielectronic Differential Analyzer**" This article traces the birth of the Electronic Differential Analyzer system. The first article, "Taxonomy and Architecture of Internet of Things: An Overview of Disruptive Technology" by S. Balakrishnan details the nuances of Internet of Things. The article, "Smart Watch with Remote Guidance: IoT based Smart Monitoring System for Blind People" by S. Suresh Kumar, J. Janet and S. Sheeba Rani discusses the application of IoT Technologies for smart watch development for the blind. The next article, "IoT – It's Expansion in Various Fields" by B. Chidambara Rajan, M. Senthil Kumar, Nisha M. and Nitresh Kumar R. Highlights the varied applications of IoT technology.

The technical trends section discusses the role of IoT in development of assistive devices in the article, "Assistive Devices for Persons with Autism Spectrum Disorder (ASD) using Internet of Things" by Thangakumar Jeyaprakash and P. Ranjana. This section also reports the varied technologies forming the IoT technology stack. The next article, "IoT Technology Stack: Whole Host of Technology" by Anjali Shrikant Yeole and Dhananjay Ramrao Kalbande introduces the component technologies of IoT. The next article, "Steganography- The Future Scope" by Shiela David, Barath Karthi R. K. And Srinidhi K highlights the future challenges and applications of Steganography technology. The next article, "Robotic Motion Planning" by Snehasis Banerjee explains the basics of motion planning in robotics.

The research front showcases, "**IoT for Functional Optimization of Cyclist**" by S.K. Sonkar highlighting how IoT can be applied to task optimization. The next article, "Debit/

Credit Card Fraud Prevention for Financial Institution or Banking Sectors: In context of Anomaly Detection Method" by Sadhana Kumari and K. N. Prasad details the application of IoT for debit/credit card fraud detection.

The issue also reports important activities, events, collaborations done by various institutions and chapters of CSI in 2019-2020 under the Presidential guidance and leadership of Prof. A. K. Nayak. We applaud all chapters and branches for conducting such activities. We also whole-heartedly congratulate all the members of the Executive Committee along with our honourable President, Mr. R. K. Vyas. We hope that they will have a successful tenure.

The issue also reports the bibliography of Sir Tim Berners Lee, director of the World Wide Web consortium. Varied student branch activities as well as workshops carried by different regional chapters of CSI like industrial visit and programming competitions have also been reported. Call for Papers for EAIT 2020 is also included for the information of interested readers.

We are extremely thankful to all our contributors as well as readers. Original, plagiarism-free, unpublished articles are solicited throughout the year from CSI members as well as non-members. Our sincere gratitude to the CSI publication committee members, editorial board members, authors and reviewers for their great contribution and support in realising this issue.

Our special thanks to Prof. A. K. Nayak, Immediate Past President, CSI for his constant encouragement, support and guidance in publication of April, 2020 issue.

We look forward to receive constructive feedback and suggestions from our esteemed members and readers at csic@csi-india.org

With kind regards,

Prof. (Dr.) S. S. Agrawal

Chief Editor

Director General KIIT, Former Emeritus Scientist CSIR,
Advisor CDAC, Noida

Dr. Ritika Wason

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Associate Professor, BVICAM, New Delhi



President's Desk

From : President, Computer Society of India

Date : 01 April, 2020

Email : president@csi-india.org / Cell : (91) 98105 92760



It's my pleasure to greet you all and convey my heartfelt respect & gratitude to all the Fellows, Senior Members, Associate Members, Members of the Managing Committee of the Chapters, Corporate Members, Academic Institutional Members and student members of CSI who gave me an opportunity to serve as the President of Computer Society of India.

I am honored to serve great CSI as President for the year 2020-21, together with the eminent Executive Committee & Nomination Committee Members. I would like to say thank you to my predecessor Prof. A K Nayak to set a benchmark of large number of activities of the Society and taking it forward and taking the profession to the highest level despite several roadblocks through various legal issues. With your continued support, I feel that we can achieve our vision to be a globally recognized professional body, adding value to our members, the profession and to the larger community of IT professionals.

Backed by experience of 7 years in Chapter Managing Committee, 3 years as Regional Student Coordinator (Region-1) and 7 years of experience as an elected member of National Executive Committee, the target of significant growth in students, professionals & life members seems to be achievable with dynamic support & active cooperation of our ExecCom members, chapter committees and all of you. I hope by the joint efforts of all the members we will be able to accelerate the rate of growth exponentially in the future days to come.

CSI is having approx. 100,000+ members including student members. The main responsibility of Executive Committee of CSI, Managing Committee of Chapters, SIGs and Student Branch Coordinators is to serve the members by conducting effective & quality conferences, seminars and workshops to fulfill the objective of the society. I shall try my level best for promoting the research

activities, collaboration with other professional & research bodies along with the efforts for the exponential growth of membership for the inclusive growth of the society.

I seek the active & kind support of the all Members to make CSI more Dynamic, Vibrant, Productive & Sustainable and help to tread the tough path ahead by enhancing the positive environment in all sphere of activities.

Expansion of CSI membership base is a continuous process, which will allow us to establish more & more Chapters & Student Branches for the growth of CSI. In January 2020 we hosted the CSI Annual Convention at Bhubaneswar which was a grand success due to the participation of large number of representatives from all Regions and States. I congratulate the organizers & members of convention committee for their tireless effort & significant contribution. The report & photographs of all of these activities are being published in March & April issues of CSI Communication.

I sincerely request all the Office Bearers, Executive Committee Members, CSI officers and staff to kindly continue working with full dedication, responsibility & honesty for CSI.

In the end I will say at this juncture when country is facing acute problem due to COVID-19, let us all come together by forgetting all differences to make Clean, Healthy & Green CSI.

With warm regards,

Mr. Ram Krishan Vyas
President, CSI

Titbit from the History of Computing – 9

India's First Electronic Differential Analyser

► **V. Rajaraman**

Emeritus Professor in the Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore. Email: rajaraman.v37@gmail.com

"History is dependent on the new generation to write a new chapter"

— LaMelo Ball

The Cambridge dictionary meaning of titbit is "A small and particularly interesting item of gossip or information".

Prologue

There was an agreement between India and the USA in 1955 called the Technical Co-operation Mission (TCM) under which Professors from the USA visited Indian educational institutions to teach and conduct research for about a year. Indian academics also spent around a year in the US universities studying and doing research. Professor Vincent C. Rideout from the



Professor Vincent C. Rideout (photo thanks academictree.org)

University of Wisconsin in Madison, USA came to the Electrical Communication Engineering (ECE) Department of the Indian Institute of Science during the academic year 1954-55 as a TCM visiting professor. His expertise was in control systems and analog simulation. Unlike most visiting professors who come to India primarily to teach and do research, Professor Rideout made it his mission to spread computer education by building an electronic differential analyser (also known as an analogue or analog computer) that is used to solve ordinary differential equations that arise in many areas of science and engineering. He brought with him 25 high gain operational amplifiers (op amp) built by Philbrick Inc.

Along with op amps he also brought calibrated potentiometers and many other electronic components to build the computer.

Electronic Differential Analyser (EDA)

The heart of an EDA is the op amp. An

op amp uses continuously varying electrical voltage $v(t)$ as input and its output depends on how it is configured. Op amp can be configured to multiply an input by a constant, to add a set of inputs, or to integrate an input. An op amp inverts the sign of the input fed to it. An integrator can also be fed an initial value at $t=0$.

An EDA is used to simulate the behaviour of many physical systems modelled using differential equations. Consider for example the vibrations of a rider of an auto-rickshaw. The rider's motion may be represented by $y(t)$ which depends on the suspension system of the auto-rickshaw. The suspension system has a shock absorber consisting of a spring and a damper. The differential equation that approximately models the motion $y(t)$ of the rider is:

$$M \frac{d^2y}{dt^2} + D \frac{dy}{dt} + K y = f(t) \text{ with } y(0) = 0, \text{ and } \frac{dy}{dt}(0) = 0$$

Where M is the mass of the auto-rickshaw and rider, D the damping constant and K the spring constant of its shock absorber and $f(t)$ represents the road surface as the rickshaw travels. To solve the above differential equation using an EDA, the differential equation is first rewritten as:

$$\frac{d^2y}{dt^2} = f(t)/M - (D/M) \frac{dy}{dt} - (K/M) y$$

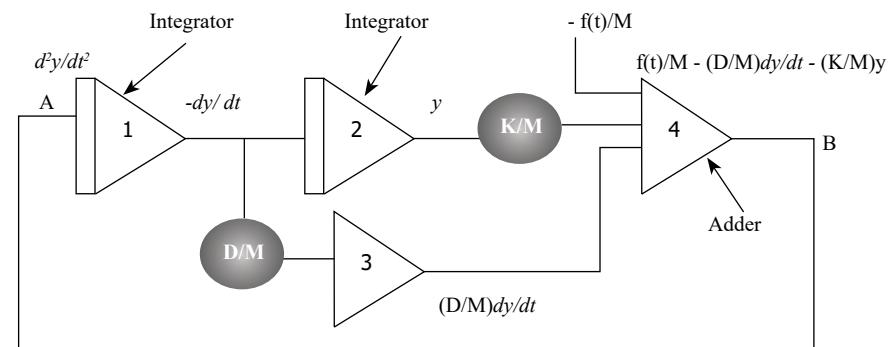
Assuming d^2y/dt^2 is available it may be successively integrated to get dy/dt and y as shown in the figure below. At the output

of op amp 4 (which is configured as an adder) we obtain the sum: $f(t)/M - (D/M) \frac{dy}{dt} - (K/M) y$ which is equal to d^2y/dt^2 with which we started. Points A and B may be connected together. This EDA set up solves the differential equation and the solution $y(t)$ is the output of op amp 2. This output $y(t)$ is plotted using a plotter.

As the EDA simulates the behaviour of a physical system using voltages as analogs of physical quantities such as displacement, it is also called an analog computer. In actual EDA set up numerical values of the variables M, D, K are used and a voltage waveform corresponding to $f(t)$ is used. There is another requirement called scaling that I am not describing as it is not relevant to this article.

Design of Philbrick Rideout Electronic Differential Analyser (PREDA)

Professor Rideout had brought with him Philbrick op amps and other components as stated in the introduction. He along with the staff and students of the ECE department mounted the op amps on chassis and interconnected them with other components by soldering. Each chassis had 5 op amps and these were mounted on a standard 19inch relay rack. Holes were drilled in the front panel to fix female jacks that were connected to the inputs and outputs of op amps. These were necessary to interconnect



EDA setup for solving differential equation: $M \frac{d^2y}{dt^2} + D \frac{dy}{dt} + K y = f(t)$

op amps using connecting patch chords that had male jacks. The analog computer was designed as a repetitive machine that repeated the solution 30 times per second so that the solution can be viewed on an oscilloscope [1]. Such a machine is also known as a high-speed EDA whose main advantage is that the effect of changing the parameters of an equation on its solution can be immediately seen on the oscilloscope that displays the result. This computer also had a multiplier besides adders and integrators. The computer could solve linear differential equations with constant or variable coefficients and simultaneous differential equations. The complexity of the equations that could be solved was limited by the number of op amps which was 20. Professor K.Sreenivasan who was at that time the head of the ECE department named the computer PREDA. It was used to simulate linear control systems in the laboratory classes of a course on control systems taught by Professor Rideout during the academic year 1954-55.



Electronic Differential Analyzer (PREDA)

PREDA being used in a classroom demonstration (Photo thanks to IISc archives)

After Professor Rideout left in the summer of 1955, a team of teachers and students led by Professor N.S. Nagaraja improved and maintained it. In the photograph given above PREDA is on the left, Professor N.S.Nagaraja is teaching a class on how to program the computer and I am on the left operating the computer. The solution of the problem being solved is displayed on

the oscilloscope on the right. Observe how patch chords are used to interconnect the op amps.

Additions to PREDA

When Professor Rideout left, PREDA could not solve many non-linear equations of the type:

$$a \frac{d^2y}{dt^2} + b \frac{dy}{dt} + c f(y) = h(t)$$

where f and g are non-linear functions. I had just completed my diploma in ECE from IISc and had taken the course given by Professor Rideout. When I wanted to continue doing research at IISc, I decided to work with Professor Nagaraja to improve PREDA to enable it to solve non-linear differential equations. I designed many non-linear units including a photo-former. A photo-former is a unit which gives as its output $f(y(t))$ when an input $y(t)$ is fed to it. The function f is a continuous function. Besides this I also designed non-linear units to simulate y^b using a non-linear resistor called a thyristor and another unit using a vacuum tube diode. Several non-linear differential equations that arose in the research of students in departments such as high voltage engineering and civil engineering were solved using these units [2]. The design and construction of a photo-former for non-linear function generation, other non-linear units and their use in solving several non-linear differential equations constituted my Associateship (equivalent to MSc) thesis of IISc in 1957. PREDA was used in the ECE department for several years – till around 1975 for teaching and solving non-linear differential equations.

Epilogue

In today's parlance an analog computer is a parallel, asynchronous, real-time computer. It is parallel as all the operations are carried out simultaneously. It is asynchronous as it is not driven by a clock. It is real-time as one second of a given system is also one second in the simulated

system. Analog computers are not as versatile as digital computers. They have limited accuracy determined by the precision of electrical components. It requires both amplitude and time scaling to operate within the physical limitation of the op amps and other components. Its chief merit is that in set-up and operation it resembles closely the physical system under study and is thus an invaluable aid to the thinking of the person who uses it. When high accuracy is needed the solution given by the analog computer is very often a good starting point for a digital simulation. There is a resurgence of interest in analog computers and attempts are now being made to design them as integrated circuit chips [3]. This has become feasible as the design of analog MOS chips has improved and they are routinely used in devices such as mobile phones. An analog computer using MOS op amps is much faster than a digital computer and consumes much less power. There are many problems in engineering where high accuracy is not needed as the parameters such as the coefficients of differential equations themselves are approximate. These new generation analog computers can be used to solve these problems.

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About the Author



Prof. V. Rajaraman (CSI Fellow) Ph.D. (Wisconsin) is Emeritus Professor, Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore. Earlier Prof. Rajaraman was Professor of Computer Science and Electrical Engineering at IIT, Kanpur (1963-1982), Professor of Computer Science and Chairman, Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore (1982-1994) and IBM Professor of Information Technology, Jawaharlal Nehru Centre for Advanced Scientific Research (1994-2001).

A Padma Bhushan awardee in 1998, he is also a recipient of the Shanti Swarup Bhatnagar Prize in 1976. He is a lifetime contribution awardee of the Indian National Academy of Engineering and the Computer Society of India. (A detailed biodata may be found in en.wikipedia.org/wiki/Vaidyeswaran_Rajaraman).

Taxonomy and Architecture of Internet of Things: An overview of Disruptive Technology

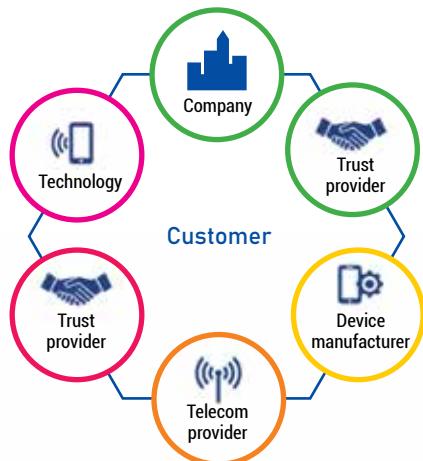
► S. Balakrishnan

Professor and Head, Dept. of Computer Science and Business Systems, Sri Krishna College of Engg. and Technology, Coimbatore, Tamilnadu, India.

The Internet of Things (IoT) is an aggregate term for the improvement that implies that apparatus, vehicles, products, machines, garments and different things and creatures (including people), is furnished with small sensors and PCs. These can see their condition, speak with it, and subsequently make a situational conduct and help make brilliant, appealing and accommodating conditions, items and administrations. By 2020, IoT innovation will be implanted into 95% of new gadgets item plans as indicated by Gartner. As IoT turns out to be increasingly more inundated in our everyday lives, the innovation will launch from being the “next new thing” to being one of the worldwide advanced economy's greatest disruptors.

1. Introduction

The “things” in IoT extend existing Internet applications and benefits and empower new ones. This new usefulness makes and requires new specialized parts and jobs and empowers the setup of new plans of action in environments. The IoT biological system is developing and clients progressively comprehend that they have to depend on outsiders and suppliers to build up a solid market suggestion. In the present IoT environment, players ‘circle’ around the client. It is given in the Fig. 1.



The IoT eco-system assumes a basic job in making sure about IoT. Organizations ought to deliberately assess their outsider providers, recognize qualified accomplices, and put resources into incorporating security, protection and trust over the biological system. Business ought to consider various ways to deal with building the

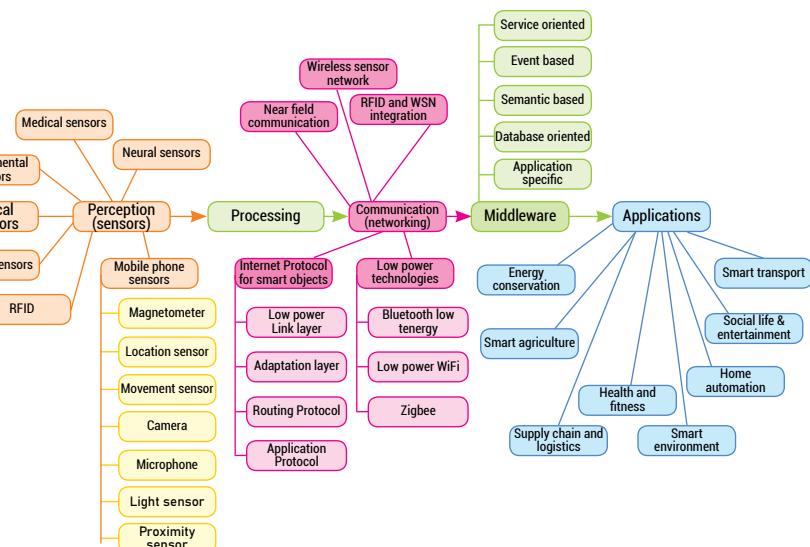


Fig. 1 : Research taxonomy in IoT technologies

abilities they require inside the environment including whether they can purchase, assemble, accomplish, contribute, or make a partnership to accomplish their objectives.

2. IOT Taxonomy

The Fig. 1 illustrates the research taxonomy in IoT technologies. This classification is established on the framework components of the IoT. The primary component of the architecture of IoT is the perception medium. It gathers information utilizing detectors, which are extremely vital components of the IoT. There are different methods of sensors utilized in multiple IoT implementations. The chief

common sensor accessible in a current day is smartphone. There are various sensors such as camera, microphone, light sensor, location sensor, magnetometer, movement sensor and proximity sensor are embedded in the smartphone. These are enormously essential in various IoT implementations.

Different other mediums are dawn to be employed such as sensors for calculating humidity, pressure, transposition, neural signals, and medical attributes for humans, biochemical and chemical components. A group of sensors that positioned away is IR sensors that anticipate cellular phones. Now they are widely employed in various

IoT implementations: motion detectors, infrared cameras, calculating nearby object distance, moisture sensors and existence of gases and smokes. And we'll discuss the various functions of sensors employed in IoT implementations in this paper. Also, this paper discusses about the functions and applications of the Internet of Things.

3. Middleware

Pervasive computing is the heart of IoT, it incorporates computing and interconnectivity in every medium around us. The heterogeneous functionality of such devices needs well qualified standard. But the normalization is troublesome because of the different illustrations of various devices and applications. For such mixed implementations, the resolution is to possess a middleware domain, which will extract the features of layers for implementations. It will cloud the features of the smart mediums. It must function as a software connection among the mediums and the implementations. It demands to deliver the command functions to the implementation programmers so that they concentrate extremely on application specification other than on communicating with the hardware things. To encapsulate, the "middleware" summarize the hardware and present an Application Programming Interface (API) for data administration, communication, calculation, privacy and security".

Following are the complications which may be labelled by an IoT middleware;

- **Programming and Interoperability extractions:** For exchanging information and facilitating collaboration among heterogeneous devices, various methods of things can interconnect with one another smoothly with the help of middleware solutions. There are three types of interoperability's: cluster, syntactic and semantic. Cluster functionality manages with wide-range of standards for transmission among modules. It protects the implementations from the complexity of various standards. Syntactic functionality protect that implementations are ignorant of various patterns, encoding and design of information. Semantic functionality manages with means of extracting information inside a specific region. It is broadly stimulated by the semantic internet.

- **Implementation Identification and Administration:** Here the property authorizes the mediums to be well informed of over all different mediums in the area and the solutions delivered by it. The infrastructure of the IoT is generally high-powered. The mediums allocate its services and presence it delivers. Most of the services in this platform are prompted by semantic internet automations. The middleware delivers APIs to the IoT mediums, capabilities and its resources. Further, generally API is used to identify mediums stationed on its potential. At last, IoT middleware have to deliver consignment.
- **Scalability:** In an IoT domain superior amount of devices are anticipated to communicate. Additionally, IoT implementations have to measure due to maximizing illustrations. This is governed by the middleware by delivering adequate alterations when the domain flakes.
- **Big data and analytics:** Generally, IoT sensors gather a superior number of information. It is mandatory to examine all information considerably detail. This resulting in utilizing a greater number of big data procedures to examine IoT data. Additionally, it is viable on account of the fragile complexion of the system few of the grouped information may be defective. It is mandatory to considering this and concludes information by utilizing advanced machine learning principles.
- **Privacy and security:** Most of the IoT implementations are interconnected to own character's life or a business. The privacy and security problems are to be identified in every environment. The middleware must possess pre-defined features to discover certain problems, down with user accessibility and the application control admission.
- **Cloud resources:** Cloud is a vital component of IoT utilization. Almost all sensor information is examined and stacked in a consolidated cloud. It is mandatory for IoT middleware to consistently function on various methods of clouds and allow users to contact the cloud to attain superior perceptions from the information grouped by the mediums.
- **Context identification:** The grouped information from the mediums requires utilizing to separate the context by implementing different methods of procedures and this could be utilized for delivering advanced solutions to users.

3.1 Widespread IoT Middleware:

3.1.1 FiWare:

This is one of the most widespread middleware infrastructures which is advanced by the European Union. This has been mainly introduced for maintaining logistics, smart cities and shop floor inspections intelligence. FiWare constitutes a sizable program structure, durable patterns and APIs that possesses thousands of FiWare programmers. At all implementation programmers could grasp a sub part of these elements and develop a new IoT implementation.

A classical implementation of IoT has various developers of detectors, a class of routers to functions the information and a class of mediums. FiWare introduces to the data grouped by detectors as context data. It describes dynamic REST APIs to represent the data from various actions. All context data is posted to an allocated resource known as a context broker. FiWare allocates APIs to stack the context and also examine it. Additionally, different implementation could record them as a context user and it could wish the context broker for data. It additionally manages the publish-subscribe architecture. Eventually, the context could be delivered to networks utilizing mediums which chief part is to transmit the context based on the essential of the terminus ends. Furthermore, FiWare describes a group of SNMP API in which we could manage and configure the conduct of IoT mediums. The objective implementation is offered APIs to query, examine the data that is grouped from the context broker. Moreover, with the developed API forecasting, it is attainable to develop and install rich quality implementations very rapidly.

3.1.2 Open IoT:

Another widespread open source technique is OpenIoT, it has 7 various elements. At the minimum range, we possess a physical level. It gathers information about IoT modules and additionally carries out few pre-processing of information. It has various APIs to interact with dissimilar methods of physical levels and obtain data from them.

Another level is the virtualized level, which has 3 elements. Initially, it has a scheduler, which supports the data streams produced by devices. It essentially allocates resources to them and looks care of their quality of service. The information storage element controls the archival and storage of data pools. It plays different functions and incorporates data pools, pre-treats them and monitor few associated statistics with such pools these amount of special request or the measure of every requirement.

The topmost medium is called application medium and it has 3 elements; request interpretation, request configuration and presentation. The request interpretation element aids us to develop request to be posted to the IoT detectors and depot mediums. It could be utilized to query and fetch information. The request presentation element develops mix-up of information by providing various request to the depot medium, and lastly the arrangement element aids to configure IoT modules.

4. Conclusion

Interconnected IoT ecosystems are basic to making the enchantment required for computerized organizations to flourish. In the end, these biological systems will be inescapable to the point that the web of things will basically be the web of life.

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Smart Watch with Route Guidance: IoT based Smart Monitoring System for the Blind People

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Internet of Things (IoT) is a convergence of multiple technologies, in which the real world objects are connected to sensor. The objects are connected through wireless network which helps the human to interact with objects in both digital as well as physical world. Due to some unfortunate situations the reason for vision impairment are traumatic injuries, macular degeneration, and diabetes infection of retina or cornea, inability to attain glasses. Every year the blindness rate has been increased seriously. Normally in day to day life the vision impairment people needs to depend someone for their work completion. The proposed system aims to provide an IoT based smart watch device to help blind people who functions by using voice recognition facility and sensors. This system can be able to act as guide for finding the route and also helps to monitor the health of user. The system measure health of user which facilitating the blind to be independent and happy. Different sensors are integrated into the arduino which facilitates the additional features such as obstacle detection, integrated GPS facility & monitoring of patients using different wireless body sensors. The system helps mainly in emergency situation to save the life of blind people. Since it is cost effective, the main aim is to have a nutshell package in a single smart watch thereby providing assistance to the blind and the elderly.

Keywords: Outdoor Navigation, GPS, Obstacle Detection, Ardunio Board, Blood Pressure Sensor, Heart rate Sensor

Introduction

The major defects occurred among age group people is blindness. Moreover 253 million people are in with vision impairment only. The major reason for vision impairment is uncorrected refractive error (21%), Glaucoma (8%) and un-operated cataract (35%). It makes the additional human assistance in order to have a care for the blinded people and the elderly. Though there are several assistances available in the market there exists some lag either in the design or in the implementation part. In order to have compensating coordination between the design and the implementation view an IoT based Smart watch System which facilitates human assistance even in the absence of human requirement. The system incorporates an IoT (Arduino) where it integrates the Google map with it to instruct the route for blind people with time. The blind people some time affected by high blood pressure or heart rate. There is high pressurized situations the device make an automatic call to ambulance and also send message to relatives. The alert sound is produced from device to get help from society people. The design proposed

aims an effective, low cost production which provides an efficient route discovery to blind and also helps in emergency situation. The device can be used by both educated as well as uneducated people. The aim of the proposal is to facilitate the blind and the elderly to have an IoT smart system which makes them to function independent and it also eliminate the dependency of others in their life.



Fig 1: Smart watch for blind

Literature Survey

G. Naveen Balaji .et.al proposed the paper on GPS Based Smart Navigation for Visually Impaired Using Bluetooth 3.0

It is suitable for both indoor and

outdoor navigation. It uses GPS for outdoor navigation and Bluetooth for indoor. The GPS is turn for outdoor navigation and the Google map is opened using voice command. The destination of the user is given through voice command. The route is tracked and the output is given using voice command through headset. The user can move towards the destination. The indoor navigation is done through Bluetooth. The Bluetooth is turned on and the user enters in some particular range of the receiver and it gets paired. There receives more than one signal the Bluetooth which has highest signal gets paired to receiver Bluetooth signal. The paired signal finds the location of user and it routes the indoor navigation. The user can easily move in indoor navigation. The input is given through voice command. The output is given through audio. The Bluetooth receiver is placed in center of the indoor.

Somnath koley, Ravi Mishra proposed the paper on voice operated outdoor navigation system for visually impaired persons

In this paper, the outdoor navigation has been performed with the help of GPS

for visually impaired persons. In this system 32-bit ARM processor with LPC2148 microcontroller is used. The current location of the person can be identified with the help of GPS. For GPS receiver the SiRF's latest single chip (third generations) is used which have ultra-high performance and low power. With the help of serial communication, the GPS receiver output is provided to the processor. The location information and voice data has been stored with the help of memory card. Ultrasonic sensor and joystick are the two main important parts. Normally to select the direction for visually challenged person, the joystick will be useful and to detect the obstacles, the ultrasonic sensor is used, both joystick and ultrasonic sensor produce the output in the form of voice. Audio amplifier and speaker/headphone has been used to produce the audio output. With the help of memory card the voice signal is given as input to the headphone very clearly.

Blood Pressure Sensor

The pressure sensor is used to measure the pressure level in human body. The Pressure sensors can vary drastically in application suitability, technology, cost, design and performance. The pressure sensor can measure various factors such as water level, fluid or gas flow, altitude and speed. Pressure sensor is also called as piezometers, pressure senders, manometers, pressure transducers, pressure indicators and pressure transmitters. Pressure sensor is made up of piezoelectric materials named as quartz.



Fig 2 : Blood Pressure Sensor

Heart Rate Sensor

The heart rate sensor has a principle named as photo phlethysmography. It consists of light emitting diode and light detecting resistor for detecting the light. The heart rate can be measured in two ways one is manually and other one is using sensors.

The photo phlethysmography are of two types:

- Transmission
- Reflection

Transmission

The transmission is used to transmit the light into earlobe, which is emitted from light emitting device and it is received by detector.



Fig 3: Heart Rate Sensor

WORKING

The System aimed to develop an IoT based smart watch which help blind to be self-dependable and get help from others in case of emergency situation. The Google

map is integrated with this device to guide the route using Voice Recognition Unit (Go Right, Go Left, Turn Around and Go Back). Along with route for every half an hour the time is announced to user, it helps the user to reach the destination in accurate time. The proximity sensor is combined with smart watch for Obstacle Detection, it helps the blind people to travel in accurate path without any diversion. To measure the heart rate and the pressure of blind people, the blood pressure sensor and the heart rate sensor has been used. In case of high pressurized situations the device make an automatic call to ambulance and also send message to relatives ("I Need Help") with the location, time and date of user.

Reflection

To reflect the light emitted from light emitting device, reflection has been used.

Conclusion

The proposal encompasses arduino which facilitates the shortest distance for blind people and obstacle detection along with which body sensors access the different conditions of the physical body. Reports like blood pressure, heart rate can be detected with the help of sensors by

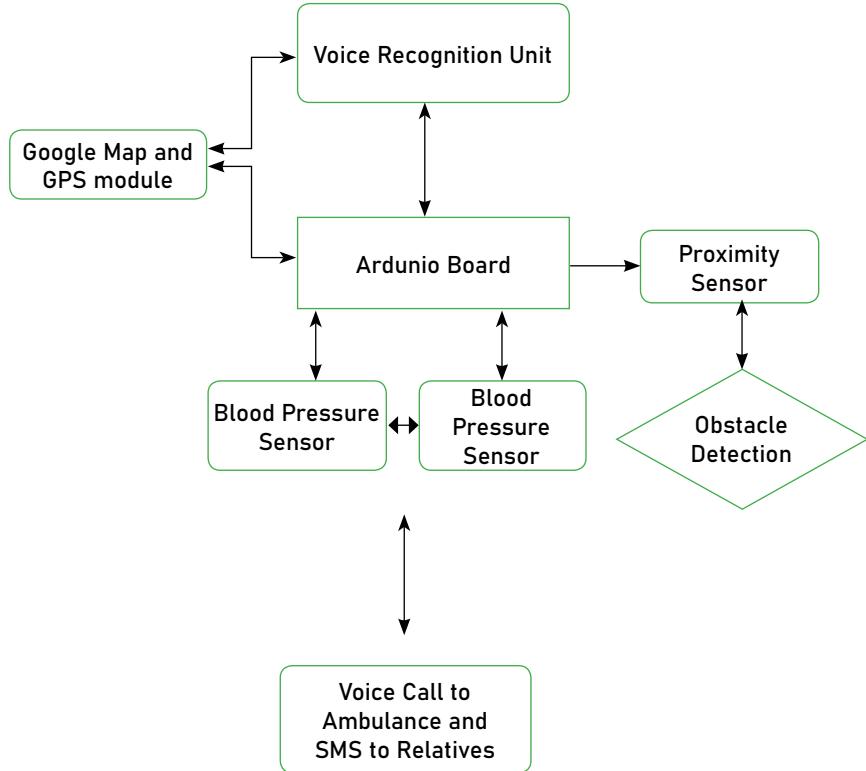


Fig. 4 : Flow Chart

providing assistance in order to monitor the blind in an effective way. It used to save the life of blind people and help them during emergency time. The pressure rate will be abnormal when the user met the accidental situation. At that time it automatically makes a call to ambulance and sends SMS to relatives. It will do automatically when the user is in unconscious situation. It produces the buzzer sound to make alert them and get help from society people. These systems provide a safe outdoor navigation system for blind people.

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IOT - Its expansion in various fields

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Internet of things (IoT), also known as Universal Object Interaction or Programmable Object Interfaces, is the new blooming technology which is a comprehensive web of computing devices, physical devices that feature internet connectivity and, sensors that enable us to access, transfer and exchange data over a network without human interactions. IoT has distinct kinds of sensors which are useful in variety of applications. These applications will help in enhancing the quality of human lifestyle.

Types of applications

Wearables

Wearables remains as a hot topic in IoT application because of its increasing interest in markets. Wearable devices are the combination of installed software and sensors. These are used to gather data and information about the users. Most popular wearables are Smartwatch and Fitness tracker. Smartwatches have functionalities similar to smartphones. Fitness tracker, also known as activity tracker is a device for tracking and monitoring fitness related metrics. Some of the important sensors used in wearables are

- Optical heart rate sensor- used to calculate the heart beat
- GPS tracker- used to track the position
- Temperature sensor-used to sense the temperature
- Glucose sensor-to monitor glucose levels
- ECG sensor



Fig.1 : Smart Watch

Smart Cities

Smart Cities is the concept of using

IoT devices to improve infrastructure, public utilities and services. It uses knowledgeable technologies to accomplish an energy economical and environmentally favorable infrastructure. Smart cities comprises of

- Smart lighting - used to give light only when someone actually walks which will reduce electricity consumption
- Traffic management - uses historical data to forecast where traffic can go and everything without human involvement
- Smart parking - uses sensors in the ground, report via smartphone to the driver, which is used to find a free parking space
- Smart waste management - helps in identification of rubbish levels in garbage to enhance the trash collecting



Fig.2: Smart City

Smart Home

Smart Home is known to be the exalted application of Internet Of Things (IoT) as they increase the comfort and quality of life. Smart Home represents a place of

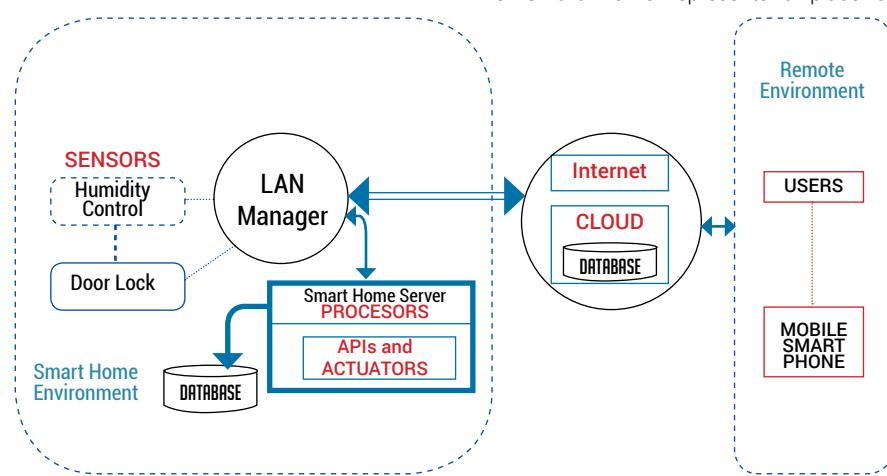


Fig. 3 : Smart Home

residence consisting of appliances, lighting, air conditioning, televisions, freezers, camera systems, which can interact with each other. These systems are controlled remotely using mobile or internet based on its time set up. Sensors and switches are placed on these appliances which are connected to a central system controlled by the resident of the home using terminals or mobile units connected to internet cloud services. The advantages of Smart Home include security, low operating cost, energy saving.

Connected Car

The Connected Car is rising gradually. In connected car, you can still bilaterally interact with other structures outside the automobile (LAN). This allows to exchange statistics with other devices both outside and inside the car. The cars are related over an IoT community called CV2X (cellular vehicle to everything).

Connectivity methods:

- Vehicle to Vehicle (V2V),
- Vehicle to Infrastructure (V2I),
- Vehicle to Pedestrians (V2P),
- Vehicle to Network (V2N).

Cars are so much subsumed in everyone's life. Connected cars can transmit data fast and increase driver's reaction time through augmented vehicle communication. Although connected car offers lots of benefits, it also faces challenges. A major problem with the connected car is hackability. A simple shortcoming while on the

autonomous drive can cause catastrophe. One of the solutions to solve these problems is changing the design of the products.



Fig. 4 : Connected Car

Connected Health

Connected Health is the newly emerging power of the IoT applications. Healthcare resources are very expensive. The number of incurable diseases are increasing. IoT in healthcare brings new tools like personal fitness sensor, surgical robot, that results in better health care. The right analysis will also lessen the need of hospitalization. Real-time



Fig.5: Connected Health

monitoring via connected devices helps in

critical situations like heart attack, diabetes, asthma, etc. The IoT device collects and transfers fitness facts: BP, blood sugar tiers, weight and ECGs. These statistics are stored in the cloud and shared with a certified person. In emergency situations, patients can communicate with a doctor who is far away with smart mobile apps.

Conclusion

The IoT's future is boundless due to development in technology and consumers' necessity to combine devices like smart phones with household appliances. IoT is honestly the next phase

In the modern era. The technology will put our lives in our hands as our mobile phone becomes the centre hub. However, various factors like safety, reliability and privacy also need to be contemplated. The Internet of Things could alter our everyday lives, work, and communities.

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Assistive Devices for Persons with Autism spectrum Disorder (ASD) using Internet of Things (IoT)

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In this modern world, many people have been affected with multiple disabilities such as hearing loss, visual impaired, autism disorder, aphasia disorder, Mental Retardation (intellectual disability), Cognitive thinking problems, and Cerebral palsy. While Internet of Things based technologies play a vital role in providing the solutions for all these problems such as persons with Autism spectrum disorder by making their life better. In this article, we have identified such assistive devices solutions available for the persons with ASD related to Internet of Things (IoT) which can be utilized.

Keywords: Internet of Things, multiple disabilities, Autism Spectrum Disorder [ASD].

Introduction

The Internet of Things (IoT) is the internet working of physical devices, vehicles, and other embedded items with electronics, software and sensor to exchange the information from one device to another. In this paper, the various challenges in the IoT were discussed. According to the act of 1988, any technology device as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities." Assistive devices [2] can be a hearing device, a speech generating devices, haptic technology device for visually impaired device, and wearable device for persons [4] with autism disorder which can be constructed with higher technology or low level technology equipment. The different conditions of Autism Spectrum disorder (ASD) has been categorized by huge number of challenges with social skills, repetitive behaviours [3], problem in speech and communication. In United States, Out of 68 children aged 8 years has autism spectrum disorder that is exactly 14.6 per 1000 children [5]. Children having autism spectrum

disorder (ASD) having a communication disability or they are not able to speak. Some people with ASD may be facing difficulty in non-verbal communication and some may struggle to understand the conversation. The following assistive devices may assist those with ASD with communication and repetitive behaviours.

Wearable Regulation for Children with Autism (Repeat) [1]:

Certain actions may repeated by children with autism disorder like Moving the head up and down, shaking the body, hitting the hands, and rubbing the skin). The Repeat [1] device helps to teach a child with autism



Fig 1: Repeat Device [1]

to restrict their repeated times of actions in a time bounded frames set on the device by LED light display. It is made up of soft and stretchy silicone material that can be bobbed, rubbed, squeezed and bitten. This device has a small digital timer for setting goal. This restriction on repeated actions will be based upon the children and their repeated behaviour.

Steps Involved in Repeat device [1]:

1. The device looks for repetitive behaviour
2. Redirect the children attention to repeat
3. It will make the child to set the timer and allow the child to interact with repeat
4. Direct the child back to work when the timer ends
5. Review the number of times repeat was used
6. Set goals for the next day.
7. This device can be enhanced with Internet of Things (IoT) for future enhancements.

Speech Generating Devices: Go Talk [6]:

It is an augmentative or alternative communication contains the communication methods used to supplement or replace speech or writing for those with impairments

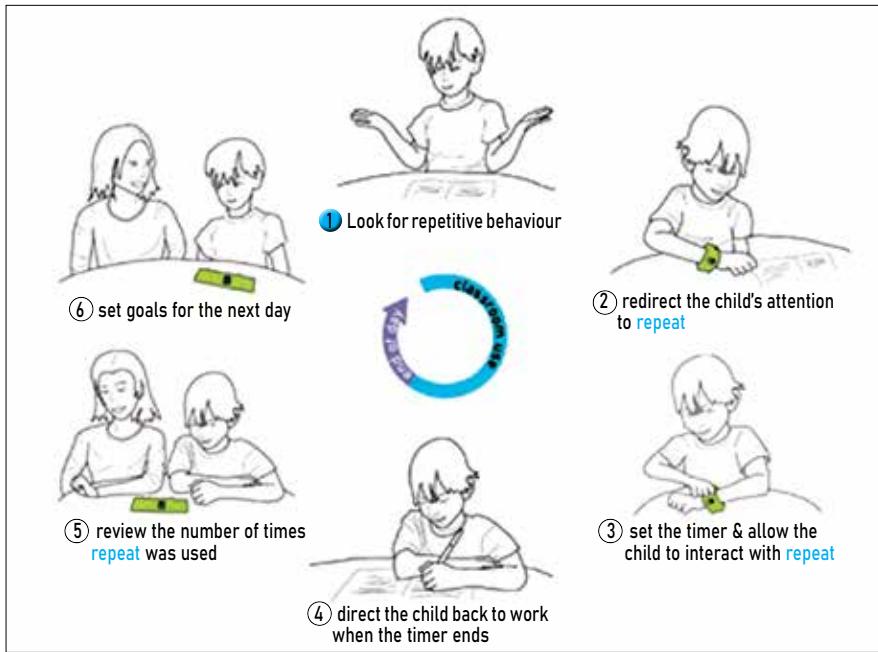


Fig. 2 : The function of repeat device [1]

in the production or comprehension of spoken or written language. Go Talk converts the images into speech communication with the wonderful sound with volume control.



Fig. 3 : Gotalk [6]

Using this Go Talk, A child can participate in classroom activities, talking with peers, share personal stories, practice speaking and articulation, give instructions, and engage in medical care communications. It can be used at home, school, work and in hospitals also.

Social Skills Improvement Softwares – FaceSay [7]

People with autism spectrum disorder have a difficulty in social skills in recognizing facial behaviour and emotional recognition. Technology can improve social skills by

playing gaming software named Face Say



Fig 4: Face Say software [8]

[7]. In 12 sessions of Face Say's fun games, the social skills of the school aged students with an autism spectrum disorder have been significantly improved. FaceSay [7] is the only Social Skills Software with peer reviewed evidence that it improves the social interactions of students with Autism on the playground, where it counts.

Life skills winner

Daily living skills are very important for children such as hygiene, doing their work independently, and creativity skills etc. Life Skills Winner [6] is a software technology that allows children with ASD to score marks while learning daily living tasks. This interaction is available through web and mobile devices too. To teach 10 daily

habits [9] (washing hands or teeth, prepare a sandwich, setting the table) based on the different steps and on giving 'awards' once completed.



Fig 5: Life skills winner [9]

Conclusion:

Internet of Things based assistive devices provides solutions such as speech communication, repetitive behaviour, to improve social skills and organizational skills for person with autism spectrum disorder. In this article, we have seen few devices such as Repeat, Go talk, Face say and Life skills winner software which provides the solution for the person with autism spectrum disorder.

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From the Desk of Chairman, Publication Committee



Dear Fellow Members,
Greetings.

We see informative articles being published in CSIC and Journal of computing (JC). The first issue of the JC was released in January 2020 during the 53rd Annual Convention of CSI held at Bhuvaneswar. The second issue is planned for release in April 2020. I request the prospective authors to send quality articles for publication. For JC, these may be sent to Dr. R. R. Deshmukh (rrdeshmukh.csit@bamu.ac.in)/ me (drddsarma@gmail.com)/ Prof A. K. Nayak (aknayak@iibm.in). The usual practice may be continued for CSIC. Prof. Nayak has done a very good job in keeping CSIC in a sound position and reviving JC. From April 2020, a new team headed by Prof. R. K. Vyas as President, CSI will take over as. We wish him all the best.

A word about a multi-tasking, multi-user operating system - UNIX:

During the late 1960s and early 1970s, Bell Labs colleagues Ken Thompson and Dennis Ritchie developed UNIX, a multi-tasking, multi-user operating system alternative to the batch processing systems then dominating the computer industry. With smart phones to super computers running on UNIX and

UNIX-like systems, Thompson and Ritchie laid the foundation for much of the world's computing infrastructure.

As we know, to run early computers users had to load programs and data in the form of punched cards, magnetic or paper tape etc., into the machine. Computer operating systems were specific to the vendor supplied hardware/operating systems from the same vendor. In this scenario, in 1972 Ritchie completed the original version of the high-level C programming language. Thompson then rewrote the UNIX kernel in C. This made UNIX portable. This is easily adapted for different computer platforms and allowed it to be used almost without change across a wide span of computers. There are other features. Ken Thompson and Dennis Ritchie's contributions laid the foundation for much of the world's computing infrastructure. I do hope that these contributions from legends will motivate our members /professionals.

With best compliments

Dr. D. D. Sarma

Chief Scientist (R), CSIR-NGRI, Hyderabad.

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TECHNICAL TRENDS

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IoT Technology Stack: Whole Host of Technology

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This article introduces the basics of Internet of Things (IoT), the technology which connects the future. It has the ability to transfer data over the network from any device to computer storage without any human intervention. The conventional classical communication protocol requires large memory and more power for communication. Fortunately, the IoT world unveiled tremendous scope for connecting billions of physical objects and to share data amongst them with less processing power and battery life. This brief note introduces the IoT architecture, Operating Systems for IoT, IoT protocols, IoT simulators and web services for IoT. IoT objects face different challenges. This will be discussed in further sections.

1. Internet of Things: Starter

The Internet of Things (IoT) is defined as interconnection of physical objects such as animals, humans, vehicles, devices, heavy machinery, buildings, trees and other things embedded with sensors, network connectivity electronics, and software – that empowers these things to gather and transfer information [1]. The revolution which we saw on the Internet, mobile devices, wireless area network (WAN) and machine-to-machine (M2M) technologies can be treated as the stepping stone for the development of the IoT[1]. Over the period, the IoT will be everywhere in the name of smart house, smart city, smart hospitals, smart transport, etc. People will be able to switch on AC, TV before reaching home but for this communication protocols are required to handle heterogeneity in data generation. As some connected objects have surpassed the human population on earth, there is a need to extend address space, so IPv6 became necessity [2]. In Fig. 1 it's clearly explained that identification, recognizing change, transferring state, processing, services and

semantics all together forms IoT.

2. IoT architecture

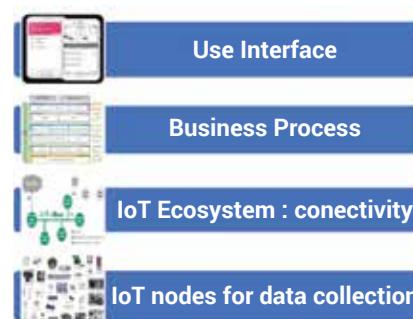


Fig. 2 : IoT architecture

It is quite clear nowadays that IoT is not just Internet-connected devices but IoT is the expert which automatically senses changes in the surrounding and sends the appropriate message to the recipient or takes appropriate action without human intervention. Therefore, there was a need to have a fixed framework over which a fixed

process flow can be built. Fig 2 shows IoT architecture layers. Bottom most layer in IoT, should be prepared with sensors and actuators thus adding the capability to emit, accept and process signals. The data from the sensors collected is in analog form which needs to be accumulated and transformed into digital streams for further handling. Data exchange becomes possible in the IoT ecosystem. The business process model can perform data acquisition and data processing. User interface layer gives out data in a human-readable format and takes input for IoT business processes and ecosystem [3].

3. Sensor Devices

A sensor is a device, which identifies deviations in its surroundings and transfers the data to the microcontroller. A sensor is always used with electronics appliances which can be as simple as a light or as complex as a computer. All the sensors we studied are manufactured by different manufacturers from different countries and are reliable as they are tested and are known for their accuracy.

There are different sensors to name a few temperature sensor, humidity sensor, motion sensor, heartbeat sensor, Blood Pressure sensor, SPO2 sensor, fingerprint sensor, proximity sensor, accelerometer, IR sensor, optical sensor, gas sensor, smoke sensor, moisturising sensor, Muscle sensor etc. Fingerprint scanning is very easy if



IOT = Identification + Sensing + Communication + Services + Semantics

Fig. 1 : The IoT element

GT511C1R sensor is used. It performs reading and identification of the fingerprints. It can store up to twenty fingerprint images and is capable of 360° fingerprint recognition. Heart Rate sensor measures your heartbeat. To measure the heart rate, you need to put the sensor in your fingertip. The electrical conductance of the skin can be measured by galvanic skin response module. Amount of sweat on the skin changes the conductance of skin. Our strong emotions will result in more sweating on the skin, resulting in changes in the electrical conductance of skin reflects change with emotions. Due to which this kind of sensor is used in lie detectors to monitor psychological state of a person. Muscle sensor is cheap and it controls things by measuring muscle activity. This sensor has special design to connect human muscles activities to Arduino directly. This sensor is costly but worth to invest money for measuring muscle activity. Body temperature is used to measure by this sensor. It is medically much important to track a patient's body temperature and record it. Some diseases have patterns in body temperature changes. By identifying those patterns diseases can be detected appropriately. By measuring body temperature, and the effectiveness of a treatment started can be assessed by the doctor. The ML8511 sensor is easy to use with the ultraviolet light sensor. The MP8511 UV sensor outputs an analog signal about the amount of UV light it detects. AM2301 Capacitive Digital Temperature & Humidity Sensor. NTC Thermistor temperature sensor in IoT. It is an affordable and very compact module. It is very sensitive to ambient temperature. It is generally used to detect the temperature of the surrounding environment.

4. IoT Sensors: Operating Systems

Operating Systems for sensor devices is called Real Time Operating Systems (RTOS). Operating Systems (RTOS) are critical since they run for the entire lifetime of IoT devices. There are quite a lot of RTOS which are good for the growth of IoT real-time applications. IoT applications widely use the Contiki RTOS. Researchers and developers use Cooja simulator from Contiki OS to simulate and emulate IoT and wireless sensor network (WSN) applications [4]. Riot OS [7], LiteOS [6] and TinyOS [5] also help lightweight OS designed for IoT real-

time projects. TinyOS supports C language; minimum memory required is 1 KB. It is an event based programming language. It supports multithreading partially [5]. Contiki OS has a cooja simulator which helps the researcher to emulate real IoT platforms. It supports C programming language. The minimum memory requirement for this operating system is 2KB [4]. LiteOs memory requirement is high 4KB supports C programming language [6]. Riot OS supports C and C++ both programming languages. Its memory requirement is 1.5 KB [7]. Low-cost, low-power microcontrollers are connected to the Internet with the help of Contiki. Difficult wireless systems can be easily built by the powerful toolbox of Contiki. the C programming language is used to implement Contiki. Range of different processors and hardware configurations is supported by it. Using uIP and uIPv6 protocol stacks Contiki provides full connectivity for IPv4 and IPv6. Only IPv6 stack for smart objects is uIPv6. It is an open source operating system for sensor networks and other networked embedded devices. The uIP stack (IPv6, RPL, 6LoWPAN), HTTP/CoAP, power profiling are essential features of Contiki OS. It has Tmote Sky boards as a hardware target. In

Contiki OS, Cooja network simulator is the main component which emulates Tmote Sky nodes and connects them.

5. IoT Networks: Simulators

A vast IoT network like the entire hospital's IoT network can't be set up physically as it is complicated. Instead of that, using a simulator is quite useful and accessible. Quick prototyping and testing on large networks are allowed by simulators at the same time it performs responsibilities at quicker than real-time speeds. Simulators are used for testing and training before actual implementation of networks. The actual application of large networks on actual IoT devices can pose a challenge; in that case, using a simulator to develop, deploy and test systems can be somewhat beneficial. Quick prototyping and testing on large grids are possible with the simulator. At the same time simulator executes tasks at a rate quicker than real-time speeds. Contiki operating system provides Cooja simulator. It is different from most simulators as it also permits real hardware platforms to be emulated. The Cooja simulator is open source. Its window is shown in figure 7. Its program is available in the contiki-2.6./ tools//cooja folder. It uses a combination

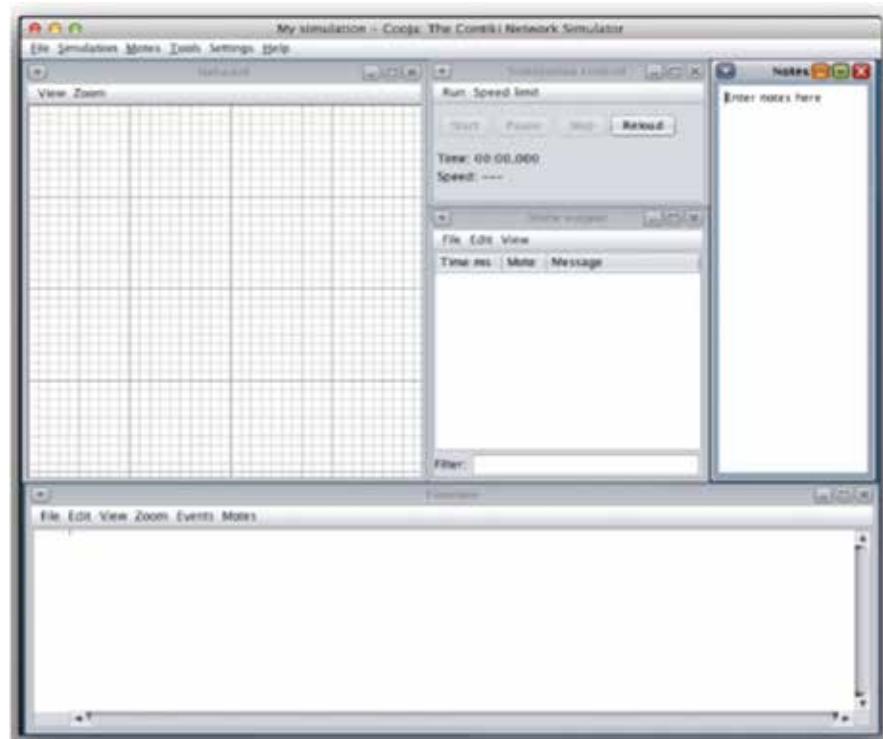


Fig. 3 : cooja simulator

of Java code for the front-end interface and platform-specific emulators to carry out the simulations [8, 9].

To start Cooja simulator use commands given below:

```
#root/ cd contiki -2.6/ tools/cooja  
# root/ ant run
```

You will see lots of statements go past on command prompt as the Cooja simulator is getting compiled, assembled and started. Finally, Cooja desktop interface will come, as shown in Figure.3.

MathWorks has developed a multi-paradigm mathematical computing model and proprietary programming language MATLAB (matrix laboratory). Matrix operations, scheming of functions and data, execution of algorithms, a user interfaces pages, and interfacing with other programs written in other languages, like C, C++, C#, Java, Fortran, and Python are allowed in MATLAB. It is planned mainly for numerical computing; an optional toolbox which uses the MuPAD symbolic engine, allowing access to symbolic computing abilities. Simulink is another wrap up which adds graphical multi-domain simulation and model-based design for dynamic and embedded systems [9].

Netsim, Ansys and lotfy are other simulators available in the market. In cloud based IoT, IoTIFY is first the first one to implement IoT performance testing simulator for helping programmer to develop ascendant IoT applications for managing lots of connected devices. NetSim is Network Simulator that can create almost anything right from simple home networks to the large, complex ones like a hospital with multistory buildings. We can easily generate network scenarios with a variety of different structures including all types of devices from the servers and sensors to single workstations, routers or ATM switches using NETSIM. It allows us to change the properties of every device and view the impact on the whole system layout. You can run the simulations from within the user interface or by using the command console; it also reveals the arrival time, queuing time payload at the same time it predicts problems caused for all the packets that travel all across the nodes and creates the reports concerning all the events. You can see how the data packets are transmitted through both the wired as well as wireless networks by using integrated packet animator that lets you view graphical representation [10]. Fundamental tools for

performing simulation experiments is offered by MicroGrid [11]. It is an environment for grid simulator. Its Developer claims that MicroGrid is mainly used for scheduling non real time systems. Whereas it is critical to simulate schedulers and brokers in the grid environment. GridSim [11] is a toolkit used for the same purpose. Experimentation related to real-time scheduling is not supported by GridSim. In contrast, GangSim [11] includes the idea of virtual organizations and multi-sites. GangSim provides repeatable and controllable testing with dynamic resource management techniques. Virtualization and heterogeneity is not considered by GangSim [11]. An advanced version of GangSim is GSSIM [11] which is a simulation environment. Experimenting with the development of strategies pertaining to multi-level and heterogeneous grid systems is the main used primarily of GSSIM. It does not allow the illustration of certain optimal schemes and real-time scheduling. Simulation form based on C++ that evaluates traditional HPC scheduling approaches is Alvio [11]. DGSim [11] offers a framework for rising simulation schedulers of different grid source management architectures. Developer claims that DGSim focuses on interoperation of grids and relevant dynamics. However, this simulator is not yet available to the general use. For simulating distributed applications in large-scale heterogeneous distributed systems few functionalities are required. They are offered by SimGrid [11]. Alea 2 [11] allows testing on heterogeneous schedulers. Its purpose is to make dynamic resource availability models without the support of virtualization. In a distributed computing environment MONARC [11] is a simulator designed for enhancing resource allocation. It also allows the simulation of data replication and scheduling. A decoupled

and layered structure and an interoperable infrastructure for grid resources by utilizing fully decentralized and bio-inspired algorithms are offered by SmartGRID [11]. Services provided by it are group communication through asynchronous message passing and resource discovery for decision support. Heterogeneity is very well supported by it. CloudSim [11] overcomes the lack of virtualization technology from maximum simulators discussed in this section. With the help of virtual memory support, CloudSim offers a seamless model. Process migration at run time is the solution taken by this. SimIC focuses on a cloud communication facility wherein multiple clouds co-operate and communicate with each other for distributing service requests in regard to the desired simulation setup [11].

6. IoT Implementation: Platforms

There are hundreds of embedded platforms out of them some are discussed here such as the Raspberry Pi, Beagle Boards, Intel Edison, and the pioneer Arduino platform. Out of all these Raspberry Pi and Arduino are commonly used in IoT projects. The following are discussed in this session. We can see the Arduino platform in Fig. 4 and Fig. 5 shows Raspberry Pi platform". A small computer is the second name to Raspberry Pi which can do many things. You can attach a monitor; a keyboard and mouse and it will work as a standard processor. You can connect your Raspberry Pi to the internet. During setup of Raspberry Pi connect it to Ethernet card or WiFi network. Arduino is easy to use open-source prototyping platform-based hardware and software. Inputs Arduino board can read - light on a sensor, a finger on a button, or a Twitter message - and output after detecting these inputs are - activating a motor, turning on an LED, publishing something online. Arduino



Fig. 4 : Arduino platform

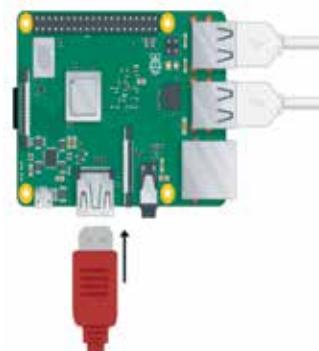


Fig. 5 : Raspberry Pi platform

board has a microcontroller which reacts to the instructions given to an Arduino board. Arduino programming language and IDE, need to be used based on processing.

Arduino is the major component of many projects, from everyday activities to complex scientific projects nowadays. As it is open source students, hobbyists, artists, programmers, and professionals - has started using this open-source platform, their contributions have added up to an unbelievable quantity of easy to get knowledge that can be of great help to new users. When Arduino was born, it was just a prototyping tool for students without a background in electronics and programming. Nowadays, the Arduino board started changing to adapt to new requirements and challenges, differentiating its offer from simple board to products for IoT applications like wearable, 3D printing, and embedded environments. Advantages of Arduino are inexpensive, Cross-platform, Simple, clear programming environment, Open source, and extensible software and Open source and extensible hardware because of which it is popular.

7. IoT Communication: Protocol Stack

In the Internet of Things, autonomous electronic devices exchange data with one another over the web. We can build the IoT system with the known technologies, but the result will not be efficient and effective. So we need protocols having different layers developed to take care of all requirements and constraints of IoT.

In IoT for small commercial domains like home automation low power MAC based protocol was needed for which Z-wave was the best suite. Z-Wave was proposed for small messages like wearable healthcare control, light control, energy control, and others within the perimeter of 30-meter point to point communication [12].

For Short-range communication Bluetooth low energy protocol is used. It has two types of frames: advertising frames and data frames. Maximum time nodes are sleeping. They are awake only when they transfer data. Advertising nodes are used to find out connecting nodes. With the help of these nodes data can be transferred from one node to other [12].

Large range of IoT applications were in need of protocol which supports the wide range of network topologies including star,

peer-to-peer, or cluster-tree when ZigBee smart energy was designed. A coordinator node of the network controls the network, and it is the central node in a star topology [12].

Low-power WAN networks work with freshly designed technology known as LoRaWAN. It has several advantages like low price, mobility, security, low power consumption and bi-directional communication for IoT devices. In this section, we discussed different data link protocols. Generally, Bluetooth and ZigBee are the most widely used standards in IoT. Ipv6 addresses can not fit in small data frames. So we require a new protocol . IPv6 over Low power Wireless Personal space Network (6LoWPAN) is one can handle IPV6. It supports addresses of different length, low bandwidth, topologies like star or mesh, low power consumption, low cost, scalable networks, mobility, unreliability and long sleep time completely. This standard provides data compression and fragmentation to reduce length of data frame and support multi hop delivery too [12].

MQ Telemetry Transport well known as MQTT. It is a subscriber /publisher, straightforward and light-weight electronic communication protocol, designed for devices with high-latency , low-bandwidth, or unreliable networks. The design principles square measure to minimize network information measure and device resource needs while additionally trying to make sure responsibility and a few degrees of assurance of delivery [12].

CoAP is an online application protocol for affected devices. It is designed to connect devices on constrained networks to devices on the Internet. This protocol is designed for IoT to support HTTP protocols. CoAP internally makes use of the UDP protocol for light-weight implementation at transport protocol. Apart from human activity IoT knowledge, CoAP permits the secure exchange of messages by victimization datagram transport layer security (DTLS) protocol [12].

8. IoT with Web Services

Web services are used to implement smart object systems. One example is a pressure sensor that sends data to a structure automation server. The construction of automation server configures a radiator based on the pressure data. This is a well-known example of IoT based machinery.

Web services are well-known methods for exchanging data between different systems. With help of web services smart objects can be easily integrated into general purposes systems like ERP systems and business systems. REST based webservices help for an architectural representation for distributed systems. The REST can be efficiently run on top of an HTTP connection, making it easy and convincing for the resource-constrained smart object devices. Over low-power radio networks web services run with good results. Advantages of web services for smart objects are integration and interoperability with added positive points low resource necessities and good performance , make then good choice for IoT systems.

9. IoT Objects: Challenges

There are different challenges faced by IoT smart objects. These are divided into two types: node level and network level. Challenges are listed below.

Node Level

Power Consumption, Physical Size, Cost are node level challenges. Smart objects are often battery powered or use an external energy source because of which consumption of power has to be consider. If they consume more power they can't be deployed in remote locations. Smart objects must be small because based on the size object can be used in different applications [13]. In any IoT application number of smart objects used are very large in number. If number of devices are more and they are costly directly increases cost of system [13]. So, it is essential to have low cost smart objects [13]

Network Level

Design of the routing protocols, lossiness, standardization and interoperability are network level challenges.

The design of the routing protocols is critical because it affects directly on network performances:

1. Amount of data the network can carry (frequency and size)
2. Speed at which data is successfully transferred. It should be lossless.

Surrounding factors such as temperature and humidity of the air as well as the physical affect data transfer in IoT network. This result in loss of data. . If a microwave oven is switched on in the house it will create problems for IoT devices [14].

Smart devices are manufactured by different vendors for different applications like smart house, smart hospital. As many smart devices are required in these applications and they all should be interacting with each other. Standardization plays an important role [15].

Ability of different equipment and systems from different manufacturers to communicate with each other is called interoperability. As IoT systems are large scale systems they have many equipment from different vendors of different types should be able to communicate with each other without any loss [15]

10. Conclusion

Traditionally, the acceptance of modern technologies speeds up after protocols, programming languages, frameworks and standers are correctly defined. All these essential components are placed together and call technology stack. Each layer in technology stack helps in adoption of new technology. It becomes more comfortable and less expensive for developers to create new products and services' using new technologies, as a technology stack matures. Similarly, technology stack for IoT consist of service platform, internet connectivity, microcontrollers and sensor. All entities from this stack has to be used carefully for successful implementation of IoT application.

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Steganography – The Future Scope

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Pursuing B. Tech in Computer Science

Introduction

In the recent year's security of information has become a big concern in this internet era, thus hiding information has become more important. Steganography (the art and science of hiding information) is the act of sending information in a hid position so the very actuality of sending the information is masked. The benefit of steganography over cryptography alone is that the proposed mystery message doesn't stand out to itself as an object of investigation. Evidently obvious encoded messages, regardless of how unbreakable they are, excite intrigue and may in themselves be implicating in nations in which encryption is unlawful.

Data Hiding:

Impalpability: Imperceptibility is the property wherein an individual ought to be not able to recognize the first and the stego-picture. Implanting Capacity: Refers to the measure of mystery data that can be inserted without the corruption of the nature of the picture. Power: Refers to the level of trouble required to annihilate implanted data without decimating the spread picture.

Digital Steganography:

A mystery message can be covered up in practically any computerized object, be it a book report, permit key, or even record augmentation. One of the most advantageous "compartments" for stenographers happens to be media records (pictures, sound, video, and so on.). They are generally very enormous in the first place, which permits the additional extra to be meatier than on account of, state, a book document. Secret data can be written in the record metadata or straightforwardly in the fundamental content. In most cases, information is hidden in the pixels and extracted from them using special tools. To do as such, present day stenographers some of the time, compose custom contents. Steganography can be applied in PC

DATA SECURITY



advances from numerous points of view. It's conceivable to shroud message in a picture, video, or music track – either for the sake of entertainment or, as for the situation above, to shield a document from unlawful copying. Hidden watermarks are another genuine example of steganography.

E-Text :

In certain networks, "e-content" is utilized substantially more barely, to allude to electronic records that are, as it were, "plain vanilla ASCII". By this is implied not just that the archive is a plain book document, however that it has no data past "the content itself" – no portrayal of striking or italics, section, page, part, or reference limits, and so on. Michael S. Hart,[2] for instance, contended this "is the main content mode that is simple on both the eyes and the PC". Hart made the correct [according to whom?] point that restrictive word-processor design made messages horribly distant; however that is unimportant to standard, open information groups. The thin feeling of "e-content" is currently unprecedented, on the grounds that the thought of "simply vanilla ASCII" (appealing from the outset), has ended up having genuine troubles:

- To begin with, this thin sort of "e-content" is restricted to the English letters. Not in any case Spanish ñ or the highlighted vowels utilized in numerous European dialects can't be spoken to (except if adroitly and vaguely as "ñ" "a"). Asian, Slavic, Greek, and other composing frameworks are inconceivable.
- Second, charts and pictures can't be suited, and numerous books have probably whatever material; regularly it is basic to the book.
- Third, "e-writings" right now have no solid method to recognize "the content" from different things that happen in a work. For instance, page numbers, page headers, and commentaries may be precluded, or may essentially show up as extra lines of content, maybe with clear lines prior and then afterward (or not). A resplendent separator line may be spoken to rather by a line of reference bullets (or not). Part and areas titles, in like manner, are only extra lines of content: they may be recognizable by capitalization on the off chance that they were all tops in the first (or not). Indeed, even to find what

shows (assuming any) were utilized, makes each book another exploration or figuring out venture.

In result of this, such messages can't be dependably re-designed. A program can't dependably tell where references, headers or footers are, or maybe even sections, so it can't re-organize the content, for instance to fit a smaller screen, or read it so anyone might hear for the outwardly disabled. Projects may apply heuristics to speculate the structure, yet this can undoubtedly come up short.

Fourth, and a maybe surprisingly [according to whom?] significant issue, a "plain-content" e-content bears no real way to speak to data about the work. For

instance, is it the first or the tenth release? Who set it up, and what rights do they save or award to other people? Is this the crude form straight off a scanner, or has it been edited and revised? Metadata identifying with the content is in some cases included with an e-content, yet there is by this definition no real way to state whether or where it is present. Best case scenario, the content of the cover sheet may be incorporated (or not), maybe with focusing imitated by space.

Cryptography Vs Steganography:

Cryptography or cryptology is the training and investigation of methods for secure correspondence within the sight of outsiders called enemies. All the more

by and large, cryptography is tied in with building and investigating conventions that keep outsiders or people in general from perusing private messages. Steganography is the act of disguising a record, message, picture, or video inside another document, message, picture, or video. Steganography requires two records: one is the message which must be covered up, the other is the spread document which is utilized to conceal the date/message. Basically, Steganography alludes to the concealing your cash under the sink or inside the sleeping cushion though Cryptography is putting away the information in a vault with a multilayer security. ■

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2020

Month & Year	Theme	Month & Year	Theme	Month & Year	Theme
January, 2020	Computer Assisted Education	March, 2020	Big Data Analytics	May, 2020	Semantic Web
February, 2020	Green Computing	April, 2020	IoT	June, 2020	Quantum Computing

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Robotic Motion Planning

Snehasis Banerjee

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Motion Planning in Robotics [1] is a hot area of research because of growing demand of mobile robotic applications as well as advances in machine learning, computer vision and AI planning. The base problem of motion planning is how to obtain a collision-free path from start state to goal state for a mobile robot that moves in an environment that can be either static and known; or dynamic and unknown (the later being more complex scenario). An example scenario is when a robot's inbuilt battery is depleting and it needs to quickly move from its current location to battery charging point.

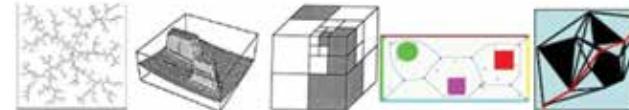
What probable paths in which a robot can move depends on its degrees of freedom (DOF). Flying drones usually can move in 6 ways - vertically up / down, longitudinally forward / backward, laterally sideways and rotationally along the 3 axes - roll, pitch and yaw - hence has 6 DOF. A telepresence service robot with a single balanced wheel can move in 2 ways (2 DOF) - longitudinally and rotation to achieve lateral movement (left / right sideways) indirectly. Depending on the wheel type and number, other service robot variants can move in 3 ways. An industry robot having an arm may itself be static, but its arm is free to move around. So the problem of motion planning (MP) is:

Given a robot R with f DOF, in a 3-D world W , with O obstacles, a motion plan will find a continuous path of states (configurations) between an initial state q_{start} and a goal state q_{goal} , or report failure if no path exists.

A legal path is derived from Configuration Space (C-space) which is set of possible states or legal configurations of the robot. It defines the topology of continuous motions. Examples of illegal paths are: path through obstacles like walls or path through air for non flying robots. The solution to motion planning is Global Path, which is composed of local paths with local sub goals. Robot perception (such as camera, IMU, Lidar, Radar) plays a key role in path planning.

A robot with camera senses RGB data in form of scenes (ego view of robot), which when processed by computer vision algorithms like Yolo (fast) or Mask-RCNN

Comparison of Motion Planning Techniques



	Sampling	Potential Fields	Approx. Cell Decomposition	Voronoi	Visibility
Practical in ~2-D or 3-D	Y	Y	Y	Y	Y
Practical in >>2-D or 3-D	Y	Y (Using randomized version)	??	N	N
Fast	Y	Y	Y	In low dim.	In 2-D
Online Extensions	Y	Y	??	??	N
Complete?	Probabilistically complete	Probabilistically-resolution complete	Y	Y	Y

(slow but accurate) can reveal target object (goal) as well as obstacles (like wall, humans) and free space (say floor) - this information is used in motion planning. For low dimensional simple scenarios, grid-based algorithms like Grassfire, Dijkstra, A* (using heuristics) work well and fast. But, higher dimensional motion planning under complex constraints is computationally intractable in continuous C-space, hence needs to be reduced to a tractable problem in discrete space. Popular methods for motion planning [2] in Robotics are:

- Roadmap Search: finding path between q_{start} and q_{goal} by using a guided space map. This can be done by Visibility graphs (inter-visible locations of polygonal obstacles and free space) or by using Voronoi diagrams (points on the edges of the Voronoi diagram are the furthest from the obstacles, hence a path along edge is a legal path to take).
- Cell decomposition method: transforms the configuration space into discrete cell regions and is suitable for diverse, non-polygonal obstacles. A* can be applied here.
- Artificial Potential Fields: treating the robot's configuration as a point in a potential field that combines attraction to the goal, and repulsion from obstacles. The resultant trajectory is computed fast, but this method can get stuck in a local minima.
- Sampling-based algorithms: it is based

on the principle that a relatively small number of samples is sufficient to cover most of the feasible space. It works well for high-dimensional configuration spaces, but it cannot detect absence of solution path. A variant, namely Rapidly Exploring Random Trees (RRT) explores collision free edges between random targets with good success.

- Reward-based algorithms: this methods are based on policies with reward functions: positive reward when robot reaches its goal and negative reward if it collides with an obstacle or takes more time to reach its goal. Output is a path that maximizes cumulative future rewards. Most of the current research is based on this approach - motion planning based on variants of Markov Decision Process (MDP) like Partial Ordered MDP, Fuzzy MDP, deep reinforcement learning [3], value iteration networks (VIN), etc.

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IoT for functional optimization of Cyclist

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Introduction

IoT stands for Internet of Things. In this 'Things' include sensors such as temperature and humidity sensor ,IR sensor, ultrasonic sensor ,ECG sensor, Oximetry sensor, GPS, GSM etc. and actuators. These all sensors are needed used to sense the data and actuators are used to take any action after receiving or analysing that data. In IOT data collected or sensed by sensors are send to microcontroller using interfaces like i2C,SPI,etc.To send large data collected from Sensors to cloud various network layer is used e.g. Bluetooth ,Wi-Fi, Wi-Max, W-Pan, etc. using internet. There are various Single board computers used to attach sensors to it e.g. Arduino, raspberry pi, beagle bone black .Code for the IOT devices is written in OS installed on boards. Arduino doesn't came with any OS. It requires Arduino IDE to write and compile sketch. While on Raspberry pi we can install any supported OS (Raspbian, Ubuntu) and write program in text editor. For Beagle bone we can use different OS such as Debian and write program in its text editor. These boards has many feature like RAM,GPIO pins, SD card slot, USB ports, HDMI port, audio jack, etc. Data sent to cloud can be access though web interface (website).We can make analysis from it used for different IOT applications.

Advantages-

- 1) Monitoring of system from remotely.
- 2) Detect an event (fire, flood) and send message immediately.
- 3) Fast processing of object detection and information collection in shops and manufacturing companies.
- 4) Useful for Searching of robbers in case of banks, toll plaza, etc.

Applications-

- 1) Home automation
- 2) Forest fire detection
- 3) Dam water level detection
- 4) Whether Monitoring system
- 5) Irrigation monitoring system
- 6) Face and Fingerprint detection

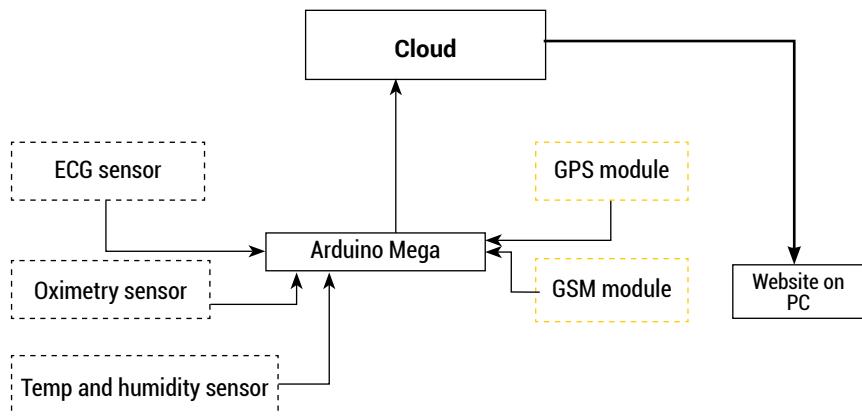
Working-

The working of cyclist monitoring system includes microcontroller, sensors,

cloud and website accessing device humidity as change in humidity levels makes

IOT applied in functional optimization of cyclists

System architecture-



(smartphone, laptop).The Arduino fetch data from sensors using i2c interface. I2C is multi master, multi slave architecture involves reading and writing a byte. Serial communication and splitting into 8-bit packets is happen. Connection with controller to the sensor is done by two lines i.e. SDA (Data Line) and SCL (Clock Line).There are five sensors in our system as stated below with their working-

1. ECG sensor-

ECG records the electrical activity generated by heart muscle depolarizations, which propagate in pulsating electrical waves towards the skin (in microvolts, or UV).

2. Oximetry sensor-

Beams of light from the device pass through the blood in your finger to measure your oxygen. Reading of your heart rate (pulse).

3. GPS module-

The 3 satellites use microwaves to calculate position of cyclist from their intersecting spheres and triangulate the position of a GPS tracking chip.

4. Temperature and Humidity sensor-

In humidity sensor, two electrodes with a moisture holding substrate measure

change in the capacitance value and forms change in resistance values lead to change humidity level digitally on website.

In temperature sensor thermistor is used to measure the temperature. With increase in temperature makes a decrease in its resistance value and digitally values gets changes.

5. GSM module-

The SIM card mounted GSM modem upon receiving digit command by SMS from any cell phone send that data to the microcontroller through serial communication. All operations is displayed over LCD display.

Arduino Mega is inherits properties of ATmega2560 family. It is based on RISC architecture having clock speed 16 MHz and 8 bit microcontroller .From Arduino data is send to cloud server using link layer technology like 802.11(Wi-Fi). In server side to store data interpretation language used is PHP and Google map API is used to generate map, graph, and tables. Data is recorded in a MySQL database table from connection with PHP. The table structure includes attributes such as Event (date/time), latitude, longitude, temperature, humidity, speed, bpm and oximetry. API generates map using

information in database and markings will be display indicates location of recording. By clicking on the marker all information will display in a new small window on that webpage. Now to access data from server cloud we have create dynamic website and we can access it from remotely using internet on pc, laptop, smartphone, etc.

Advantages-

- 6) Useful in prediction of the performance of cyclist or athletics in sports events.
- 7) Cyclist get to know the effectiveness of their training loads.
- 8) Cyclist get idea of route he haven't go before on that route.
- 9) Cyclist can analyse his performance after practice using this IOT system.

Conclusion-

- 1) We learn how cyclist record system work.
- 2) Real-time biofeedback of cyclist getting

on website.

- 3) As no. of users of system increases smart city system can be made.

Applications-

- 1) Monitoring health of a cyclist or athlete.
- 2) Tracking of cyclist.
- 3) Cycling gadgets such as smart gloves, smart helmet, smart lock, etc.

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Debit/Credit Card Fraud Prevention for Financial Institution or Banking Sectors: In Context of Anomaly Detection Method

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The Initiation of credit card is wonderful thing that ever happened in the banking and financial sector. It has the ability to make a purchase and order goods and services with comfort of our sitting room through internet and telephone fascinated everyone. Today most of the customers have applied for credit card and the financial institutions issuing more cards everyday. This tendency however, has presented a worrying security concern fraud. Frauds are applying for credit card writing their victims identity and if they get the cards they follow on a spending spree and at which time anyone knows about it, the damage done is beyond repair with this paper a relatively simple and efficient way of detecting a fraudulent transaction before things get out of hand and stop it. Anomaly detection is the best technique for this very purpose, as discussed in the paper. In the first section, Introduces security concerns in the use of credit cards, with more focus on identity theft. In next section we discuss briefly about anomaly detection technique of data mining and how it can be implemented for fraud detection. This is followed by the related research work. The last section presents the proposed solution.

Introduction

During last few years various people seems to have updated the idea of carrying or even shopping using our cash currency, oblige to E-commerce. It has not only create our life easier, but also less the cases of robbery and money loss.

Anyone may walk into a shopping center, order goods and services and produce a debit/credit card at the point of sale. This process can also be performed at the home and make payment over the internet. It is a very exciting experience for a human being. Although, the losses incurred of one fall victim of fraud enormous. A fraudster can silently collect all the details of their victim and when they ensure that they have sufficient information to impersonate their victim they will use all the details of debit/credit card and spend as much as they may on the account of their victim. At a time this might go undetected for a while, causing more damages and by the time victims or the banking or financial institution suspect it, the swindlers have already obtain as much as they wanted. The same process may also occur if the victim's debit/credit card and secret information shared to the use of close family members. As per Rajeshwari U

and Sathish Babu report there are various types or fraud on debit/credit cards including identity theft, fake cards, stolen 1 lost card, Card NOT Present (CNP) clean, affiliate, friendly and triangle frauds. In clean frauds a stolen debit/credit card is used to make a purchase with stolen debit/credit card, but the transaction is manipulated in such a way that fraud detection function is circumvented. In friendly frauds, the card holder makes purchases online for a product or service with their debit/credit card and then contacts their debit/credit card issue to dispute the charge and wanting to be reimbursed for the financial loss.

There have been various techniques put in place by financial institution like bank to limit credit/debit cards fraud, ranging stand in need of customers to prove themselves legitimate holders of the debit/credit cards to trying to find and stop online fraudulent transactions. It is hard luck, none of these techniques have succeeded in totally stopping crime of debit/credit card fraud. Because almost all of these techniques passes from some challenges that bedevil debit/credit card detection in financial institution & banks. Salazar et al observes

that the problem is characterized by a number of challenging issues in data processing such as huge volume of data, rapid changes in the fraud patterns, small ratio of fraud amount to legitimate transactions, suspicious but legitimate customer behavior that are imitated by fraudsters and operation requirements of very low false alarm ratio and online processing. In this paper we propose a methodical approach of detecting and preventing fraudulent transaction for banking and financial institutions. This method stands for the complement of existing laid down strategies, All working towards a debit/credit card fraud free world.

Anomaly Detection

In the surrounding where the behaviors of the authorized card holders and swindles are so much alike that we may not differentiate between them and where the swindles are transaction dataset is too heavy and where the swindles are repeatedly learning and adapting new ways of disguise as authorized customers. The biggest challenge for any banking and financial institution are facing in the ability to exactly detect and stop fraud before it happens on during the process of fraudulent transaction.

In this type of a setup, It may be chances of classifying as fraud and authorized transactions are very high and the changes of categorizing as genuine customers. It is a great challenge that banking/financial institutions facing is the ability to correctly detect and stop fraud before it occurs or during the process of fraudulent transaction.

An Anomaly is a condition that deviates from an expected method or pattern. With the help of this paper we try to propose an effective fraud detection approach. That starts analyzing the initial transaction that to be made using debit/credit card and identify whether it is actual or not. In the same time, the system also collects details for the transactions which are in continuous manner used to come up with a dataset for that particular card. These details include the card holder's pattern of expenses, their selection, their geographic locations when using offline purchases like Point of Sales and ATMs. When anomaly detection is applied in fraud detection, our main objective is to check any suspicious activity that seems to different from the already know details about the true card holder. As per N. Malini and M. Pushpa, the best way of detection is to identify frauds accurately, must be active in detecting fraud cases and try to never classify a genuine transaction as fraud. As a general data mining technique. If anomaly detection being well applied, then it bears position results in this area.

Related Work

Various works has been done on this topic and even though we haven't got a complete solution to debit/credit card fraud many researches, some of them are mentioned here, have done a commendable works on it. Agrawal et al propose a credit/debit card fraud approach that tests each and every transaction carried out individually. In which the authors of the paper uses combined form of three techniques like the Hidden Markov Model (HMM), Behaviors Based Techniques and Genetic Algorithm, that collect information about the last transactions classifies them into low, medium and high as per their values and also calculates the average of three in order to detect fraud. V. Mareeswari and G. Gunasekaran proposes use of a hybrid support vector machine to protect debit/credit card fraud. The proposed approach detects debit/credit card fraud at the initial stage of debit/credit card application. As per

the authors, the main purpose is to overcome the problems and drawbacks found in most other existing systems like scalability, high response time, efficiency, imbalance of data and wrong predictions. Pornwattana Wongchinsri and wreakak Kuratach take us through various data mining frameworks used in debit/credit card processing. They describe four major activities involved in debit/credit card processing, namely fraud detection activity, new customer selection activity, customer relation Management activity (CRM), and repayment activity. Hidden Markov model is the other technique that can be used in debit/credit card fraudulent detection and also this is proposed and analyzed by the authors in V. Bhusari and S. Patil. Their proposed system made of two main modules i.e. online shopping module by which the user logs into desired website and makes a purchase and fills the required details about the purchased goods or services. The another module is the fraud detection system that uses debit/credit card details like debit/credit card number, Security Code (CVV), expiry month and year and analyses them for legitimacy. The main drawback with this model is that it cannot detect fraud in the first few transactions.

Srivastaval et al defined the use of neural networks at merchant side for the detection of debit/credit card fraud. In this paper there are various techniques used in debit/credit card fraud detection such as Neural Networks, rule induction, case-based reasoning, genetic algorithms, inductive logic programming, expert system and regression with various parameters. They also justify the use of Artificial Neural Networks in fraud detection and propose as system which is self-trained and made of two parts learning and testing phase. Dia et al discuss the use of a hybrid framework with big data technologies in detecting debit/credit card fraud. As per the authors of this paper big data technology seems to be the key to solving the challenge of computational capacity. In this paper the author discuss about the problem of unbalanced characteristics may frequently occurs during the classification that affect the correctness of information classification.

Proposed Model:

As per the resource and overviews existing techniques still suffer from the problem of accuracy i.e. the display of false positives (genuine transactions considered as legitimate). The proposed system model

works towards reduction of the same problem, in order to enhance accuracy in debit/credit card fraud detection and also efficiency. It is a dynamic system that detects a fraud during the transaction and generates an alarm. Our main objective is to identify suspicious activity that seems to differ from already known details about the genuine card holder. This will trigger a module that prompts the user doing the transaction to enter more details about themselves, details which can only be known by the already registered card holders.

As the model proposed in use of Hidden Markov Model which cannot detect fraud in the first 10 transaction, our proposed system will be able to analyze every transactions from the beginning of the use of the debit/credit card with enhances efficiency and accuracy. As discussed above the system will store details of the subsequent transactions which shall be used to come up with a dataset for that particular card. For each new transaction, the details are weighted against the existing information to check whether it is suspicious or not. In case the new transaction detects to deviate in any way from the already established details about the last six transactions the customer is prompted to enter more information for verification. These finer details can only be known by the card owner.

Conclusion

In this paper we have discussed the use of anomaly detection data mining techniques to extract patterns from the stored data. Methods they can help us classify a transaction into whether it is suspicious and stop it or whether it is original. The Anomaly detection system works during the first transaction therefore if leaves no chance for fraudsters to think their fraudulent work on new cards will go unnoticed. It is not only accurate in classifying transactions but also efficient to detect frauds. Due to use of a small piece of data therefore it does not suffer from the enormous data processing and slow response like many of the other existing models. It is also scalable when the data used can be replicated in real time on several sites, so speeding up the process of debit/credit card fraud detection. This system will also not detect false frauds, since it deals with each transaction at a time and at the same time the transaction is being carried out.



CSI Kolkata Chapter Activity Reports for the year 2019-20

Reported by **Gautam Hajra** Chairman, Kolkata Chapter (2019-2020)

Dear Fellow Members,

Please accept my sincere thanks for helping us to conduct various chapter activities during the last 12 months (2019-2020).

1. A lecture meeting on ERP Implementation Success factors in Indian Power Utilities & Post ERP Financial Success measurement was held on April 6, 2019 at 5:00 pm in the CSIKC office premises. Dr. Tapas Bhattacharya, Additional General Manager (IT) of West Bengal State Electricity Distribution Company Ltd. (WBSEDCL) was the key speaker of that lecture meeting.
2. A student branch has opened at University of Engineering & Management (UEM) Kolkata, on April 13, 2019. Mr. Gautam Hajra, the Chairman of Computer Society of India Kolkata inaugurated the student branch.
3. **AGM 2017-2018** - Kolkata Chapter AGM 2017-2018 was held on CSIKC auditorium on April 27, 2019 at 6:30 pm. Total 42 members attended in the meeting. Mr. Subir Kumar Lahiri, Chairman(2017-2018) presided over the meeting. Chapter awards for the year 2017-2018 were announced by Mr. Gautam Hajra. Mr. Aniruddha Nag, as selected for Chapter Patron Award, Mr. Radha Krishna Bar, as selected for Significant Contribution Award and Dr.(Mrs) Ajanta Das as selected for Active Participation for Woman.
4. A lecture meeting on "On the Conundrum of Cyber Value-System and Malpractices" was held on Saturday May 11, 2019, at CSIKC auditorium. Mr. Abhijan Bhattacharyya, Scientist, TCS Research & Innovation Lab, Tata Consultancy Services, Kolkata is the keynote speaker of that Lecture meeting. Total 15 members attended this programme.
5. World Environmental day was celebrated in association with Rural Development Forum, Institute of Engineers-India(EIE) and Science Association of Bengal on June 5, 2019 at CSIKC auditorium at 11:30am. Dr. S. Roychaughuri was the coordinator of this programme. The program was inaugurated by Mr. Shyama Prasad Dutta, Chairman RDF, IEI. Welcome address was given by Mr. Gautam Hajra, Chairman, CSIKC and Mr. Sourav Chakraborty, Secretary CSIKC. Key speakers were Dr. Parijat Chakravorty (Mentor of Innovation Hub, NCSM, Govt. of India), Prof. K.P.Das (MAKAUT), Dr. Sima Mukhopadhyay (Dr. T.M.Das Foundation). Total 46 persons including School students attended this programme.
6. **Summer Training** – This year Summer Training was started on June 20, 2019 and ended on July 19, 2019. Total 100 students of different engineering colleges enrolled their names in this training program. Subject of the Summer Training program are CoreJava, Advanced Java, Python. Mr. Malay Mitra, course Director of CSIKC took class on Python.
7. **Lecture Meeting** – A lecture meeting on "Embedding Engineering Properties in Development Properties" was held on July 6, 2019 at CSIKC auditorium. Mr. Abhishek Roychowdhury of TCS was the key note speaker of this programme. Total 15 members were present in this meeting.
8. A MOU was signed between CSIKC and MAKAUT in presence of Mr. Gautam Hajra, Chairman CSIKC and Prof. Saikat Maitra, Vice-Chancellor, MAKAUT and Register of MAKAUT, on July 20,2019. MoU included different certificate courses collaboration with MAKAUT and CSIKC.
9. A condolence meeting of past president of CSI, Late Anirban Basu, was held on August 17, 2019 at CSI Kolkata Chapter Office premises. Colleague, friends, his wife and son were present in this meeting.
10. **Cyber Security Summit** – The 2nd Cyber Security Summit was held on September 7, 2019 at Indian Statistical Institute Kolkata, Platinum Jubilee Auditorium. Theme of the program was INSIGHTS TO SECURE CYBER SPACE. Mr. Sourav Chakraborty, Secretary, CSI Kolkata, invited the dignitaries on Dias. Inauguration was started with Lighting of Lamp by honorable Guests. Chief guest of this summit was Sri. Debasish Sen, IAS, Additional Chief Secretary, Dept. of IT, Govt. of WB & Chairman, HIDCO. Welcome Address was delivered by Mr. R N Lahiri, CSI Fellow & Summit Convenor. Inaugural Address was delivered by Prof.(Dr.) A K Nayak, President, Computer Society of India. Keynote speaker was Prof.(Dr.) Bimal Kumar Roy, Chairman National Statistical Commission and Former Director ISI. Inauguration session was closed by Mr. Gautam Hajra, Chairman of Computer Society of India. Invited Speakers of this Summit were Prof. (Dr.) Chandan Majumdar, JU, Prof.(Dr.) Subhamoy Maitra, ISI, Mr. Sandeep Sengupta, Indian School of Anti Hacking. Mr. Prodip Mukhopadhyay, MD, WEBEL, Mr. Bivas Chatterjee, Public Prosecutor, Govt. of West Bengal, Dr. Nabarun Bhattacharyya, Senior Director C-DAC, Kolkata, Mr. Subhojit Ganguly, NASSCOM and Mr. Kuntal Siddharth, Kolkata Police Cyber Crime Department. Summit was ended with vote of thanks. Total 158 participants including different Engineering College Students, Guests, CSI Members and other dignitary persons.
11. **Workshop on SPSS package** - Three days Workshop ON USE AND APPLICATION OF SPSS was held CSI Kolkata Chapter auditorium from 13 September,2019 to 15 September 2019. Speaker of the programme was Dr. Baidyanath Pal of Indian Statistical Institute, Kolkata and two instructors of the same institute. Total 26 participants of different Universities and Colleges and Medical Practitioner were attended this workshop. Workshop was ended with Certificate distribution.
12. The department of Computer Science, Supreme Knowledge Foundation Group of Institutions has successfully organized a 2 hours Special Lecture on "Emotional Intelligence: Idea, Application and Future Perspective" on 26th October 2019 in association with CSI Kolkata, Student Chapter. About 106 Computer Science and Engineering students were present at the event. Mr. Sourav Samanta, Assistant Professor UIT Burdwan has delivered his lecture on the said topic.
13. **Student Branch Open** – A student branch has opened on November 11, 2019 at Asansol Engineering College. (Largest Student Branch of West Bengal 341 Student Members) Total

- 676 student memberships in presence of delegates from CSI. Invited speakers (theme 'ML & IoT') were Hrishav Barua (TCS R&I), Dr. Somnath Mukhopadhyay (Assam University) and Prof Anirban Mukhopadhyay (Kalyani University) trailed by Balloon Rise Ceremony.
14. **CSI Regional Student Convention** – On November 13, 2019 CSI Regional II Student Convention was held at MCKVIE College, Liluah. The programme witnessed keynote address by Prof. Dipti Prasad Mukherjee, Deputy Director, ISI and Dr. Arpan Pal, Chief Scientist, TCS R&I, trailed by Paper Presentation Contest and ICT Quiz.
 15. **CSI State Student Convention** – West Bengal State Student Convention was held on JIS Engineering College, Kalyani on November 14, 2019 in collaboration with CSI Kolkata Chapter. The theme of this convention was "ML & IoT". Event was well organized and witnessed lectures from Prof A.K.Nayak (CSI President), Md. Shams Raja (RVP- Region II,CSI), Gautam Hajra (CSIKC Chairman), Prof. J K Mandal (Kalyani University), Atul Prakash Agarwal (MD, APT Software) and Snehasis (4) University of Engineering & Management (UEM), Kolkata opened CSI student branch on 13 April 2019 in the presence of delegates from CSI Kolkata Chapter.
 16. **CSI Student Branch awareness Program** – The Program followed by a meeting with Principal Swami Shastrajnananda and Vice Principal Maharaj Swami Ekachittananda and other Faculties of Department of Computer Science & Electronics and Prof. A K Nayak, CSI President and Mr. Gautam Hajra, Chairman CSIKC other CSI Delegates was held on 13th November, 2019 at The Ramakrishna Mission Vidyamandira, Belur Math, Howrah, West Bengal.
 17. **Computer Day** – This year Computer Day was celebrated on December 14,2019. Programme was started at 11:00 AM with the welcome by the Chairman, Mr Gautam Hajra. Significance of Computer Day was deliberated by Dr. Subhabrata Roychaudhuri, Convener Computer Day & Patron, CSI Kolkata Chapter and Mr. Devaprasanna Sinha, Fellow CSI. Introductory address was given by Mr. Sourav Chakraborty, Secretary & Patron, CSI Kolkata Chapter. Amal Roy Memorial Lecture was given by Prof. Samir Mukherjee, Maulana Abul Kalam Azad University of Technology, West Bengal. Guest of Honour Addressed by Mr. Harjinder Singh, Zonal Business Manager (East), Acer India Pvt. Ltd, Kolkata. Vote of thanks given by Dr. Aniruddha Nag, Vice Chairman, CSI Kolkata Chapter. After the post lunch session, ten Schools were participated in Extempore, Debate and Quiz competition. In the Extempore competition St. James' School took the First Position, Lakshmi pat Singhania Academy took the Second position and Modern High School For Girls took the Third position. In the Debate completion Modern High School For Girls took the First Position, St. James' School took the Second position and Hariyana Vidya Mandir (Day) School took the Third position. In the Quiz competition Modern High School For Girls took the First Position, The Bhawanipore Gujarati Education School took the Second position and Sri Aurobindo Institute of Education took the third position respectively. Total participation of this programme were 52 present.
 18. **STPI-YITPA Awards 2020** – STPI - YITPA Awards 2020, Region II, was held on January 4, 2020 at Computer Society of India, Kolkata Chapter, Auditorium. The theme of the programme was "Smart Technologies for Digital India". Programme Registration was started at 10:00am. Inauguration Session started on 10:45am with Welcome Address by Mr. Gautam Hajra, Chairman of CSI Kolkata Chapter. Significance of STPI – YITPA award contest was deliberated by Mr. Sourav Chakraborty, Secretary of CSIKC. Presentation Slot was allotted through lottery in presence of Mr. D.P.Sinha, Fellow CSI & Convener of CSI STPI – YITPA 2020 programme. There were 11 teams from TCS,CDAC,ISI Kolkata, Pricewaterhouse Coopers Pvt. Ltd. and West Bengal University of Technology, Barasat presented their papers and from them Winner are Ruddra Dev Roychoudhury, Hrishav Bakul Barua and Ashis Sau of TATA Consultancy Services Ltd. (R & I) and their paper name is Saathi: A Telepresence Robotic Avatar for a Convenient, Safe and a High-Tech Society in Future, Runner are Ravi Sankar,Sangit Saha and Tapas Sutradhar of C-DAC and their paper name is Intelligent Diabetic Olfactory Device (iDol), Kolkata. The Special Mention award goes to Sangam Kumar Chaturvedi and Abishek Hazra of C-DAC, Kolkata. Their paper name is Karkat Niray Yantra : Infrared Imaging based Breast Cancer Screening System. Judges of this programme, both academic and Industry. were Mr. Prodip Mukhopadhyay, Managing Director WEBEL, Kolkata, Dr. Debashish De, Professor, Department of Computer Science and Engineering, Maulana Abul Kalam Azad University of Technology, Prof. D D Sinha, Former HOD of Computer Science department the University of Calcutta and Prof. Debotosh Bhattacharjee, Professor, Department of Computer Science and Engineering, Jadavpur University and IEEE Computer Society. Programme was ended with prize distribution and vote of thanks.
 19. **AGM 2018-2019** – Kolkata Chapter AGM 2018 – 2019 was held at Calcutta Rowing Club(CRC) on January 10, 2020. Total 52 members were present including members and others. This year Mr. B K Sarkar as selected for Chapter Patron Award, Mr. Abhijit Sarkar as selected for Significant Contribution Award, Prof. Tapashri Sur as selected for Active Participation Award for Woman, and Mr. Sudipta Sahana as selected for Active Participation Award for Youth Member. The AGM was sponsor by ACER India Ltd. In this occasion Mr. Harjinder Singh, Zonal Business Manager (East), and his team members was delivering his company products Demo and Presentation to the members. AGM was end with fellowship dinner.
 20. **CSI Annual Convention** was held at KIIT, Bhubaneswar. CSIKC did a clean sweep in the CSI awards bagging Best National Chapter, Best Regional Chapter and Best Newsletter Awards among many individual awards. Mr R N Lahiri and Dr. Utpal Banerjee were received CSI Lifetime Achievement Awards. Mr. Subir Kumar Lahiri were received the Fellow, Mr. Aniruddha Nag and Mr. B K Sarkar were received Chapter Patron Award, Mr. Radha Krishna Bar and Mr. Abhijit Sarkar were received Significant Contribution Award, Mrs.(Dr) Ajanta Das and Prof. Tapashri Sur were received Active Participation Award for Woman, and Mr. Sudipta Sahana were received Active Participation Award for Youth Member. Around 200 copies of award winning 'Hardcopy' were distributed among eminent speakers and dignitaries.
 21. **Winter Training Programme** – Total 32 students have registered in the winter training programme.
 22. **Elections for 2020-21/22**
This year e-voting was start from 1st February, 2020, 5.00 PM, and its end on 8th February, 2018, 5:00 PM. Election results was declared on 8th February, 2020.
 23. **Outreach Programme** – A outreach programme was held at Blind Persons' Association (B.P.A.) at Baruipur, South 24 Parganas on February 23,2020. Mr. Gautam Hajra, Chairman CSIKC and Dr. Aniruddha Nag, Vice Chairman, CSIKC and Mr. D P Sinha Fellow CSI were present in that programme. CSIKC given Rs.10,000/- towards educational grant.

24. **National Science Day 2020** - The Science Association of Bengal in collaboration with Birla Industrial & Technology Museum and Computer Society Of India Kolkata Chapter Jointly Organised National Science Day Programme 2020 on 29th. February, 2020 at Birla Museum Auditorium, Kolkata for National Science Day Award Ceremony 2020. The Science Association of Bengal honored few persons of different discipline of their notable work in popularizing Science and Technology. This year Mr. Gautam Hajra, Chairman, CSI Kolkata Chapter received the "Charles Babbage Memorial Award" in this programme for his notable contribution. CSIKC given ₹ 10,000/- as a grant to SAB for the programme.
25. **EAIT 2020** - EAIT 2020 conference with Springer Proceedings in LNCS Networks & Systems is scheduled to be held at University of Kalyani on 28 and 29, November, 2020. Tutorial will be held at IIIT Kalyani on 27 November 2020.
- Fund transfer from UCO Bank to CSI EAIT Bank Account ₹ 50,000/-
 - The Bank Account of EAIT ie CSI-EAIT Conference of CSIKC to be held at University of Kalyani will be used for all transaction. The University of Kalyani will not participate in any financial transaction.
 - The APJ Abdul Kalam Auditorium to be booked for 28th November 2020.
 - The program Chair Dr. J K Mandal is authorized to take necessary steps for conducting EAIT 2020 smoothly and will make all necessary linkage with the Dept. of CSE, KU and University of Kalyani authority.
- The resolution sing by Mr. Gautam Hajra, Chairman CSIKC
26. **Library Books**
Purchased 13 new books in our Library.

Membership

The total membership of the chapter :

Year	Life Members	Individual/Associate Members	Institution Members	Student Branch
2019-2020	576	16	42	11

Summary of Institutional Members Student Branch opened in the year 2019-2020

Sl. No.	Name of Institution
01.	Techno India University ECE Department
02.	Techno India University BCA Department
03.	Asansol Engineering College Computer Science Department
04.	Maulana Abul Kalam University of Technology
05.	Ramkrishna Mission Vidyamandir
06.	Chaubasa Engineering College Under PPP Model Govt. of Jharkhand And Techno India

Summary of Student Branch opened in the year 2019-2020

Sl. No.	Name of Institution
01.	University of Engineering & Management (UEM)
02.	Asansol Engineering College Computer Science Department (Largest Student Branch of West Bengal 341 Student Members)
03.	Techno India University BCA Department

Financial Results

Last year CSIKC FDs Value ₹ 51,60,528/- now this year FDs Value are ₹ 64,41,792/-

Acknowledgement

My sincere thanks to all Fellow, Patron, OB's, MC members, specially thanks to our Secretary Mr. Sourav Chakraborty, Vice-Chairman Dr. Aniruddha Nag and Treasurer Mr. Snehasis Banerjee and also publishing Hardcopy in time.

My sincere thanks to our President Prof. A K Nayak and all Execom members to given their lot of support to conduct various programme in Kolkata.

Finally, I would like to express my deep gratitude to all our esteemed members, invited speakers for various academic programmes, sponsors, and specially our Chapter staff Mr. Swarup Chakraborti, Mr. Buddhadeb Kayal, and Mr. Dular Sengupta for their untiring effort in allowing all the activities of CSI Kolkata Chapter to proceed smoothly.

KIND ATTENTION !

Prospective Contributors of CSI Communications

Fourth Coming Issues : May 2020 : Semantic Web

Please note that Cover Theme for **May 2020 issue is Semantic Web**. Articles may be submitted in the categories such as: Cover Story, Research Front, Technical Trends, Security Corner and Article. Please send your contributions by 20th April, 2019.

The articles should be authored in as original text. Plagiarism is strictly prohibited.

Please note that CSI Communications is a magazine for members at large and not a research journal for publishing full-fledged research papers. Therefore, we expect articles written at the level of general audience of varied member categories. Equations and mathematical expressions within articles are not recommended and, if absolutely necessary, should be minimum. Include a brief biography of four to six lines, indicating CSI Membership no., for each author with high resolution author photograph.

Please send your article in MS-Word format to Chief Editor, **Prof. (Dr.) S. S. Agrawal** in the email ids **csic@csi-india.org** with copies to the Publisher **Prof. A. K. Nayak**, in the email id : **aknayak@iibm.in** and Editor **Ritika Wason**, Associate Professor Bharati Vidyapeeth's Inst. of Computer Applications and Management (BVICAM) in the email id : **rit_2282@yahoo.co.in**

Issued on the behalf of Editorial Board, CSI Communications.

Prof. (Dr.) S S Agrawal
Chief Editor

CSI Day-2020 – Knowledge and Wisdom for up-skilling to the NextGen

Reported by Prof. J. Jerald Inco, Chennai Chapter Secretary



CSI day was celebrated in a grand manner on 7th March 2020 at Hotel Palmgrove, Chennai and was co-sponsored by AGIRA TECHNOLOGIES, ZOHO, GREAT LEARNING and SP ROBOTICS MAKER LAB. Prof. Jerald Inco, Hon. Secretary of CSI Chennai Chapter welcomed the gathering and the program started with the lighting of Kuthuvizhakku by the Keynote speaker Mr. Manikandan Thangarathnam, Director, AMAZON, Technical session Speaker Dr. Bhanu Prasad Pinnamaneni, Director (R&D), Kelenn Technology, France, Chairman Dr. E. Iniya Nehru, Vice-Chairman Prof. P. V. Subramaniam and Treasurer Mr. Anantha Padmanaban. Chairman highlighted how CSI Chennai Chapter collaborated with the stake holders and made tremendous changes in Academia and Industry collaboration and how an individual or institution could make use of the CSI for their long term benefits. He also emphasized the importance on the theme "Knowledge and Wisdom for up-skilling to the NextGen".

Mr. Manikandan Thangarathnam, the keynote speaker started the session with his vibrant technical speech on various existing applications from hololens to Alexa. He briefed about amazon go, voice based computing, auto speech recognition, natural language understanding, physical shopping, computer vision, deep learning and sensor fusion. The speech went on with live video lectures. He stressed up on the focus on robust coding to get a better job and must be very strong in fundamental concepts on algorithm and data structures to become a successful solution architect.

Technical session speaker Dr. Bhanu Prasad Pinnamaneni started with a comprehensive view on ten avatars or 10 pillars of Industry 4.0 (virtual/augmented reality). He briefed his lectures with

videos on advances of autonomous vehicles. He stressed on building intelligence using the existing technologies like advanced simulation, autonomous robots to think, act and react. Automation of vehicles was explained by KIA motors examples. AI in traffics management, cyber security were discussed. He also stressed on to have a strong foundation in computers and get inspired by technologies to innovate more. He also said that MV, AR linking will help to build a strong technical society. To explain the advancement in the physiotherapy industry, he gave a demo on special socks-that helps to massage the feet when we get fatigue, sensors fitted in the socks will activate and do little massage. AI in traffic management was well explained. The session became very lively with the video demo on agriculture's value added services using AI technology. Separation of red and green tomatoes using VR/AR technology was explained. The techniques used to identify the diamond for carat, clarity, colour and cut were also briefed. Augmented reality in different industries Shopping, Intelligence refrigerator, Online Real estate, fit and see mirror, automobile repair through the projection of 3D images, in dentistry by placing a mirror in front teeth for scanning and replacing of teeth, digital healthcare-helping to make the diagnosis, Google (diabetic retinopathy) were discussed. The discussion continued with idiot syndrome, AR/VR/XR sensors, wearable healthcare products, AR geography, unlimited virtual screen and chemistry lab learning through fun. Finally he stressed on building a life with experience and not a resume without experience.

The Panel Discussion on Up-skilling for NextGen Industry was the great highlight with the panellist Shri. Ganapathy M, CEO,

Agira Technologies, Shri. Srikanth Sankaran, WileyNxt, Shri. Karthik Gopalan, Director, Great Learning, Shri. Michael Allwyn, Director, Gem3 Technologies, Shri. Harish Vardhana D, Manager, SP Robotics Maker Lab, Shri. Karthikeyan Sankaran, Manager, Latent View and was moderated by Dr. E. Iniya Nehru. The panel had lot of discussions on various issues of industry and education needs. Mr Ganapathy spoke on entrepreneurship, Mr Karthik Gopalan spoke on adaptiveness, Mr

The students project competition started with the presentation from IFET Engineering College, Villupuram on automatic sewage system, St. Joseph College of Engineering, Chennai presented Plant disease Predictions using ARIMA, Sri Sairam College of Engineering, Chennai presented medfork systems under engineering category. In non-engineering category SSS Shashun Jain College for Women, Chennai presented Traffic system controller for ambulance, SRM



Srikanth Srinivasan spoke on recent changes in IT, problem solving ability, to learn faster, his speech was focused on unlearning, Mr Michael Allwyn spoke on next gen, Mr Harish Vardhan, spoke on skills, Mr Karthikeyan Sankaran spoke in adapting to changing scenario, learning process and thinking from the customer perspective.

The next Panel discussion was on Curriculum design for NextGen, Dr Albert Antony Raj from SRM IST spoke on in content of the course to design a syllabus. How it was subject centric in earlier days and how it is been expanded recently based on the skill set of the student according to the industrial needs. He also briefed on the cast of a learner to be problem centric and not only knowledge, skill set is very important. He compared Outcome based learning and CBCS system given to students. Finally he ended up stressing that curriculum should be based on IT related industry requirements. It was followed by Dr T Mala Nehru, Anna University, spoke on Gurukul method and said nowadays everything is available online. She discussed on flipped classes. She recalled how Dr APJ Kalam Sir used to start a lecture with queries related to problem statement and finally end up with solutions. Dr. Kurinji, Dr. Dharmabala Govt. Polytechnic College for Women discussed on leanings based on the GDP growth things. Curriculum should not depend only on core courses and recommended for new departments to cater the industry needs. The moderator, Dr. Ananthi Seshasayee, Special Officer - E-Governance, Directorate of Collegiate Education stressed on to make the students to write the algorithm and to think and design the query to be strongly independent to face the industry needs.

College from Ramapuram presented road accident analysis using ML, PSG College from Coimbatore presented simultaneous defensive team game play in soccer using LSTM model.

The valedictory of CSI Day 2020 was started with an AV presentation on annual events by Chapter secretary Prof. J. Jerald Inico. National award winners of CSI Chennai chapter were honoured by the Office Bearers. Model exam co-ordinator Mrs. Mythili Prakash, M. C. members Mr. Rajaraman and Dr. Prema Kirubakaran were honoured for their services rendered during the year 2019-2020 by the office bearers. The student volunteers from Loyola College, Chennai were appreciated with special certificates.

The Student Project winners were announced and cash awards with medals, and trophies were distributed. In engineering stream, a team from IFET Engineering College, Vilupuram won the first prize, St. Joseph's College of engineering, Chennai and Sri Sairam College of Engineering, Chennai secured Second and Third places respectively. In Non engineering stream, a students team from PSG College of Arts and Science, Coimbatore bagged the first place, a team from SSS Shashun Jain college for Women, Chennai and SRM Institute of Science and Humanities, Ramapuram Campus secured second and third places respectively. CSI day celebration fulfilled the aim of bridging Industry and Institution to the learners' community. Lucky draw was organized to enhance punctuality and brought 94 out of 162 participants before 9 am. Certificates were distributed to all the participants and the event was witnessed by many senior CSI members and was really a full packed knowledge sharing event to everyone gathered. ■

CSI Region-VI : Partnering IIT Bombay's E-Cell for their various events

Reported by **Mr. Pradeep Rathi**, Regional Vice-President (Region-VI) (Maharashtra & Goa) (2018-22)
National Convener – SIG (Entrepreneurship & Innovation) (2019-21)

Eureka 2020

CSI was Incubation cum Knowledge Partner to IIT Bombay's Business Plan Event "Eureka 2020". RVP-6 Mr. Pradeep Rathi was the Jury for IIT Bombay's Business Plan Event "Eureka 2020". Eureka's aim is to foster the spirit of entrepreneurship and business acumen among people all around the world, Eureka! goal is to fast-track the journey from an innovative idea to a commercial success. Eureka! is Asia's largest business model competition accredited independently by CNN and Thomson Reuters. Eureka! prides itself on providing a 360 degree, holistic experience in the 5 months period that it spans. Right from

acknowledging potential of ideas, to drafting a B-Model and pitching in front of an esteemed panel of investors. CSI was partner to the event for the entire period of 5 months.

This year in Eureka over 2,000 entries were received and reviewed by mentors provided by CSI. The short listed startups were provided with free mentoring for 3 months by CSI's mentors. Eureka was an excellent opportunity to review mind boggling pitches and interact with highly motivated and energetic startup entrepreneurs.



E-Summit 2020

CSI was Knowledge Partner and Outreach Partner to IIT Bombay's flagship event "E-Summit 2020" organized by their e-Cell. Over 26,000 attendees visited the E-Summit over two days. The E-Summit, currently in its 15th edition, has been host to some of the biggest stalwarts of the industry over the years. It continues to inspire countless ideas, expedite innovative startups and multiply fruitful networks through a jam-packed cluster of events designed for everyone.

This year, the E-Summit sets out to champion the maniacs and misfits that refused the routine and achieved breakthroughs. With an electric environment filled with energetic individuals, the E-Summit aimed to accelerate these ideas through the stratosphere.

For the event CSI's team of mentors and speakers were led by RVP-6 Mr. Pradeep Rathi. CSI's mentors provided spot mentoring to over 100 startups spread over two days.

CSI STUDENT CONVENTION

REPORTS

KARNATAKA STATE STUDENT CONVENTION

(Region-V) at Dayananda Sagar Academy of Technology & Management (DSATM), Bengaluru



The 33rd CSI Karnataka students' convention with the Theme "Artificial, Virtual & Animated Computing" was conducted by Dayananda Sagar Academy of Technology & Management (DSATM), Bengaluru on 28th & 29th February 2020 in association with CSI Bangalore Chapter.

The convention inauguration was started with an invocation by Abhishek in the Auditorium at 10.00 am on Friday, 28-02-2020. Dr. Nandini, Vice Principal & HoD CSE, welcomed all the dignitaries for this convention. The chief guests & other dignitaries joined to light the lamp to mark as a good beginning. Dr. Anbunathan, Chairman CSI Bangalore Chapter briefed about CSI and its academia association. The audio message of Prof A K Nayak, President, CSI was aired on this occasion. Dr. Sunil Panwar – IFS, ED, Centre for Smart Governance, GoK was the chief guest and introduced by Prof Bhasker Rao (Event convener). Dr. Sunil in his inaugural address advised the participants to equip with current technology and provide contactless service to citizens in a smart way. Dr. Keerthika provided the process information on technical papers. Prof Jahnavi introduced the guest of honor. Mr. Ashok Gopinath – MD, Accenture gave keynote address. An application PrintF developed by the students was released on this occasion. Prof. M Surendra Prasad Babu (RVP-CSI, Region 5) addressed the audience about knowledge upgradation. Dr. Lakshminantha B R (Principal-DSATM) delivered the presidential remarks. He advised the participants to make best use of opportunity. Dr. Sumithra Devi K A (HOD-ISE), proposed vote of thanks during inauguration. Mrs Anitha Venkatesh, State Student Coordinator, Karnataka was also present on the occasion. From CSI-BC Mr. T Sabapathy, Mr. H C Sridhar, Mr. T N Seetaramu, & Dr. Shantharam Nayak have participated in the inauguration and also coordinated the events. Mr. Vishwas Bopanna, Mr. Sabapathy & Mr. Sridhar R helped in evaluation of paper presentation.

The invited talk was: i) Ashok Gopinath talked on "Artificial, Virtual & Animated computing" ii) Mohan Krishnaraj from HARMAN International talked on "Designing the World of Unconventional" iii) "AI & Machine Learning" by Prof. M S P Babu iv) Dr. Prakash S (Principal, EPCET) talked on Virtualization and Re-skilling. A Panel Discussion in Kannada was conducted focusing on "Ondu Samvada, thantrika shikshanada sutta mutta" The panel comprising Prof A M Padma Reddy (Director, SVIT), Dr. G T Raju (Vice Principal, RNSIT), Dr. Prakash S (Principal EPCET). Mr. Janardhan, Pro Vice Chancellor-DSU was the guest during valedictory. He congratulated DSATM for

conducting CSI student convention successfully. The convention was meaningful. Total 475 (375 host college + 100 other institution) delegates from 19 different engineering colleges have participated and drawn the benefit. The curtain was drawn to the convention by honoring the Winners of all the competitions during valedictory. Prof Anil Kumar announced the names of winners. Prizes were distributed in the valedictory programme. Prof. Bhasker Rao along with their team from DSATM, Bangalore have coordinated for the success.



KERALA STATE STUDENT CONVENTION

(Region-VII) at MES College Maramapilly, Aluva



CSI State Student Convention for Kerala State for the year 2019-2020 was organized by Department of Computer Applications of MES College Maramapilly, Aluva, Kerala on 31st January 2020. The convention is organized with the objective to provide platform for the students to showcase their talent with a competitive spirit. The event was successful enough to attract as many as 200 registrations across the state.

The inaugural ceremony commenced with prayer followed by lightning the Kuthuvilaku and the welcome address was delivered by Dr. Murugan. R, HoD, Department of Computer Applications. The presidential Address was given by Dr. A Biju, Principal, MES College Aluva. The convention was inaugurated by Dr. M Sundaresan, Professor and Head, Department of Information Technology, School of Computer Science and Engineering, Bharathiar University, Coimbatore and Regional Vice-President Region VII of CSI. The College Chairman Mr. M A Mohammed addressed the gathering and the Chief Guest was honored with memento. The programme was illuminated by distinguished dignitaries of Computer Society of India and College Committee members. Dr. B Kannan (Professor,

CSI STUDENT CONVENTION

REPORTS

CUSAT, Chairman, CSI Cochin Chapter) threw some light on the thrust areas of CSI and described the importance of it in present days. This was followed by felicitation by Dr. M V Rajesh, Associate Professor, Model Engineering College Thrikkakara & State Student Coordinator for Kerala State. He explained upcoming activities of CSI. The inaugural ceremony came to an end with Vote of Thanks by Dr. Julie M David, Assistant Professor, CSI State Student Convention Coordinator and MES College CSI Chapter Coordinator. Sri Biju M G Executive Committee member and Past Chairman, CSI Kochi, Sri Jo Bastin Executive Committee member, CSI Kochi were also present on the occasion.

The convention executed with a total of 5 events planned and organized at its best of quality.

The following are the events organized:

- 1) Paper Presentation
- 2) Idea Pitching
- 3) Web Designing
- 4) Code Debugging
- 5) Android App Development

A total nearing to 20 papers and 25 innovative ideas were

acknowledged in Paper Presentation and idea Pitching Contest respectively. Other competitions also marked an active participation from students.

The Valedictory function started at 4 pm on the same day and the winners were encouraged with a memento, certificates and cash prizes for all the events. The whole event came to an end by Vote of Thanks by Master Aseel Abdulla, Local Chapter Student Coordinator.



State CSI Student Convention for Tamil Nadu (Region-VII) at K.L.N. College of Engineering, Pottapalayam



CSI Student Branch of K.L.N. College of Engineering (Region VII) had organised CSI State Level Student Convention on 6th March 2020. Mr. M K Harihara Bharath, President of Student Branch welcomed the gathering. Dr. M Sundaresan, Regional Vice President delivered Inaugural address and Prof M Suresh Thanga Krishnan, Regional Student Coordinator delivered the special address. Dr. A V Ram Prasad, Principal presided over the function and Dr. R Alageswaran, HOD of IT Department & CSI Student Branch Coordinator felicitated the gathering.



This Student convention provided the platform to prove the student's talents, ignite their innovative ideas and share their knowledge among the technical buddies. Five events namely

Weblinsta – Web Designing, Paplectio – Paper Presentation, Code Battle – Coding Contest, Multimedia Montage – Multimedia Contest and CodeDay – Hackathon were conducted in the convention at different venues. More than 150 students from various Engineering colleges had participated in the event. In the paper presentation contest, participants presented their ideas in the field of IoT, Cloud Computing, Big Data Analytics and Machine Learning. The participants of other technical events actively participated and showcased their talents.



Dr. P Udayakumar, HOD of Mechanical Engineering Department and Placement Officer delivered valedictory address and released the newsletter of CSI State Level Student Convention Tamilnadu 2020. The first copy of the newsletter was received by CSI student branch advisors Dr. J S Kanchana and Dr. S Ilangovan. The winners of Weblinsta were given three months internship with stipend by Pruvity HR Solutions Pvt Limited and the winner of Code Day bagged a 24 inch LED TV sponsored by MTV. The event coordinators Mr. C Pandian and Mr. J Gatum made all the arrangements with the support of CSI office bearers of Student branch. The event was concluded with the vote of thanks by Mr. P R Mithun Kumar, Joint Secretary of CSI Student Branch.

STUDENT BRANCHES INAUGURATION REPORTS

DR. AMBEDKAR INST. OF TECH., BENGALURU (REGION-V)



Dr Ambedkar Institute of Technology, one of the premier institutes in Karnataka is celebrating Ruby Jubilee year 1980-2020. As a part of the celebrations the college is conducting various workshops, seminars, symposiums, conferences, faculty development programs, exhibitions etc.

The 25th of February 2020 marks the day when the Computer Society of India, Student Branch, Bangalore, was set in motion along with a 5 day workshop on "Design and Development of Applications using IoT Launch pads" in Dr Ambedkar Institute of technology by the Department of Computer Science & Engineering.

The Chief Guests for the function were Dr Anbunathan Ramaiah, Chairman, CSI Bangalore Chapter, Dr S N Omkar, Scientist, ItlSc Bangalore, Mr Jeevan, Representative of Ed-Gate, Texas Instruments.



The Guests of Honor were Dr C Nanjundaswamy, Principal, Dr AIT, Dr Siddaraju, Dean of Academics and Head of Department Computer Science, Dr AIT, Dr B V Sumangala, Vice-Principal, Dr AIT.

The event started off with the keynote address by Dr S N Omkar, a well-known scientist from IISc, Bangalore who talked about drone technology and its numerous applications and projects. It was also brought to light that a team of students from Dr Ambedkar Institute of Technology worked under Dr Omkar in detection of anomalies in sugarcane at IISc. The students also received many ideas about projects that the students can take up and work on from his speech.

The Invocation song was sung by the students Miss Haripriya and Miss Shrushti and it was followed by the lighting of the lamp ceremony.

The chairman of Computer Society of India, Dr Anbunathan Ramaiah then graced the event with his presence. Dr Anbunathan Ramaiah then delivered a speech about the association, events and perks concerned with it and advice to all students to actively be part of CSI.



CSI FOUNDATION DAY CELEBRATIONS AT S A ENGINEERING COLLEGE, CHENNAI



CSI student Branch of S A Engineering College, Chennai organized a CSI Foundation day on 10th March 2020. Dr R Geetha, HOD-CSE & CSI Student Branch Coordinator delivered the welcome address, Dr G S Kumarasamy, Principal shared his august presence. Dr K Baskaran, Director, Bilvac, Technomanagement Ltd and Past Chairman, CSI Chennai Chapter addressed the gathering about the importance of industry exposure to advance the technology career and career success factors. He also explained about the overview on CSI role and benefits for member participants. The CSI members of CSE, IT & MCA participated in various events like Project Contest, Coding Contest and Web Design. They expressed their innovative thoughts and the prizes were distributed to the winners.



KANCHEEPURAM CHAPTER

CSI Kancheepuram Chapter in association with SRM VEC CSI Student branch has organized the "**CSI Day Celebration**" on 6th March 2020 at SRM Valliammai Engineering College under the Guidance of Dr. B Chidambararajan, Chairman, CSI, Kancheepuram Chapter. Totally 8 events were conducted in various categories and 372 students were participated from various Engineering colleges. These events were conducted to improve the students' skills in the following aspects to expand their knowledge in coding, improving communication skills, Debugging games, network related issues and quiz contest etc.

The Special address was delivered by Ms S Sruthi, Ex- President of CSI & Alumni of CSE, in her address; shared the past experience in CSI as a President and motivated the students for betterment of their future. Dr. B Vanathi, Head - CSE, Dr. Komala James, Head-ECE and Mr. S K Saravanan, HOD-GE were presided over the event.

The event was coordinated by Dr. M Senthil Kumar, Secretary, Kancheepuram Chapter, Dr. S Ravikumar, CSI Coordinator, SRM VEC and Mr. V Santhana Marichamy, CSI Coordinator, SRM VEC

CSI Kancheepuram Chapter organized a PROJECT EXPO on 7th March 2020 at St Joseph's Institute of Technology, OMR, Kancheepuram District. Dr. P Ravichandran, Principal, St Joseph's Institute of Technology presided over the event, and the Chief guest of the event was Dr. S Sathyalakshmi, Nomination Committee Member of Kancheepuram Chapter.

The Welcome Address was given by Dr. S Kalarani, Professor and Head of department of Information Technology, St Joseph's Institute of Technology, shared her view on organizing this Project Expo and welcomed all participants from various colleges. The Vote of Thanks was given by Dr. J Dafni Rose, Professor and Head of Head of department of Computer Science and Engineering, St Joseph's Institute of Technology, thanked the management and all participants from various colleges.



The first prize cash ward of ₹ 2,000/- was won by Mr. Yateendra Mishra and Mr. Anubhav Soha from SRM Institute of Science and

Technology. The second prize cash award ₹ 1,000/- was won by Ms Sandra Robin and Ms. K Rithika from Panimalar Institute of Technology. The Event was organised under the Guidance of Dr. B Chidambararajan, Chairman of CSI Kancheepuram Chapter.

CSI Kancheepuram Chapter, Paarivendar Student's Tamil Association, Kanith Tamil peravai of SRM Valliammai Engineering College has organized a National Seminar on Tamil Computing on 12th March 2020. National Seminar on Tamil Computing, which aims to promote the use of Tamil, to raise awareness of the Tamil language, to undertake the studies and internal exercises of the students of all disciplines and to learn the fundamentals and uses of Tamil Computing.

The guest of honour on the occasion was Professor Periyar University and contributor to Tamil Wikipedia, Dr. Thamil paridhi Mari. The second session was addressed by Mr. Neechalkaran, a Canadian Literary Estate Computing Award winner and Technical Analyst, Infosys entitled Tamil computing Requirements and Opportunities. The third session, titled Tamilinaiyam Tasks and Opportunities, was addressed by Dr. Anna Kannan, a Journalist and Founder of the Nokker Language Lab.



Dr. Subalalitha, Associate Professor of Computer Science and Engineering, SRM Institute of Science and Technology, Tamil Nadu, addressed the fourth session entitled Tamil in today's Computer science Engineering and Technology.

The function was conducted presided over by Dr. T P Ganesan, Director of SRM Valliammai Engineering College. The function was felicitated by SRM VEC, Principal and Chairman of Computer Society of India, Kancheepuram Chapter, Dr. B Chidhambararajan and SRM VEC vice Principal, Dr. M Murugan. The function was conducted under the guidance of Dr. B Vanathi, Professor and Head, Department of Computer Science and Engineering. Mr. K Shanmugam, Assistant Professor, Department of Computer Science and Engineering coordinated the event. More than 150 students participated in the event.

KOLKATA CHAPTER

An outreach program with difference CSI, Kolkata chapter is always champion the cause of helping socially ostracized people. From spreading Computer awareness to helping marginalized people of the society, CSI is always on top. Keeping in mind Helen Keller's word "Alone we can do so little; together we can do so much", on 23rd February 2020. On behalf of CSI, Kolkata chapter, Dr. Aniruddha Nag, Vice Chairman, Mr. Gautam Hajra, Chairman and Mr. D P Sinha, Fellow CSI participated in the Blind Person's Association at Malancha – Mahinagar and donated ₹ 10,000/- for purchasing Braille Printer which will enable Blind people to read and write.



A long way back in 1946, Professor late Nagendranath Sengupta started Blind Person's Association with a few sightless youths ; their goal was setting up a common platform for exchanging their views. The members of the organization realised in the sixties that the main problem of the sightless people lies in the lack of identity in the society. Their quest for identity can never be fulfilled unless the sightless share social responsibility with their fellow-brothers. They urged upon the members to plunge themselves into social activities. At the same time, the organisation took upon itself the task of promoting education among the sightless solely relying on patronage of the common people. In a world of dominated by pride, prejudice, selfishness and greed, it is the motto of Blind Persons' Association to hold aloft the banner of altruism, selflessness, sympathy and mutual understanding among the blind and the seeing citizens of the society. The association conduct three blind schools and a Braille press and library in different districts of West Bengal. Without knowledge a sightless person cannot contribute to the progress of the society and attain true social recognition so Blind Persons' Association records talking books for blind students and people with some form of print disability. Blind Persons' Association publishes booklets, leaflets, Souvenirs etc., disseminating its ideas and ideals since inception. In addition, in 1978 it brought out a quarterly named "Phalak". Later on the quarterly was registered as "Phalak Shirsha" in the year 1980. The magazine served as a bridge between the sighted and the sightless, where both sighted and sightless writers and poets contributed, irrespective of cast, creed and sex.



It was indeed a rarest of the rare experience for CSI office bearers who spent the whole day with sightless people who were reading, writing, even typing in Computer and doing all menial jobs with uncommon elan.



The Science Association of Bengal in collaboration with Birla Industrial & Technology Museum and CSI, Kolkata Chapter organized a National science Day programme on 29th February 2020 at Birla Museum Auditorium, Kolkata for National Science Day Award Ceremony 2020. The Science Association of Bengal honored ten persons of difference discipline of their notable work in popularizing Science and Technology. This year Mr. Gautam Hajra, Chairman, CSI Kolkata Chapter received the "Charles Babbage Memorial Award" for his notable contribution.

PUNE CHAPTER



CSI Pune Chapter organized CodeX 2020 a Regional coding competition, in association with Soft Corner, Pune and Reliscore, Pune. This competition was for Undergraduate Students from Computer / IT engineering, BSc.

The Competition was held in three rounds:

- In the First-round total 145 students participated. This was an online round conducted on 8th Feb 2020. Students solved the problems and wrote code on Reliscore web portal.
- Out of these 145 students 9 students were chosen for Final-round.
- Final round was conducted at MIT WPU, Pune on 22nd Feb 2020. This was supervised online coding round.

Final 3 winners declared and given cash prizes along with trophy and certificates. Prizes for the final round were presented by Dr. Mrs Vrushali Kulkarni, HoD, Computer Dept., MIT, Pune, Mr. Sandeep Godbole, Dr. B M Patil, Hon Secretary, CSI Pune Chapter, Prof. Pradnya V Kulkarni, Vice Chairman, CSI Pune Chapter.

Winner: Sidharth Kothari, VIIT, Pune

1st runner up: Pratik Dhende, PCCOE, Pune

2nd runner up: Tanya Raina, MES Wadia COE, Pune.

The event was coordinated by Mr. Abhishek Agrawal, Mrs Pradnya Kulkarni and Dr. B M Patil.

TIRUCHIRAPPALLI CHAPTER

CSI Tiruchirappalli Chapter organized a workshop on Bioinformatics using Perl on 6th March 2020 at Bharathidasan University Technology Park (BUTP) in association with Bharathidasan University and University College of Engineering, BIT Campus, Anna University, Tiruchi.

The one-day workshop covered two primary focus areas in Bioinformatics: the central dogma of molecular biology and Bioinformatics using Perl programming. Bioinformatics is an interdisciplinary field that develops methods and software tools for understanding very complex biological data such as genetic codes. As an interdisciplinary field of science, bioinformatics combines biology, computer science, information engineering, mathematics and statistics to analyze and interpret the biological data. Developments in these fields have direct implications on key issues related to health care, medicine, genetic disorders, development of agricultural products, renewable energy, environmental protection, etc. Currently,

Bioinformatics research community requires Bioinformatics programmers to develop inter-disciplinary software. The goal of this workshop is to create awareness about Bioinformatics domain and debate on the opportunities and the challenges that arise.



Dr. Gopinath Ganapathy, Registrar, Bharathidasan University inaugurated the workshop and briefed the need of such workshop in the current scenario. In addition to that he briefed about the humanoid, digital universe, automation, robotics, skin replacement therapy, human parts production and electronic tree growth. Mr. N Gopalaswamy, Director, Dalmia Bharat Limited addressed the gathering and advised the delegates to sharpen their skills by attending such workshops. In addition to that he insisted the participants to utilize the advancement of the technology to be harnessed in a positive manner.



Mr. R Selvaraj, Chairman, CSI Trichy Chapter, presided over the function. In this juncture, he touched upon the activities of National and Regional level events of CSI chapter activities. He informed that the CSI Trichy chapter is continuously receiving Best chapter award and Best electronic newsletter award from 2014 onwards to till date. He also conveyed that the CSI, Trichy chapter is conducting technical lecture programs every second Tuesday of the month at BHEL premises.

Dr. G Annapoorani, HOD-CSE, University College of Engineering briefed about the workshop. Dr. S Ravimaran, Principal, MAMCE welcomed the gathering and Mr. D Senthil Kumar, Hon Secretary of the chapter proposed the vote of thanks. Dr. G Annapoorani delivered a lecture on the central dogma of molecular biology. Dr. K Uma Maheswari gave hands-on training on Perl Programming. Mr. T Jaison Vimalraj, gave hands-on training on basic bioinformatics programs. Prof. R Kavitha gave hands-on training on advanced bioinformatics programs. About 85 faculty members, research scholars and students from different Engineering, Arts & Science Colleges participated in the workshop. In the valedictory function, Er N Rajasekaran, Vice chairman, CSI Trichy chapter gave the valedictory address. Er. R Sivakumar, Hon Treasurer, CSI Trichy chapter proposed the vote of thanks.



CSI, Tiruchirappalli Chapter jointly with IEI organized free lecture on "Petrol Depot Automation" by Er Thenmozhi Varman, Additional General Manager SSTP, BHEL, Tiruchirappalli at Institution Building, BHEL, Trichy.



Abstract:

- Generally, Consumer vehicles are loaded from Fuel outlets with fuel like Petrol, Diesel or LPG. The Fuel outlets are loaded with Tank trucks filled through Terminal Automation System in Depot or Terminal. Fuels include Motor Spirit (MS), Diesel, Aviation Turbine Fuel (ATF), Naphtha, Superior Kerosene Oil (SKO), Furnace Oil etc.
- Integrated Terminal Automation System/Depot Automation System provides monitoring, control and management of the entire product handling process, right from receiving to storage and distribution.
- Depot Automation is a process in which a Supervisory Software System (Depot Automation System) automates certain manual processes in a terminal. Supervisory Software system consists of number of sub systems which perform validations in every stage from Entry to Exit of a Tank Truck (TT).

VELLORE CHAPTER

CSI Vellore Chapter organized one day workshop on Python for Techies on 6th March 2020 at VIT University for CSI foundations day. Mr. Pari Jayapal, Data Scientist from Lambda Tech, Chennai. Started with basics of python for solving society problems using the features of python program and deeply covered programming concepts of Numpy, Keras and Pandas for real time applications. The workshop was attended by around 90 CSI members. Organized by Dr. Govinda K, Past RVP-VII and Prof. K S Sendhil Kumar



REGION-III

Devang Patel Institute of Advance Technology and Research, Anand



21-2-2020 - Hands-on Workshop WaspMote and Arduino



29-2-2020 - Hands-on Training on Adobe XD and UI/UX Design for Mobile Application (Beginner)

Jaypee University of Engineering & Technology, Guna



24-2-2020 & 25-2-2020 – Workshop on Python



28-2-2020 & 29-2-2020 Workshop on Graphic Designing

Babaria Institute of Technology, Vadodara



8-2-2020 – First Prize awarded to Mr. Abheek Samyal by Dr. Avani during workshop on Flutter



15-2-2020 Hands-on Workshop on Internet of Things

REGION-III

G H Patel College of Engineering & Technology, Anand



25-2-2020 - Alumni talk on Entrepreneurship and how to use Social Media to market your Start-up

REGION-V

Kallam Haranath Reddy Institute of Technology, Chowdavaram



13-3-2020 - Technical Quiz Contest in Programming

REGION-V

Pace Institute of Technology & Sciences, Ongole



10-3-2020 & 11-3-2020 - Workshop on Big Data Analytics

J.B. Institute of Engineering & Technology, Hyderabad



26-2-2020 - Guest Lecture on Oracle Application and DBA

Usha Rama College of Engineering & Technology, Telaprolu



18-3-2020 - CSI Project Expo

Chalapathi Institute of Engineering and Technology, Guntur



10-3-2020 - MCQ Test on Python & C-Language

K S Institute of Technology, Bangalore



18-2-2020 - Seminar on Cracking Code

Dr. K V Subba Reddy Institute of Technology, Kurnool



27-2-2020 to 29-2-2020 - Workshop on Oracle

Vidya Jyothi Institute of Technology, Hyderabad



24-2-2020 - Guest lecture on Redhat Linux

Anurag Group of Institutions, Hyderabad



27-2-2020 – Tech Talk on Hybris Technology

REGION-V

Gokaraju Rangaraju Inst. of Engineering & Technology, Hyderabad



28-2-2020 - Technical Session on Competitive Coding

B N M Institute of Technology, Bangalore



6-3-2020 & 7-3-2020 - Workshop on Node.js and Express Development with MongoDB

BVRIT HYDERABAD College of Engineering for Women, Hyderabad



26-2-2020 & 27-2-2020 - Workshop on Interactive Ethical Hacking



7-3-2020 - Guest Lecture on NoSQL Database

St Joseph Engineering College, Mangaluru



28-2-2020 & 29-2-2020 - Workshop on Digital Image Processing and Applications



3-3-2020 - Industrial Visit to Infosys, Mudipu

Dr. Ambedkar Institute of Technology, Bangalore



25-2-2020 to 29-2-2020 - Hands on workshop on Design and Development of Applications using IOT Launch Pads



7-3-2020 - Technical Talk on Technical Paper Writing

REGION-V

Vidyavardhaka College of Engineering, Mysore



4-3-2020 – Event on Cryptex

JSS Academy of Technical Education, Bangalore



8-3-2020 - Workshop on Embracing Industry 4.0 - Cyber Security

New Horizon College of Engineering, Bangalore



25-1-2020 – Event on Vita day : Competition



28-1-2020 to 30-1-2020 – FDP on Deep Learning

NMAM Institute of Technology, Nitte



15-1-2020 - Competition of writing stories based on technical theme
(Kahani Mei Twist)



16-1-2020 – Competition on Minute to Win

REGION-V

Sir M Visvesvaraya Institute of Technology, Bangalore



20-2-2020 & 21-2-2020 - International Conference on Evolutionary Computing and Mobile Sustainable Networks

REGION-VI

Maharashtra Institute of Technology, Pune



24-2-2020 & 25-2-2020 - Hands-on Workshop on Java Programming

REGION-VI

Vidyavardhini College of Engineering and Technology, Vasai



7-3-2020 – Workshop on DEV-OPS



12-3-2020 – Seminar on Machine Learning

Marathwada Mitra Mandal's College of Engineering, Pune



11-2-2020 - Intercollegiate Workshop on Hibernate-JAVA



11-3-2020 - Workshop on AWS Cloud

Prof. Ram Meghe Institute of Technology & Research, Amravati



6-1-2020 - Workshop on Introduction to Arduino Uno



6-1-2020 to 8-1-2020 - Workshop on Introduction to Robotics Programming : Spark V

College of Engineering, Pune



14-2-2020 - Expert Session on Green Computing through Adaptive Multicore Architectures



1-3-2020 - Workshop on Web Crawling and Scraping

REGION-VII

Kongu Engineering College, Perundurai, Erode



18-2-2020 – INFOCRUISE : Inter College Symposium



10-3-2020 - CSI Foundation Day Celebration

Rajalakshmi Engineering College (Autonomous), Chennai



10-2-2020 - BOOTUP'20 – National Level Technical Symposium



21-2-2020 & 22-2-2020 - Hackoverflow – 24 hours Hackathon

National Engineering College, Kovilpatti



19-2-2020 – Event on Cyber Investigation (Technical Contest)



5-3-2020 - Hands on training MIT App Inventor

Marthandam College of Engineering & Technology, Kuttakuzhi



13-1-2020 - Workshop on PHP Application Development & Python Programming



21-1-2020 - Seminar on Digital Marketing

FROM CSI STUDENT BRANCHES

REGION-VII

Sri Venkateswara College of Engineering, Sriperumbudur



18-2-2020 – INFOCRUISE : Inter College Symposium

IFET College of Engineering, Villupuram



10-3-2020 - Guest Lecture on Image Processing

SRM Valliammai Engineering College, Kattankulathur



13-3-2020 - Project Exhibition Day

Student branches are requested to send their report to

sb-activities@csi-india.org

Chapters are requested to send their activity report to
chapter-activities@csi-india.org

Kindly send **High Resolution Photograph** with the report.



Call for Paper for CSI Journal of Computing

(e-ISSN: 2277-7091)

Original Research Papers are invited for the **CSI Journal of Computing**, published online quarterly (e-ISSN: 2277-7091) by the Computer Society of India (CSI). The Journal of Computing, offers good visibility of online research content on computer science theory, Languages & Systems, Databases, Internet Computing, Software Engineering and Applications. The journal also covers all aspects of Computational intelligence, Communications and Analytics in computer science and engineering. Journal of Computing intended for publication of truly original papers of interest to a wide audience in Computer Science, Information Technology and boundary areas between these and other fields.

The articles must be written using APA style in two columns format. The article should be typed, double-spaced on standard-sized (8.5" x 11") with 1" margins on all sides using 12 pt. Times New Roman font and 8-12 pages in length. The standard international policy regarding similarity with existing articles will be followed prior to publication of articles. The paper is to be sent to Dr. R. R. Deshmukh, Editor-in-Chief in the email id: rrdeshmukh.csit@bamu.ac.in with a copy to Prof. A. K. Nayak, Publisher, CSI Journal of Computing in the email id : aknayak@iibm.in

Prof. A K Nayak
Publisher

Glimpses of CSI Convention, Bhubaneswar



(L to R) Dr. M Sundaresan, Mr. Jayant Bhide, Mr. Anil Ji Garg, Mr. N. Anand Rao, Mr. R K. Vyas, Mr. Apoorva Agha, Dr. Subhash Yadav and Dr. R R Deshmukh at CSI-STPI YITP Award function



CSI President Prof. A K Nayak presenting memento to Hon'ble Dr. K K Agarwal, Chairman, Board of Accreditation, Govt. of India



CSI President Prof. A K Nayak presenting memento to IFIP President Mr. Mike Hinchy



Dr. L M Patnaik and Mr. R K Vyas with Prof. P K Behera in pre-convention tutorial at Utkal University



Mr. R K Vyas, VP, CSI and Dr. M N Hoda, Director, BVICAM in the CSI pre-convention lecture at Bhubaneswar



(L to R) Dr. Bhagwan Singh, Mr. Pradeep Rathi, Prof. A K Nayak, Dr. Sunil Pandey and Dr. Subhash Yadav with Mr. Achyut Samanta, Founder of KIIT and KISS University