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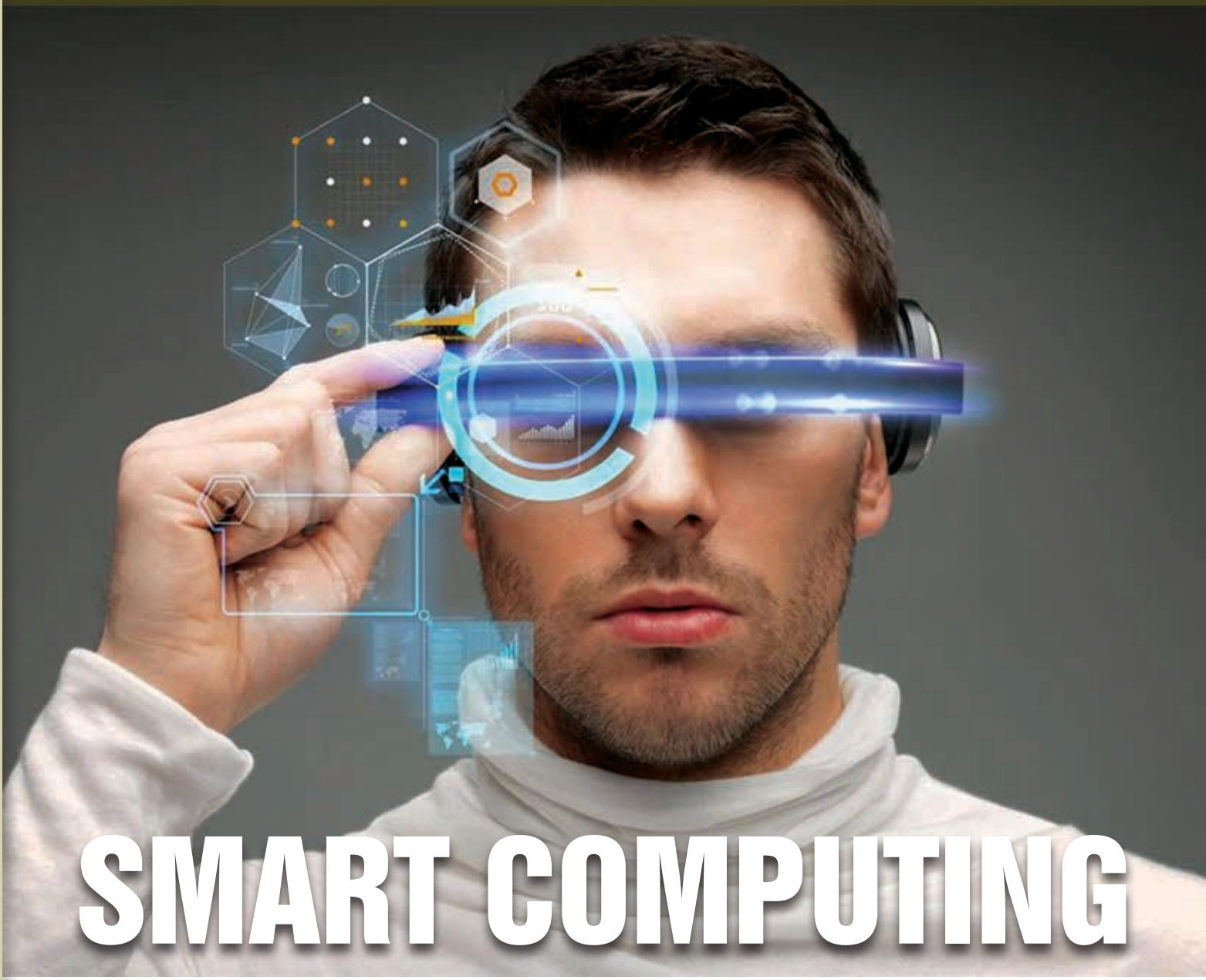

SMART COMPUTING

AGM NOTICE

Computer Society of India™

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25th February, 2019

Dear Esteemed Members of CSI,

Sub.: **Annual General Body Meeting on 17th March 2019 at New Delhi.**

Greetings from Computer Society of India !!

I wish to inform you that, **Annual General Body Meeting** of Computer Society of India (ref. Article 4.1.4 {c}) will be held on **17th March, 2019 (Sunday) at India International Centre (Lecture Hall II – Annexe), Lodhi Road, New Delhi – 110 003 at 12.15 PM**, followed by Lunch .

Agenda of AGM is as follows:

1. Welcome Address
2. Confirmation of Emergent General Body Meeting minutes held on 30th June 2018 at IIIC, New Delhi.
3. Hon Secretary's Annual report, Membership report, Administrative report for the fy 2017-2018.
4. Hon. Treasurer's presentation of Audited Balance sheet for the FY 2017-18 and appointment of statutory auditor for the FY 2018-19.
5. Vice President's report on conferences, SIG, Student branch activities for the year 2018-19.
6. Report on Legal matter's, Income Tax matter's, GST matter, Service Tax matter etc. by IPP.
7. Report on Disciplinary action against the members for violating CSI Constitution by Vice President.
8. Report on illegal sale of CSI property at Worli, Mumbai by IPP.
9. Any other items with permission of Chair.

General Body Meeting will be presided over by Vice President cum President Elect of CSI Prof. A K Nayak for the year 2018-19.

Soliciting valuable presence on 17th March, 2019 for strengthening CSI.

Sd/-

Prof. S K Yadav
Hony. Secretary, CSI

CSI COMMUNICATIONS

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Editor: S. S. Agrawal

Editorial

Prof. (Dr.) S. S. Agrawal
Chief Editor

Dear Fellow CSI Members,

"Technology is nothing. What is important is that you have a faith in people, that they are basically good and smart and you give them tools, that they are do wonderful thing with them". ***- Steve Jobs***

This issue of CSI communications touches on a very special topic in the field of computer science and technology. With the rapid advances in computer science and many other associated technologies. The human life is also changing fast. It has a great importance on the way we work, communicate and live. The papers and articles contained in this issue present various developments and trends in technology and the business in this area.

The cover story articles on "Smart Computing: An Integrated Approach for Computing" and the "Smart Computing – An Overview" present the general features of current scenario, growth and trends of this technology and its adaptation for various applications.

The researches that are being done and applied in medical sciences are nicely described in the article on "Mammography: Awareness and Preservation" by Prof. Deshmukh and Ms. Rashmi Bhale. Similarly its advance applications in communication are presented by Prof. R. S. Chauhan in his article on "Optimization using Swarn Intelligence for Efficient Communication".

Applications of AI and Smart Computing are becoming more and more important in Speech and Natural Language Processing and particularly for Indian Languages from our perspective. In continuation to previous issues, the present issue also contain good articles on "Revolution of Natural Language Processing in India" and unifying Indian languages through Neural Machine Translation. Other articles on security issue and technology applications are very interesting.

The AGM of CSI will be held on Sunday March 17, 2019. The members are requested to attend the same in as many members as possible. Information regarding conferences, events organized and the future activities planned by the Divisions/Chapters and students chapters are given.

I would like to make special mention of the article "Reminiscing on Indian ICT" written by Padma Shri Prof. Utpal Benerjee, a Veteran Eminent Computer Professional, great academician, Govt. Official and Industry Consultant. He has shared his thoughts and experiences achieved over a period of half a century – particularly about the Indian ICT Scenario, present status and the promising future. It is worth reading for all IT professionals. CSI is grateful to him for this highly valuable contribution.

I would like to thank the Guest Editor Prof. Durgesh Kumar Mishra for his keen interest and all the authors for their valuable contributions and look forward to get their cooperation in future also. My special thanks to Prof. A. K. Nayak, Vice President cum President Elect of CSI for his constant support and encouragement in this work.

With kind regards,

Prof. (Dr.) S. S. Agrawal
Director General KIIT & Emeritus Scientist (CSIR)

Message from the Vice President cum President Elect

From : Vice President, Computer Society of India
Date : 01 March, 2019
Email : vp@csi-india.org / Cell : (91) 82106 93239

In the recent days the Intelligent and Smart Computing are emerging with wide applications by utilizing the power of many advanced and Hybrid Computing Techniques. The range of techniques are consisting of Artificial Intelligence, Soft Computing, Machine Learning, Simulation and Modelling, Pattern Recognition, Robotics, Machine Vision, Signal And Image Processing, Biomedical Computing, Bioinformatics, Green Computing, Ubiquitous Computing, Cryptography etc. The advanced form of these techniques are hybridized for solving the real life problems with the help of intelligence and smart technology & smart devices. The theme of this issue of CSI Communication **Smart Computing** is of great importance as it will focus on Technology Innovation and Trend Setting initiatives in Academic, Research, Corporate, Business, Industries, Government, Education, Security and Health Care domains for the citizens. This issue will address the areas that deepen the understanding of logical, cognitive, and computational foundations of the future perspectives and exploring the most essential issues and innovations in Intelligent modeling and smart applications.

CSI AGM/NC/ExecCom Meetings

I have the pleasure to inform you that the Annual General Body Meeting & National Council Meeting for the year 2017-18 is going to be held at India International Center, New Delhi on 17th March 2019 to discuss on various Agendas circulated to Hon'ble Members & Chapter Representative respectively. The Audited Balance Sheet as well as the Annual Report for the financial year 2017-18 shall also be presented on this occasion. The Executive Committee Meeting shall also be held prior to the AGM & National Council Meetings. I request all the concerned for their kind presence for enhancing the strength, efficiency, visibility, productivity & effectivity of CSI.

Inauguration of New Student Branches

Expansion of CSI continues all over the country by establishing more & more Chapters & Student Branches. The inauguration & establishment of new Student Branches at Sreyas Institute of Engineering & Technology, Hyderabad on 25th January 2019, at Sipna College of Engineering & Technology, Amravati, Maharastra on 9th February, 2019 & at S. G. Balekundri Institute of Technology, Belagavi, Karnataka on 22nd February 2019 have set the milestone for the clear indication that more & more Academic Institutions & students are extending their faith & confidence in CSI by enrolling themselves under CSI Domain. The society achieved the substantial growth in Student Membership enrolment in the current year comparison to the previous year. I take this opportunity to congratulate the Management & Student Members of respective student branches for their great efforts.

Momentum in activities

The last month February has seen lot of activities in CSI by many of our Chapters & Student Branches with their dynamic & vibrant efforts in organizing quality activities from Local Level, State Level, National Level to International Level seminars/ workshops/conferences. All of them conducted good & quality activities. I congratulate all the respective organisors & members for their tireless effort & significant contribution. Particularly The conduct of three Regional conventions i.e Regional Student Convention of Region-I at Chitkara University, Punjab, Regional Student Convention of Region-II at Netaji Subhas Institute of Technology, Patna & Regional Student Convention of Region-IV at GIET University, Gunupur, Odisha were quite successful by the participation of more than 300 students in each with numbers of activities. I congratulate the Managements, Student Branch Coordinators, students members of the respective organisations for their pioneer efforts & leadership to organize the various events successfully & effectively in excellent manner.

Forthcoming Events

CSI is going to witness a record number events in the month of March 2019. The organization of four more Regional Student Convention, National Student Convention & two International Conferences in the Span of one month apart from many State Level Student Convention, local & state level seminars, Workshops, lecture Meetings and Conferences. Many of them are mentioned in the calendar of events of this issue. Many more number of activities are also conducted by different Chapters, Student Branches & SIGs which reports are not coming to the notice of CSI Communication & to the Members also. I congratulate & sincerely thanks to all fellow brothers & request them for communicating the reports of all activities so that the same can be published in CSI Communication.

I take this opportunity to seek the active & kind support of the Members to make CSI more Dynamic, Vibrant, Productive & Sustainable to achieve the height of excellence.

Let us come forward to make Clean CSI & Green CSI with transparent activities & visions to make it Swachh, Pardarshi & Hara Vara.

With warm regards,

AkNayak

Prof. Akshaya Nayak
Vice President, CSI

Reminiscing on Indian ICT

Padma Shri Utpal K. Banerjee
Urban Royal, I FL., 230 Madurdaha, Near Kalikapr, Kolkata-700 107 • E-mails: ukb7@rediffmail.com. Utpalbanerjee7@gmai.com.

Introduction

As an octogenarian today, I am ensconced in my study with emblems of ICT around: a desk-top (to use multiple language fonts for writing books, having crossed already the half-century mark); a lap-top (for helping to keep in touch with social media); and an I-Pad (for downloading new E-books and reading them through on 'Kindle'), – besides updating myself on Cloud Computing, Big data, Machine Learning, Artificial Intelligence and sundry other burning topics from professionally-edited issues of *CSI Communications* every month. Obviously, I take a jaundiced view of ICT: I consider it as my hand-maiden!

It was not always the case. When I leapt into my superior civil service job in the late 1950's (fresh from my graduation in Pure Physics and post-graduate studies in nuclear physics and electronics), nobody had heard of ICT. When University of Manchester Institute of Science & Technology, UK, offered an opportunity for Doctoral research on quantitative management as Commonwealth Scholar in 1968, it was like a breath of fresh air! Slogging 24x7 on state-of-the-art computers, George 3 operating system and back-breaking loads of punched cards (for my several case-studies) to ferry between machines and home was still heaven! Returning to India in 1972, Computer Society of India – with its variety of professional activities – was an Oasis to me, in an otherwise arid land. Later, discarding civil services and choosing other ICT-related career options like user industry (Tata Steel); ICT education (Administrative Staff College of India, ASCI); ICT industry (Computronics India); user management and bureaucracy (All India Management Association, AIMA), followed by free-lance ICT consultancy and national projects (involving ICT networks and interfaces) were gradual eye-openers.

The above bird's-eye view on my years at the altar of ICT is offered as a necessary prelude to what follows as my own synoptic view of the past, present and future of Indian ICT.

Dismal Past

While India's IT Services industry was born in Mumbai in 1967 with the Tata Group in forming partnership with Burroughs and the first software export zone, SEEPZ – the precursor to the modern-day IT park – was established in Mumbai in 1973, things were far from rosy. Politicians took a dim view of IT considering as "a killer of employment", as was evident when – as Programme Chair in CSI-78, Kolkata – I accosted stiff opposition of the West Bengal (British-educated!) Chief Minister pitted against IT. User industry was saddled with second-generation contraptions, when suddenly IBM decided to leave India, spreading gloom all round. It-user industry was also helpless when policy-makers in Delhi would unusually clamp down on expansion of CPU power. At ASCI, when –as Director of Computer Division – I appealed for incresing salary for my hardworking IT colleagues, the honchos from STC, Punjab Natinal Bank, Hindustan Lever, former Cabinet Secretary-- all of them in ASCI's Court of Governors – were up in arms and, despite spirited support from respected FC Kohli of TCS there, asked for my scalp. I had to resign, virtually the first victim at the altar of the new IT revolution!

With advent of personal computers and ECIL going full steam into production for the Indian market, it was the turn to e-governance. The IAS officers, who so purposefully lead our bureaucracy had to be roped in. Fortunately, Dept. of Personnel and Training, in the late 1980's, formulated large-scale Refresher Courses for the serving civilians. Leading as Director General of AIMA, I had the onerous task to bring "computers for non-computer executives' [as my monograph for IAS officers brought out by LBS Academy of Public Administration was called]. I was able to relate almost to every one out of three IAS officers in the country: through all their academies in State capitals and Mussourie. The seeds were laid, awareness grew and it was heartening to watch how these very worthy officers ushered in e-governance in the land. But the price had to be paid again, and AIMA's Governing Council was not exactly delirious with my enthusiasm for IT, – asking me to leave.

But winds of change were blowing. The Indian economy underwent major economic reforms in 1991, leading to a new era of globalization and international economic integration, and annual economic growth of over 6% from 1993–2002. The new administration placed the development of IT among its top five priorities and formed the Indian National Task Force. Wolcott & Goodman (2003), within 90 days of its establishment, produced an extensive background report on the state of technology in India and an IT Action Plan: with 108 recommendations. The Task Force could act quickly because it built upon the experience and frustrations of state governments, central government agencies, universities, and the software industry, – much of which was consistent with the thinking and recommend notions of international bodies like the World Trade Organization (WTO), International Telecommunications Union (ITU), and World Bank. In addition, the Task Force incorporated the experiences of Singapore and other nations, which implemented similar programs. It was less a task of invention than of sparking action on a consensus that had already evolved within the networking community and government.

Regulated VSAT links became visible in 1994. In 1991, the Department of Electronics broke an impasse, creating Software Technology Parks of India (STPI) that, being owned by the government, could provide VSAT communications without breaching its monopoly. STPI set up software technology parks in different cities, each of which provided satellite links to be used by firms; the local link was a wireless radio link. In 1993, the government began to allow individual companies their own dedicated links, which allowed work done in India to be transmitted abroad directly. Indian firms soon convinced their American customers that a satellite link was as reliable as a team of programmers working in the clients' office.

Videsh Sanchar Nigam Limited (VSNL) introduced Gateway

Electronic Mail Service in 1991, the 64 kbit/s leased line service in 1992, and commercial Internet access on a visible scale in 1992. Election results were displayed via National Informatics Centre's NICNET. The New Telecommunications Policy, 1999, helped further liberalise India's telecommunications sector. The Information Technology Act, 2000 created legal procedures for electronic transactions and e-commerce.

The prevailing gloom against ICT seemed to be gradually disappearing!

Promising Present

IT in India is an industry consisting of two major components: IT services and business process outsourcing (BPO). The sector has increased its contribution to India's GDP from 1.2% in 1998 to 7.7% in 2017. According to NASSCOM, the sector aggregated revenues of US$160 billion in 2017, with export revenue standing at US$99 billion and domestic revenue at US$48 billion, growing by over 13%. The United States accounts for two-thirds of India›s IT services exports.

The revolution in the ICT sector is making the world united. In today's world ICT is a key parameter for economic development. Presently India is 121st position in ICT "Development Rankings" out of a total 157 countries. Though the value of the index increased from 2.13 in 2011 to 2.21 in 2012, India's overall ranking slashed down from 120 to 121 during this period. Hence India has to improve its ICT status.

A NASSCOM Strategic Review, 2009, reflected the top sectors attracting private Equity funds in India in 2008. 107 IT & BPO units invested US$ 1567 million; 49 manufacturing units invested $ 1014 million; 48 other units invested $ 951 million; 45 BFSI units invested $ 1101 million; 33 healthcare & life science units invested $ 535 million; 28 energy units invested $ 1693 million; 24 engineering & construction units invested $ 538 million; 22 media & entertainment units invested $ 578 million: 13 shopping & logistics units invested $ 509 million; 10 telecom units invested $ 1468 million; 8 textiles & garments invested $ 323 million; 6 food & beverages units invested $ 378 million; 6 retail units invested $ 138 million; – with a total 399 units investing US$ 10793 million.

As per World Development Indicators (2007), Washington DC., ICT Status in Selected Countries (per 1,000 persons) in 2005 revealed that daily news papers, television sets, telephones, mobiles, personal computers and Internet users were respectively as follows: USA – 196, 980, 606, 680, 762, 630; UK – 326, 950, 528, 1088, 600, 473; France – 142, 950, 404, 997, 575, 430; Japan – 566,990, 460, 742, 542, 668; Canada – 168, 566, 514, 417, 700, 520; Russia – NA, 980, 280, 838, 122, 43; China – 59, 890, 269, 302, 41, 85; and India – 60, 320, 45, 82, 16, 55.

From the above indicators that I could collect, it does appear that India was at last making reasonable progress in ICT. I was directly involved in two more areas. First, Industry-academic collaboration assumed some importance and – along with Prof. PVS Rao and Prof B Nag – I was invited to IIT, Kanpur, to evolve a broad strategy on the subject in cooperation with Prof. V. Rajaraman, at the behest of Prof. Sampath, Director. Subsequently, the GGS Indraprastha University asked me to organise a national-level industry-academic colloquium. The other area was the dearth of good study material in ICT and I got involved in evaluating and recommending excellent courseware that the University of Carnegie-Melon, USA, had just made available on-line.

Glorious Future

As explored in the Net, India is today the topmost off-shoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top ICT firms in India. Indian ICT's core competencies and strengths have attracted significant investments from major countries. Leading Indian ICT firms are diversifying their offerings and Social Mobility, Analytics and Cloud (SMAC) are collectively expected to offer greater opportunities. Cloud represents the largest opportunity under SMAC, increasing at a CAGR of approximately 30 percent by 2020. The social media is the second most lucrative segment for ICT firms. The Indian e-commerce segment is witnessing strong growth, thereby offering another attractive avenue for ICT companies to develop products and services, to cater to the high growth consumer segment. The ICT industry has also created significant demand in the Indian education sector, especially for engineering and computer sciences.

Showcasing leading ideas in block chain, artificial intelligence to clients using innovation hubs, research and development centres, in order to create differentiated offerings, – our companies are well-poised to provide the right training and have been able to continuously improve their knowledge base. They have used the new technologies effectively, winning customer satisfaction and are equipped with a sound experience in dealing with foreign customers, who are very quality conscious. The recession is on its way out. The markets are looking up. To be realistic, the software industry is going to stabilize at this point, but opportunities will beckon soon..

The Indian government's 'Digital India Initiative' is a $ 1 trillion business opportunity, offering great potential to the domestic IT/ICT sector. In addition, the prospects presented by the ever expanding ICT security market & Internet of Things (IoT) is expected to be vast.

Conclusion

I wish finally to draw general attention to three profoundly destabilising scientific ideas that ricochet through the 21st century, trisecting it into three unequal parts: *the atom, the gene, the byte*. Each represents the irreducible unit – the building block of the larger whole: the *atom* for the material world; the *gene* for the heredity and reproduction; and the *byte* (or 'bit') for digitised information. In the 21st century, the *atom* has been reduced to its smallest constituents, not just nucleons, but muons, pions, neutrinos, nuclear cement and finally the "God particle" – relentlessly pursued by CERN, France and similar large labs in the USA. Eventually, all this will lead to a unified field theory, embracing gravity, electromagnetic force, large force and small force. The *gene* resides on chromosomes – the long filament-like structures – buried within cells. Humans have 46 such chromosomes– 23 from each parent. The entire set of genetic instructions, carried by an organism is termed a 'genome', and the human genome project is today revealing gradually the secrets contained in 21,000-23,000 genes that provide the master instructions to build, repair and maintain humans. The *byte* is the constituent of all algorithms and ultimately embraces all humans defining their consciousness and

natural intelligence. With robotics and artificial intelligence, on one end, we are moving to very large joblessness (with bots replacing the whole range of jobs; from drivers, attendants, compounders, paramedics, receptionists to the chartered accountants, lawyers, surgeons, doctors – aided by bg data an machine learning – doing all their jobs better than they ever could). At the other end, by grafting inorganic organs on human body, humans are – by short-circuiting Darwinian Evolution – proceeding to transform themselves from 'Homo Sapience' (wise men) to 'Homo Dieu' (divine men). And, in all three domains, the key component of all research and analysis, prognosis and diagnosis, ICT is the driving force. I invite our millennial youths to play their due role in the material, genetic and information revolutions rocking the world and charter their own road maps. The wide open world is beckoning them!

A Select Bibliography [by Dr. UKB]

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■

About the Author

Dr. Utpal K. Banerjee received his honours degree in Pure Physics (1955) from the University of Calcutta with a Graduate Scholarship and his Ph.D. from the University of Manchester, UK (1972) where he was a Commonwealth Scholar for doctoral work in Operations Research and Computer Systems.

Government and Industry

His vast experience in matters relating to information management and allied subjects stems from his close association with the Ministries of Defence, Finance, Industry and Directorate General of Technical Development where he served in senior official capacities for 17 years. His involvement was as Under Secretary, Deputy Secretary, Director and Advisor up to 1975. After resigning from superior government service, he worked with Tata Steel, Jamshedpur as their Manager, Management Services from 1975-78; with the Administrative Staff College of India, Hyderabad as Director of the Computer Division from 1978-80, and as Senior Executive Director, Computronics India, Delhi from 1980-85. During 1985-89, he was Director General of All India Management Association, Delhi, the national apex body for promotion of management, with a network of 50 Local Management Associations all over the country.

Consultancy

From 1991-93, he took over as National Project Director at the prestigious body Indira Gandhi National Centre for the Arts (IGNCA) to prepare UNDP Project Document on Multi-Media Data Base for Indian Art and Culture. In subsequent years, he has been Advisor and Consultant for Information Technology for ET&T Corporation and National Open School (NOS), Delhi; Rollatainers Ltd., Faridabad; Institute of Management Technology (IMT) and Swadeshi Polytex Ltd., Ghaziabad; Orissa Computer Application Centre (OCAC), Bhubaneshwar; and others. From 1991-2003, he has been Chairman, Governing Council for Academic Affairs, XANSA India, which is a UK-based multinational involved in software development, application management, export project services and product support, – with a strong interest in IT & management education. In 2003-05, he was Placement Adviser to GGS Indraprastha University, followed by MIT's courseware evaluation for KLG Syntel in 2005-06. He was Chief Coordinator of the highest-level 'Leaders of India' Project from digitisation to Website creation for the A-V holdings on Mahatma Gandhi, Jawaharlal Nehru, Indira Gandhi and Rajiv Gandhi.

Assignments: Overseas

Widely travelled, he was National Advisor on Information Technology from India for the Asian Productivity Organisation, Tokyo, on behalf of National Productivity Council. He delivered lectures in: London School of Economics, UK; RAND Corporation, USA; and International Development Centre,

Japan. He represented Commonwealth Secretariat in ESAMI, Arusha (Tanzania) and KIM, Nairobi (Kenya). He went to Sri Lanka, Maldives, Afghanistan and Nepal on UNESCO missions. He chaired sessions at International Conferences, for IFIP and IFORS, on informatics, computer management and operational research at Dublin (Ireland); Leiden (Holland), Hamburg (Germany); and Brisbane (Australia). He participated in Asian Association of Management Organisations (AAMO) in Hong Kong, Taipei, Seoul, Bangkok, Jakarta, Kuala Lumpur, Manila, Sydney and Singapore. He addressed the SAARC management conference in Dhaka. He represented India in a top-level delegation led by Sam Pitroda in Moscow and Riga. UNDP sent him to Pittsburgh and New York for IGNCA's multi-media documentation project.

Academia

He delivered more than a thousand lectures at: Indian Institutes of Management (IIM) in Ahmedabad, Bangalore, Kolkata and Lucknow; Indian Institutes of Technology (IIT) in Kharagpur, Kanpur, Chennai, Delhi and Mumbai; Xavier Labour Relations Institutes (XLRI), Jamshedpur; Indian Statistical Institute (ISI) in Delhi and Kolkata; LBS National Academy of Administration, Mussorie; Administrative Training Institutes at Lucknow, Shimla, Nainital, Jaipur, Srinagar and Thiruananthapuram; Foreign Services Institute, Delhi; Internal Security Academy, Mt. Abu; National Thermal Power Corporation (NTPC) and Power Management Institute, Delhi; National Management Programme at Management Development Institute, Gurgaon; CMC, Delhi; National Informatics Centre (NIC), Delhi. He was Visiting Professor at IIPM, Delhi for more than a decade, besides taking several courses in International Management Institute (IMI) and Fore School of Management, Delhi. He delivered invited talks in the CSI and ORSI Conventions all over India, apart from the Indian Science Congress in Lucknow.

As a Commonwealth scholar in the UK, he stepped in 1970-72 as a Senior Lecturer, Manchester Metropolitan University. His connections with leading universities in India have been quite intimate. He lectured in universities of Delhi, Rohtak, Chandigarh, Aligarh, Roorkee, Allahabad, Indore and Dhaka (Bangladesh). He was in several academic committees in the IGNOU since its inception and taught as visiting faculty in the MCA programme of Jawaharlal Nehru University (JNU) in 1998-99. In May-June 2002, he visited to lecture in China at Beijing University of Aeronautics and Astronautics (BUAA); Dalian University of Technology (DUT); Jiao Tong University (SJTU), Shanghai; and South East University (SEU), Nanjing. He was invited again in Oct-Nov 2003 as Visiting Professor in China to teach and take examinations in full-time post-graduate programmes at Tsinghua University (the topmost university of China), Bayhang University and South East University, Nanjing. He taught in China post-graduate programmes for a third time in September 2003 in Yunan University, Kunming.

Oeuvre

He is the author of fourteen professional books, such as, Dynamics of Formulating Policy in the Government of India, (Concept, 1980); Operational Analysis and Indian Defence (Concept, 1980); Information Management in Government (Concept, 1984); Management Perspectives (Vikas, 1984); Computer Applications for Techno-Economic Development (Concept, 1985); Computer Applications for Rural Development (Vikas, 1987); Computer Management & Planning (Tata McGraw Hill, 1987, 2nd edition); Computer, Computer (Vikas, 1987, 4th edition); Management Information System: A New Framework (Vikas, 1994, 3rd edition); Common Man's Guide to Computers (1992); Information Technology for Common Man (1992) and Computer Education in India: Past, Present and Future ((Concept, 1996). His latest books are: Practical Management Information Systems (Macmillan India, Delhi, 2004) and Management Strategy for Information Technology, (Concept Publishing, Delhi, 2007. Besides, He has written individual chapters in Indian and foreign books, and published more than 100 papers in National and International journals.

Distinctions

He is Fellow of: British Institute of Management (UK), Computer Society of India, Institution of Electronics and Tele-Communications Engineers (India) and Operational Research Society of India. He has headed two National Committees of the Govt. of India relating to computers. He has been on the computer expert panels of Union Public Service Commission (UPSC), Defence R & D Organisation, State Govt. of Uttar Pradesh and Andhra Pradesh, Indira Gandhi National Open University (IGNOU), National Crime Record Bureau, IIMs and IITs for several years. He has been Sectional President of 90th Indian Science Congress in 2003.

Interests

His experiences in IT education, strategic planning for IT, use of IT as a strategic resource and end-user computing in a distributed environment come from: Tata Steel, Railway Board, Bajaj Auto, Indian Police, NTPC (for their current project-sites at Rihand, Singhrauli & Vindhyachal, apart from their corporate planning), State Electricity Boards of UP, AP & DESU, ET&T Corporation, to name a few. These involvements have given him rare insight into Industrial and Business problems especially regarding man-machine interfaces and top management perceptions, apart from the paramount role of education and corporate training in IT.

Award

He was awarded 'Padma Shri' by President of India in 2009.

Smart Computing: An Integrated Approach of Computing

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1. Introduction:

With the use of computers and related technologies human life is changing rapidly, becoming faster and smarter than never before. Computers transformed the entire world in to a global village. Audio visual communication between the persons in any part of the world in almost no time has become possible due to computers. Computers are being used in area of art and culture, finance, print, electronic and digital media, entertainment, medical and healthcare, education, transport, law and order, defence, research, innovations and many more to mention. Obviously, human life gained momentum, became easier, simpler and smarter. As any technology is double edged sword there are few threats like security, data loss, system failures etc. too and needs to be addressed.

Like mainframe computing, personal computing, and network computing the Smart Computing technology is most recent and rapidly developing innovation and growth technology addressing the previously unresolved issues. Computing today, incorporates the use of various techniques such as machine learning, soft computing, artificial intelligence, pattern recognition, robotics, machine vision, simulation and modelling, biomedical computing, signal and image processing, bioinformatics, green computing, ubiquitous computing and cryptography with the advanced form of those techniques hybridized with swarm optimization, ant colony, evolutionary algorithm, nature inspired computing solving the real life problems with the help of intelligence and smart science. *Smart computing utilize the power of microelectronics in coordination with many advanced and hybrid computing techniques*. Present article discuses the way how and where smart computing technology works.

2. Smart Computing Technology:

Smart computing technology is related to computer hardware, software and sometimes of both. It is perfect blend of existing technologies.

a) Self monitoring, analysing and reporting technologies (SMART) are known as *Smart Computing Technology*. It monitors and detects reliability, anticipates failures of computer hard disk drives (HDDs), solid-state drives (SSDs), embedded multimedia cards (eMMC) drives and reports accordingly to the user. Its main function is to detect and report various indicators of drive reliability with the purpose of anticipating coming up hardware failures. On indication of upcoming failures of drive, software running on the host system notifies the user well in advance and alerts him to take precautionary action against data loss. With this information the failing drive can be replaced and data veracity maintained.

b) Smart Computing is a new generation technology of integrated hardware, software, and network technologies that provide information technology systems with real-time awareness of the real world and advanced analytics to help people make more intelligent decisions about alternatives and actions resulting in optimization of the ongoing processes. With smart computing the existing technologies gain new capabilities of real time situational awareness and automated analysis. Obviously, the smart computing instead of giving task solutions to be performed goes one step ahead and initiates the best possible action. It senses the happenings around, gathers the new information, analyzes it further for risks and possibilities, suggests alternatives and finely takes an action.

3. Supporting Programs and Applications:

Smart computing technology is a multidisciplinary domain. It works in combination of latest in Sensor based technologies, Internet of Things, Edge computing, Cyber-Physical system, Machine Learning, Cognitive Computing, Big Data analytics, and Artificial Intelligence. Algorithmic and system advancements of cloud computing, mobile/pervasive computing, cyber-physical systems, sensor networks and social computing are taking technology to a new dimension for improved ways of living. Sections below narrate smart computing technology that incorporate various technologies such as artificial recognition, face recognition, cloud computing etc.

3.1 Smart computing and Artificial Intelligence:

Using high speed hardware does not, by itself, guarantee a solution of particular problem quickly. Further it does not simplify the programming process. In this view, AI based software systems could of much help and perform on its own few tasks such as bookkeeping, configuration control, and internal structuring tasks. Without AI powered systems these tasks usually are carried out by programmers [1].

3.2. Smart Computing and Face recognition:

Using face recognition systems instead of just for identification and surveillance tasks, it could be employed for interpreting human actions,

intentions, and behaviour at the core of smart computing technologies. Facial expression recognition system interacts with smart environment capabilities. For example, a smart system knows whether the user is impatient as the information is being delivered too slowly, or confused because it is coming too fast. Facial expressions provide clues for identifying and distinguishing between these states. The best facial expression recognition and analyzing system must first be able to recognize and tune its parameters to a specific person. Face recognition is an integral part of wearable systems like memory aids and context-aware systems. Such smart computing systems are useful for patients suffering with Alzheimer's disease [2].

3.3. Cloud Based Smart Mobile Computing:

Mobile Cloud Computing (MCC) integrates the cloud computing technology and ubiquitous mobile network, environment overcoming certain issues related to performance, environment and security and of course with certain limitations battery life, storage capacity, bandwidth etc. With cloud computing data processing and storage happens outside the device.

Google's Gmail, Maps and Navigation systems for mobile, Voice Search, Android platform applications such as Mobile M from Apple, Live Mesh from Microsoft a Motoblur from Motorola, mobile accounting, mobile payment, mobile healthcare such as monitoring of patients activity, playing music, shopping, advertising, ticketing, gaming, learning and voice based searching based on speech recognition are served to users and are powered by mobile cloud computing [3].

In addition smart computing technology can play its key role in various public domains such as transportation, energy, environment, smart and connected communities, medicine and healthcare, banking, entertainment, agriculture, tourism, safety and well being, water and waste management, infrastructure development (for smart grids, smart transportation systems for smart cities), law, privacy and security, education, entrepreneurship and social media.

As an example, smart railway reservation system based on unique identification number of individual. Persons seeking reservation have to simply present their UID number/s and biometric inputs such as finger prints etc. The smart computing technology will then fetch all the data such as name, age, sex, photograph, bank account details from the UIDIA database and up on providing the journey details will issue the required ticket/s to the person/s verifying their identity and thus providing a better and hassle free, secure ticket reservation system. Further, it can successfully be applied at automatic ticket vending machines (ATVM) as well and ultimate reduction of the load at reservation/ ticketing counters [4].

4. Conclusion:

Smart computing technology is a new generation computing technology which integrates the existing computer related hardware and software technologies various computer architecture, networking systems and modules. Smart computing performs data processing faster and in smarter way giving real time best possible solutions with safety, security and cost effectively. It is the computing technology of future.

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Smart Computing – An Overview

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"SMART COMPUTING" is a term coined by Andrew Bartels. According to him, SMART refers to Specific Measurable / Measurement Achievable Relevant Time-Oriented and Computing to perform calculations quickly. Some of the main characteristics of SMART computing are, Flexibility , Adaptability , Responsiveness, Conditional Awareness, Spatial Awareness, Temporal Awareness, Analytics for IT Intelligence , Focuses on new business problems and so on. The objective of this article is to disseminate the building blocks of SMART computing and the application areas of SMART computing to the readers.

Building Blocks of SMART Computing:

The notable components of SMART Computing are,

- *"Ubiquitous Computing"* is a term used to denote computing at any time, any device and any location. According to **Mark Weiser**, father of Ubiquitous Computing, "Ubiquitous Computing is a physical world that is richly and invisibly interwoven with displays, actuators sensors, and computational elements, embedded seamlessly in the everyday objects of our lives, and connected through a continuous network".
- *"Virtual computing"* is emulation of real time computing environments that enable devices to access pertinent services remotely at anytime.
- *"Cloud Computing"* is a word used to share system resources such as software, infrastructure and platform over internet. Using this computing user is able to utilize service on demand.
- *"Artificial Intelligence",* emphasizes the creation of software agents or intelligent machines that work on behalf of humans, also reacts like humans to queries and reduces energy in terms of time duration and memory space.
- *"Human Computer Interaction",* the use and design of computer technology, the acts as an interface between people and machines. Now-a-days, Natural User Interface (NUI) such as voice, gesture and work, its play a vital role in interaction with the systems.

Areas of Smart Computing:

The following table gives emerging areas of SMART computing,

Areas	Purpose	Features
Smart Phones	An android phone that performs many of the functions of a computer, typically having a Internet access, voice recognition system, touch screen interface, and an operating system. etc.,	A long-lasting battery, Fingerprint sensor, and Crystal-clear display etc.,
Smart Grid	The electricity distributed and transmission mechanism to maintain a secure and reliable electricity framework that can meet the future needs of the growth.	Smart meters, Stability, Security and Standard
Smart City	An urban area that uses different types of electronic devices for data collection sensors to supply information for used to manage assets and resources efficiently.	Adequate water supply, electricity supply, sanitation, solid waste management. Urban mobility public and transport, affordable houses.
Smart Road	Its aim to combine the intelligence and sensing in highways that to reduce the hazards and hassles of vehicular travels.	Interactive light, Roadways with Solar Wind-Powered lights Electric Priority lane.
Smart Water Systems	It integrates the software, power of Sensus advanced metering technology, and proven service with the FlexNet communications system.	Data acquisition leak detection

General Features of Smart Computing:

Smart computing offers the following features to the users,

- Remote control devices, like power line communication systems to control devices.
- Device Communication, using wireless media and, middleware to form a structure of connected closed environments.
- From sensor networks the Acquisition/Dissemination of information.
- Using the Intelligent devices the services are enhanced
- Decision Making and Prediction techniques.

Conclusion:

Information technology has

enrolled a new revolution growth of innovative world with the multidisciplinary domain, is termed as 'Smart Computing'. By converging much more, from the new technologies such as the Internet of Things, Cloud Computing, AI, Robotics and so on, Smart Computing will become more flexible and sustainable in future.

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About the Author

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ExecCom Meeting

Computer Society of India™

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25th February, 2019

Dear Esteemed ExecCom & NC Members of CSI,

Sub.: **ExecCom Meeting on 17th March 2019 at New Delhi.**

Greetings from Computer Society of India !!

I wish to inform you that, ExecCom Meeting of Computer Society of India will be held on 17th March, 2019 (Sunday) at India International Centre (Lecture Hall II – Annexe), Lodhi Road, New Delhi – 110003 at 10.00 A.M.

ExecCom Member's are requested for travel plan to Sri Swapnil K., email swapnil@csi-india.org with a copy to secretary@csi-india.org and glamina@csi-india.org for necessary travel and stay arrangement/s (max 1 /2 night/s) at New Delhi.

Agenda of ExecCom is as follows:

1. Welcome Address.
2. Confirmation of ExecCom Meeting minutes held on 20th May 2018 at IIC, New Delhi.
3. Hon. Secretary's Annual report, Membership report, Administrative report for the FY 2017-2018.
4. Hon. Treasurer's presentation of Audited Balance sheet for the FY 2017-18 and appointment of statutory auditor for the FY 2018-19.
5. Vice President's report on conferences, SIG, Student branch activities for the year 2018-19.
6. Report on Legal matter's, Income Tax matter's, GST matter, Service Tax matter etc. by IPP.
7. Report on Disciplinary action against the members for violating CSI Constitution by Vice President.
8. Report on illegal sale of CSI property at Worli, Mumbai by IPP.
9. Any other items with permission of Chair.

Execom Meeting will be presided over by Vice President cum President Elect of CSI Prof. A K Nayak for the year 2018-19.

Thanking you.

Yours faithfully,

Sd/-
Prof. S K Yadav
Hony. Secretary, CSI

Mammography: Awareness and Prevention

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Introduction

As we see the trends in computing are changes day by day. In medical domain soft computing plays an important role. Previously when this was not there the traditional system has certain drawbacks like local minimization and mathematical models and so on. Soft computing tolerate imprecision and uncertainty to achieve tractability, robustness and low cost. With some limitation of traditional computing introduced the use of soft computing in CAD systems. For diagnosis process of some disease CAD systems are developed. Actually it is an attempt to overcome the limitation of human behavior.

Human body is very complicated inside as it seen very neat and proper outside. The body is divided into infinite number of disease and there symptoms. So there may be chance to skip important information by human mind, here the use of CAD human mind, here the use of CAD system plays important role. Now if we see worldwide most dangerous and largely found disease is cancer.

Cancer

Cancer can be defined as a type of diseases which characterized by out of control cell growth. Cancer affects human body when damaged cells divide in uncontrollable manner and form limps of masses of tissues which we in medical language called as tumor. Human body is made up of lakhs and millions of cell these cells grouped together to form tissue, organ. There are many types of cancer now a days affecting human body some of them are as follow

- Brest
- Bladder
- Brain
- Cervical
- Kidney
- Lung
- Thyroid
- Liver
- Skin
- Prostate
- Mouth
- Stomach(Gastric)
- Throat

So these are some common types of cancers which found largely in human being.

For a woman it is very difficult to take care of herself in her day to day life. Todays a woman plays various roles like she does all household works then she went for job. Take care of her family and maintain relation with relatives and social appearance is also there. If we see her life style she does not get time for her to think or take care of herself. The women at the age of 30 to 40 are generally comes in this category. It may happen that the cancer symptoms will be neglected by her.It is very important to make awareness about health checkup regularly.After 35 every women should go for checkup and mammography must be included in that.Following graph shows the age wise breast cancer by American cancer society

Note: Rates are per 100,000 and age adjusted to the zopo us standard population.
Sources: Incidence: North American Association of Central Cancer Registries (NAACCR), 2017. Mortality: National Center for Health Statistics, Centers for Disease Control and Prevention, 2017.

American Cancer Society, Inc. Surveillance Research, 2017

Fig.1 : Age specific female Breast Cancer Incidence Rates by Race/Ethenicity, 2010-2014

WHO (world health organization) making awareness in women for early checking and taking care of her health. one of the majorly seen cancer type in women is breast cancer; It's very difficult for anybody to identify this type of cancer. In Breast the cancer starts growth in lobules which is nothing but tissue made up of glands for milk production or in ducts. Ducts connect lobules to the nipple. The breast is made up of fatty and connective tissues.

Symptoms of Breast Cancer

Most common and can be found lump of mass , this will be detected by her own. Some of the other symptoms are given below:

- Swelling of allparts of breast
- Skin irritation
- Breats /nipple pain
- Nipple rretraction
- Red ness,scalliness or thickening of nipple or skin
- Nipple discharge(other than milk)

Dignosis of Breast Cancer

Breast cancer is generally detected at screening examination or when women notices presence of massive portion. As the breast area is massive, so most of the time it may happen the mass or lumps turnout to be benign (non-cancerous). For detection of cancer microscopic tests are also done by the experts. There are two methods to obtain tissue for microscopic examination.

- Needdle Biopsy
- Surgical Incision

There are two type of cancer seen one is invasive and other is noninvasive. In invasive type the cancer spread out in the body and in noninvasive cancer the portion will not increase the cancerous part will be same as time passes.

- Mammography

Mammography is a diagnosis technique in which mammogram images are captured by X-ray machine and digitally stored on a computer or machine. Generally a mammogram is a low-dose X-ray image. Radiologists will ask you to stand in front of the

mammography machine and then he/she help and guide to place one breast on a flat surface. This flat surface is named as compression paddle will slightly be lowered at the place to compress patient's breast. Compression is done for spreading the breast tissues and to remove motion. Motion may blur the image. At the time of compression one may feel uncomfortable, but that will not hurt patient. Compression takes place usually for few seconds only. During this few seconds compression time, an X-ray beam penetrates your breast tissue which comes from above. The image is formed on a film cassette which is located below your breast or digitally recorded and stored in a computer. After the X-ray is taken the compression will be released and then for deep study and accurate diagnosis the experts may change the angle of the machine and again the process will be repeated at slightly lower the compression paddle and take one more X-ray images. These steps may be repeated again.

Breast Cancer Risks

Many times post-menopausal breasts cancer are thought to be caused by behavioral factor such as obesity, physical inactivity, use of estrogen and progestin combine menopausal hormone. Alcohol consumption and not breast feeding.

- Family history
- Genetic predisposition
- Personal history of breast cancer
- Breast density
- Mestrual cycle
- Bone mineral density
- Endogeneous harmone levels
- Harmonal birth control
- Breast feeding
- Post monoposal harmone

	Population Based Mammography Screening Program Recommendations by age group and resource level		
Resource Level	40-49 years of age	50-69 years of age	70-75 years of age
Well-resourced settings with strong health systems[1]	Suggested, if conducted in the context of rigorous, research monitoring and evaluation	Recommended, if conditions for implementing an organized program are met, with a screening interval of 2 years	Suggested, if conditions are met and only after programs are established for women aged 50-69 years of age.
Limited-resource settings with relatively strong health systems[2]	Recommended against	Suggested, if conditions for implementing an organized screening program are met, with a screening interval of 2 years	Recommended against
Limited-resource settings with weak health systems[2]	Recommended against	Early diagnosis of women with symptomatic lesions, followed by treatment, should be the priority in this setting. Clinical breast examination seems to be a promising screening approach for this setting.	Recommended against

Table 1 : WHO recommendations regarding implementation of mammography screening programs

- Tobacco

Environmental and other Risk Factor

- Radiation
- Diethylstilbestrol exposure
- Environmental pollutants +3

American Cancer Society is working for helping people who are facing cancer. They doing everything to help prevent breast cancer and all type of cancers. They are available 24 hours a day, seven days a week online at cancer.org.

Breast Cancer Prevention:

- Keep Weight in Check
- Be Physically Active
- Eat Your Fruits & Vegetables – and Avoid Too Much Alcohol
- Don't Smoke
- Breastfeed, If Possible
- Avoid Birth Control Pills, Particularly After Age 35 or If You Smoke
- Avoid Post-Menopausal Hormones
- Tamoxifen and Raloxifene for Women at High Risk

Conclusion

Cancer is a leading cause of death worldwide today. To reduce mortality it is important to make awareness among people, So that the diagnosis and prognosis will be carried out as early as possible. Government should also take part and organize health checkup programs. American Cancer Society and WHO (World Health Organization) are working at their best.

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Dr. R. R. Deshmukh [CSI-00100518], has completed Ph.D. from Dr. B. A. M. University in 2002. He is working as a Professor in Computer Science and Information Technology (CSIT) Department, at Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) INDIA. He is a Sectional President of Information and Communication Science & Technology (including Computer Sciences) section, Indian Science Congress. He is a vfellow and Chairman of IETE, Aurangabad Chapter and life member of various professional societies as ISCA, CSI, ISTE, IEEE, IAEng, CSTA, IDES, Etc. He has published more than 160 research papers in various National and International Journals and Conferences.

Rashmi R. Bhale is a Ph.D. Student of Computer Science and Information Technology Department, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) INDIA. She has completed her M.Sc. in Computer Science. She is pursuing her research in the domain of biomedical image processing. Her Research is related to Statistical Analysis of Mammogram. She has published research papers in the International Journals and presented work in the Conferences.

Optimization using Swarm Intelligence for Efficient communication

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Introduction

Every living being communicates with each other by expressing their thoughts, knowledge, information etc. There were times when communication was tedious, and time consuming. I remember rushing to the STD (Subscriber Trunk Dialing) for a landline call, listening to cricket commentary on radio and BSNL office to post our telegram. I still remember the days when 30 people in queue used to wait for phone call. Now STD booth..... telegram's..... has been announced as 'retired'.

From the last few years, we the human beings desire efficient and effective communication for the development of business. Let us suppose, there is huge data which is to be transferred to customers where everyone seems to be in hurry. This delay in transfer of data might result in few losses for company where customer might decide to reject company services. So we are supposed to provide *maximum* but in *minimum* time. This argument is called optimization of function.

In this era, Optimization is one of the most desired mathematical studies that can be applied for various purposes to deduce important results that can serve the society in different methods. Optimization is a key verdict theory which uses any technical, precise or reasonable means concerning the optimized results in diverse operations. The area of optimization is related with maximization and minimization of methodical functions. Due to excessive utility in various areas of applied sciences, technology, finance, statistics, economics, medicine, etc. optimization holds a great role in the practical domain and the technical world. The topic is so prevalent that we even discover few optimization terms in our normal language. Consequently, there is a desire of optimization approaches that can be used to maximize or minimize the parameter to satisfy prescribed specifications. The results will surely play great role to improve the growth of any business.

The range of optimization that have been applied to tackle various problems can be classified in two general categories, firstly, the continuous methods and secondly the combinatorial (discrete) methods. *Static (exact) combinatorial optimization methods* and *Dynamic (approximate) combinatorial optimization methods* are two important classes of combinatorial optimization problem (COP). In static COP, the features of the problem are defined once. It does not varies while the problem is being solved. While dynamic COP are defined as a function of few quantities when the problem is initialized. However detailed classification of different search methods has been shown in Fig. 1.

Since the invention of transistor/ computer in 1947/the early 19th century,

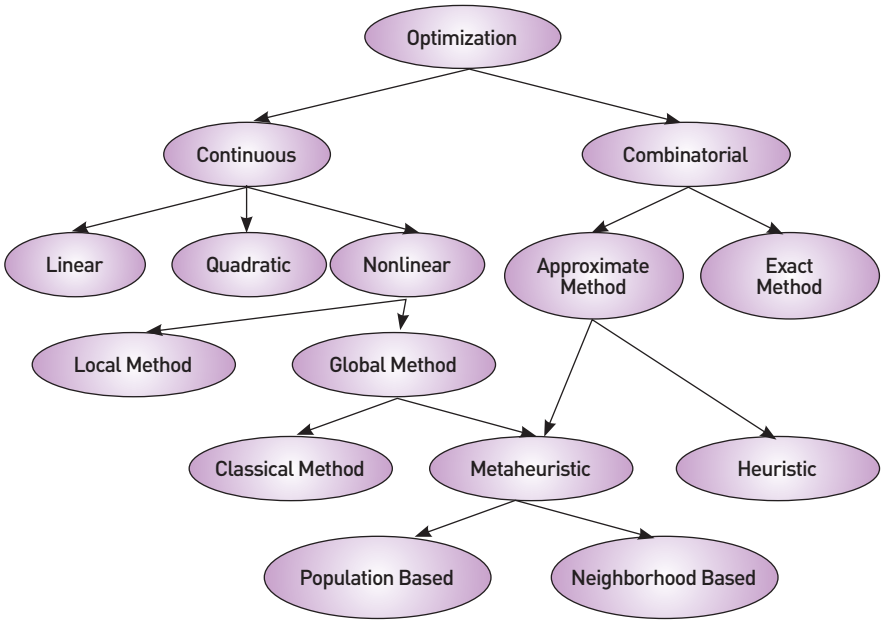

Fig. 1: Classification of common search methodologies

Processing of creating an integrated circuits by combining thousand of transistors into a single chip is changing after every year. In 2018, the transistor counts was 7.8 billion in an intel processor that is about 7.2% of 100 billion neuron in human brain so artificial intelligence is getting closure to living beings intelligence. Evolution of mankind has consistently shown an exponential growth curve both in term of intellectual abilities and in the area of science and technology.

Swarm Intelligence:

Swarm Intelligence (SI), which is an evolutionary computation or dispersed problem-solving strategies enthused by the communal behavior of societal insect colonies and other animal civilizations. It is a smart computing and developmental allegory for solving disseminated problems that initially was enthused from the biological cases provided by societal insects such as bees, ants, termites, & wasps and by swarming, flocking, herding, and shoaling occurrences in vertebrates. Elasticity, Sturdiness and Self-Organization are the major advantages of Swarm Intelligence. Particle Swarm Optimization (PSO) & Ant Colony Optimization (ACO) are at present most sought after swarm intelligence techniques that exists. PSO is a universal minimization technique for tackling with glitches in which the best solution can be denoted as a point or surface in an *n*-dimensional space. The other very popular optimization technique encouraged by reals ants is ACO.

Particle Swarm Optimization:

Particle Swarm Optimization is an evolutionary process developed by Eberhart and Kennedy in 1995. This search algorithm is population based and derives its inspiration from observing natural and routines of bird flocking and fish schooling in multidimensional space. It is a supple, strong population-based stochastic search/optimization method with implied parallelism that unlike traditional optimization methods can effortlessly deal with non-differential objective functions.

The methodology is based on simulation of bird flocking in multidimensional space. The objective function is optimized through Bird flocking. Each particle is familiar to its best value (*pbest*). This information links to the personal experiences of each particle. Furthermore, each particle knows the *gbest* i.e finest value so far in the cluster among *pbests*. Specifically, each particle attempts to alter its position using the information given below:

- Space from the current position to *pbest*.
- Space from the current position to *gbest*.

The position and velocity are denoted as $X_i = (X_{i1}, X_{i2}, X_{i3}, ..., X_{iD})$ and $V_i = (V_{i1}, V_{i2}, V_{i3}, ..., V_{iD})$ for i^{th} particle in D-dimensional space. The given equation represents the movement of particles:

$$V_{id} = c_1 * r_1 * (P_{id} - X_{id}) + c_2 * r_2 * (P_g - X_{id}) + w * V_{id} \quad ...1.1$$

$$X_{id} = X_{id} + V_{id} \quad ...1.2$$

where r_1 & r_2 are two random numbers. The parameter w is inertia weighted factor and c_1 & c_2 are acceleration coefficients.

The best previous position (giving the best fitness value) of particle i called *pbest*, i.e. vector $P_i = (P_{i1}, P_{i2}, P_{i3}, ..., P_{iD})$. The position of the finest particle among all the particles in the population is denoted by vector $P_g = (P_{g1}, P_{g2}, P_{g3}, ..., P_{gD})$ and is known as *gbest*. Each particle trails its coordinates in the problem space that is related to the best solution. The other "best" value followed by the *global* style of the particle swarm optimizer is the best value globally, and its location, attained till now by any particle in the population. This location is termed as *gbest*.

Ant Colony Optimization:

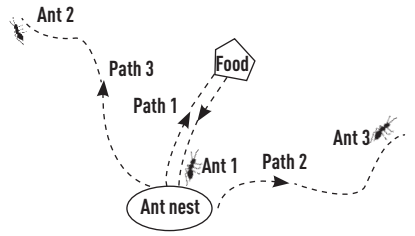

Fig. 2: Illustration of rummaging behavior of ants.

The detailed depiction of the foraging behavior of ants is illustrated in figure 2. At the first step, three ants leave their nest and move randomly in different directions in search of food. During their search for food, they leave a certain amount of pheromone trail, which will evaporate gradually but can be detected by other ants.

We assume *Ant* 1 detects a food source. That ant will take some food and then will go back to the nest by following its own pheromone trail, depositing extra pheromone on the same path while *Ant*2 and *Ant* 3 are still moving arbitrarily. During the food search by the other set of ants, they would find double pheromone on *Path* 1 than on *Path* 2 and *Path* 3, considering the evaporation of pheromone is insignificant. As the chance for a path to be followed is relative to its pheromones rate, the numbers of ants that will trail *Path* 1 in search of food, will be considerably high. And this method helps the ants to create the optimized path from their colony to the feeding bases.

Ant Colony Optimization (ACO) is an exemplar for designing metaheuristic algorithms used for COP i.e combinatorial optimization problems. Ant Colony Optimization is a metaheuristic approach where a colony of artificial ants collaborates in finding the best solution to challenging problems. Given are the basic characteristics of ACO algorithms:-

- It is versatile.
- It is strong and universal purpose.
- It is population centered heuristic.

There will be major differences between the artificial ant colonies and natural (real) ants:

- Artificial ants can retain some information to some amount.
- They can see to some extent.
- They perform in discrete time environment.

Both static and dynamic COPs can be resolved using ACO algorithms. The Static problems as the name suggests, is in which the features of the problem are fixed when the problem is well-defined and is unchangeable while the problem is being sorted out. A model example for such type of problem is Traveling salesman problem (TSP) (Dorigo and Gambardella, 1997). In

contrast, dynamic problems are those problems where the function of some quantities and its value changes. As the problem parameter varies during run time i.e why algorithm must be proficient enough to adapt to the changing environment. Network routing problems are the best suited example to explain this phenomena.

In simple terms, an ACO algorithms are based on these three basic procedures: Create Ants Solutions, Upgrade Pheromones, and Daemon Actions. **Create Ants Solutions** manages the colony of ants that synchronously & asynchronously goes to adjacent states of the problem being taken up by moving via neighboring nodes of the problem's construction graph *G*. **Upgrade Pheromones** is the method where the pheromone trails are updated. The value of trail can either be increased, as ants keep on leaving pheromone on the path they follow, or it may decrease depending upon the pheromone evaporation that takes palace. At last, **the Daemon Actions** method is utilized to execute the centralized actions that cannot be handled by single ant.

Conclusion:

Using swarm intelligence (SI), we can optimize the data which is used for the efficient communication for the growth of business. Enterprises appear to be entering a new era ruled by data through digitization. Something that was once the figment of fiction, SI has made it possible in optimization by evolving it into digital revolution for sustaining knowledge. Companies can now use swarm intelligence algorithms to identify trends and insights in vast amounts of data and make optimized decisions that potentially position them to be good in real-time. SI focuses on the linking between a customer's desire to buy and understanding of revenue by the company. This soft computing technique conglomerates a huge amount of data and machine learning to detect which products may be popular among the potential customer. It is well said *"dumb parts, properly connected into a SWARM, yield smart results"*.

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Revolution of Natural Language Processing in India

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Natural Language Processing (NLP) can be defined as the natural language manipulating automatically like text and speech. It is a diverse field to process and parse human language automatically. It is a combination of Artificial Intelligence and Computational linguistics. Figure 1 shows the basic elements of Natural Language Processing.

In our country, we are using NLP in IIT Kanpur, IIT Kharagpur, IIT Delhi, IIT Hyderabad, AU-KBC Chennai, C-DAC, Microsoft, Yahoo, AOL, 365 MEDIA, Taazaa, Reuters India etc.

The two main applications of NLP are

- **Applications based on Text**

Searching and extracting information from a database or large document.

- **Applications based on Dialogue**

Answering, Providing service over a call, controlling machines through the voice that is the instructions are given through speech. Fig. 2 shows the layered processing of inputs in Natural Language Processing.

Advanced NLP techniques are needed to be built to identify malicious languages. The interface between the NLP and security must be promising. The consumers are shifting to this latest trend and expect more advancement from NLP. So NLP has an important responsibility to provide highly secure to the user's data. The identification of malicious domains, potentially vulnerable code segments and phishing attempts are the major issues in NLP information security. So many investigations are going on applications of NLP techniques to resolve security threats. Authenticating Password and hiding data in natural language text. In authenticating the password, Password mnemonics concepts are used for

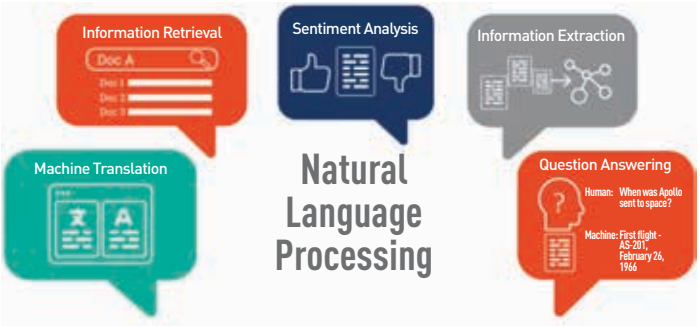

Fig. 1: Elements of NLP

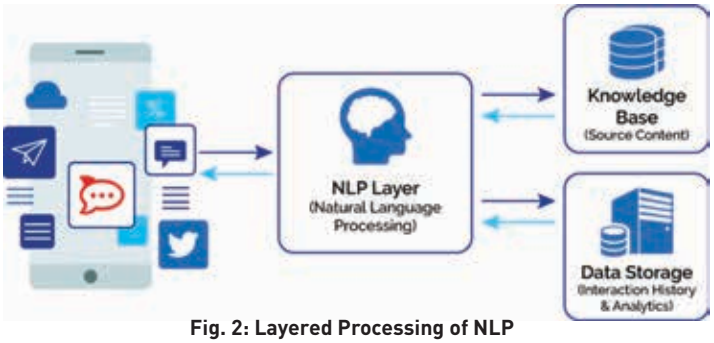

Fig. 2: Layered Processing of NLP

random passwords to remember. Text watermarking system used to avoid unnecessary removal of text.

Authorized and Secured Information (ASI):

In NLP, we are having important problems in order to secure our information. There are four ways to apply Natural Language Processing to ASI.

Natural Language and Humor Generation for Memorizing Random Strings

In this way, it specifies the construction of mnemonic to make the human remember. Meunier is the one who built software called 'Sing-a-Password' for this direction as an initial step. Modified tunes and melodies are used in order to help human to remember. In this software, lyrics have meshed with music and it can generate meaningful sentences. The other software called COPS which reveals a difficult pattern.

NLP for Watermarking

Here textual watermark is used without any changes occurred in the original text. This textual watermark will be hidden and embedded with the original text. Fig. 3 shows the step by step procedure for watermarking in Natural Language Processing.

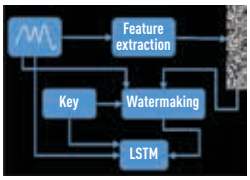

Fig. 3 Steps for Watermarking

MT Techniques for Information Security

In this way, encoding natural language as a secret message is translated automatically into another language. This technique can be the main mechanism for security or it will be an extra layer when other methods are used.

Downgrading or Sanitizing Information

Here, high network authorized users are stores and exchanges sensitive and highly secured data through a low network. The communication between the low networks and high networks are assured. Sanitized and Downgraded texts are generated from the text where sensitive data are removed.

Malicious Domain

Apart from the above-mentioned security threat area, hackers apparently use the lexical styles when deploying domains for phishing and persistent threat. These kinds of sites are identified using NLP techniques. As per the OpenDNS Security laboratories, identifying malicious websites and pages and phishing domains are done speedily with the help of techniques used in NLP. Recently OpenDNS have analyzed data which associated with attacks. These attacks are carried out with the help of the cybercrime group.

OpenDNS also discovered the variety of suspicious websites, allocating the same infrastructure and revealing patterns of similar attack. NLP techniques can be used to identify malicious typo-squatting and phishing domains as the lexical similarities used among the domains.

The *'Minimum-Edit Distance'* method is also available to differentiate and identify the legitimate and malicious domain. This method analyzes the distance between words in domains of typo-squatting and legitimate. This method can check to spell and translating speeches in other kinds of applications as well.

Recently NLP has been applied to Android security also and has got promising results. App reviews or app code and the manifest files are used for this purpose to analyze security. The framework called WHYPER detects risky applications automatically. The CHABADA system verifies description of textual applications. These systems help the user to take decisions according to the security threat.

This NLP is used a lot than human language processing and we can apply to any text in written format.

In future, NLP can be used in

- ✓ Semantic Web/Search
- ✓ Sentiment Analysis or opinion mining
- ✓ Machine translation
- ✓ Advanced speech processing application
- ✓ Social network analysis
- ✓ Collective intelligence

The Following Fig. 4 shows the application of Natural Language processing in E-Governance environment in India.

Fig. 4: Example of E-Governance through NLP

Native Language Processing used in other domains:

- ✓ Bio-medical
- ✓ Forensic science
- ✓ Advertisement
- ✓ Education
- ✓ Politics
- ✓ E-governance
- ✓ Business development
- ✓ Marketing

Conclusion

NLP plays a vital role in Data Governance. NLP collects enormous data from the users. It handles ownership of data, the privacy of a user and providing security. It has more control over whatever the user uses his data even. Google, Amazon, Microsoft, and others are the big tech corporations for this NLP. So the government needs to regulate on collecting data and disseminated data through Natural Language Processing. Especially NLP will be used for a financial purpose.

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Application of Smart Computing in Digital Business and e-commerce through Business Intelligence

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Introduction

Smart computing is a multi-disciplinary area combining advanced computational methodologies and technologies implemented through engineering approaches to develop applications, build systems, and create new services that meet the needs of the generation. It is an ever-expanding field of innovation and up gradation through research and development. It requires both creating new applications and services, as well as upgrading the old ones by improving their efficiency, reliability, and sustainability. Smart computing is not just limited to a particular file instead it is spread along a vast domain of disciplines including business, education, energy, transportation, health-care, environment, safety-security & surveillance, industrial systems and entertainment. Smart computing aims to explore and exploit advanced methods of computing and engineering techniques to meet the needs of users and society to make human life better. Smart computing is like a cloth intertwined with various kinds of fibres. Besides the significant areas of technology and engineering, smart computing includes artificial intelligence, computational intelligence, machine learning, data analytics, advanced software engineering, computer vision (including graphics and image processing), technologies with distributed computing, ubiquitous or pervasive computing, etc. along with formal approaches for performance evaluation and reliability. This article mainly focuses on the contributions of Smart Computing in the business sphere. We will see how, smart computing concepts related to Internet of Things (IoT), Cloud Computing and Business Intelligence (BI) is creating a revolutionary impact on modern digital business and e-commerce .

Today Internet is the term that defines connectivity; anyone will be connected anytime, at any place, with anything and appropriately utilizing any network/service. The enormous expansion of the Internet and data communication methodologies has created a rapid evolution of the Internet of Things (IoT). IoT has its significance and is considered to be one of the most essential tools of future computing in terms of data communication and integration. With IoT providing a universal global IT Platform to combine seamless networks and devices, the backend solution is dealt by Cloud Computing, which processes huge data streams and provides a gigantic data centre that is scalable and flexible.

Digital Age: The Importance of Data and Its Processing

The 21st century is the era of data and information and hence is called the Digital Age. Computational capabilities and digital technologies are used extensively for technical, industrial, educational and research & development activities. This century has shown a typical characteristic of a rapid shift from traditional industrial model brought about by the Industrial Revolution through industrialization, to an economy and business based on information technology. The onset of the Information Age or Digital Age is marked by rapid digitization caused due to the Digital Revolution. The evolution and advancements in Computational and digital technologies have an extensive impact on the day-to-day life and social organization. This, in turn, has led to the fact that the modernization and advancements in information and communication processes have become the driving force for societal evolution, progress, growth and development.

Today organizations have shifted their business strategies from traditional bricks and mortar to digital and online business or more specifically e-commerce. Online transactions i.e., buying & selling of products online over the Internet, electronic funds transfer, online banking (net banking and mobile banking) and modern business activities such as online marketing, transaction processing, material management, supply chain management, inventory management , production and logistics management as well as automated data collection systems are used extensively thereby generating enormous amount of data.

Joris Toonders, in his WIRED article: *"Data is the New Oil of the Digital Economy"* [1], July 2014 has pointed out the value of data in today's digital age. A quote from the article has an interesting statement which says that "Data in the 21st Century is like Oil in the 18th Century: an immensely, untapped valuable asset. Like oil, for those who see Data's fundamental value and learn to extract and use it, there will be huge rewards." In the same way, Peter Sondergaard (Gartner, Inc.), in his FORBES article: *"Big Data Fades to the Algorithm Economy"* [2], has truly said that "But for all of its value, data is inherently dumb. It doesn't do anything unless you know how to use it. Oil is

useless thick goop until it's refined into fuel." The above statements deliver the fact that as oil is useless until it's refined into fuel, similarly, data is also useless if it is not organized and appropriately processed.

Business Intelligence

Business intelligence (BI) is all about delivering the right information, i.e., relevant, required and reliable information to the right people at the right time with the objective of achieving smarter and better decisions faster. To achieve this, BI makes use of a set of concepts, procedures and methods to improve business decision making by using fact-based support systems. In other words, it uses methods and programs to collect unstructured data, convert it into information and present it to improve business decisions.

Data is some collection of raw, unstructured, random and unorganized values, facts or figures. Information is processed data, which has been organized, structured and presented in a meaningful manner. Knowledge **is a** collective combination of information, derived experience and insight that may benefit the individual or the organisation. Wisdom is the ability to use this knowledge and understanding learned from past experiences to make better decisions and judgments for the present or future course of action.

Business Intelligence (BI) can be described as the processes, technologies and tools required to turn data into information and information into knowledge and knowledge into plans that drive profitable business action [3].

BI: Functionality and Advantages

BI consists of a broad category of application programs and technologies for collecting, storing, analyzing, and providing reliable information to help organizations make better business decisions. BI applications support the activities of decision making, query and reporting, statistical analysis, forecasting, and data mining. It takes the vast amount of data generated by businesses and presents it in a meaningful and actionable way. BI includes performance management, data mining, analytics and some predictive modelling. It is all about taking the disorganized, disordered and un-clustered data and turning it into organized, ordered and clustered information.

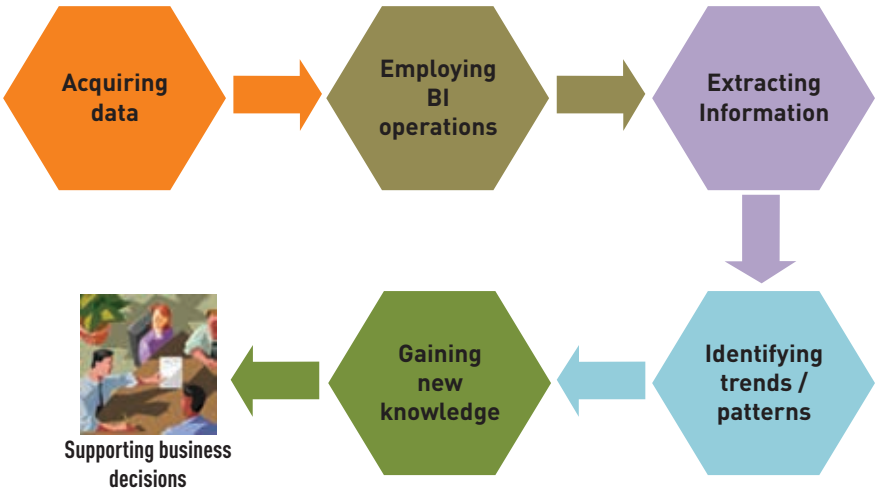

Fig. 1: Steps involved in Business Intelligence (BI)

Earlier employees have to go through complex webs of linked spreadsheets, the huge bulk of documents, to prepare organizational reports after analysing the data manually but with the advent of BI systems, now employees can request the information and will get it in no time. BI offers a significant advantage: by helping to make strategic decisions, providing real-time access to organized data, automated preparation of reports and charts for business dashboards, tracking Key Performance Indicators (KPIs), continuous performance monitoring and management and lot more. Besides this, using BI one can discover inefficient business processes, production issues, identify areas of strength and weaknesses, and discover new opportunities which will contribute to a better understanding of the organizational operations and market challenges.

Today organizations and corporations primarily focus on business-value perspective, and hence they use BI to enhance their decision-making capabilities for managerial processes such as planning, purchasing, budgeting, assessing, controlling, measuring, and monitoring activities. With the use of digital technologies, today organizations are generating islands of data. The objective is to extract the meaningful information from this data so that the business can decide its future course of actions by enhancing its efficiency, productivity and performance.

The primary benefits of using BI are be as follows:

- Accelerating and improving decision making
- Improve operational efficiency through Optimizing internal business processes
- Driving revenues by incorporating new business strategies.
- They are gaining competitive advantages over business rivals.
- Identifying market trends by Customer Analysis and Behavioural Analysis
- Identifying business problems and hence addressing them

BI: As a Solution for Improving Business Decisions

With business intelligence, companies have greater insight into their organization, thereby yielding new opportunities, strategies, corrections to existing flaws and errors, competitive advantages, and lot more including the ability to identify top-selling commodities by area, store, or salesperson, generate financial and business-oriented reports, identify market trends, track business competitors and probable risks, etc

With the rising competition in the global market, enterprises are rapidly employing IT to conduct business electronically. As a result, a variety of business software//tools, such as Enterprise Resource Planning (ERP), Material Management (MM), Supply Chain Management (SCM),

Production Management (PM), Customer Relationship Management (CRM), etc are increasingly used to gather enormous amount of business transaction, supplier as well as customer data [4]. Now using BI, these varieties of operational and transaction data are transformed into information and then to knowledge. This systematic acquisition, collection, analysis, extraction, interpretation and exploitation of information help enterprise decision-makers take better business decisions.

BI helps to improve business decisions, by making use of information from multiple sources, experiences and assumptions to develop an accurate and precise understanding of the business dynamics. BI comprises of several objectives which include, gathering data from various sources then transforming this data into information and then to knowledge. It also provides a friendly graphic interface to display this knowledge. BI process works to transform data into information, and then knowledge using analytical tools, such as data mining (DM), online analytical processing (OLAP), visualization etc. Data mining can be defined as the process of analyzing and sorting large data sets to identify patterns and extract information from them. It includes data processing, data classification and clustering, along with the application of some advanced algorithms related to data analytics.

On the other hand, OLAP is a powerful technology extensively used with BI applications. Basically, it makes data discovery by performing multidimensional analysis of business-related data and provides the capability for trend analysis and help to get the insights and understanding of business activities for better decision making. Finally, these analytical findings and generated knowledge is presented in forms of reports, graphs, summaries, charts, dashboards, maps, etc. to provide organizations with detailed intelligence about the state of the business and hence supports the business decisions.

Business Intelligence has brought a new wave that continues to evolve by offering smarter, effective and sophisticated analytics capabilities to the business organization. BI helps to describe the past and current state of the business. It tells us, how the business was and how it is doing currently. BI offers a way for organizations to examine data by analyzing and interpreting it, to understand the hidden trends or patterns and derive insights which support the business decisions and opens the door for improvement and overall growth of the business.

BI: Flow Diagram

With the advancements in the fields of smart computing, Business intelligence is gaining enormous power and efficiency through which it can put a good impact on business growth. Due to the extensive span of the internet, and the vast amount of users connected to it, petabyte of data is generated every second. Moreover, due to fast online transactions, this data is sometimes beyond our imagination, and because of its vastness, this data is often called "big data". The challenge lies in extracting useful information from this huge amount of unstructured and unorganized data. The information extracted from big data can be used to make better business policies and decisions that will help the business to prosper. Here, we can make use of advanced, sophisticated processing algorithms such as predictive analytics, customer behaviour analytics, or some other advanced data analysis methods that will efficiently and effectively extract value and information from the gigantic data sets. In other words, we need to process, explore and analyse the data, to mine useful patterns and information out of that for the business prospectus. Such data mining tools for big data analysis and business intelligence can make use of machine learning and predictive algorithms to extract the required stuff and detect the possible business trend. Predictive algorithms use advanced predictive analytics to extract information from massive data sets with a goal to discover unknown patterns, complex relationships, recognize and forecast possible trends, find associations, etc. It allows business to gain huge business cognizance and insight that will help to anticipate the future and make better decisions.

Fig. 2 provides an overall high-level view, on how the various disciplines of smart computing are blended to form a gigantic integrated system. The left side depicts the various business software/ tools extensively used in business organizations, such as e-commerce , Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), Material Management (MM), Production Management (PM), etc.

The top portion in Fig. 2, displays the large ecosystem developed and maintained by the Internet of Things (IoT). This network is a collection of

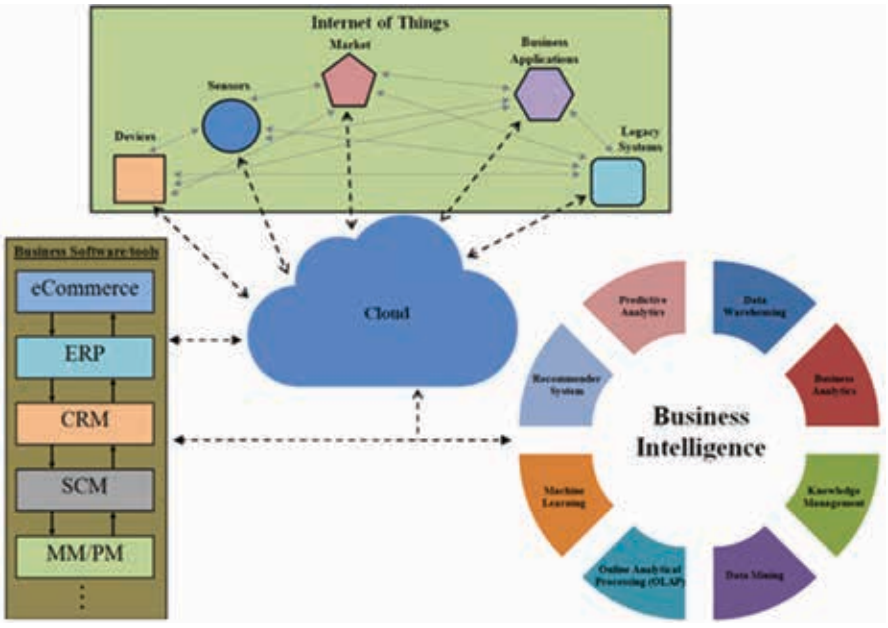

Fig. 2: Business Intelligence (BI) Flow Diagram

numerous computing devices, sensors, business applications, market, legacy systems, etc., which collects and integrates data from different devices and applications. It then applies analytics to explore the valuable information of utmost importance.

The central portion in Fig. 2, shows the global platform provided by cloud computing. The cloud has great importance in today's digital market. It provides safe, scalable, elastic and flexible storage capabilities. Apart from that it also provides various facilities such as Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS) and most importantly Integration platform as a service (iPaaS). iPaaS is a suite of cloud services that provide effective integration platforms for data and application integration.

The rightmost half of Fig. 2, shows the Business Intelligence (BI) module. The segments encircling BI displays the systems, algorithms and analytical components used by BI, these include business analytics, data mining, OLAP, predictive analytics, machine learning with artificial and computational intelligence, recommender systems, etc. All these subsystems are connected together with the capabilities to exchange data among them. BI collects data either directly from the business software or the cloud. It then applies its analytical capabilities to extract high-level information, patterns and trends.

BI: Importance in e-commerce

Over the last two decades, there has been an expeditious evolution of e-commerce in the national and international market. With the internet as the backbone, e-commerce has changed our way of shopping. From marketing, shopping, advertising, to purchasing of products, goods, and services; e-commerce has been a single point of interaction between buyers and sellers over the internet or digital market. This has completely changed the lifestyle of the customer community and has pushed them towards more comfort zones. It is like a boon for business houses and customers since by sitting at home one can do their business transactions.

Information is the rudimentary item for decision making. Business development depends a lot on the timely availability of accurate information. Timely access to accurate information is a vital thing in business management since it determines the position and growth of a company in the competitive market.

With advanced business intelligence, business organizations can outline and gain information about

- Top performers
- Business rivals
- Customer trends analysis for customer preferences and behaviour
- Marketing campaigns
- Sales activities
- Inventory and stock management, etc.

The information obtained through business intelligence help business managers to formulate and develop typical business plans and policies to make the business grow. These business decisions are quite critical and business specific. Advanced data mining and recommender systems can be used to analyze customer buying trends. This analysis includes customer's affinity towards particular products, brands, their possible price ranges, as well as the kind of customers attracted towards that product, i.e., customer's gender, their age range, social status and income range, etc. Apart from that, the ability of BI reporting allow business managers to recognize key performance indicator and point out possible problem regions thereby drilling down further to find the root cause of the problem and ultimately find a optimum solution or probable workaround to fix the issue.

BI: For Business Management & Performance Monitoring In e-commerce

Advanced Dashboards and Performance Scoreboards can be used as some of the high-tech BI components for tracking business performance to meet the business objective or goals.

Through the advanced dashboards, significant and diversified information related to business can be put together and presented in a single interface. This will allows business managers and necessary stakeholders to get a high-level view of the state of their business, related to production, sales, marketing and distribution, advertising, and customer buying statistics. These advanced dashboards will help the stakeholders to get a glance at the entire business.

Now, every business has some predefined milestones and objectives. Based on these, business managers set the course of action, with an aim to meet the milestone and hence objective as quickly as possible. Performance scoreboards can be used to provide measurements, related to the extent, the targets or objectives of the business has been achieved. With interactive graphical depiction, they will show up the areas, which require immediate attention and monitoring. These Scoreboards can further help managers identify business areas where the actual performance is not up-to-the-mark and is lagging behind expectation.

Conclusion

Smart Computing along with its associated concepts and technologies has created some remarkable and uncountable contributions to the digital business domain. Business intelligence coupled with predictive analytics is providing new tools for understanding business requirements, customers' needs, and business challenges and responding to market changes. Besides providing immediate access to real-time data, BI is continuously evolving and strengthening its capabilities to support decision-making and performance monitoring in business. It is because of these technologies that today, digital business or e-commerce is touching new horizons and leading the world towards economic development.

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Unifying Indian Languages through Neural Machine Translation

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The World is evolving, people meet new people and come across new languages. Some of which they might not know and hence, Machine Translation is an emerging technology as the conventional human translators are both time and extensive money consuming. Machine Translation is used for translating text or speech from one language to another using software or dedicated hardware devices. The two widely used and common engines for Machine Translation are Rule Based Machine Translation (RBMT) and Statistical Machine Translation (SMT).

This paper explains about Machine Translation and Neural Networks it also explores the implementation of Neural Network for Machine Translation, the challenge involved in Neural Machine Translation and why the world is turning towards Machine Translation to complement their Translation process.

General Terms : Machine Translation, Rule Based Machine Translation, Statistical Machine Translation, Neural Network, Deep Learning.

Keywords : Machine Translation, Neural Network, Neural Machine Translation, Deep Learning.

1. Introduction

The world is a very vast and diverse place, and when it to languages it is even immense. India itself has 22 registered languages and more than 108 native languages (counting only languages with more than 10,000 speakers) according to census 2011.

Translation is a process of converting one language to another language in such a way the essence or the intent of the initiator is delivered to the receiver if an intact form. The input language is called the source language, while the output or destination language is called the Target language. The process opted for this conversion is referred to as Translation, and when this translation is carried out with an aid of a computer system or solely on a machine, then it is called Machine Translation. Machine Translation can be best described by quoting the words of Warren Weaver as,

Warren Weaver on translation as code breaking (1947):

When I look at an article in Russian, I say: 'This is really written in English, but it has been coded in some strange symbols. I will now proceed to decode'.

We are surrounded by new languages, since sometime we meet new people or come across the language via internet while we are chatting or reading some articles. Modern technological advancements allow us to seek and get a very rich data or information pools. Some of these data, as discussed earlier are in languages that sometimes we do not understand or have not even seen before A large number of web clients, who have meaningful information of our interest are always online, but we fail to communicate with them as a result of language barrier. The idea of machine translation has driven an interest and created an enthusiasm for fully electronic machine translation or at least a computer assisted ways to deal with translation. If we look around we have already been using machine translation in our day to day lives , like when we use Google translate to get the meaning of some word in our native language or when we translate a webpage like of china or Korean webpages.[1]

"The effective integration of physical, digital and human system in the built environment to deliver sustainable, prosperous and inclusive future for its citizens" [2]

2. Machine Translation

Machine Translation or simply MT fundamentally described, are types of computational lexical and language designing which uses software to translate text or speech from one language to another.

Some most common techniques of Machine Translation:

1) Statistical Machine Translation (SMT)
2) Rule Based Machine Translation (RBMT)
3) Example Based Machine Translation (EBMT)
4) Hybrid Machine Translation

3. Statistical Machine Translation (SMT)

Statistical Machine Translation (SMT) has been quite the prevailing translation methodology for quite a long time [5]. hands-on applications and on ground implementation of SMT are normally using the Phrase-Based-System (P B M T) which translate chunks

of phrases or words while the length of the inputs, that is these phrases or words may vary[6]. Although earlier there may not be any direct implementations of Neural Machine Translation however the neural networks in general have been utilized like a segment inside SMT systems having a few achievements also. Maybe a standout amongst the most outstanding experiments included the utilization of a combined vernacular model (including both input and output languages) to learn or train phrase representations [8] which produced an amazing progress when integrated with the phrase-based translation.

The SMT approach also contains some parts of Phrase based Translation system in its operational methods and so it also inadvertently inherits some of its limitations. Some other suggested methodologies to learn phrase representations [9] or training end-to-end translation through neural systems / algorithms showed some good intermediate results, but at the end got more worse accuracy against the standard phrase-based systems. Here the basic idea of this end-to-end learning for machine translation has also been undertaken previously also. While the translational precision of these algorithms have been motivating, thorough comparison and correlation with prevailing large scale, superior phrase-based translation systems has been deficient and inadequate.

1980s :	IBM
1990s :	Increased Research
Mid 2000s :	Phrase Based MT (Moses, Google)
Around 2010 :	Commercial Viability
Since mid 2010s :	Neural Network Models

4. Rule Based Machine Translation (RBMT)

Now The Rule Based Machine Translation Systems or simply RB-MT were the system in common and rigorous use in the past due to the lack of high computational and processing powers. In addition, the high storage space requirements were very expensive to cater, for storing the training data. Even today there are instances where rule based translation

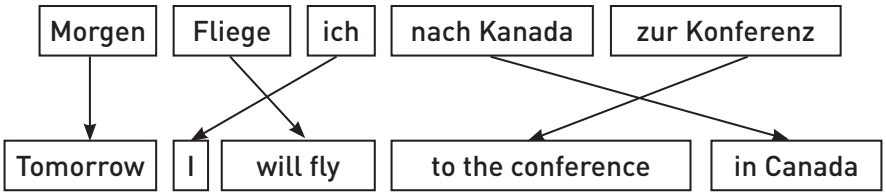

Fig. 1: Phase Based Translation (German- English) [13]

does better than the statistical or neural methods. These cases include poetic devices, complex sentences and also when the statements to be converted are long or lengthy . These types of sentences are difficult to manage my statistical or neural methods since they may also include complex Semantic and syntactical configurations. This method requires a greater knowledge of linguistics and grammar. The most common error generated in this type of system is the incorrect ordering of words in the newly formed sentence as the word arrangement rules may be different for the two languages in operation.

"Both syntax and semantic analysis modules analyze the sentence and then transform into the interlingual tree" (sic) [10]

5. Example Based Machine Translation (EBMT)

The EBMT or Example based machine translation perform the operation of interpreting the statement from one given language to another by breaking down the process of translation into simpler sub-process, which are comparing the input statement for any pre existence in the bilingual corpus(conversion dictionary) also referred to as Matching. In the next step the excerpt pairs which are the correct matches of the input sentence segments are extracted to form the new sentence in destination language this process is called segment retrieval. Finally all the segments found are reordered / rearranged to form a meaningful sentence in the destination language and this task is transfer. Now, because the EBMT system is only comparing the input sentence in its bilingual example dictionary called the bilingual corpus it is also called source-similarity based translation. An indigenous machine translation system in India ANUVADAKSH [15], developed for translation between English and Hindi is an example of EBMT and SMT.

6. Neural Machine Translation

Neural Machine Translation (NMT) can be understood as a total statistical approach for managing machine translation, with the likelihood to solve or remove an extensive number of the deficiencies of conventional articulation based or rule based translation structures. Grievously, it is understood that NMT structures are computationally very costly and expensive both in getting ready that is the training/development as well as the actual translation operation. Besides, many NMT structures encounter issues with unprecedented or uncommon words. Issues like this have slowed down the usage of NMT in potential sectors and organizational scenarios, where exactness / preciseness along with minimal time consumption are crucial.

7. Case Study:

Google Neural Machine Translation (GNMT)

Some very well-known works in this area includes the GNMT (Google's Neural machine translation) system, which tried addressing to a significant section of such aspects. The G N M T model contains a deep LSTM (Long Short Term Memory) system/ network with 8 layers of encoders and 8 decoders "using attention and residual connections". To improve the parallelism and, in this way, lessen the time required for training set processing or training time, the "attention mechanism" as they describe it in G N M T Connects bottom layer of decoders with upper (or top) layers of encoders. To escalate the last translation speed even further, GNMT uses low exactness or low accuracy scheming in the while the inference computation. To upgrade the management of uncommon on unprecedented words, the GNMT splits

the words into limited units of common word units ("bits of words" or "word pieces") for inputs as well as outputs. This technique according to Google gives a nice balance between *"the flexibility of character - delimited models and the efficiency of word - delimited models"*[3] generally handles the translation involving some uncommon on unprecedented words or phrases and, finally, improves our over-all accuracy by the translation system. The GNMT deploys a technique called a " Beam Search Technique ". The Beam Search Technique or the BST uses a length normalization methodology and usages a degree discipline with coverage penalty, that actually reinforces the generation of a translated sentence that is the final output which will perhaps cover each one of the words in the source sentence.

"At the WMT'14 benchmarks from English to French and English to German, GNMT achieves competitive results to state-of-the-art. Using a human side-by-side evaluation on a set of isolated simple sentences, it reduces translation errors by an average of 60% compared to Google's phrase-based production system."[3]

8. When do we need and use Machine Translation without even knowing it

We have been using machine translation in our day to day lives for quite a long time and have not even realized. The need of Translation on the go craved a need for embedding the machine translation systems or their api(s) into the most commonly used applications, systems and services like the search engines and mailing clients. In today's world our communication and information exchange are not just limited to any particular geographical area region or any particular language. We now communicate with the world including it's diverse domain of languages. Therefore, if we are using a search engine or browsing a web page, it may incorporate data in various languages, some of which we may not know. Same can be said for the emails , we may be communicating with people from dissimilar language background. To have effective communication a translator has to be used, in situations like these machine translation plays its roles.

n(<times appear>|<word>)	probability of the number of words in the target language that the source word generates
p-null	probability of a null word appearing
t(<t-word>|< s-word>)	probability of a target word, given the source word (i.e., what we've seen so far)
d(<t-pos>|<s-pos>)	probability of a target word appearing in position t-position, given the source position s-position

Table 2: Components of identification in IBM model [12]

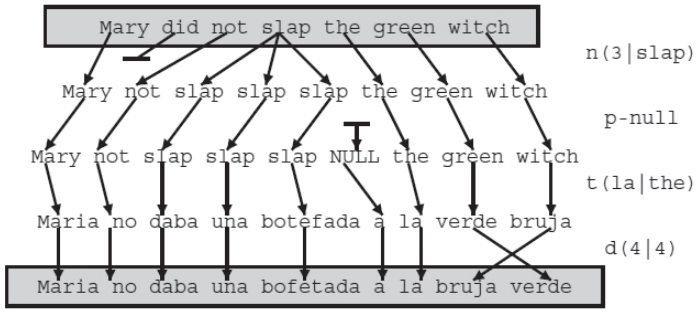

Figure 2: IBM Model- Generative Story [12]

Second Role of machine translation is when the amount of vocabulary is limited also the range of sentence is small. A few examples of this are like translation of user manuals or technical manuals to an easier and more understandable text. Weather report translation is also an implementation of machine translation. Multilingual countries which also includes India need the machine translation to translate their laws, constitution or other governmental and official documents in all the officially registered languages to maximize the reach of document in the citizens and also to be unbiased towards all the officially registered languages.

9. The IBM Model

IBM uses probabilistic machine translation or in simpler words, it uses statistical machine translation. These probabilistic or statistical translational models are considered models that are more sophisticated, they treat the problems as a source or input language producing the target or output language and talking into consideration the statistical measurements like probability below:[12]

10. Scope and Challenges of Machine Translation

In previous sections the advantages and working of machine translation systems were discussed also is possible scopes were highlighted. This section talks about some challenges in the processing of a machine translation system. The major challenge is the difference in the languages lexically, syntactically, semantically, and pragmatically.

The term Lexical difference infers the differences in the words that the two languages in operation or processing incorporate like some words having different meanings depending on the sentence framing. This phenomenon of words having different meanings is referred to as Lexical Ambiguity. Some examples of Lexical Ambiguities could be the homographs in English language like address, where it may refer to a physical location of staying and may also imply as to give a speech. Compound is both an enclosed area with a building or a mixture of some substances. Bank , it can have multiple meaning, one of which is the shore of a river, another is the financial institution which stores and protect our money, and in some cases it also denotes the turning of aircraft with inclination.

Next hurdle in machine translation is the semantic relationships. For example while converting from English

to German; there are many points to be taken into consideration. English is a Gender independent language, but German language has three genders Male, Female and Neutral while talking about non-Living things. Bus is non living thing so it is neutral in English but it is Masculine in German. Another very common example of semantic relation while building English to German translator is, the English word library is translated to Bücherei for referring to public Library. However, same English word is translated to Bibliothek when intended to denote a Scholarly work.

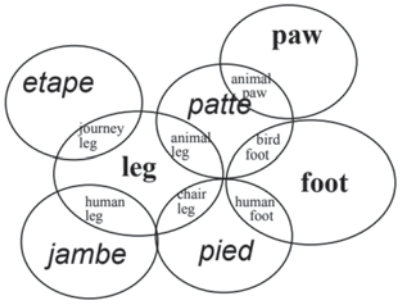

Fig. 3: Semantic Overlap French-English (Venn Diagram)[14]

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IOT Security: A Big Challenge

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Iot is itself a huge field. Even now a days iot has come is daily use and it is important to secure our device from hackers who can hack our iot device and misuse the device. As Iot is an emerging technology and is connected through internet it is vulnerable rit now and that is why its security is the main issue these days. Many Iot devices comes with the old operating system and software and it is difficult for users to change the default passwords and even if they do so they cannot come with any strong password. Thus, Iot devices are directly connected to the internet so that it can b directly monitored and if there is any vulnerability then action can be taken.

Index terms: IOT, IOT security, challenges, solutions, latest technologies, ongoing researches

I. Introduction

According to many great researches it is assumed that there will be 21 billions devices connected to IoT by the 2020.IoT security is the area of effort botherd with security of connected devices and network in the IoT. When in 1990's the idea of IoT was introduced, the large number of security experts were warned of potential risk of unsecured device connected to internet. In 1982,the concept of a network of smart device was discussed. It was discussed with the advanced coke machine at **Carnegie Mellon University.** It was the first web based gadget which was able to tell stock details and also that whether loaded cokes were icy or not. The IoT concept become popular in 1999's,by Kevin Asthon, through Auto-ID center at MIT and related market-analysis publication. He thought Radio-frequency identification(RFID)as an essential thing for IoT at that time.

In 2016, IoT developed when the customary field of implanted system, wireless sensor network, control framework, home and building robotization empowered to IoT. That is the merging of numerous organizations including omnipresent remote correspondence, continuous investigation, machine learning, group sensor and inserted framework

Challenges in IoT security:-

As IoT is an emerging technology and is connected to internet so its vulnerable. To secure devices it is important to have a good and simple security for the IoT devices. Sometimes it is difficult for users to change the default password of devices and if they can some are not able to set a strong password. It is a great challenge to secure the IoT devices. There are many fields yet where there the security is still a big issue.

Embedded sensor structures used as a piece of current machine-to-machine (M2M) correspondence, shrewd vitality frameworks, building and home motorization, vehicle to vehicle correspondence, wearable gadgets and other preparing contraptions speak to most of the IoT correspondence that happens. Most introduced gadgets are little and are proposed for low power use with confined accessibility. The dealing with farthest point and memory required to play out their assignments is similarly to a great degree compelled notwithstanding some are ease and essentially unimportant. Each one of these parts could end up being a preventing variable in encryption and other solid wellbeing endeavors. With immense measure of data IoT gadgets make and talk about back to the cloud for examination, it is indiscreet to acknowledge that all structures can scale to oblige the exchange speed, power, amassing and enlisting limit anticipated that would manage this store.

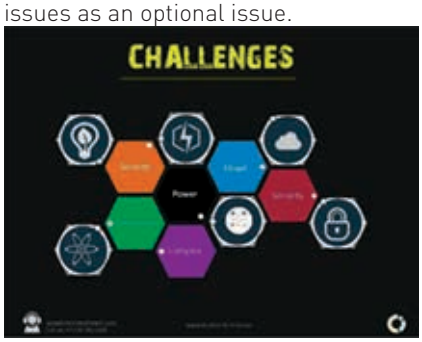
To create more security based and attack proof IoT enabled gadgets and applications following are some ideas for its security-

Data collection, protection and privacy-The primary guideline of IOT is to make person's life advantageous and upgrade the effectiveness of representatives of corporate world. The gathering of information of people and corporate world's will enhance our choice taking force and will enable us to make more brilliant choices. Be that as it may, accommodation bring some terrible effect so information gathering will have some security and protection concerns.

And Apart from above when everything will be connected to the internet, daily common items can be easily exploited by cyber criminals to get access to the devices. Sensors send information to the various data preparing subsystem over the web where positive execution of encryption system is required to keep up the information respectability at the layer of data handling. Likewise, security systems must be formulated and connected to guarantee the safe exchange of the transmitted information and prepare for unapproved impedance or abuse of the information being transmitted over the system.

Big Data-The more associated we turn into, the more interruption we're probably going to see. What's more, to the extent the IOT is concerned, it might as of now be past the point where it is

possible to give a protected situation. This might be viewed as a skeptical view by a few , however one thing the vast majority can concede to is that the IOT has some real security issues to address. All the all the more squeezing is the way that we're taking a gander at the quantity of IOT devices to reach up to 50 billion before the decade's over. These gadgets utilize information — monstrous measures of information that can detail some exceptionally private data. That implies massively individual information is at danger of burglary or spilling. Those businesses that make IOT devices might need to guarantee that data is kept private, yet for the time being, it shows up they see security and enormous information issues as an optional issue.



Encryption of Data - IoT applications collect various data. Getting data recuper and readying it is the basic bit of the whole IoT condition. Most of these data is important to be guaranteed through encryption.

To address this IoT security issue you can utilize Secure Sockets Layer custom or SSL wherever your information is open on the web. Zones beginning at now utilize SSL certification to encode and ensure the client's information on the web. This is beginning late half piece of the condition other half is to secure the remote custom side. While information is being exchanged remotely it needs encryption also. Touchy information like spaces should be enthused about be concerned client and nobody else. Consequently promise you utilize a remote custom with inbuilt encryption.

Authentication of Data - Surely, even after exceptional encryption of data,chances of contraption get hacked itself exists. On the off chance that there is no certifiable way to deal with oversee set up the validness of the information being shown to and from an IoT contraptions, security is traded off.

Side-channel Attackes - Encryption and bolster both set up still leave scope for side channel ambushes. Such attacks concentrate less on the data and more on how that data is being appeared. For example if some individual can get to information like masterminding data, control utilize or electromagnetic release, the vast majority of this data can be utilized for side channel assaults.

Solutions for IoT security:

As IoT is still emerging and is having huge challenges, it is really important to get its solution as soon as possible. There are many fields yet where the security is poor in IoT field.

Following are some topics for secured testing of hardware

Range of Device - Degree course of action of the IoT devices is central. You should make certain about the range estimations for your application or devices. For example on the off chance that you are utilizing Zigbee advancement to engage your contraption's framework you should discover what number of repeaters you will require inside a foundation to give correspondence range to your gadget. Be that as it may, you can't indiscreetly put any number of repeaters as with developing number of repeaters the purpose of constrainment of your structure decreases. In this way contraptions go testing will connect with you to locate that sweet spot where you can extend the range without finishing the cutoff .

Latency and Capacity–Limit is the bps (bytes every second) dealing with speed of your system while dormancy means the aggregate time taken for information exchange between the application endpoints.

Experts dependably search for approaches to manage expand cutoff and inaction of their IoT applications to enhance execution. Issue is both these parts are on the other hand proportionate, enhancing one corrupts the other. Information raised contraptions and applications ought to be outright taken a stab at lethargy and limit change.

Manufacturing Test– It is now and again that you will amass you IoT gadgets with no planning in solitude. As a general rule, you will be using part and module manufactured by others in your application. Testing these modules in solitude for honest to goodness working is basic.

Makers continually do the mechanical era structure testing on their end yet you ought to in like way certify the same. Moreover when you set up every last one of the modules together on a board testing is required to ensure there are no messes up displayed in light of joining and wiring. Manufacturability testing is fundamental to ensure your application goes about as it is needed to.

These are some concepts that can be used to make new softwares for IoT security.

Current Status of IoT Security:

An examination supported by the U.K's. Government Office for Science anticipated that by 2020, the amount of related contraptions could be some place in the scope of 20 billion to 100 billion, so we shouldn't expect IoT devices are too little to be in any capacity observed. As the Internet of Things ponder keeps on grabbing balance and more related devices come to feature, security should be best of mind.

Trying to apply regular controls to the IoT is an overwhelming errand and would require noteworthy planning to address the various goals these gadgets have.

New Solutions for IoT Security-

IBM starting late discussed the end customer's need to place stock in the validness of the endpoint gadgets (the thing). This is a result of the way that it may store information and possibly impact your provoke physical condition, putting the attention on singular

assurance.

One other part to note is the correspondence between the thing and the cloud-based application or structure. Sending data to the cloud infers the application has full detectable quality into the way IoT devices are being used.

Latest Trending Technologies in IoT:

WikiLeaks' trove of CIA reports uncovered that web related TVs can be utilized to cryptically record coversations. Trump's knowledge Kellyanne Conway accept that microwave grills can keep an eye out for you—possibly she was inferring microwave cameras which no two ways about it can be utilized for discernment.

As showed by Forrester's examination, here's summary of the 6 most slanting progressions for IoT security:-

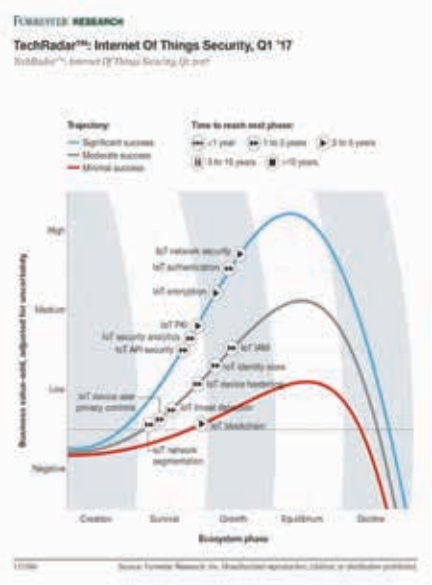
Network Security of IoT-Ensuring and securing the framework partner IoT gadgets to back-end systems on the web. IoT mastermind security is more trying than ordinary framework security in light of the fact that there is a more broad extent of correspondence traditions, models, and contraption capacities, all of which act significant issues and extended flightiness. Key limits fuse ordinary endpoint security components, for instance, antivirus and antimalware and furthermore unique components, for instance, firewalls and interference suspicion and acknowledgment systems. Test venders: Bayshore Networks, Cisco, Darktrace, and Senrio.

Authentication of IoT- Giving the capacity to clients to endorse an IoT contraptions, joining overseeing different clients of a solitary devices, (for example, a related auto), running from clear static puzzle key/pins to all the more exceptional certification fragments, for example, two-factor check, automated approvals and biometrics. Not in any way like most meander systems where the check shapes join an individual entering a capacity, different IoT attestation conditions, (for example, inserted sensors) are machine-to-machine based with no human mediation. Test merchants: Baimos Technologies, Covisint, Device Authority, Entrust Datacard, and Gemalto.

Encryption of IoT- Scrambling information still and in go between IoT edge contraptions and back-end structures utilizing standard cryptographic checks, keeping up information uprightness and suspecting information sniffing by programming engineers. The wide collection of IoT contraptions and equipment profiles obliges the capacity to have standard encryption techniques and conventions. Additionally, all IoT encryption must be joined by comparative full encryption key lifecycle association shapes, since poor key association will diminish general security. Test shippers: Cisco, Entrust Datacard, Gemalto, HPE, Lynx Software Technologies, and Symantec.

Security Analytics for IoT- Social event, totaling, checking, and normalizing data from IoT gadgets and giving critical reporting and advised on specific practices or when practices fall outside developed methodologies. These game plans are starting to incorporate complex machine learning, artificial learning, and gigantic data methodologies to give more farsighted showing and inconsistency area (and diminishing the amount of false positives), yet these capacities are up 'til now rising. IoT security examination will dynamically be required to recognize IoT-specific ambushes and intrusions that are not identified by ordinary framework security game plans, for instance, firewalls. Test dealers: Cisco, Indegy, Kaspersky Lab, SAP, and Senrio.

IoT API Security- Giving the ability to affirm and concur with data advancement between IoT gadgets, back-end structures, and applications using detailed REST-based APIs. Programming interface security will be essential for securing the dependability of data going between edge devices and back-end systems to ensure that solitary affirmed devices, creators, and applications are talking with APIs and furthermore recognizing potential perils and attacks against specific APIs. Test traders: Akana, Apigee/Google, Axway, CA Technologies, Mashery/ TIBCO, MuleSoft, and WS02.



Ongoing Research on IOT Security

Secure Protocols for IoT and IoT secure layers-Building interconnected and interoperable sharp articles requires the task of standard correspondence customs. At plan layer, an IOT focus can secure information trade standardly by utilizing the Internet Convention Security (IPsec) IPSec can give puzzle, uprightness, information starting stage assertion and affirmation against replay assaults, for every IP separate (works at compose layer). These security organizations are executed by methods for two IPSec traditions: Confirmation Header (AH) and Encapsulated Security Payload (ESP). The AH is responsible for giving respectability, data commencement affirmation and against replay limits, while ESP is accountable for giving security, check and uprightness.

Enhancing Security in lOT based Home Automation using Reed Solomon Codes-The proposed Home computerization framework in view of lOT utilizes Reed Solomon codes where creators moderate dangers and hence upgrading security by giving mistake redress plot both in the correspondence channel and additionally the information store. A Reed-Solomon (RS) code is a mistake revising code initially portrayed in a paper by Reed and Solomon in 1960. Since that time they've been

connected in Album ROMs, remote interchanges, space correspondences, DSL, DVD, and computerized TV. RS encoding information is moderately clear, however deciphering is tedious, regardless of significant proficiency upgrades made by Berlekamp and other amid the 1960's. Just in the previous couple of years has it turned out to be computationally conceivable to send high-transmission capacity information utilizing RS.

Privacy Preservation in Cloud Based IoT Applications-Many commitments appear as a reasonable Reference Architecture for building a security and confide in administration convention (SPTP) that is equipped for ensuring private information at the season of divulgence or accumulation, intransit, very still and for the life of a private information component notwithstanding when it crosses the limits of the first framework to be expended by another framework. Also, we propose a sensible Reference Architecture for building cloud-empowered IOT applications. The writers additionally propose a Secure, Private and Trustworthy Protocol (SPTP) with a related seal that will be promptly unmistakable by end-clients in different on the web and universal figuring settings. The standard seal is to be utilized as a part of all frameworks (counting cloud administrations, cell phones and applications, sensors, contraptions, sites, and the sky is the limit from there) that desire to distinguish themselves as being secure, private and dependable to end-clients and different substances.

Authentication and Authorization for IoT - There can be tremendous resource necessities for the DTLS handshake while using open key cryptography for peer affirmation and key understanding purposes. These overheads particularly hamper secure correspondence for memory compelled gadgets. To facilitate these repressions, we propose an arrangement plan that offloads the exorbitant DTLS affiliation establishment to an arrangement server. By surrendering over the set security setting to the constrained device, our arrangement building on a very basic level reductions the benefit necessities of DTLS-secured correspondence for constrained gadgets. Besides, our assignment building typically gives endorsement handiness while using the central piece of the assignment server in the hidden affiliation establishment. Along these lines, in this paper, maker display a broad, yet insignificant response for approval, endorsement, and secure data transmission in the IP-based IOT. The evaluation occurs show that diverged from an open key-based DTLS handshake our task building reduces the memory overhead by 64 % estimations by 97 %, sort out transmissions by 68%.

Data Encryption for IoT-The superb method is proposed for encryption for IOT which is utilized FPGA for the execution as a result of a few reasons. FPGA is shabby, simple to execute, reconstructed, has fast and has a decent level of security. This examination is concentrated on exhibitions and usage of blowfish calculation. The execution measure of encryption calculation plans led changing round fiestel and changing key size. The exhibitions parameters that were talked about are encryption time, FPGA usage asset utilized, torrential slide impact, and throughput.

Wireless Sensor Network - Remote sensor organize assumes a vital part in IOT, the issue causing in remote sensor systems are false hub, hub adjustment, DDOs assaults, hub breakdown, message defilement, activity investigation, parodied assaults, skin gap assaults, Sybil assaults, worm opening assaults in remote sensor systems. Confirmation, cryptographic calculations can't be executed on remote systems in light of compelled assets, low computational power. There are numerous security approaches which are giving security to remote sensor systems.

Conclusion

With everything considered, the Internet of Things is closer to being executed than the standard individual would think. By far most of the fundamental inventive advances required for it have starting late been made, and a few producers and workplaces have starting late began executing a little scale assortment of it. The essential reasons why it has less been recognized is the impact it will have on the good 'ol fashioned, incredible, security and social fields. Specialists could manhandle it, programming pros could get to it, affiliations won't not want to share their data, and particular people abhor the total

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AMBIENT INTELLIGENCE: Technologies, Application and Opportunities

Madhulika Bhatia
Associate Professor, Department of Computer Science and Engineering, Manav Rachna International Institute of Research and Studies, Faridabad

Shubham Sharma
Student, B.Tech, Computer Science & Engineering, Manav Rachna International Institute of Research and Studies, Faridabad

In the past basic human need is food, cloth and shelter but as we are moving toward modern world more and more services are added in our life for better lifestyle and ambient intelligence play a major role in this. *Methodology:* Ambient Intelligence agreement with this modern world of computing devices which spread everywhere in the environment and behave with human interaction. Ambient Intelligence helps in building a smart environment whereas AI helps in building smart devices or smart systems. It is also a large umbrella of technologies same as Artificial Intelligence. Result: Ambient Intelligence will be best suited in different areas like smart city, smart homes, healthcare and smart cars.

Introduction

As we are moving towards modern world there are some great advancement in science and technology which lead innovation and these innovations in some, or other way help in providing a better lifestyle for humans. In some old era basic human need is food, shelter and cloth but now many more services are added in these basic needs for the benefit of humanity and to ease the work for humans, for this services like hospitals, electricity, transport and security are added in basic needs ,Now services like internet, smart home automation, smart doors or we can say there are smart and intelligent devices or bots are present today who work on-behalf of humans and as per humans instruction. We are making intelligent devices or bots which can survive in normal environment but in this article we discuss how we can make a smart and intelligent environment which can response as per human presence and human action with the help of available technologies. There is a term which explain the whole concept of intelligent environment and technologies which help in making it is called Ambient Intelligence

Ambient Intelligence is a kind of intelligent, smart and sensitive electronic environment which response as per human presence and action. It's a future vision of electronics, telecommunication, Networking and computing technologies. It's an undeveloped technology which bring intelligence to our day to day life and makes our environment sensitive, adaptive and responsive to our activities, needs, gestures and emotions. Like Artificial Intelligence, Ambient Intelligence is also a large umbrella of technologies like ubiquitous computing, cloud computing, fog computing, artificial intelligence, machine learning computer vision, internet of things, networking, telecommunication, embedded systems, human computer interaction and vision but the only difference is that AI umbrella has same type of technologies like machine learning, deep learning, natural language processing and pattern recognition.

Steps involved in Ambient Intelligence

Ambient Intelligence algorithms recognize the state of the environment and users with sensors which are embedded in environment, reasons about the data using a variety of Artificial Intelligence techniques, and act upon the environment using actuators and controllers in a way to achieve the intended goal.

There are five basic steps involved in the process of ambient intelligence as shown in Fig 1.

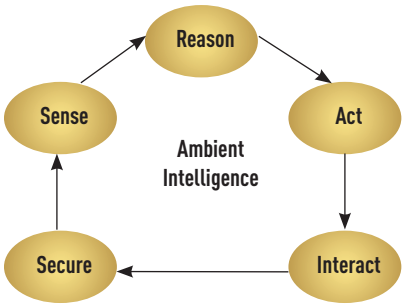

Fig 1: Steps involved in ambient Intelligence

Sensing: Sensors play an important role in ambient intelligence technology, they designed for real world and physical environment. Sensors detect a physical quantity or an activity and converting it into signals that can be read by computing device. It can be a single sensor, or a network of sensor embedded in the environment or in the body.

Reasoning: Reasoning provide a central computing and decision-making ability to the system. Reasoning use many AI algorithms for decision making, these algorithms should be intelligent, adaptive and responsive and should accomplish the following activities:

- Modelling
- Activity Selection and recognition
- Decision Making

Acting: This step connects

reasoning with the real world. It is the action performed by the system after sensing and analysing the real-world data from environment like changing the colour of light based on mood, door and windows automation, home automation systems and notifications, alerts or information. It can also work like robotic assistant in nursing home and hotels.

Interacting: This step is involved because it makes Ami easier to live with, it should define a human centric computer interface that is natural and context aware where devices interact with humans.

Security and Privacy: The ambient intelligence environment should prevent the authorized external access to avoid exploitation of system vulnerabilities and its network. Aml environment should not risk the privacy of individuals.

Technologies for ambient intelligence

Ubiquitous Computing

In most simple word the meaning of ubiquitous is "found everywhere". Ubiquitous computing help in developing an environment where we embed multiple computer into a physical environment and each of the computer perform some task for which it is prepared with little human intervention or even without requiring that user detects it presence. Using ubiquitous computing means, people are not aware of computers, but they are doing their work in background.

Every technology has some pros and cons, to make ubiquitous computing feasible we must consider some technical features like:

- Low Cost Device
- High Network Bandwidth
- Automatic Installation
- Personalize Information
- Privacy

The Major Trends in Computing

- Mainframe: One Computer and Many User's
- Personal Computer: One Computer and One User
- Ubiquitous Computing: One User and many Computer.

Cloud computing is considered as the most advance technology and it is a perfect example for Ubiquitous Computing Technologies.

A. Internet of Things

The network of physical devices is called Internet of things. IOT is playing a major role in upgrading living standards e.g. we can control our home with the help of IOT from anywhere in the world. IOT is used for industrial automation, healthcare, Educational and many other fields.

IOT includes:

- Embedded systems
- Software Defined Networking
- Applications
- Sensors
- Actuators

B. Machine Learning

In machine learning we are trying to mimic human activities without the intervention of human .Machine learning provide some fancy algorithms which are applied on collected data and after applying these algorithm a machine learning model is being developed which take decision on its own after receiving similar type of data as input for future perspectives.

Some of the famous machine learning algorithms are:

- Support Vector Machine (SVM)
- Random Forest
- K-Nearest-Neighbors
- Decision Trees

C. Biometrics

Biometrics are defined for the metrics of human characteristics. Human characteristics are very important for providing smart environment . In Ambient Intelligence we are thinking to provide smart environment, it become very essential to take human characteristics as input and analyse them for providing better and smart environment for human future interaction with environment.

Evolution of AI

There is lot of advancement in AI over time, At First AI was applied to SNARC(Stochastic Neural Analog Reinforcement Calculator) system to which neural nets are implemented. It is designed by Marvin Lee Minsky. After hardware AI more concentrate on computers and MYCIN knowledge based computer is good example for this phase. After this AI was more centred toward network and American Express Authorizer' assistant is another a good example for this phase of AI. In 1990 web shows great advancement and its boom originates many intelligent recommendation system. Now the question arises in everyones head "What is the next Step for AI?" The current trend is pointing toward smart environment for human in which instead of making a device intelligent we are more focused on making a smart environment which behave as

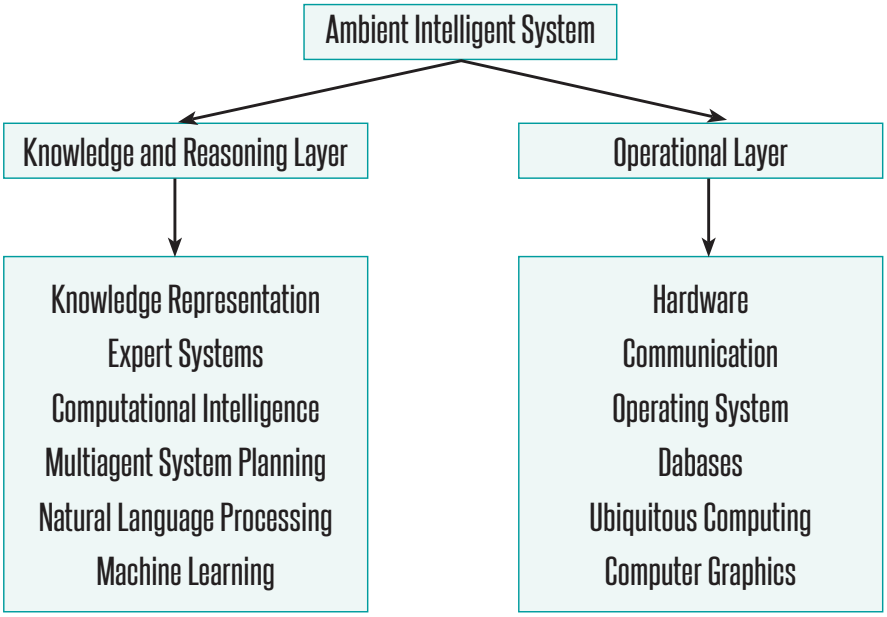

Fig. 2: Evolution of Ambient Intelligence

per human action or as per human gestures.

Ambient Intelligence is continuously used in the market like buzzwords and many people are building ambient intelligent system without using any type of intelligence they are just using operational technologies (like embedded systems, sensors ,actuators, database) which are providing great result therefore to make a smart environment we have to use artificial intelligence (AI) with operational technologies. Evolution as shown in Fig. 2:

Ambient Intelligence : Future

Ambient Intelligence is embedded in our daily life as "Internet of Things" and Internet of Humans.

- Ambient Intelligence prove useful to control home appliance from far areas to get meals ready at required time.
- Home without Keys will be future application of ambient intelligence with home front entry integrated with garage door.
- This Technology will make refrigerators intelligent and maintain list of vegetables for us.

As the Smart computing is diverting all intelligence from man to computers. The other side if we see that if man is trying to acquire and training the computer like human brain the smart computing like Ambient Intelligence can acquire ad hack intelligence of Human being and seize our decision making capability of human beings.

About the Authors

Dr. Madhulika Bhatia is working as a Associate Professor in Department of Computer Science and Engineering at Manav Rachna International Institute of Research and Studies, Faridabad, Haryana. She holds Diploma in Computer Science & Engineering, B.E in Computer Science & Engineering, MBA in Information Technology, M.Tech in Computer Science & Ph.D from Amity University, Noida. She has total 13 years of Teaching experience. She published almost 29 Research Papers in National, International conferences and Journals. She is also Author of two Books. She Filed two Provisional Patent. She attended and organized many workshops, Guest Lectures, seminars. She is also member of many Technical societies like IET, ACM, UACEE. She reviewed for Elsevier-Heliyon, IGI, Indian Journal of Science and Technology and currently pursuing Editorial for Springer Nature, Switzerland for Book Chapter in Data Visualization and Knowledge Engineering.

Mr. Shubham Sharma is pursuing B.Tech in Computer Science & Engineering with specialization in Cloud Computing with IBM at Manav Rachna International Institute of Research & Studies, Faridabad. He has participated in many conferences & workshops and published research papers in International Conferences.

KIND ATTENTION !

Prospective Contributors of CSI Communications

Fourth Coming Issues : April 2019 : E-Commerce

Please note that Cover Theme for **April 2019 issue is E-Commerce**. Articles may be submitted in the categories such as: Cover Story, Research Front, Technical Trends, Security Corner and Article. Please send your contributions by 25th March, 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 Guest Editor **Dr. Bhagwan Singh**, Central Univerisity of Himachal Pradesh in the email id : bhagwansingh.bs@gmail.com

Issued on the behalf of Editorial Board, CSI Communications.

Prof. (Dr.) S. S. Agrawal
Chief Editor

National Council Meeting

17th March 2019 at 11.00 A.M. at New Delhi.

Computer Society of India™

http://www.csi-india.org

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E-Mail: secretary@csi-india.org • **Website:** www.csi-india.org

25th February, 2019

Dear Chairman / Vice Chairman / Hon. Secretary / Hon Treasurer of CSI..... Chapter,

Sub.: **National Council Meeting on 17th March 2019 at 11.00 A.M. at New Delhi.**

Greetings from Computer Society of India !!

I wish to inform you that, **National Council Meeting** of Computer Society of India (ref. Article 4.1.4 {c}) will be held on **17th March, 2019 (Sunday) at India International Centre (Lecture Hall II – Annexe), Lodhi Road, New Delhi – 110 003 at 11.00 A.M.**

Agenda of National Council on 17th March, 2019 (Sunday) at India International Centre, ND is as follows:

1. Welcome Address
2. Confirmation of National Council Meeting minutes held on 20th January 2018 at Kolkatta.
3. Hon. Secretary's Annual report, Membership report, Administrative report for the FY 2017-2018.
4. Hon. Treasurer's presentation of Audited Balance sheet for the FY 2017-18 and appointment of statutory auditor for the FY 2018-19.
5. Vice President's report on conferences, SIG, Student branch activities for the year 2018-19.
6. Report on Legal matter's, Income Tax matter's, GST matter, Service Tax matter etc. by IPP.
7. Report on Disciplinary action against the members for violating CSI Constitution by Vice President.
8. Report on illegal sale of CSI property at Worli, Mumbai by IPP.
9. Any other items with permission of Chair.

National Council Meeting will be presided over by Vice President cum President Elect of CSI Prof. A K Nayak for the year 2018-19.

As per CSI norms, 1 (one) representative (Chairman/Vice Chairman/Hon Secretary/Hon Treasurer/Chairman's representative with authority letter from Chairman) can attend National Council Meeting on 17th March 2019 at New Delhi and eligible for reimbursement of travel expenses and stay expenses maximum upto the tune of ₹ 15,000/- (Rupees Fifteen Thousand Only), subject to production of original bill/s etc.

Requesting to confirm your participation, latest by 10th March 2019 to admn.officer@csi-india.org with a copy to secretary@csi-india.org

Soliciting valuable presence on 17th March, 2019 for strengthening CSI.

Thanking you.

Yours faithfully,

Sd/-
Prof. S K Yadav
Hony. Secretary, CSI

Regional Student Convention for CSI Region-II

Organized by NSIT, Bihta, Patna

Reported by **Gopal Krishna**
Student Branch Coordinator, CSI Student, NSIT
Bihta, Patna

February 23rd & 24th 2019, CSI Student Branch of Netaji Subhas Institute of Technology, Bihta, Patna has organized the Regional Student Convention for CSI Region-II in its campus. Prof. A K Nayak, National Vice President & President Elect of CSI inaugurated the convention. Mr. Kumar Anshumali, Director 'JEEVIKA' Bihar and Ex-Secretary, Bihar Election Commission was the Chief Guest of the convention. Others Special Guests present in the event were Dr. Prabhat Kumar HOD, Department of CSE, NIT Patna and State Student Coordinator, CSI, Bihar, Md. Shams Raza, Member of CSI Nomination Committee and Mr. Sunil Purbey, Founder and President of 'Maa Bhagwati & Tirupati Bala Ji Kalyan Sansthan', Patna.

The function was commenced by National Anthem, expressing condolence to the soldiers who martyred in Pulwama attack and lamp lighting by the dignitaries present. Mr. Krishna Murari, Registrar, NSIT welcomed the guests by presenting mementos, shawl and baby plants. He also outlined the brief history and achievements of the institute. Mrs. Shraddha Pandit, Dean Academics, NSIT briefly introduced the academic and technical activities of the institute. Mr. Triloki Nath, Asst. Prof. NSIT introduced the event as organizing secretary of the convention. Mr. Gopal Krishna, Asst. Prof. NSIT, proposed vote of thanks as CSI Student Branch Coordinator.

Various student activities and inter college competitions were organized in this two day convention such as paper presentation, poster presentation, mobile app development, web development, robotics, technical project competition, debate, solo singing, solo dance, group dance and short films. 400 students and 30 delegates from more than 20 colleges of CSI Region-II participated in the convention. Technical competitions were held on the first day, cultural competitions and prize distribution on the second day. The topic of paper presentation was "Technology for Future India". The topic of poster presentation was "Social Transformation through Technologies". The topic of debate was "Is the AADHAR a breach of privacy?" Short films competition was based on social issues. "Winners of inter college competitions were awarded by medals, certificates and cash money prizes. Some of the participating institutes were IIT Patna, NIT Patna, BIT Mesra, Patna Women's College, LNMI Patna, Magadh Mahila College, ISM Patna, Arcade Business School, G J College, Bihta, Deoghar College etc. Partners of this event were EPSON, Zebronics (audio partner) and ICETL.

Faculties and delegates from NSIT and other organizations actively participated in the convention to make this function a grand success. Few notable among them are Mr. Aditya Shekhar, TPO, NSIT, Mr. Subhash C. Pandit, HOD, CSE, Mr. Rajani Ranjan, HOD, ECE, Dr. Jyotiymayee Dalei, HOD, EEE, Mr. Pushpam Sinha, HOD, ME, Mr. Digvijay Singh, HOD, CE, Mr. Devashish Gautam, Asst. Prof., ME, NSIT, Mr. Gaurab Pandey, Area Head, Bihar, EPSON, Mr. Anshuman, LNMI, Mrs. Deepa Sonal, Patna Women's College, Mr. Suraj Kumar, Center Manager, ICETL.

CAIRIA-2019

National Conference on Artificial Intelligence: Research, Innovations & Research

http://www.cairia.in
On January 30th - 31st, 2019
Reported by Dr. Pankaj K. Goswami, Conference Chair CAIRIA-2019

Scientists and philosophers have been trying to resolve two big questions of the universe: How does a human mind work and can non-human have minds? However, these questions are still unanswered. Researchers are trying to find out the computational approach originated by computer scientists and accepted the idea that machines can do everything that humans can do.

CAIRIA-2019: Two days National Conference on Artificial Intelligence: Research, Innovations & Applications, organized by Amity Institute of Information Technology (AIIT), Lucknow campus. The sessions held on the different tracks like Artificial Intelligence, Machine Learning, Machine Translation, Neural Networks, Fuzzy Systems, Data Mining, Data Analytics, Artificial Neural Networks, Neural Machine Translation were the topics covered during the two days conference.

Our technical associates are Computer Society of India (CSI Lucknow Chapter), The Institution of Engineering and Technology (IET-UK) and Springer consented for publications.

A workshop on Machine Learning based on Google TensorFlow was held on day-1 of the conference. A speaker from Google Crowdsource was called to deliver a session on "TensorFlow", Machine Learning libraries.

The research/review papers were invited from the authors of different Indian Universities and Institutions through EASY CHAIR CALL FOR PAPERS submission portal.

https://easychair.org/conferences/?conf=cairia2019

Selected and peered reviewed papers published in the conference proceedings with ISBN- 978-93-5346-375-5 and the extended version of selected papers will be published in Springer series / CSI communications/ IET journals.

Lightning of Knowledge lamp by Keynote Speakers including Dr. Sunil Dhaneshwar, Pro-VC Amity University, Lucknow

Conference (CAIRIA-2019) enhanced and achieved the scientific value at National as well as international level. We formally associated with reputed organizations, institutes and research labs during the conference.

National level we associated with Indian Institute of Technology (IIT) Kanpur and Patna, South Asian University India, Institute of Engineering and Technology-Lucknow, Computer Society of India (CSI).

International level we associated with Google Crowd-source, Microsoft, IET-UK, Springer, ParallelM, Sunnyvale, CA, USA.

Amity Institute of Information Technology, Lucknow, highlighted at the International/National level as a premier institute in India with the attained reputation of research and academics. Also showcase our strength in the domain of Artificial Intelligence, Machine Learning, Machine Translation, Deep Learning, Fuzzy System, IOT, Block Chain and other applied stream of AI.

Following resource persons were invited for the conference as Keynote Speaker/Session Chair and Guest:

Revealing of Conference Proceedings (L-R) - Dr. D. S. Yadav, Mr. Ali Mustafa, Mr. Nishith Pathak, Mr. Rakesh Puri, Dr. Sunil Dhaneshwar, Dr. Sunil Khatri, Maj. Gen. K.K. Ohri, Brig. U. K. Chopra, Mr. Raghavan, Dr. Pankaj K. Goswami and Dr. Parul Verma.

- **Mr. Nishith Pathak**, Microsoft Reginal Director,
- **Dr. D. S. Yadav**, Professor IET, Lucknow,
- **Dr. Sunil Khatri**, Director AIIT, Noida,
- **Mr. Vijay Kumar**, Ex. Senior Vice President, Tech Mahindra,
- **Dr. Karm Veer Arya**, Professor IET, Lucknow,
- **Dr. Sanjay K. Dwivedi**, Professor & Head Computer Sc. BBA University,
- **Dr. Anil K. Tiwari**, Director Amity School of Engineering and Technology,
- **Brig. U. K. Chopra**, Director Amity Institute of Information Technology,
- **Mr. Ali Mustafa Shaikh**, Google Crowdsource, Speaker of TensorFlow,
- **Mr. Amit Sengupta**, Co-founder Anushree Technologies Pvt. Ltd,
- **Mr. Raghavan**, Head Membership IET-UK,
- **Ms. Megha Pandoh**, IET-UK,
- **Mr. Rakesh Puri**, Chairman CSI-Lucknow Chapter.
- **Mr. Pawan Nigam**, Secretary CSI-Lucknow Chapter,
- **Er. Pravin Agarwal**, Finance Officer, The Sanskriti School Lucknow,
- **Mr. Avinash Sharma**, Director Cosmo Info. Solutions.

Overall the impact of the conference was great and

academically enriched with the added value of content delivered during the conference. We received very good feedback form the participants and they appreciated the invited speakers and the content of the conference. They would like to attend such conference organized in association with Computer Society of India (CSI) and Amity Institute of Information Technology (AIIT) in future.

Inaugural Session: National Anthem attendant by participants, keynote speakers and faculty of Amity Institute of Information Technology, Lucknow

Panel Discussion (L-R): Dr. Sunil Khatri (Amity-Noida), Mr. Nishith Pathak (Microsoft), Dr. D. S. Yadav (IET), Wg. Cdr. Dr. Anil K. Tiwari (ASET), Brig. U. K. Chopra (AIITL)

Valedictory Session: Participants of CAIRIA-2019 and Faculty of AIIT

Call for Paper for CSI Journal of Computing

(e-ISSN: 2277-7091)

Original Research Papers are invited for the CSI Journal of Computing, published on line 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 Prof. A K Nayak, Publisher, in the email id : csi.journal@csi-india.org with a copy to aknayak@iibm.in, CSI Journal of Computing.

Prof. A K Nayak
Publisher

CSI Student Regional Convention-Region 1

15th - 16th February, 2019
Chitkara University, Punjab

CSI Student Branch, under the aegis of Department of Computer Applications, Chitkara University, Punjab, organized 2-day CSI Regional Student Convention (Region-I) on 15-16 Feb. 2019. The Convention was aimed at bringing together the students from various states of Northern India and to provide a platform to broaden their horizons.

The inauguration ceremony was graced by eminent personalities and CSI Office Bearers. Prof. (Dr.) A. K. Nayak, Vice President cum President Elect, CSI, was the Chief Guest for the occasion. Prof. P. Prabhakar, Chairman, CSI Chandigarh Chapter, Mr. Subhash Chander Jain, Immediate Past Chairman, CSI Chandigarh Chapter and Dr. Sushil Kaura, Executive Member, CSI Chandigarh Chapter also attended the session.

Dr. S. C. Sharma, Registrar, Chitkara University, Dr. I. S. Sandhu, Dean Examination, Chitkara University, Dr. Jaiteg Singh, Dean, Department of Computer Applications and all faculty members of Department of Computer Applications were also present during the session.

The ceremony started off with traditional lamp lighting, which symbolises peace and success. Prof. (Dr.) A. K. Nayak addressed the students with an enthusiastic speech. He emphasized the importance of artificial intelligence and machine learning in today's era. He also advised the students to be knowledge seekers and work for welfare of the society. The keynote speaker of the day Prof. P. Prabhakar talked about the futuristic approach to be adopted by learners so as to enable changeover to the next generation of inventions. The dignitaries and industry partners were felicitated during the session.

This was followed by various activities scheduled for the day, which included a workshop on IoT, and another workshop on Python in the labs of Department of Computer Applications. Two expert lectures, one on Idea Generation and New Innovations by Dr. S. N. Panda, Director CURIN and another on Intellectual Property Rights by Dr. Sachin Ahuja, Professor, CURIN were very well received by the audience. A competition on smart devices was also held at the campus wherein student teams participated and competed each other. Prof. (Dr.) A. K. Nayak visited the different venues of the event and motivated the participants. He applauded the efforts of CSI Student Chapter at Chitkara University for providing numerous opportunities to the students to participate in and hone their skills by means of various technical workshops, coding events, expert talks, etc.

Day 2 of the CSI Regional Student Convention saw active participations in activities like the Micro Conference for students, and Code Crackers, besides the roll-over to day 2 for workshops on IoT and Python. The micro conference also attracted participation by large number of student teams that shared their ideas by means of poster presentations. The posters were judged on the basis of various quantifiable parameters so as to ensure fair judgment. Code Crackers was yet another competition which required a desired code to be generated by the participants in a specific programming language. Besides these activities, LAN gaming (FIFA and Counter Strike) competitions were also arranged for the students wherein they competed against each other, and in the process, demonstrated their control over the input devices.

The valedictory session to mark the closure of the Regional Student Convention was held during the second half of the day. Dr. P. Prabhakar, Chairman, Chandigarh Chapter was the chief guest. Other guests include Dr. S. C. Sharma, Registrar, Chitkara University and Dr. I. S. Sandhu, Dean, Dept. of Examinations. The chief guest awarded the winners of various events. Mr. Jaswinder Singh, SBC-CSI Student Chapter along with the student volunteers of the CSI Student Chapter were felicitated for successfully organizing the student regional convention. The guests, as well as the student participants from other educational institutions expressed deep sense of satisfaction over the quality of events organized during these two days. The CSI Regional Student Convention came to a close with vote of thanks by Dr. Jaiteg Singh, Dean, Department of Computer Applications.

IoT-IGNITE Workshop

Dept. of Computer Science at Sophia Girls' College Ajmer (Autonomous), in collaboration with Computer Society of India, Udaipur Chapter

22nd and 23rd February, 2019

A Two Day National Workshop on IOT-IGNITE held on 22nd and 23rd February in Department of Computer Science at Sophia Girls' College Ajmer (Autonomous), in collaboration with Computer Society of India, Udaipur Chapter.

The workshop was inaugurated in a prayerful manner with the lighting of the lamp by Chief Guests Prof. Kumkum Garg Dean, Department of Informatics and Automation, Bhartiya Skill Development University, Jaipur the Guest of Honor Prof. N. N. Jani, Director SKPIMCS Kadi Sarva Vishwavidyalaya, Dr. Sister Pearl, Principal Sophia Girls'College Ajmer (Autonomous), Mr. Gautam Chaturvedi Convener of the workshop and Dr. Ritu Bhargava , Organizing Secretary of the workshop.

Speaking on the occasion, Prof. Kumkum Garg enlightened the budding minds about IOT and skill based education. She focused on IOT as a major component of Digital India Program. Prof. N. N. Jani introduced the "IOT Domain Ignite". He changed the phrase "Teach me and I will learn." to "Involve me and I will learn". The crux of the session was Innovation and RFID. To broaden our horizons, he demonstrated RFID system. Helpful innovations like Dash Button for physically handicapped has inspired our students to learn more about IOT. Dr. Richa Mehta, Assistant Professor SKPIMCS Kadi Sarva Vishwavidyalaya took the charge of sharing information on: "Face Recognition availing Python platform."

Dr. Mehta mainly emphasized on imparting knowledge about the applicability of face recognition technology by sharing the existing mobile and web platforms. A free and open source (FOSS) environment was introduced using PYTHON. She discussed about the implementation of face recognition technique by sharing the pre-requisites of hardware and software, installation of Python Environment, open library, database browser and execution. Prof. Madhukant bhai Patel, MD Reve Automation LLP and Ex ISRO Scientist delivered a lecture on "IOT Motherboard and Building Application".

The session brimmed with information on IOT and how IOT devices make decisions using smart data. He enlightened the participants over the need to learn about IOT. He gave a live demo of machine learning and sensors working on REVE Automation IOT motherboard. He also gave a demo of Actuators working on REVE IOT motherboard. He further interacted with the participants by challenging their knowledge on reliability sciences by a triangle based quiz. He shared very stimulating and instructive exchange of ideas with the participants to enhance their knowledge.

Prof. Madhukant bhai Patel, made the participants familiar with Sensors, its Interface, Protocol and Actuators. He also discussed about the Basics of Embedded, including access point, gateway, and cloud.

At the valedictory function, the Principal Dr. Sr. Pearl welcomes and addresses Prof. Arun K. Pujari, Vice Chancellor of Central University of Rajasthan. Prof.Pujari emphasized that technological advancement is inevitable because it is the need of the time and has numerous advantages in our daily life along with a dark side of negative social impact which we have to manage at every level of life. Dr.Ritu Bhargava, convened the Workshop, the vote of Thanks was given by Mrs. Neha Sharma.

State Student Convention (SSC-2019)

at Vivekananda Institute of Professional Studies, New Delhi

17th – 18th February 2019

Lamp Lightening

L to R: Prof. Rattan Sharma felicitating Mr. R.K. Vyas

Vivekananda Institute of Professional Studies (VIPS), New Delhi in collaboration with VIPS CSI Students' Branch, New Delhi organized State Student Convention (SSC) on 17th – 18th February 2019. In the two days convention, second edition of 24-hour Hackathon (HackVSIT-2019) was organized with 08 parallel tracks; Human resources, Blockchain, Mental Health, Financial Technology, Tools for Developer & Designers, Smart City, IOT and Computer Vision. The events received tremendous response in terms of participation from various Institutions of repute like Indian Institute of Technology (IIT) Delhi, Indian Institute of Information Technology and Management, (IIIT) Gwalior, Indira Gandhi Delhi Technical University for Women (IGDTUW), Indraprastha Institute of Information Technology (IIIT) Delhi, Jamia Millia Islamia, Delhi Technical University (DTU), Lovely Professional University Punjab, Netaji Subhas Institute of Technology (NSIT), Ambedkar University of Delhi, Amity University, Jaypee Institute of Information Technology (JIIT), Noida, Krishna Engineering College, Ghaziabad, Shri Ram Group Of Colleges, Muzaffarnagar, Thapar Institute of Engineering and Technology, Patiala and many more. More than 190 teams registered for this event. 50 teams were selected on the basis of idea submitted in different tracks.

HackVSIT-2019 commenced with two minute silence for praying for our fallen soldiers souls in Pulwama attack which happened on 14th February, 2019. This was followed by lighting of lamp by dignitaries. Prof. Rattan Sharma, *Principal Director, VIPS* formally welcomed all dignitaries and participants. He addressed and spoken about collaborating education with professional society and nurturing our country as a whole. Further he motivated students to be more innovative and work with sincerity and dedication. Dr. Supriya Madan, *Dean, VSIT* then asked students to participate in the event with full vigor and dedication. Then forum was open for other dignitaries to share their experiences and enlighten the students. Mr. R. K. Vyas, *Vice President elect, CSI* talked about enthusiasm and passion of the faculty in VIPS and how it increases every time he visits this institution. He also appreciated all members and coordinators for their passion to work, he concluded by thanking the management and wishing all teams good luck.

Mr. Pankaj Sehgal, *CEO & Founder, Novuse, Delhi* stated that in his opinion everything depends on the creativity of the team while encouraging teams that one can crack anything with innovative thoughts and ideas. Mr. Anand Saxena, *Senior Cyber Security Consultant, ENY, Noida* shared his journey with all the students and motivated them to give their best in the event. Mr. Pawan Kumar, *Sr Software Eng, QArt Fashion, Delhi* also shared his experiences on how he graduated from VIPS and now invited as a mentor in the event. He extended his gratitude to the management and thanked VIPS for inviting him and wished good luck to all the participants.

Mr. Siddhant Agarwal, *Program Coordinator and Relation Development, Google, Delhi* encouraged students and advised them to carry on working on their ideas even after this event. He wished good luck to all participants and thanked the management for inviting him at HackVSIT. Mr. Arun Singhal, *Managing Director Technology, Accenture, Delhi* shared his technical journey with all of the participants; how he is working with TCS since 1994. He also appreciated HackVSIT team for selecting contemporary and new themes / tracks for this event. Mr. Anurag Arjun, Co-Founder & Chief Product Officer, Matic Network, Delhi was welcomed through video calling. He taught the students how to get started with Matic, talked about Blockchain and how the technology has a major role in real time data.

Prof. M.N. Hoda, *Director, BVICAM, Delhi* gave the closing note and he congratulated VIPS and talked about how domain knowledge is really important and how one should know where to apply knowledge to its best. He also motivated students by some beautiful quotes for active participation in the event and wished success of the convention.

Dr. Deepali Kamthania, Professor, VSIT gave vote of thanks to all dignitaries. She thanked all the guests and participants for gracing the occasion by their solemn presence. She also thanked CSI for providing a platform to conduct such state conventions. She also appreciated all student coordinators of ACE (association of computer enthusiasts) for their hard work and dedication and wished Hackathon-2019 to be a great success. The inauguration was followed by an open discussion over lunch.

Judges and mentors visited all teams throughout the evening to guide and help them in making their products better. Various mentors in the two days session were Mr. Pawan Kumar, QArt Fashion, Mr. Ashish Pahwa, Data Engineer, Novuse, Delhi, Mr. Aditya Dhawan, Frontend Developer, Novuse , Mr. Pratik Gujral and Mr. Harshit Juneja from Facebook Developer Circle, Delhi, Mr. Nikit Bhandari, Co-Founder Votel, Hack City, Github Rep, Delhi and Mr. Shivam Singhal, Mozilla Add-On Contributor, Open Source Enthusiast, Mr. KaushikParashar, Product Lead, Bobble, Delhi, Mr. Surmeet Singh, Ethical Hacker & Security Engineer, i2K2 Networks, Delhi.

Top 12 teams were selected for presentation of developed product. Top three teams were selected as winners of the event by judges. Prizes of more than fifteen lakhs rupees were distributed to the winners along with merit certificates.

HackVSIT-2019 was a great success in terms of participation and management from teams. Some innovative and very creative ideas were seen and implemented in HackVSIT 2019.

This second edition of VIPS' Hackathon has exceeded expectations and set a new standard for itself which is a really great achievement for both college and student organizers.

JMIETI Hosted

ONE DAY CSI HARYANA STATE STUDENTS CONVENTION 2019

Computer Society of India (CSI) Student Branch, under the aegis of Department of Computer Applications, Chitkara University, Punjab, organized 2-day CSI Regional Student Convention (Region-I) on 15-16 Feb 2019. The Convention was aimed at bringing together the students from various states of Northern India and to provide a platform to broaden their horizons.

The inauguration ceremony was graced by eminent personalities and office bearers of the Computer Society of India. Prof. (Dr.) A. K. Nayak, Vice President cum President Elect, CSI, was the chief guest for the occasion. Prof. P. Prabhakar, Chairman, CSI Chandigarh Chapter, Mr. Subhash Chander Jain, Immediate Past Chairman, CSI Chandigarh Chapter and Dr. Sushil Kaura, Executive Member, CSI Chandigarh Chapter also attended the session.

Dr. S. C. Sharma, Registrar, Chitkara University, Dr. I.S. Sandhu, Dean Examination, Chitkara University, Dr. Jaiteg Singh, Dean, Department of Computer Applications and all faculty members of Department of Computer Applications were also present during the session.

The ceremony started off with traditional lamp lighting, which symbolises peace and success. Prof. (Dr.) A. K. Nayak addressed the students with an enthusiastic speech. He emphasized the importance of artificial intelligence and machine learning in today's era. He also advised the students to be knowledge seekers and work for welfare of the society. The keynote speaker of the day Prof. P. Prabhakar talked about the futuristic approach to be adopted by learners so as to enable changeover to the next generation of inventions. The dignitaries and industry partners were felicitated during the session.

This was followed by various activities scheduled for the day, which included a workshop on IoT, and another workshop on Python in the labs of Department of Computer Applications. Two expert lectures, one on Idea Generation and New Innovations by Dr. S.N. Panda, Director CURIN and another on Intellectual Property Rights by Dr. Sachin Ahuja, Professor, CURIN were very well received by the audience. A competition on smart devices was also held at the campus wherein student teams participated and competed each other. Prof. (Dr.) A.K. Nayak visited the different venues of the event and motivated the participants. He applauded the efforts of CSI Student Chapter at Chitkara University for providing numerous opportunities to the students to participate in and hone their skills by means of various technical workshops, coding events, expert talks, etc.

Day 2 of the CSI Regional Student Convention saw active participations in activities like the Micro Conference for students, and Code Crackers, besides the roll-over to day 2 for workshops on IoT and Python. The micro conference also attracted participation by large number of student teams that shared their ideas by means of poster presentations. The posters were judged on the basis of various quantifiable parameters so as to ensure fair judgment. Code Crackers was yet another competition which required a desired code to be generated by the participants in a specific programming language. Besides these activities, LAN gaming (FIFA and Counter Strike) competitions were also arranged for the students wherein they competed against each other, and in the process, demonstrated their control over the input devices.

The valedictory session to mark the closure of the Regional Student Convention was held during the second half of the day. Dr. P. Prabhakar, Chairman, Chandigarh Chapter was the chief guest. Other guests include Dr. S.C. Sharma, Registrar, Chitkara University and Dr. I. S. Sandhu, Dean, Dept. of Examinations. The chief guest awarded the winners of various events. Mr. Jaswinder Singh, SBC-CSI Student Chapter along with the student volunteers of the CSI Student Chapter were felicitated for successfully organizing the student regional convention. The guests, as well as the student participants from other educational institutions expressed deep sense of satisfaction over the quality of events organized during these two days. The CSI Regional Student Convention came to a close with vote of thanks by Dr. Jaiteg Singh, Dean, Department of Computer Applications.

CHAPTER'S REPORT

AHMEDABAD CHAPTER

Ahmedabad Chapter in association with Pandit Deendayal Petroleum University and Gujarat Innovation Society (GIS) conducted an Industry connect program on 8th February 2019. Program started with the welcome address by Dr. T P Singh, Director, SOT and focused on T shaped Learning. Mr. Sunil Shah, Chairman, Gujarat Innovation Society, in his key note address, said that must think keeping the nation at the centre and took the oath from all the members for involving themselves. Mr. Bharat Patel, Joint Secretary, GESIA and founder of Yudiz Solutions Pvt. Ltd. requested faculty members that "It's not the time that we teach; it's the time that students learn". The speakers motivated the gathering towards innovation. Departmental overview was given by Dr. Mehul Raval, Professor, ICT. Dr. Samir Patel thanked all the supporting bodies and showed the video of PDPU. Students of CSE and ICT presented their posters during this event. Eminent industry guests were invited to strengthen Institution's vision of bridging the industry-academia gap. This Industry Connect touched upon topics like the roles & opportunities available in the industry, the skills & knowledge required the challenges & gap, the scope for adding more value and substance to the curriculum. The inverted T model was recommended where students should be introduced to broader disciplines. Vote of thanks was given by Dr. Samir Patel.

PUNE CHAPTER

Pune Chapter organized CodeX 2019, a Regional coding competition, in association with Soft Corner, Pune and Reliscore, Pune. This competition was for Undergraduate Students from Computer / IT engineering, BSc, and MCA stream. The Competition was held in three rounds. In the First-round total 340 students participated. This was an online round conducted on 12th Jan 2019. Students solved the problems and wrote code on Reliscore web portal. Out of these 340 students 15 students were chosen for Second-round. This was an interview round through Skype and conducted by Soft Corner team on 16th Jan. 2019. Third and final round was conducted at MIT WPU, Pune on 19th Jan 2019. Total 11 students were selected for this round. This was supervised online coding round. Top three winners declared and given cash prizes along with trophy and certificates. Winner: Rushikesh Gaikwad, Rajarshi Shahu College of Engineering, Pune. 1st runner up: Prem Sakore, Army Institute of Technology, Pune. 2nd runner up: Prasad Rathod, College of Engineering, Pune. Prizes for the final round were presented by Mr Arun Kadekodi, CEO, Soft Corner and Mr. Ravindra Damle, COO, Soft Corner, Pune. The event was coordinated by Mr. Abhishek Agrawal, Mrs. Pradnya Kulkarni and Dr. B M Patil.

STUDENT BRANCHES INAUGURATION

REPORTS

Sreyas Institute of Engg. and Technology, Hyderabad (Region-V)

The Branch inaugurated on 25th January 2019 at Sreyas Inst. of Engg. and Tech., Hyderabad, Telanagana State. Starting with the lightening of lamp and Ganesh Pooja. The event was followed by inaugural of two technical events. At this occasion, Mr. A Hridhaya Reddy, Vice Chairman-SIET, Dr. Sureash Akella, Principal-SIET, Mr. K Seetha Ram Babu, Vice Chairman, CSI Hyderabad Chapter, Dr. A V Krishna Prasad, Chapter Secretary, Dr. V Goutham, HOD-CSE, Dr. Ambala Srinivas, Student Branch Coordinator, Technical trainers Mr. Nareash Chandel and Mr. Krishna Prasad were present. The event was witnessed by around 500 participants which included CSI members, student members, other faculty and students. One Hundred and Eleven students have become the member of CSI. Mr. Hridhay Reddy, Vice Chairman, SIET gave inaugural keynote, congratulated for institutional membership and declared the CSI-SIET Student Branch. Dr. Sureash Akella marked the importance that CSI is playing a major role in IT Policy framework and encouraging the professionals by way of organizing conventions and various awards. Mr. K Seetha Ram Babu and Dr. A V Krishna Prasad stressed upon the importance and role of this branch for organizing professional activities. The branch will play a foremost role in achieving the objective of the CSI. Branch will provide connectivity between members. To enhance the knowledge of members, the branch will organize different workshops and conferences, Guest lectures, technical meetings, poster presentation / exhibitions, seminars. The branch will also host regional, divisional, national and international events along with the various reputed sponsoring agencies. In this Context, two Technical seminars are conducted i.e. Cloud Computing and Big Data Analytics are being organized by Dept. of CS and Engg. for CSI students.

S G Balekundri Institute of Technology, Belagavi (Region-V)

The Branch at S G Balekundri Institute of Technology, Belagavi, Karnataka was inaugurated on 22nd February 2019. The aim of the function was to provide awareness for the students regarding the benefits provided by Computer Society of India. The chief Guest of the function was Dr Rashmi Rachh, Associate Professor, Department CSE, PG and Research Center, VTU, Belagavi. Dr Rashmi Rachh mentioned in her address a few points to the path of success. "No pain No gain- Success will not be achieved without any efforts." She has also delivered technical talk on latest technology that on philosophy of Deep Learning. Dr Sidramappa V. Itti, Principal SGBIT, Belagavi, motivated the students to become successful in their career. He encouraged students to become Professional, Skilled in this Competitive world. He quoted saying "without creating history we cannot make history". He addressed students to be abreast with cutting edge technology so that they can shape their career properly. Dr. G. R. Udupi, HOD, CSE welcomed the gathering and enlighten the importance of having CSI Student. So that student can have professionalism in their life. Prof. Shaheen Mujawar, CSI coordinator, briefed about CSI student chapter benefits to the students. Prof. Sahana Bislapur introduced Chief Guest. Prof. Shreedhar Niradi, CSI Coordinator proposed a vote of thanks. The function was organized by Prof. Shaheen Mujawar, Pof. Shreedhar Niradi, the faculty and students of Department of computer Science and Engineering SGBIT, Belagavi.

Sipna College of Engineering and Technology, Amravati – (Region-VI)

The CSI Student Branch at Sipna College of Engineering & Technology, Amravati, Maharashtra was inaugurated on 9th February 2019 by Dr. Gajendra R Bamnote, Professor and Head of CSE Dept, Prof. Ram Meghe Institute of Technology and Research, Badnera who is also the Founder Chairman of CSI, Amravati Chapter and it was graced by Mr. Suyash Zanwar, Founder and CEO of Effigrity Solutions, Pune. All the office bearers of CSI, Amravati Chapter were present for the inaugural function. The inauguration began with the traditional lamp lighting ceremony by the delegates. After lighting the lamp, the function started with felicitation of the chief guest, Dr. Gajendra R Bamnote by Dr. A D Gawande, Principal, Sipna COET by a sapling and a memento. Mr. Suyash Zanwar was also felicitated by Dr. V S Gulhane, Chairman of CSI Amravati Chapter and Head, IT department by a sapling and a memento. The session began with the introduction by Mr. Abhishek Shah, President, CSI student branch, SIPNA COET. He also introduced the chief guest and speaker of the programme Mr. Suyash Zanwar. Dr. A D Gawande, Principal welcomed the guests. Dr. V S Gulhane spoke about the different activities of CSI and highlighted the benefits of being a member of CSI. The guest of honour, Dr. G R Bamnote expressed his views on the occasion. He stressed on to organise different tutorials, seminars, conferences and for which the student & faculty community will be benefited. After that, the management committee members of CSI student branch, SIPNA COET were felicitated by giving them their I-CARDS along with a flower by the hands of the delegates. The seminar was followed by an interactive technical session by Mr. Suyash Zawar in which he discussed about the topic "Tech Leap", A seminar on upcoming technology and trends and how Machine Learning and Artificial Intelligence will impact our future. Mr. Zawar made the session very interesting and lively by sharing real life experiences with the students. The session ended with a vote of thanks by Miss Bhargavi Upadhyay. Dr. V S Gulhane, HOD IT, Dr. S S Dhande, HOD CSE, Dr. P R Malasane, Dean, Student Affairs, Distinguished Faculties, Prof. S Z Khan and Prof. Y A Thakare, Student Activity In-charges and all the CSI members were also grace occasion.

About the Guest Editor

Dr. Durgesh Kumar Mishra has received M.Tech. degree in Computer Science from DAVV, Indore in 1994 and PhD degree in Computer Engineering in 2008. Presently, he has been working as a Director and Professor (CSE) & Director, Microsoft Innovation Centre at Sri Aurobindo Institute of Technology, Indore, MP, India. He is a ex-visiting faculty at IIT-Indore, MP, India. He has 27 years of teaching and 15 years of research experience. He has completed his PhD under the guidance of late Dr. M. Chandwani on Secure Multi-Party Computation for Preserving Privacy. He has published more than 90 papers in refereed international/national journals and conferences including IEEE, ACM conferences. He has organized many such conference like WOCN, CONSEG, ICTBIG, ACM-WIR and CSIBIG in the capacity of conference General Chair and editor of conference proceeding. His publications are listed in DBLP, Citeseer-x, Springer, Elsevier and Scopus. He is a Senior Member of IEEE and held many positions like Chairman, IEEE MP-Subsection (2011-2012), and Chairman IEEE Computer Society Bombay Chapter (2009-2010). Dr. Mishra has also served the largest technical and profession association of India, the Computer Society of India (CSI) by holding positions as Chairman, CSI Indore Chapter, State Student Coordinator- Region III MP, Member-Student Research Board, Core Member-CSI IT Excellence Award Committee. Chairman CSI Division IV Communication at National Level (2014-2016). Dr. Mishra has delivered his tutorials in IEEE International conferences in India as well as abroad. He is also the programme committee member, and reviewer of several international conferences. He visited and delivered his invited talk in Taiwan, Bangladesh, Singapore, Nepal, USA, UK and France. He has authored a book on "Database Management Systems". He is editor of 6 Springer books. He had been Chief Editor of Journal of Technology and Engineering Sciences. He has been also serving as member of Editorial Board of many national and international refereed journals. He has been a consultant to industries and government organizations like sales tax and labour department of government of Madhya Pradesh, India. He has been awarded with "Paper Presenter award at International Level" by Computer Society of India. He visited MIT Boston and presented his presentation on Security and Privacy he has also Chaired a panel on "Digital Monozukuri" at "Norbert Winner in 21st century" at BOSTON. He became the Member of Bureau of Indian standards (BIS), Govt of India for Information Security domain. Recently, Microsoft invited to deliver his on Innovation at Xi'an China. Computer Society of India announces for Patron Award of Computer Society of India to Dr. Mishra.

REGION-I

Amity School of Engineering and Technology, Noida

30-1-2019 - Expert Talk on Software Project Management

REGION-II

Institute of Engineering and Management, Kolkata

30-1-2019 – Invited Talk on Blockchain by Padmashri Dr. Bimal Kumar Roy

REGION-II

Techno International Batanagar, Kolkata

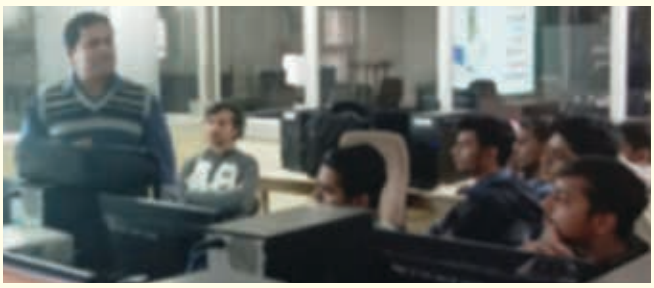
15-2-2019 - Technical Poster Competition on Research and Innovative Project Proposals

Supreme Knowledge Foundation Group of Inst., Hooghly

8-1-2019 to 15-1-2019 – Winter Workshop

REGION-III

B V M Engineering College, Vallabh Vidyanagar



9-2-2019 - Workshop on Network Administration using Cisco Packet Tracer

16-2-2019 - Workshop on Android App Development

REGION-III

Gyanmanjari Institute of Technology, Bhavnagar

2-2-2019 - Workshop on Python by Prof Arti N Rathod

2-2-2019 - Workshop on Cloud Computing & its Applications

REGION-III

Devang Patel Institute of Advance Technology and Research (DEPSTAR), Anand

2-2-2019 - Workshop on WordPress with Hands-on

Chandubhai S Patel Institute of Technology, Anand

10-1-2019 - Event on Dynamics of Artificial Intelligence (AI) and Internet of Things (IoT)

Sarvajanik College of Engineering & Technology, Surat

19-12-2019 - Workshop on PC ASSEMBLY

8-1-2019 - Seminar on Red Hat LINUX

REGION-III

G H Patel College of Engg. & Tech., Vallabh Vidyanagar

2-2-2019 - Webinar on Transformation Journey from Campus to Corporate as part of Alumni talk series

REGION-IV

Shri Shankaracharya Inst. of Professional Mgmt. and Tech., Raipur

15-1-2019 to 25-1-2019 Student Development Program on Internet of Things

REGION-IV

Silicon Institute of Technology, Bhubaneswar

9-2-2019 – Inter College Computer Science and Tech Quiz

REGION-V

Sasi Institute of Technology & Engineering, Tadepalligudem

10-1-2019 & 11-1-2019 - Workshop on Technical Paper Writing

REGION-V

NBKR Institute of Science and Technology, Nellore

30-1-2019 - Event on Puzzle Crack

6-2-2019 - Debate on Latest Technical Trends

Sreenivasa Institute of Tech. and Mgmt. Studies, Chittoor

24-1-2019 - Workshop on LaTex for Professsional Writing

G Pullaiah College of Engineering & Technology, Kurnool

11-1-2019 - Python Training Programme

Kallam Haranadha Reddy Institute of Technology, Guntur

20-2-2019 - Seminar on Design & Development of Software Systems by Dr Salman Abdul Moiz

AMC Engineering College, Bangalore

28-1-2019 to 30-1-2019 FDP on ICT Tools and Effective Research

New Horizon College of Engineering, Bangalore

20-2-2019 - Coding Contest in Logic Building

Maharaja Institute of Technology Thandavapura, Mysore

29-1-2019 & 30-1-2019 - Workshop on Java and Android Application Development

REGION-V

CMR Technical Campus, Hyderabad

24-01-2019 to 25-01-2019 - National Conference on Cyber Security, Image Processing, Graphics, Mobility & Analytics

31-1-2019 - Guest Lecture on Students Internship and Web Development Technologies by Mr Bharath Chandra

REGION-V

B.M.S. Institute of Technology & Management, Bangalore

28-1-2019 to 1-2-2019 - FDP on Machine Learning for IoT Applications

REGION-VI

Maharashtra Institute of Technology, Pune

9-2-2019 - Inter-College event on Placement Mantra

REGION-VI

Prof. Ram Meghe Institute of Technology & Research, Amravati

12-1-2019 - Workshop on Introduction to Arduino Uno

18-1-2019 & 19-1-2019 - Workshop on Introduction to IOT using Raspberry Pi-3

REGION-VI

Guru Gobind Singh Polytechnic, Nashik

2-2-2019 – FDP on Train the Teachers

REGION-VII

Sri Venkateswara College of Engineering, Sriperumbudur

1-2-2019 - Guest Lecture on Building a Server Less Web Application in Cloud

REGION-VII

Manakula Vinayagar Institute of Technology, Puducherry

18-1-2019 & 19-1-2019 - Workshop on Networking and Real Time hands on Training in Web Server

12-1-2019 - Workshop on IOT using Arduino and Andriod

Contd. on last cover >>

CSI CALENDAR
MARCH 2019

Date	Event Details & Contact Information
MARCH 08-09, 2019	**State Student Convention for Tamil Nadu** on the theme TEKNOKRET 2K19 Organized by KPR Institute of Engineering and Technology, Coimbatore. Contact: **Dr. N Prasath**, Mob.: 9894932371 Email: n.prasath@kpriet.ac.in
11-12, 2019	**Regional Student Convention for Region-7** Organized by Kongu Engineering College, Perundurai, Erode. Contact : Dr. K Kousalya, 9942214795 Email: keerthi.kous@gmail.com
12, 2019	**State Student Convention for Kerala** on the theme Security in Digital World, Organized by Viswajyothi College of Engineering and Technology, Ernakulam. Contact : **Prof. Arsha J K**, 9567966176, arshaj@vjcet.org,
13, 2019	**State Student Convention for Tamil Nadu** Organized by Sri Sai Ram Institute of Technology, Chennai. Contact : **Dr. B Sreedevi**, Mob.: 8754582224 Email: hodcse@sairamit.edu.in
13-15, 2019	**INDIACom-2019 (IEEE Conference ID: 46181 | SCOPUS Indexed)** 13th INDIACom; 2019 6th IEEE International Conference on "Computing for Sustainable Global Development" Contact : Prof. M. N. Hoda, General Chair, INDIACom-2019, Director, Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM) E-mails: conference@bvicam.ac.in, indiacom2019@gmail.com Tel.: 011-25275055 TeleFax: 011-25255056, Mobile : 09212022066
14-15, 2019	**I.T.S National Convention** I.T.S, Mohan Nagar, Ghaziabad in association with CSI Students Branch @ I.T.S, Ghaziabad Contact : **Dr. Sunil Kr Pandey**, Mobile - 8447744063, Email: sunilpandey@its.edu.in and **Dr. Ajay Kumar** Mobile - 8447744073, Email: ajaykumar@its.edu.in
15, 2019	**State Student Convention for Puducherry** Organized by Manakula Vinayagar Institute of Technology, Puducherry. Contact : **Mr. S. Pariselvam**, Mob.: 94863 89505, Email: hodcse@mvit.edu.in, s.pariselvam@gmail.com
15-16, 2019	**Regional Student Convention for Region-3** on the theme Recent Digital Technology Advancement, organized by **Shri Vaishnav Vidyapeeth Vishwavidyalaya**, Indore. Contact : Prof Vijay Prakash, 9993390764, vijayprakash15@gmail.com
17-18, 2019	**State Student Convention for Maharashtra** Organized by Vishwakarma Institute of Information Technology, Pune. Contact : **Prof. Snehal Rathi**, Mob.: 9890969897 snehal.rathi@viit.ac.in
30, 2019	**Global IT Day** I.T.S, Mohan Nagar, Ghaziabad in association with CSI Students Branch @ I.T.S, Ghaziabad Contact : **Dr. Sunil Kr Pandey**, Mobile - 8447744063, Email: sunilpandey@its.edu.in and **Dr. Umang**, Mobile - 99100 55457, Email: umangsingh@its.edu.in

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FROM CSI STUDENT BRANCHES

>> Contd. from 3rd Cover

REGION-VII

Sethu Institute of Technology, Kariapatti

20-2-2019 – Event on Innovative Idea Showcase

Kongu Engineering College, Erode

12-1-2019 Workshop On Mobile Application Development Android

Kongu Engineering College, Erode

30-1-2019 - Symposium – Envistas'2K19

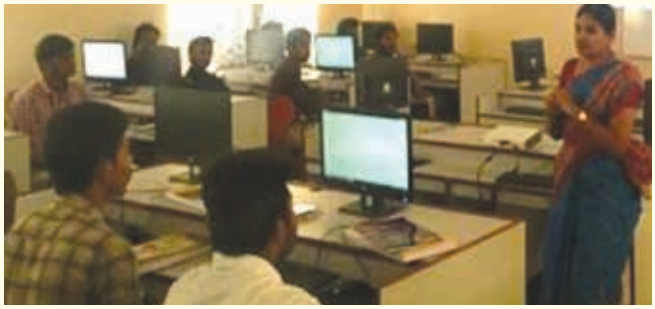
SRM Valliammai Engineering College, Kattankulathur

2-2-2019 - Guest Lecture on IOT Opportunity and Scope for Young Developers

SRM Valliammai Engineering College, Kattankulathur

5-2-2019 - Workshop on Language Technology

Nandha College of Technology, Erode



8-1-2019 – Hands-on Workshop on Mobile Application Development

Nandha College of Technology, Erode

18-2-2019 - Seminar on PHP & MySQL

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.