Dear Fellow Members,
Greetings.

“A great mind never restricts itself to the technologies available in the world, he moves forward with brilliant ideas and visions to improve the existing technology and serve the world with his radiant piece of work”.

Prof Rajaraman’s article on Apple I and Apple II published in Nov., issue of CSIC is a valuable addition. Prof Rajaraman has given a lot of information which many of us may not be aware of. Marcus Garvey’s quote: ‘A people without knowledge of their past history, origin and culture is like a tree without roots’ is very apt.

In the November issue of CSIC, apart from other points, I brought it to the notice of readership that a number of conferences are being conducted under the aegis of CSI and these should be channelled CSI flagship and that eminent academicians/scientists/Industrialists who wish to contribute monographs on any IT/computer science domains of interest shall also be encouraged. Please utilize this opportunity.

Complimentary to this we should generate stimulated thinking which can also be called innovative thinking. In this context I would like to cite the example of Dr. James Gosling. Dr. James Gosling – a Canadian Computer Scientist, is best known as the father of popular Java Programming language. Gosling is generally credited with creating the original Java design, and implementing the original compiler and virtual machine. Gosling developed Java in 1994 while working for Sun Microsystems. I would urge the readership and computer professionals, to think in this direction. There are many outstanding academicians and scientists in our Society.

Commensurate with the decision taken that themes for CSIC be announced in advance, the following topics viz., 1. Computer Aided Education 2. Green computing 3. Big Data Analytics 4. Quantum Computing are announced in advance. Thanks to Prof. A. K. Nayak, President, CSI, the Editor-in-Chief and the Editor for this. This step is taken with a view to give enough time to prospective authors to further increase the quality oriented article submission rate.

I would also urge the author that when they submit articles for publication in CSIC / Journal of Computing to see that the references cited are reflected in the text. Otherwise the article looses its weightage even if nicely it is printed. This is the basic responsibility of the authors.

We look forward to your valuable suggestions.

Dr. D. D. Sarma
Chief Scientist (R), CSIR-NGRI, Hyderabad.
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Printed and Published by Akshaya Kumar Nayak on behalf of Computer Society of India, Printed GP Offset Pvt. Ltd. 269, 2nd Floor, A-2, Shah & Nahar Industrial Estate, Sitaram Jadhav Marg, Lower Parel, Mumbai 400 013 and Published from Samrudhi Venture Park, Unit No. 3, 4th Floor, Marol Industrial Area, Andheri (East), Mumbai 400 093. • Email: hq@csi-india.org
Chief Editor: S. S. Agrawal

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Dear Readers

“In the year 2020 you will be able to go into the drug store, have your DNA sequence read in an hour or so, and given back to you on a compact disc so you can analyse it”. – Walter Gilbert, 1980

The above quote by Walter Gilbert, a nobel laureate unravels the power of bioinformatics. Simply defined, bioinformatics is the compilation, storage, recovery, management and modelling of BIOLOGICAL data for analysis, visualization or prediction through the development of appropriate algorithms and software.

Continuing with our invited series Titbits from the History of Computing-V by the legendary Prof. V. Rajaraman, this issue reports, “Birth of the IBM Personal Computer”. This article traces the birth of commercial personal computers. The first article, "Whither Artificial Intelligence"? by Subbarao Sambhapati is an invited article. First article of cover story, “Bioinformatics” by A. R. Revathi and Shwettha M. gives a brief overview of bioinformatics. The applications, skillset and tools used in bioinformatics have been further elaborated in “Bioinformatics: Applications, Skillset and Tools” by Mamta Santosh and Avinash Sharma. The security corner reports the security technologies applied in bioinformatics elaborated in the article, “Role of Bioinformatics in Cancer Research” by M. Senthil Kumar, B. Chidambara Rajan, P. Kiruthika and M. Rajakumar.

The technical trend section starts with tracing the importance of effective neonatal monitoring, in the article “A review on importance of Neonatal Care Monitoring System” by A. Albert Raj, J. Regina Parvin and S. Satheesh Kumar. The last article, “MicroBots: Benefit, Challenges and Potential Applications” by Durgansh Sharma and Sunil Gupta highlights the major applications of microbots.

The research front section showcases how phylogenetic classification trees have been applied in bioinformatics. The first article “Phylogenetic Trees in Bio-informatics” by D. Evangeline reviews application of phylogenetic trees. The last article “Agent based Bioinformatics Integration using Jade – Overview” by S. Balakrishnan introduces how agent technologies are being applied in bioinformatics.

The issue also reports important activities, events, collaborations done by various institutions and chapters of CSI and CSI congratulates them for conducting such activities. Various student branch inaugurations and activities have also been highlighted. The issue also contains calls for upcoming CSI annual convention CSI2020 and other conventions.

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

Our special thanks to Prof. A. K. Nayak, President, CSI for his constant encouragement, support and guidance in publication of December, 2019 issue.

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

With kind regards,

Prof. (Dr.) S. S. Agrawal
Chief Editor
Director General KIIT, Former Emeritus Scientist CSIR, Advisor CDAC, Noida

Dr. Ritika Wason
Editor
Associate Professor, BVICAM, New Delhi
Bioinformatics is an interdisciplinary field of science which combines biology, computer science, information science, mathematics and statistics to analyze and interpret biological data. Bioinformatics is used for analyzing biological queries using mathematical and statistical techniques. It is a hybrid science that uses biological data with techniques for information storage, distribution, and analysis to support many areas of scientific research, including biomedicine & bioengineering. It helps in data-generating experiments like genomic sequence determinations and measurements of gene expression patterns. A number of important applications for bioinformatics have been discovered in the field of medicine as for example, it is used to identify correlations between gene sequences and diseases, to predict protein structures from amino acid sequences, to aid in the design of novel drugs, and to help in making treatments to individual patients based on their DNA sequences.

Bioinformatics is of great importance for the future scientific computing as it will focus on technology innovation and trend setting initiatives in the field of biomedicine, bioengineering, genetics, health science & related fields. The Bioinformatics experts have experienced the importance of growing demands of same in the past few years but the benefits of the same are still to be optimally utilized.

The theme of this issue of CSI communication Bioinformatics is of great importance as it will focus on technology innovation, related applications and trend setting initiatives in the concerned area. Different sectors will experience the great contribution of this computing technology in the current decade but the benefits of the same should be completely and uniformly understood and utilized by the users & the Society.

CSI Annual Convention

The CSI Annual Convention to be held at Bhubaneswar, Odisha on 16th, 17th & 18th January 2020 with the theme “Digital Democracy-IT for Change” for which the dedicated & devoted Members of the Bhubaneswar Chapter are making their best efforts to make the convention excellent & scale of height shall witness a galaxy of programmes including Inaugural function, Valedictory function, e-Governance Award, CSI-STPI YITP Award, IT Excellence Award, Invited Lectures, Panel discussion, Research paper presentation, Poster presentation, CSI discovery thinking programme contest, Different awards like Life Time Achievement, Hony. Fellowship, Fellowship, Chapter service awards, Student branch academic awards, Best PhD Thesis awards, Annual General Body Meeting, National Council Meeting, ExecCom Meeting, Regional Divisional Meetings, Student Coordinators Meetings, Auditors meeting & many more. The Proceeding of the Convention with selected papers shall be published by Springer CCIS. I also express my sincere thanks to the authorities of KIIT university for providing the venue & other support for this great cause. I request all the concerned for their kind participation & presence in the annual convention for enhancing the strength, efficiency, visibility, productivity & effectivity of CSI.

Activities & Events

The Society has witnessed more than 60 activities & events in last month comprising of National Workshops, Seminars, Regional Meetings, Seminars, Workshops, Regional & State Student conventions, Technical Talks & student branch activities etc. which clearly reflect the dynamism, vibrancy & activeness of the Society. I express my sincere thanks to all the concerned Chapter MC, National ExecCom Members & Student Branch Coordinators along with Members & Student Members for their efforts to bring the society to scale of excellence. We were able to publish the reports of around 50 activities due to paucity of space & rest shall be published in next issue which we received in late.

Inauguration of New Student Branches

Expansion of CSI continues all over the country by establishing more & more Chapters & Student Branches. The inauguration & establishment of 7 new Student Branches in last month at different places in the country has set the record & milestone to clearly indicate that more & more academic Institutions & students are extending their faith & confidence in CSI by enrolling themselves under CSI Domain. The inauguration report of six student branches are covered in this issue. 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. In the same time I extend my heartiest thanks & congratulations to our all Regional Vice Presidents, Regional Student Coordinators, State Student Coordinators for their sincere efforts & coordination to translate CSI dream of explanation in to action. It is significant to mention that the report of Central University, Silchar, Assam is not covered which shall be covered in due time.

It is my pleasure to inform you all that the society in the way to achieve the inclusive presence & growth in membership in the country with the presence at north east region, particularly in Nagaland, Sikkim, Meghalaya & Assam.

In the month of December we are also expecting to have our student branch at Central University, Mizoram & Manipur University.

CSI Election

The CSI election final slate for the year 2020-21/22 has been published in this issue. My sincere request to all the voting members for their larger participation in the democratic process to elect the most suitable & able candidates for the respective positions.

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

Thanking you & looking forward to your continued cooperation & support for the all round develop of CSI. With warm regards,

Prof. Akshaya Nayak
President, CSI

Wishing you a Merry Christmas and Prosperous New Year!
The Cambridge dictionary meaning of titbit is “A small and particularly interesting item of gossip or information”.

**Early IBM Small Computers**

International Business Machines (IBM) was the largest multi-national computer company in the world in 1980 with a revenue of $26.21 billion, net earnings of $3.39 billion and growing at 15%. It was well known for its big, powerful, highly reliable, expensive mainframe computers. The price of the mainframe computer IBM 3081 that was released in 1980 as the successor of the highly successful IBM 370 series was $8.7 million.

Besides the big mainframes, IBM also sold electric typewriters and small office machines. One of its smallest computers, IBM 5100 portable computer (not really portable as it weighed 25 Kg), was released in 1975. It was a desktop machine with a keyboard, 5-inch CRT display, a cassette tape drive, 64 KB RAM, a ROM that stored interpreters for BASIC and APL languages. The processor was a 16-bit processor called PALM (Put All Logic in Microcode). It cost $20,000 for the 64 KB model.

The IBM 5100 was followed by the IBM 5110 that was launched in 1978. The main improvement over 5100 was additional I/O devices (floppy drives, RS 232 interface etc.) and larger character set. The next model in the series was IBM 5120 released in 1980 that had a larger 9-inch CRT display, and two built-in 8-inch, 1.2 MB floppy drives. It also bundled programs for billing, payroll, inventory, accounts payable, accounts receivable and general ledger accounting along with the hardware. The 5100 series machines were designed under the direction of Bill Lowe, Director of the IBM Entry Systems Division, located in Boca Raton, Florida.

IBM 5120 was followed by System/23 Datamaster whose design started in 1978 and was meant for small businesses. It used Intel 8085 microprocessor with 4.77 MHz clock, 256 KB main memory, 112 KB ROM, two 8-inch floppy disks, and a 15 inch 24 lines, 80 characters per line display. It had a BASIC interpreter, word processor, and business software similar to the one for IBM 5120. It cost around $10,000. A second terminal could be attached to this machine. Designing an upward compatible BASIC delayed the release of the machine by a year and the machine was released only in July 1981.

**IBM PC Project**

Meanwhile, Personal Computers (PC) were being released by Apple, Tandy and Commodore at much lower price ranging from $600 to $1700 and were selling in thousands. A new home and small business PC market had opened up with an annual sale of $150 million in 1979 and growing at the rate of 40% per year. In 1980, Atari, a small company which was manufacturing PCs sent a proposal to Frank Cary, the then chairman of IBM, that they would design and build PCs for IBM if it wanted to enter the market [1]. Cary passed it on to Bill Lowe, the Director of IBM’s Entry Systems Division to examine it. He, in turn, took it to the IBM’s management committee which dismissed it as frivolous. However, as it had been referred by the chairman of the company and the PC market was growing rapidly, the management committee asked Lowe to examine whether IBM can design and manufacture its own PC. IBM was a huge organization with a labyrinthine bureaucracy. Most new projects took three to four years to complete. One of the members of the committee was reported to have remarked that “IBM bringing out a personal computer would be like teaching an elephant to tap dance” and not feasible. The management committee felt that only if IBM could design and market a PC fast it should attempt it.

Lowe took the challenge and said that he could design and market a PC in one year if given a free hand to take important decisions without having to go through the normal tortuous IBM process. IBM had constituted small independent business units that could take up projects and short circuit the bureaucracy. One such unit was constituted in July 1980 with a small group of a dozen engineers to examine the feasibility of making and marketing a PC in one year. They designed a prototype in a month using off the shelf components and demonstrated it. The project was approved and a deadline of August 1981 was set to release IBM PC. Meanwhile Lowe was promoted and transferred (in the usual bureaucratic way) from the Entry Systems Division and Don Estridge became the head of the group.

The group met regularly and took many strategic decisions that were alien to the normal IBM practice. IBM was a vertically integrated company and normally sourced most of the important components from within. Software was also developed in-house. However, to meet the very tight deadline of one year it was decided to design the system in the laboratory, buy well tested components from the open market for the PC hardware and manufacture it in IBM’s Boca Raton plant. All quality control of hardware was to be performed by IBM. All system software as well as applications were to be outsourced to outside vendors.
The system software would be tested and quality assured by IBM. The PCs would not be marketed by IBM sales team but would be given to retailers such as Sears Roebuck and ComputerLand. The market price would be competitive and similar to that of other PCs like Apple.

The IBM team had design experience with Intel 8085 processor as it was used in System/23 Datamaster. Hence, they chose to design the PC using 4.77 MHz Intel 8088 microprocessor, a hybrid processor that had 8-bit data bus, 16-bit registers, and 20-bit address. The 20-bit address allowed addressing 1 MB memory and consequently solve more complex problems.

It was decided by the group to have an open architecture with several expansion slots to allow other vendors to attach peripherals. Unlike other available PCs in the market, IBM PC’s memory design included a parity bit for each word to check memory errors. The computer was tested and ready for manufacture in April 1981.

**Entry of Microsoft**

IBM decided to outsource the development of BASIC interpreter, even though it had developed BASIC for the 5100 series machines. From past experience, the development of a new BASIC internally would have taken at least two years. This led IBM to Microsoft which had developed BASIC for other PCs before. The OS development was also outsourced to Microsoft. (The circumstances leading to Microsoft getting the OS development contract was described in the first article of this series [2]). Microsoft signed a contract in November 1980 to deliver the OS and BASIC before July 1981 and to keep the agreement top-secret. IBM PC prototype was sent to Microsoft at Seattle in November 1980. IBM team visited Microsoft frequently and the software was subjected to a slew of IBM designed tests. Microsoft delivered the OS named PC-DOS along with BASIC, FORTRAN, Pascal and a game program in July 1981. Bill Gates pulled a strategic coup by insisting that instead of IBM buying PC-DOS outright it would pay a royalty for each copy licenced, and that Microsoft would be allowed to licence PC-DOS to other PC vendors as MS-DOS. IBM signed this agreement that had far reaching consequences not expected by IBM at that time. IBM also licenced EasyWriter word processor and VisiCalc spread sheet program.

**Release of IBM PC**

IBM 5150 PC was released at an event at the Waldorf Astoria Hotel in New York on August 12, 1981. The model number 5150 was chosen to indicate that it was a continuation of the 5100 series computers. The computer was solidly built and its hardware was highly reliable. The system had a keyboard with 83 keys consisting of alphanumeric keys plus numeric keypad and ten function keys. The keyboard was attached to the main unit by a 6-foot flexible cable allowing it to be placed on one’s lap. It had a 15-inch monochrome or colour display with 80 characters per line and 24 lines. It supported 40KB ROM and 16 KB to 256 KB RAM. It had two diskette drives and 5 expansion slots to connect other circuits and peripherals. The minimum configuration with 16KB RAM and without a display was priced at $1565 and the maximum configuration with a printer and all software was priced around $6000. Such low price for a computer was unheard of in IBM’s history. IBM releasing PC was a momentous event and gave legitimacy to PCs. It sold fast, registering a sale of 13,500 units in the first two months and 750,000 by 1983. It was a popular computer with small businesses and a saying among managers was that “No one ever got fired for buying IBM”. Soon a huge number of independent software vendors created a variety of software for IBM PC making the PC yet more popular.

**Epilogue**

The consequences of IBM choosing an open architecture, using off the shelf components, Intel 8088 as the processor, and outsourcing OS to Microsoft were profound. By June 1982 the first IBM PC compatible (also called IBM PC Clone) was made by Columbia Data Products and was followed soon by Compaq and many others. The clones could use the same components as IBM, use a similar design and did not have to develop an OS as it was available from Microsoft. They were cheaper and ate into IBM’s market share. Microsoft became dominant in the software industry. IBM introduced its own OS called OS/2 in 1987 but it was overtaken by Windows OS of Microsoft. PCs and other small computers started to dominate the market and IBM lost its pre- eminent position in the computer industry. Was the decision to set one-year deadline to manufacture IBM PC that led to many decisions including using an open architecture, sourcing off-the-shelf components, and outsourcing OS to Microsoft a strategic error?

**References**


**About the Author**

Prof. V. Rajaraman (CSI Fellow), Ph.D. (Wisconsin), is Emeritus Professor in the Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore. Earlier Prof. Rajaraman was Professor of Computer Science and Electrical Engineering at IIT, Kanpur (1963-1982), Professor of Computer Science, and Chairman, Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore (1982-1994) and IBM Professor of Information Technology, Jawaharlal Nehru Centre for Advanced Scientific Research (1994-2001). A pioneer in Computer Science, education and research in India, Prof. Rajaraman was awarded the Shanti Swarup Bhatnagar Prize in 1976. He is also the recipient of Homi Bhabha Prize by U.G.C., Om Prakash Bhasin award, ISTE award for excellence in teaching computer engineering, Rustam Choksi award, Zaheer Medal by the Indian National Science Academy, Padma Bhushan by the President of India in 1998, and lifetime contribution award by the Indian National Academy of Engineering and Computer Society of India. He was awarded DSc (h.c.) by IIT, Kanpur and by Bengal Engineering and Science University, Shibpur. An author of several well established and highly successful computer books, Prof. Rajaraman has published a large number of research papers in reputed national and international journals. (A detailed biodata may be found in en.wikipedia.org/wiki/Vaidyeswaran_Rajaraman).
Whither “Artificial Intelligence”?

Dr. Subbarao Kambhampati
Professor of Computer Science, Arizona State University

History, much like life, can only be understood backwards. We, nevertheless, cannot resist the temptation to prognosticate. Having made quite a cogent sense of human history from the rearview mirror, Yuval Noah Harari attempts to extrapolate the themes into the future of humanity in his iconic books, Sapiens and Homo Deus (freely available on the Net). The result is a mixed bag: provocative and eminently readable, but also questionable in places. A big part of Harari’s speculation in these books concerns our future with Artificial Intelligence. My aim for this short write-up is to provide a primer on the current state of this technology from the perspective of a working scientist.

Artificial Intelligence (AI) has become quite the public buzzword. Companies and investors are pouring money into the field. Universities — even high schools — are rushing to start new degree programs or colleges dedicated to AI. Civil society organizations are scrambling to understand the impact of AI technology on humanity, and governments are competing to encourage or regulate AI research and deployment. One country, the United Arab Emirates, even boasts of a Minister for AI. At the same time, the world’s militaries are developing AI-based weaponry to defeat their enemies, police agencies are experimenting with AI as a surveillance tool to identify or interrogate suspects, and companies are testing its ability to replace humans in menial or more meaningful jobs — all of which may change the equation of life for all of the world’s people.

Our fixation with AI seemingly started only a couple of years ago. Yet, the pursuit of AI — the quest to get computers to show intelligent behavior — traces back to the dawn of computing, when Alan Turing, considered the father of computing, asked a question: “Can Machines Think?” The field itself was christened at a Dartmouth workshop in 1956. Over its more than 60 years of existence, AI has balanced precariously between being an irresistible scientific quest and a seemingly quixotic enterprise, falling in and out of public favor. Only now, thanks to key advances in computing and ubiquitous data capture (including such technology as smart phones), has its true promises — and its perceived threats — begun to seem more of a reality.

To understand what changed most recently to make AI a household word, it is instructive to compare the progress in AI to the stages at which children show different facets of intelligence. Children typically start by showing signs of perceptual and manipulative intelligence — the ability to see, hear and smell the world, and to manipulate physical objects around them. They go on to show signs of social intelligence along with emotional and communicative intelligence. Finally, they graduate to cognitive intelligence— the ability to reason in abstract symbolic terms — that underlie most intelligence assessment tests. In contrast, AI’s quest to have computers show facets of intelligence went in an almost opposite direction. The last time AI was in the public imagination was in the early ’80s, when so-called expert-systems technology was being used to automate the reasoning processes in many industries. In the ’90s, we had progress on general-reasoning systems, with the decisive win of IBM’s “Deep Blue” computer over chess master Garry Kasparov. It was only in the early 2000s that AI started making progress towards perceptual intelligence, which has driven today’s significant interest in AI.

In other words, we had AI systems defeating humans in chess, a task popularly considered the zenith of cognitive intelligence, long before they had the perceptual / manipulation capabilities needed to recognize the pieces on the board by sight and move them — quite a stark contrast to how children learn to play chess. Understanding why the progress in AI happened in this opposite way provides a very useful perspective on the rise of interest in AI. The first attempts at getting computers to show intelligent behavior focused on programming them with our theories of intelligent problem-solving and expert systems. This approach worked fine for facets of intelligence, such as reasoning, for which we do have conscious theories. However, as the philosopher and polymath Michael Polanyi famously remarked, we know more than we can say. We have no consciously accessible theories for many aspects of our intelligence, including perception — how we “see” the world around us.

As babies, we learned how to do perception from observation. (After all, human babies hang around for years just being cute, observing and soaking up the world around them!) For AI, progress on perception and other tacit-knowledge tasks thus had to await breakthroughs in algorithms that can learn from observation. To be more precise, it had to await infrastructure that made it possible to capture and provide training data to the learning algorithms. Although it is fashionable to say that we are producing more data than ever, the reality is that we always produced data, we just didn’t know how to capture it in useful ways. The emergence of the internet, worldwide web, smart phones and the associated infrastructure made it possible to capture the data that is being produced in useful forms, and then to make it available to learning algorithms.

It is easy to underestimate the importance of this data-capture infrastructure. Not long ago, the whole field of computer vision used to revolve around a handful of benchmark images — most prominently, the face of a Swedish model, named Lena (pronounced “Lenna”), that became the standard test image used in image-processing. In contrast, now even the smallest benchmarks have millions of images. Simply put, the worldwide web has become a sort of Jungian collective subconscious, which has been leveraged
to train many AI systems for tacit tasks such as vision and language. The data-capture infrastructure, in conjunction with the computational infrastructure, has breathed new life into some machine-learning approaches that have long been around. The resulting technology, branded “deep learning,” has been behind some of the most impressive feats of AI in perceptual intelligence. These feats, in turn, have captured public interest to an extent that far surpassed anything AI experienced before.

In a way, this fascination is not hard to understand. When Deep Blue defeated Kasparov, it was a hot news item for a few days but faded away, as it didn’t affect our day-to-day lives. However, the fruits of the advances in perceptual intelligence are translating into visual and voice recognition capabilities of our smart phones, thus significantly impacting our daily lives. Once AI captured the public imagination, it invariably led to many misconceptions, misperceptions and fears about the capabilities and potential impacts of the technology. So, having made early strides on explicit-knowledge tasks involving reasoning over programmed information, AI technologies have recently started making impressive progress on tacit tasks — in large part, thanks to the availability of infrastructure for capturing training data. This has, in turn, led to a slew of applications of AI technology, and has captured public imagination.

It is, in a way, ironic that it is the advances in perceptual intelligence — the ability to see and hear the world that we humans share with all animals — that have fueled the recent resurgence of interest in AI. A distinguishing characteristic of human intelligence is, of course, the ability to combine perception with cognitive and social intelligence and common sense models of the world to support long-term planning and collaboration. Achieving this requires a seamless combination of tacit and explicit knowledge and tasks — something that AI technologies have yet to master.

So what is there next? Are we at the threshold of human-level or even super-human-level Artificial Intelligence? Will AI systems get along with us? Is data really the new oil driving AI, or is it mere snake oil? Is widespread technological unemployment inevitable with the current rise of AI? Is there an AI race — and if so, are we winning or losing it? Can we defend our reality against the onslaught of AI-powered fake reality? Is AI an amplifier or a cause of societal biases? Many of these are still open questions that don’t have definitive answers from technologists. There is, for example, considerable disagreement in the field as to whether we need to be worried about “super-intelligent” machines that purportedly will have all the qualities of human intelligence and are further able to show significantly higher perceptual and cognitive capabilities.

Harari, of course, takes significant poetic license and paints many of them as somewhat foregone conclusions. Some of Harari’s speculations ring true from the standpoint of current science and technology of AI. For example, Harari is right in pointing out the great decoupling between intelligence and consciousness. Popular Hollywood depictions notwithstanding, AI technology is on track to produce artifacts that will exhibit superhuman intelligence in narrow domains, without ever showing the first signs of self-awareness. Others—such as AI systems knowing so much about the collective preferences of a population as to make democratic elections redundant—seem far-fetched. After all, there is a significant pushback from the scientific community as well as civil society voices to put limits on data collection to preserve privacy guarantees that we are used to. Harari also misses some other imminent dangers of AI technology. In particular, the current advances in perceptual intelligence have enabled AI technology to generate alternate reality (the so-called “Deep Fakes”) that can overwhelm the fact-finding abilities that are the cornerstone of a liberal society. Nonetheless, Harari’s speculations about a possible future trajectory of humanity should be a sobering reminder to us all as to what could happen, if we the civil societies do not adequately monitor the effects of the powerful AI technology.

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About the Author

Dr. Subbarao Kambhampati, PhD, is a professor of computer science at Arizona State University and chief AI officer for AI Foundation, which focuses on the responsible development of AI technologies. He served as President and is now Past President of the Association for the Advancement of Artificial Intelligence. He was a founding board member of Partnership on AI. He can be followed on Twitter @rao2z.
Bioinformatics

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“If you want to compete in bioinformatics, first you need to compete for really smart people. You need really smart people who understand how to manipulate nanomolecules.”

-Managing Director of Excel Venture Management.

Introduction

In today’s world, Information Technology is applied everywhere in everything. In ancient days, scientists and doctors felt burdensome to store the collected data. But now things have changed and technology can be integrated with any field. Science is a huge field to which IT can be combined. Bioinformatics can be purely termed as the fusion of biology with computer science. Figure 1 illustrates about what bioinformatics is all about. Informatics simply is the study of the system that processes, generates and stores any information as mentioned in [1]. Nowadays the population is increasing rapidly day by day.

Figure 1: Bioinformatics elements

It is quite challenging to store any public information. Thus bioinformatics is the solution to overcome this problem as stated in [2]. It follows some strategies to handle the data in a proper way. It is not safe to keep a person biological data in a digital format as there are chances that if this falls into some wrong hands then it can be misused. Though a few faults are seen, it is highly essential to store, retrieve and modify the bulk biological data efficiently. Machine Learning and Bioinformatics along with deep learning together can be effectively used for diagnosis, prediction of diseases, health care analysis and so on.

The bioinformatics data contains DNA sequences of genes, proteins, nucleic acids and others. They obtain accurate data for discrete cell types and identify the different patterns of data. This is taken during the data generation process. The sequencing techniques include a huge amount of data. For example, the sequence code for DNA is a four digit code Adenine (A), Cytosine (C), Guanine (G) and Thymine (T). A sequence database contains the combination of these four codes in random order.

Thus, it defines a person’s biological information in digital form which can be easily accessed and stored using bioinformatics.

Bioinformatics System Architecture

The Bioinformatics System Architecture simply known as BSA defines the working and the components used to make it work. Every individual component that is present in the architecture performs a unique task. They all work together to supply quality bioinformatics information.

As a whole the data goes through a seven stage process in the system as shown in Figure 3. The source systems, humans or machines generate the data. The data can be public database or any organizational data. This data is sent to the Data Integration Hub (DIH) where similar data are integrated together to provide different combinations. The data from the DIH is stored permanently in the data warehouse and from there...
the data is extracted into various subsets based on their characteristics. The Business Intelligence System is the next major component that consists of multiple tools to manage the data. Here many tools are used to govern the data. Another key component is used to collect information about the changes in the data as it flows from one to other. Extract Transform Load (ETL) is responsible for the transfer of information between the components in the system.

Applications
Bioinformatics can be broadly applied to numerous areas as shown in Figure 4. They are mainly used in the fields of medicine, agriculture and so many as confirmed in [3]. Some of these are
- It uses a special structure to identify whether any drug is present in a chemical compound as in [4].
- Instead of curing a disease after it has occurred it is better to prevent the disease by figuring it early. This can be done easily using bioinformatics.
- It can guide an alternate solution for a particular problem in case if that solution is not possible to find out.
- They can suggest new combinations of chemical compounds that can be used for some other purpose.
- Recently some genes have been transferred to rice and other millet to raise the iron and other vitamin contents in it. These can be tested properly using bioinformatics.
- The protein structure pattern can be easily identified.
- It can be effectively used in gene therapy.
- This concept can be used widely in Biotechnology.
- Crop improvement is efficiently done using this practice.

Merits
The quality of bioinformatics is achieved through its advanced features as stated in [5]. The advantages in Figure 5 include
- The verification is accurate and can be done in a convenient method.
- It is time-efficient in terms of usage.
- It facilitates to access huge databases.
- It provides the ability for rapid sequencing.
- Also identified attributes can be stored efficiently.
- Bioinformatics can use the Blast Local Alignment Search Tool.

Demerits
Bioinformatics on the other hand has countable flaws. The challenges are
- The chance for any threat to occur is high.
- The reliability factor is often examined.
- Sometimes while dealing with large databases searching becomes difficult.
- There are no hard copies the identifying characteristics is lost.
- Also it is not good to keep trace of a person’s information.

Conclusion
To sum up simply say that Bioinformatics has a great future and it is. The data used for this is very huge and it uses certain strategies, algorithms and tools for maintaining and manipulating those data. The Bioinformatics system architecture with a set of components to make the process work right. It can be integrated with latest technologies for different reasons. It guides people with an easier way to solve their problems and come up with new inventions. The applications are wider and can be used for numerous purposes. Though it has few disadvantages it has already started to rule with the biological data.

References

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Bioinformatics: Applications, Skillset and Tools

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1. Introduction

Bioinformatics is an interdisciplinary field which combines Statistics, Chemistry, Engineering, Mathematics and Computer Science to solve biological problems. It was invented by Paulien Hogeweg and Ben Hesper in 1970. It is the implementation and development of computation to provide solutions to different problems and create hypotheses for biological sciences. Biological studies are continuously expanding. Bioinformatics is contributing for biological advancement by providing tools for handling vast datasets.

The process of bioinformatics [4] consists of storing, retrieving, organizing and analyzing complex data(Fig 1). Since computer science, statistics, chemistry are quite distinct areas of science, so the collaboration of all the fields is required for solving the problems.

2. Applications of Bioinformatics:

2.1 Climate change Studies

To reduce the high levels of increasing carbon dioxide in the environment, analysis of microbes can help, mainly the microbes which use carbon dioxide as sole carbon.

2.2 DNA sequencing

Due to weak signals, the data collected may be distorted which makes it non-trivial problem. It include the base process called Base Calling, which includes the process of assigning nucleases to chromatogram peaks.

Phred base-calling is one of the most widely used software, both at academic and commercial level (Fig 2).

2.3 Sequence assembly:

To obtain the original DNA sequence, short sequence fragments are combined into a longer sequence also called ‘contig’ sequence.

2.4 Pan Genomics:

It provides a complete gene report of a taxonomic group. The parts of Pan Genomics are - The Core genome and The Dispensable/Flexible Genome.

2.5 Analysis of mutations in cancer:

One of the most challenging name for the medical world. In cancer, the genome are arranged in a very complex and unpredictable structure.

3. Skill set for Bioinformatician:

Bioinformatics require collaboration of different fields to solve the huge complex problems (See Fig 3).

3.1 Biology & Medicine

The bioinformatician should have the knowledge of biology – cells, genes, genomes and the knowledge of medicines to discover the impact of medicines over the cell structure and find the cure.

3.2 Computer Science

Integration of data and tools is very important for the analysis, processing of vast information. Scripting languages such as Python, Perl, and Ruby are used for bioinformatics along with best performance data structures. Scientific computation

Fig. 2 : DNA Sequencing [5]

Fig. 1: Bioinformatics process [1]

Fig. 3:Bioinformatician’s Skillset [2]
packages such as R, Matlab/Octave are used.

3.3 Mathematics & Statistics:
The research in bioinformatics heavily rely on the application of statistical methods and probabilistic models. So it become essential for bioinformatician to know the concepts of statistics such as probability, Bayesian method, Gene Expression and Microarray Analysis, Sequence Alignment, calculus and many more [3].

4. Bioinformatics Tools
There are different tools and software available when we union the Bioinformatics with Computer Science.

When we start to describe these tools, they have different functional area, for example:

4.1 Primer Designing: There are various tools used in the Primer Designing process, one of them is FastPCR. It is a tool for probe design or PCR primers, alignment and repeat searching.

4.2 Primer Properties Checking: The structures produced by the primer(s) can be checked, along with the free energy required for production of these structures.

4.3 Restriction analysis: We need to map everything, for that we have plenty of software’s. Web Map is one of them. It maps the Re sites for a given sequence, it can also produce reverse complimentary of the input.

4.4 RNAi: There are lots of advance siRNA design tools available to improve the identification of functional siRNA. siDesign- Thermo Scientific is one of them. One of a kind that can enhance target specificity and adapt the designs for more complex designs.

5. Acknowledgement
We are thankful to University Grand Commission for providing Senior Research Fellowship for supporting writing this article.

6. Conclusion
In this article, we have discussed the Introduction, Application, Skillset and Tools for Bioinformatics. Bioinformatics is an interdisciplinary field with vast applications. Although many researches have been made in the field in more than past 10 years, still there is a long way to go and achieve advancement.

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Understanding Bioinformatics and Security system

What is Bioinformatics?

Bioinformatics is an interdisciplinary area of science that deals with the storing, retrieving and analyzing methods for large amount of biological information. This science involves various diverse types of specialists such as biology, statistics, computer science, and mathematics for processing and understanding the biological data. This field is also called as computational biology as it utilizes the computers algorithms, such as machine learning, artificial intelligence, data mining etc., for analysis and management of biologically derived information. This field is the blend of biology and information technology that employs and develop computational techniques to extract and create valuable information to solve biological problems. With the advancement in the technology the biological data can be read and stored at a faster rate than before. This biological data is stored and organized in the databases and information system. With the rapid growth in this field, it comes with the security and privacy challenges. Due to rapid growth in stealing the data by the intruders there is an elevated need for information security system. Collecting data via a computerized system and storing the same on cloud or online databases, poses a new challenge to information to solve the security problems.

1. Security of Genomic Data

It is a common practice to use biological data from patients medical and health record for the clinical research purpose. Researchers are still facing a major obstacle in maintaining the data privacy and security in order access the sensitive information from the data such as genomic information. To handle the security issue and promote clinical research at the same time, many organizations started integrating the clinical as well as genomic data from several sources into one common centralized data warehouses which stores de-identified information on patients such as name, patients medical history, demographic information etc. These crucial data are placed in reliable and trusted environment behind the organization’s firewall. [1]

Method: The most reliable solution to such problem is to build a privacy-enhancing technology that can supports computation on encrypted data such as homomorphic encryption. Homomorphic encryption is believed to be an efficient enabler which restricts the intruders to extract any sensitive genomic information about the patients [2].

2. Security in DNA Sequencing

With the advancement in the technologies the low cost of DNA sequencing resulted in the availability of surplus amount of genomic data for the clinical and biological research conducted for the improvement in biomedical and healthcare delivery systems. The presence of the plethora of genomic data revolutionized the genome-wide association studies (GWASs) to find the association of genes and certain disease. This will immensely help in the drug discovery and which further improves the present diagnostic and healthcare system. Nevertheless, this also comes with security and privacy issues as information stored in genome can uniquely identifies an individual [3].

Method: From DNA sequence reads, the attacker can obtain large percentage of the genetic markers. Using such data, they can then construct the genetic data file which misleadingly appears like relative to other samples in the database. In certain cases, these false relative can be used to make the re-identification of genetic data more difficult. Symmetric Key Block Cipher Algorithm is one of the efficient methods to handle issues related to security in DNA sequencing [4,5,6].

Now let us understand why bioinformatics play an important role in providing security solutions?

In the area of life sciences and clinical research, computational techniques play an vital role which range from classical bioinformatics, which concerns with the use of computer methods in molecular biology, to numerical models of complex physiological systems. The major role of any computational algorithm is to deliver
the system with high degree of robustness, process enormous data in parallel fashion, learn from environment with minimal human intervention etc. Many computer algorithms, which are used successfully in many applications, are inspired by the biological science as biological beings often exhibit characteristics that would be desirable in computer systems [7]. In the subsequent section, we give the overview of such technologies that are used in varied security applications.

**Bioinformatics in Security Technologies**

1. **Secure Information Transmission**

   The major problem in the data communication is the transmitting secure information over insecure channels. Cryptography is the efficient technique to transmit data in secured form in such a way that only the intended recipient can have its access. In this the data is protected by process called encryption in which cipher text (encoded text in form of illegible code) is generated from plain text. Finally, the encrypted message can be decrypted using decryption algorithm which decodes the cipher text (see Fig. 1). The method of encryption and decryption of bioinformatics and cryptography algorithm protects the information from adversaries [8]

   **Method** : With the advancement in the field of DNA computing, DNA based cryptography is the emerging and faster technique available for securing data from intruders. DNA based computing is a modern approach which mimic the DNA bimolecular structure and computing is performed using computational methods based on molecular biology technologies [9,10].

2. **Intrusion Detection using Bioinformatics**

   Masquerading is one of the most destructive among all the attacks. The attacker uses the fake identity to obtain the unauthorized access to personal computer information. Such attack normally occurs when attacker has legitimate user’s password or when the workstation is left unattended by the user without the locking system. The amount of access that the attacker get differs depending upon the level of authorization they’ve managed to get. As the attacker appear to be normal user therefore such kind of security breach at its initiation is difficult to detect [11].

   **Method** : The field of bioinformatics, is well suited to build an algorithm that can be applied in a variety of fields. Such as specialized pattern matching algorithms, known as sequence alignment algorithms, can be successfully applied to large number of varied fields where pattern matching is required. The sequence alignment method is employed to quantify the similarity between different sequences. For example, this method is most significantly employed in comparing the genetic materials e.g. DNA, RNA etc. The alignment of sequences produces a score which indicates how well the sequences are aligned with each other i.e. in other words tells how similar the two sequences are. The same concept is used to see the alignment of sequences of computer commands. The score thus obtain gives the insight of how comparable the two command sequences are to one another. This score is then used as an indicator of the presence of an intrusion in the testing sequence or segment [12,13,14].

3. **Bioinformatics in Blockchain Technology**

   Blockchain technology, technology behind the bitcoin, is the encryption system for the privacy and security of the information. It utilizes the public-key cryptography which uses the pair of keys i.e. – a private key (only known by the user) and a public key (viewable by everyone). The private key ensures the user’s secrecy and permits the user to make secure transactions on the blockchain. Whereas, the public key enables to send or receive transactions on the blockchain [15,16].

   This innovation enables the consumer to encrypt their DNA sequence, allow different organization to store, communicate and use the data without infringement in the privacy of the consumer. Moreover, blockchains cannot be hacked because of the underlying encryption protocols. This property made any transaction involving their DNA secure. Such that the data will not end up in the wrong hand and misused [17].

   **Method** : With the combination of blockchain and DNA technology its open ups and paves the new way in the field of genetic research. Due to the cryptography technology of information security and privacy, a greater number of individuals are willing to participating in studies which can contribute to the world-changing findings [18,19].

**Conclusions**

The main goal of this article is not only to create an awareness among the readers about the field of bioinformatics and the security systems but also to introduces the challenges associated with the privacy of the information. Through this article we give brief introduction about the various research areas that are used to protect the privacy of the biological data. Moreover, we give overview how present technologies are inspired from human biological system for designing the computational algorithms.
References


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Role of Bioinformatics in Cancer Research

Introduction

7 million people died every year due to cancer. In next year, this will become 16 million. Researchers identified about 200 varieties of cancer. Cancer is caused because of rapid cell growth in the body which leads to death. Countries like Asia, South America, Africa and Central America counts for 70% of the cancer related deaths in the overall world population. On the other hands, bioinformatics is an inter-disciplinary field which includes Computer Science, Mathematics and other. Huge biological data can be stored, analysed and manipulated in using bioinformatics. Advanced tools and effective algorithms are helpful in analysing these biological data. Thus, in this some of the databases that provide cancer related data were discussed.

Bioinformatics

- Bioinformatics is an emerging technology that put together many fields such us Biology, Computer Science, Information Technology, Mathematical, Chemistry and others.

- Bioinformatics allows the users to store, analyse and manage large quantities of biological datasets.
- Bioinformatics is considered to be a hybrid variety of multiple fields of science.
- Thus, Bioinformatics is used for analysing large data sets to understand the biological processes.

Benign is type of cancer is Adenoma, Lipoma, Myoma etc.
Malignant is type of cancer in lung breast etc.
A normal cell is transformed into cancer cells by some not possessing properties
1. Cell reproduction in a regular basis
2. Cell communication
3. Cell adhesion
4. Cell specialization
5. Cell death
In humans, out of 30000 years 247 genes are diseases genes. Such four main types of cancer include
1. Point mutation
2. Frame shift mutation
3. Change of gene copy number
4. Structural variant

After the evolution of “Human Genome Project” in 2003, has made the analysis of biological data makes easier. Targeted therapies of bioinformatics have two ways of approaches:

- Direct approach – In this method, the cancer cells are targeted directly and their signalling is altered by using drugs such as ligands, MoAbs2 that targets...
the protein structure of the cancer cells.

- **Indirect approach** – In this method, the antibodies are placed in the cell surface and acts as a targeting device to ligands.

**Analysis of Biological Data:**

The genomic data has a huge repository which acts a resource for the researchers. About 10,000 human tumours datasets are available in the database in various aspects such as DNA, RNA, Protein structure and others. Some of the repositories of the genomic data are:

1. cBioPortal
2. UALCAN
3. KM Plotter

- **cBioPortal**
  
  cBioPortal allows the user to show, analyse and download the genomic data. cBioPortal gets input as a set of genes and we can view the outputs such as copy alteration patterns and mutation. cBioPortal is a publicly accessible database. To view mutations

<table>
<thead>
<tr>
<th>TOOL USED</th>
<th>PLOT USED</th>
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<tbody>
<tr>
<td>Mutation Mapper</td>
<td>Lollipop</td>
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To get oncoprints “oncoprinter” tool is used.

- **UALCAN:**
  
  UALCAN is a web portal which is user-friendly. UALCAN supports for many functions such as:
  
  1. Gene expression for input provided
  2. Various tumour subgroups
  3. Identify the cancer stage
  4. Download the results in required formats.

  For e.g.: For a given input sample of gene, it says whether it is a normal tumour gene, estimate the level of cancer and allows to download the result.

  This information is available as a boxplot. And the user can switch between the three various plots such as boxplots, Kaplan Meier Plots and heat maps Kaplan Meier Plots define the survival period for the given input of Tumour cell. And these three plots can be downloaded in desired formats such as PNG, JPEG, PDF and SVG.

- **KM Plotter**
  
  KM Plotter is an efficient tool and access the gene types of about 54000 and also 21 cancer types. Its datasets include over 5000 breasts, 2400 lung, 1800 ovarian patients and so on. This tool helps in providing the survival rate.

**Conclusion**

Food and dietary habits also involved in increasing the risk of Cancer such as less fruit intake, alcoholic addictions and others. Thus, Bioinformatics can be applied in Cancer research such as in analysing, RNA, DNA, gene structure and so on. The above described databases if used efficiently many new inventions for Cancer treatments can be discovered, which will bring a resolution.
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A review on importance of Neonatal care Monitoring System

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Neonatal is one of the crucial periods for new born baby as many of the babies lose their lives at this period due to improper monitoring. This period is nothing but the first 28-30 days of new born and to be taken care very effectively. This period has the highest risk of morality per day of their childhood than any other period. To overcome it, an intensive care to be taken on such children since neonatal death is still high due to improper monitoring system. An IoT based continual monitoring system can be designed along with Machine Learning and Speech Recognition for Video and Audio processing of the child. The risk of life can be minimized by effective continual monitoring and care.

Keywords - Neonatal, risk factors, remedies

1. Introduction

Pain is an unbearable thing if we think of infants that too neonatal. A mother is the one who worries much on the new born baby about its wellbeing. It is not an easy thing to hear by any mother that her child is affected by any issue due to improper monitoring during neonatal period. Infant death during neonatal period is still crucial to digest for any mother. At most care to be taken in order to overcome those difficulties. According to the research, about 0.75 million neonates die every year in India. This is the highest rate of death throughout the country. There are various causes of death of children under 5 years which is shown in Fig. 1 [1].

![Fig. 1: Causes of Death of children (Ref: WHO)](image)

![Fig. 2: Morality rates for newborn by cause of death (Ref: WHO)](image)

Fig. 2 shows the statistics of various causes of neonatal death. It can be observed that there are higher number of deaths are due to per maturity or low birth weight baby. Also state wise comparison is given between 2015 and 2016. Still the numbers of loss of lives are higher, preventive measure to be taken at the initial stage to save neonatal life.

**Causes of Neonatal Death:**

**Low Birth Weight / Pre maturiy:** Low Birth Weight (LBW) describes the weight of the baby which is less than the nominal weight. In India, the average weight of the baby is between 2.5 kgs- 2.9 kgs. The baby who weighs less than 2.5 kgs are termed as LBW or prematurity. This is the prime cause of neonatal death.

**Infections:** Secondly, infection is one of the riskiest things that cause neonatal mortality. For every 100 death, 36 neonatal deaths will be due to infections.

**Birth asphyxia / Trauma:** It is caused due to failure of breathing. It is due to...
insufficient oxygen supply to various organs. According to World Health Organization (WHO), every year 4 million neonatal deaths are a result of Trauma.

Non communicable disease: Non-communicable diseases (NCDs) are one of the many like cardiovascular disease, cancer, chronic respiratory disease and diabetes.

Congenital: It is one of the causes of death due malaria, birth defects, pneumonia and diarrhea.

Injuries: It is one the major causes of losing of child’s life.

Tetanus: Tetanus is also one the non-communicable disease through exposure to the spores of the bacterium.

In this paper, over view of cause of neonatal death causes and statistics is given in Section I. Related research is given in section II. Proposed method and suggestions are described in section III followed by conclusion in section IV.

II. Related Research

There are various research works carried out for preventing the neonatal disease. The life of children is not only affected during the neonatal period but also till the age of 5, there are various factors that causes the loss of life of children. Figure 3 shows the state wise morality of neonatal death.

(i) Infant Monitoring system:

Elham Saadatian et.al. proposed a device which is a low cost, mobility-based monitoring systems which monitors the child even from remote place [3]. The overall architecture of the proposed system is given in Fig. 4. The system is designed in such a way that, the entire baby’s information towards health can be monitored like heartbeat, temperature etc. it will be communicated with the nurses as well as the working mother.

Various sensors like motion, temperature, and heart rate sensors are used for continual monitoring of child’s biological and Physiological data. These analog values will be digitalized and compared with the database for the abnormalities. Figure 5 shows the system flow diagram of the research work.

(ii) Infant Incubator system:

Though there are various diseases that cause loss of lives of children, effective monitoring system of incubator is highly essential to reduce the death rate. Muslim

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**Fig. 3**: State wise Death rate of Neonatal child

**Fig. 4**: Overall System Architecture

**Fig. 5**: System Flow Diagram
Ali et. al., proposed a mechanism to monitor the temperature and humidity continuously [4]. These parameters are to be maintained in such a way that the infant should feel like being in mother’s womb. The temperature and humidity are displayed using LCD display so that the change of temperature and humidity can be easily viewed.

(iii) Pain Assessment of Infants:
The infants may undergo severe pain due to various factors during neonatal period. Ghada Zamzami et al., proposed a method to identify the pain based on the facial expression [5][6][7]. In order to capture the same, a continual video has been recorded to identify the babies’ motion and facial expression. The analysis is made using two classifiers namely: k Nearest Neighbors (KNN) and Support Vector Machine (SVM) help to classify the pain of the child.

III. Proposed Method
Based on the various research works on neonatal death, it is observed that continual monitoring of child is more important to take care during this neonatal period and medications to be supplied immediately based on the condition of the health of the child. So continual recording of the child to be done for understanding pain of the neonatal, irregularities or abnormalities during incubation. The proposed method can be described in two manners

- Machine Learning (ML) based video processing and
- Support Vector Machine (SVM) based audio processing

Machine Learning (ML) based video processing:
Machine Learning (ML) is an application of Artificial Intelligence which automatically learns by itself and improves it from the experience learnt. It can learn from the access data. The proposed method is focused on continual monitoring of the neonatal children; ML helps to understand the behavior of the children from the experience. It helps to identify the pain undergone by the children. It helps to improve the analysis and relevant treatment can be given by the authenticated personalities for the betterment of the children. The problem we face on neonatal death is due to improper treatment at the time of need or failure of intensive care. Continual monitoring-based machine learning helps to overcome such difficulties in turn reduces the death rate.

Support Vector Machine (SVM) based audio processing:
In multimedia, audio classification plays a vital role in identifying the necessary information. In this proposed system, support vector machine (SVM) approach [8][9] is used to identify the silence, sound level. This will be helpful to identify the pain and no pain of the child. With the help of support vector machine, various sounds are classified based on the similarity of the events. And smoothing is performed to eliminate the unwanted noise. It will be then compared with the database to identify the exact pain what the neonatal is undergoing.

IV. Conclusion:
Neonatal death is one of the hardest parts in day-to-day life. Comparatively in India there are large number of neonatal deaths due to improper or failure of intensive care. This paper gives an overview of Neonatal death, causes of death and related works. The paper is presented with the various existing methodologies which helps identify the cause of illness of the child. A method is being proposed for continual monitoring of children during neonatal period. Machine Learning (ML) based video processing is done and Support Vector Machine (SVM) based audio processing can be performed which may be helpful for predicting the pain undergoing by the neonatal and intensive care can be given based on the observation.

References:
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MicroBots: Benefit, Challenges and Potential Applications

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Introduction
Integration of real life challenges with computational solutions leads towards benefits for the society. Various processes need constant effort to achieve best outcome along precise throughput and computers can help mankind to achieve the same. Computational power once integrated with electronically conducted mechanical hardware leads towards robotics. Whenever we correlate with real life challenges than size of the solution does matter.

The microbots are micro devices or bots with an autonomous software program working over a network able to interact with systems. They are designed to accomplish a specific task with precision. These versatile devices are bearing a size of the order of few millimeters to less than a millimeter. Recent times have a major paradigm-shift where the metal based applications got biocompatible transformation majorly through the incorporation of graphene based nano material.

Graphene (G) based structure comprises of graphene oxides (GO), reduced graphene oxide (rGO), fully reduced three-dimensional aerogels are significantly in demand towards futuristic biomedical, industrial, environmental application. The biomimetic behaviour of graphene based nano materials are inspirational while getting success towards abridging natural phenomenon using synthetically designed devices [1]. The Fig. 1 shows the bio medical usage of microbots.

Benefits of using MicroBots
Miniaturlization of computerized hardware based bots aka microbots has opened up a new dimension where size has always been a challenge to analyse and provide solution. Enormous benefits to the society are aligned with the resolution of size based challenges for computerized bots. Microbots can pursue various industrial activities right from operations to machine repair, graphene based microbots are used to remove toxic heavy metals from machines.

They can remove unwanted material from ocean and river waters. Graphene based material are mostly been used in biomedical processes including curing cancers and tumours by active delivery of medicines to the affected areas [1]. They are used in preventive measures towards high blood pressure, heart strokes, post open heart surgery, angioplasty etc. Two dimensional...
substrates of graphene and graphene oxides are found beneficial in damaged tissue engineering [1]. Furthermore, neural stem cell (NSC) culture along with categorization and differentiation of human stem cell are managed using graphene foams as three-dimensional (3D) scaffolds [1]. Graphene as a carbon nano material currently is providing beyond expected results in the field of medical imaging varying from MRI, EPRI, SERS and CARS. These all medical test are working on the principle of magnetic resonance and photoacoustic imaging [1]. Apart from Medical there are various other set of benefits in the field of industrial application and environmental application as shown in Fig. 2.

**Challenges in using MicroBots**

Movement of graphene based microbots was a major challenge, which has been overcome by a multipurpose graphene coated glass ball exhibited focussed gestures with the impact of application with suitable electric field using the chemical potential gradient in the presence of external magnetic field [3]. Graphene Oxide (GO) based bots are created appropriately for various applications in the area of biomedical area, few of them are drug delivery to the patient [2]. Many of the medical cases need gene therapy for getting relieved from genetic or hormonal based illness. It has already making its wayin the field of medical imaging to support combined cancer therapy. In various medical cases it is supporting as antibacterial agents as biosensors [2][3]. Nevertheless, in real time cases nanomaterial based sensors are critically analysed on the basis of its biocompatibility. Up till now, any Graphene Oxide (GO) based applications got their approvals for clinical trials [2].

**Potential Applications of Microbots**

Microbots and minibots exit in many different sizes and they have different applications, which involve various measurement methods, assembly and its control, and their technology. The potential application of microbots includes industrial, medical, disaster, environmental and many more [4][5][6]. The different types of microbots are shown in Fig. 3.

1. **Industrial**: Microbots can be used to do mechanical work, like it is used to construct the objects, used for carrying out number of items. The microbots are also used in micro assembly to fabricate micro-electromechanical in plants. It is also used for cell printing in biological field.

2. **Disaster Relief**: The traditional robots have already known for revolution in everything like in battlefield, disaster recovery and any hazardous conditions. But due to their big sizes we may not able to place robots everywhere where we needed. The microbots is very helpful to do lot of task where we may not use the big robots.

3. **Environmental**: Microbots can be used for removing the radioactive material like uranium from the water. The waste water coming from the nuclear power plants may be reuse by removing the contaminated factor. The bots like ZIF-8 is used to clean the waste of radioactive material. These bots capture the material, separate the waste, remove and recover the water from the uranium.

4. **Medical**: Microbots can design and develop the strategies to make drugs and treatment of many diseases like cancer, tumours, ulcers, liver disease, kidney disease, open heart surgery, and invasive surgery.

- **Cancer Drugs**: The cancer treatment is done by usually drugs, radiation, hyperthermia, and by surgery. The drug treatment is common and easy to treat the disease. But due to uncertainty of circularity functions it's difficult to know the dose of drug in every human body. The hyperthermia has also certain side effects. So to overcome we may use the microbots to treat the cancer. The microbot with biodegradable polymer is used to transport the drugs to body and these bots easily identify the various data needed to treat the cancer.

- **Tumours**: The bacteria-based microbot is a new technique to remove the solid tumours from the body. This bot uses the bacteria as micro-actuators and the sensors is used to deliver the structure to tumours. These microbot help to detect and used to remove tumours targeting ability.

- **Open heart surgery**: The traditional methods for heart surgery is to open the blood vessels. In this the doctors has to change the location and the directions, which is very difficult to identify and insert the wire into blood vessels. That seems very large and risky process. The macrobots are now used to locate the guide wire and that is controlled by magnetic fields and master slave system. These bot ensure the particular location and faster recovery of the patient.

- **Invasive Surgery**: Microrobots can used for invasive surgery. It include opening of clogged vessels, hyperthermia treatment and removal of biomaterial. This microbot travel in the human body (like cardiovascular system) to detect the disease and try to remove the same.

- **Ulcers**: The microbots is used to find out the ulcer in human stomach. It help to record, find and evaluate the ulcer in the human body.

**Conclusion**: Microbots is the emerging technology in robot science. The technology have number of benefits compared to traditional large robotic system. Microbots have many applications in almost each and every field, but best promising application in medical

*Contd. on page 26*
field. It provide treatment of disease in best care possible. It helps to create environment and water pollutant free. The research in this field give many advantages to human, our surrounding for treatment and diagnosis of any harmful diseases.

References:

About the Authors

Dr. Durgansh Sharma currently working as Associate Professor, Computer Science and Engineering, University of Petroleum and energy studies, Dehradun. He has conducted various workshop, conferences MDP and FDP. He Guides various students for research and project work. He is an authored 25 research papers, 1 consult ancy project. His academic interest includes image processing, machine vision, Robotic Process Automation, IoT systems, healthcare. He can be reached at durgansh.sharma@ddn.upes.ac.in.

Dr. Sunil Gupta [CSI- F8000738], currently working as Professor, Computer Science and Engineering, University of Petroleum and energy studies, Dehradun. He has conducted various workshop, conferences and FDP. He Guides various students for research and project work. He is an authored 65 research papers, Four Patent and two books, namely Cryptography and Network Security and Wireless Sensor Networks. His academic interest includes security, cloud computing, big data, sensor and wireless networks, healthcare. He can be reached at s.gupta@ddn.upes.ac.in.
Phylogenetic trees in Bio-informatics

D. Evangeline
Assistant Professor in Department of Information Science and Engineering at Ramaiah Institute of Technology Bangalore. Email: evangeline271088@gmail.com

It is well-known that taxonomy is the study of classification of organisms [1]. Phylogeny is related to taxonomy. It brings out the evolution and lineage of species [2]. Indirectly, phylogeny rests on DNA and protein sequences of organisms. It is required to understand evolutionary and population history; rate of evolutionary change; origin of diseases; etc. [3]. Phylogenetic trees also known as evolutionary trees represent phylogeny in tree structure.

Terminology and classification
Terminology in tree data structure is well-known to computer science literates. As already known, tree has a root, internal nodes and leaf nodes all connected through left, right or multiple branches. Here also, such terminology is applicable but phylogenetic trees may or may not possess roots. Now, phylogenetic trees may be classified as follows [4]:

1. Rooted tree: The organism mentioned in tree root is the common ancestor for all other organisms mentioned in internal or leaf nodes.
2. Unrooted tree: This type of tree highlights the relationships between various organisms mentioned in various nodes of the tree. It is also possible to construct an unrooted tree from a rooted tree by ignoring the root and focusing only on relationships between different organisms.
3. Bifurcating / multifurcating tree: Rooted and unrooted trees can have left and right branches in case of bifurcating trees. Also, when more than two branches exist in evolutionary trees, they are termed as multifurcating trees.

![Figure 1 Types of Phylogenetic trees](image)

One must assume each and every node in phylogenetic tree represents a single taxonomic unit. Fig. 1 (a) is a rooted tree which is bifurcated. There is also a possibility of multifurcation. One can also understand from Fig. 1 (a) that nodes B and C have one common ancestor A. Now, B and C are sister groups. And the root A is the most recent common ancestor (MRCA) of the taxonomy represented in the tree. Sometimes, phylogenetic trees may include least related taxon with least related characteristic traits which are termed as outgroup [6].

Mostly rooted trees are cladograms that gives relative recency of common ancestry [1]. Unrooted trees are phylograms or additive trees wherein a cladogram with branch lengths can be seen. One special type of tree, dendrogram or ultrametric tree are again phylograms wherein all leaf nodes are equidistant from root node.

Example for Tree Construction
National Center for Biotechnology Information (NCBI) has phylogenetic lineages of over 1,60,000 organisms. PhyLOT [9] is an online tool that generates phylogenetic trees and uses terminology of NCBI. One simple example is worked out in this tool. Phylogenetic tree for Homo sapiens (Humans), Mus musculus (House mouse), Gallus gallus (Red junglefowl), Drosophila melanogaster (a species of fly) and Escherichia coli (Bacteria) is worked out and the results can be viewed in Figure 2 (a) and (b).

We can notice that this is an unrooted tree and of all the organisms, Escherichia coli is totally unrelated species. There are many tools that build, process and analyze phylogenetic trees [10].

Construction of phylogenetic tree
Usually, genetic data like DNA sequences, RNA genomic sequences, are considered and homology, i.e., similarity owing to common ancestry is understood to construct phylogenetic trees. The methods for construction of phylogenetic trees can be classified into two broad categories as phenetic and cladistic methods. While phenetic methods are based on distances, cladistic methods are based on characters [5].
Phenetic methods: Some distance metrics used widely include arithmetic mean as in Unweighted Pair Group Method with Arithmetic Mean (UPGMA), estimation of closest neighbors as in case of Neighbor Joining (NJ), fitting trees into distance matrices as in case of Fitch – Margoliash (FM) method, finding tree with minimum sum of branch lengths in Minimum Evolution (ME) method, etc.[1,5].

Cladistic methods: These methods employ evolutionary information like substitution in sequences to determine ancestral relationships [5]. The concept of parsimony which means most likely branching pattern is the pattern that requires fewest changes is employed here. Maximum Parsimony (MP) and Maximum Likelihood (ML) are two well-known algorithms in such genre. While both algorithms generate all possible trees, MP chooses one that minimizes overall count of mutation operations and ML searches for one with maximum likelihood.[1,5]

Validation methods like Bootstrapping and Jack knife can also be used to construct phylogenetic trees [1].

Role of computer science in phylogeny

It is evident that phylogenetic tree construction itself involves very common computer science operations like string matching, distance editing, matrix operations, etc., Again, tree is a ubiquitous data structure [8], variants of which are parse trees in compiler design, decision trees in machine learning, etc.

One important measure in phylogenetic trees is Phylogenetic diversity (PD) which is defined as the spatial spread in the tree that is given by total length of the phylogenetic tree connecting the species [7]. PD can be optimized using greedy algorithms wherein an optimal solution is selected at every stage to arrive at final optimal solution. Travelling salesman problem is one classic greedy algorithm. Clustering approach is generally adopted while constructing dendrograms.

Classification is employed to assign organisms under each node in the tree. Genome sequencing is essential prerequisite for construction of trees and cost estimation and extinction risk analysis must be done to determine the same. Dynamic programming approach that divides problems into sub-problems, finds solutions for sub-problems and stitches those solutions to arrive at the solution to the problem can be utilized for such cost estimation. Distance methods and matrices compute closeness of different taxa in the tree. Branch and bound approach can be used on ME trees. This explains the inevitability of computer science algorithmic approaches in the field of bioinformatics.

References

[9] https://phylot.biobyte.de/

About the Author

Ms. D. Evangeline (I501816) is working as an Assistant Professor in Department of Information Science and Engineering in Ramaiah Institute of Technology, Bangalore. Her areas of interest include Computer Graphics, Digital Image Processing and Evolutionary Algorithms. She has authored publications in journals and national and international conferences. She is the author of the book on "Computer Graphics and Multimedia: Insights, Mathematical Models and Programming Paradigms"
Agent based Bioinformatics Integration using JADE - Overview

S. Balakrishnan  
Professor and Head, Department of Computer Science and Business Systems,  
Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India.  
Email: balkiparu@gmail.com

The reception of agent technologies and multi-agent systems comprises a rising domain in bioinformatics. Immense measures of life sciences information are spread far and wide as alternate sorts of heterogeneous information sources. They should have the option to co-relate important data is crucial to build the general information and comprehension of a particular subject. In an Artificial Intelligence world, Agent-based innovation is one of the most lively and significant territories of R&D, developing Information Technology in the business as of late. Intelligent Agent (IA) is a self-sufficient substance which watches, examinations and reacts to a domain proper to accomplish the normal objective. The IA forces a few classes, for example, "Coordination, Integration, Mobility, Believable Agent and Assistance" in accomplishing its anticipation. In this article, we introduce agent technology and how agent technology can be useful for bioinformatics integration.

1. Introduction

"System integration" is a difficult research territory, significant for bioinformatics. "Agent technology" has been effectively applied in the past to "System integration". The primary objective of integration is to give components that can bring together various (PC) frameworks. By frameworks we principally allude to information sources, similar to databases, web servers, etc. Rather than having to physically ask for (inquiry) information from different assets and afterward consolidate the outcomes to get increasingly valuable data, one might want an integrated system that can computerize such a procedure. We can depict such usefulness as various advances: (i) "the user makes a request (query) to the integrated system; such a request may require more than one data source to be satisfied; (ii) the integration system processes the request and decides how to split it into sub-requests specific to data sources; (iii) the sub-requests are made and all individual results are returned to the integration system; and finally (iv) the results are combined to a coherent answer which is returned to the user". Three important aspects of system integration are "distribution, autonomy and heterogeneity".

1.1 Bioinformatics System Integration

"System integration" is a difficult research point, significant for most application areas. This is particularly valid in bioinformatics frameworks in view of the inborn multifaceted nature of the area in which: (i) "most rules have exceptions; (ii) there is a rich variety in data, from one-dimensional genome or protein sequences to three-dimensional models of embryos—3D images demanding vast amounts of storage capacity; (iii) complex relationships between structures; (iv) variation in curation and quality control standards; (v) multiple sources of similar data, in some cases interpreted versions of the same data; and (vi) uncertainty, natural variation, experimental error, interpretation error, computational error".

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
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<td>Autonomous</td>
<td>Agents can exercise control over their internal state and actions without direct human or other interaction.</td>
</tr>
<tr>
<td>Communicative</td>
<td>are sociably able.</td>
</tr>
<tr>
<td>Reactive</td>
<td>Respond in a timely fashion to their input.</td>
</tr>
<tr>
<td>Pro-active</td>
<td>are goal-oriented and take the initiative where appropriate.</td>
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<tr>
<td>Planning</td>
<td>can plan their own actions.</td>
</tr>
<tr>
<td>Persistent</td>
<td>have temporally continuous state.</td>
</tr>
<tr>
<td>Adaptive</td>
<td>can learn and change their behavior on the basis of their previous experience.</td>
</tr>
<tr>
<td>Mobile</td>
<td>have the ability to transport themselves from one machine to another.</td>
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</table>

Figure 2: Agents’ properties
3. Agent Technology and Bioinformatics Integration

Three significant parts of biological data integration are “distribution, autonomy and heterogeneity”. Distributions, much of the time information sources are conveyed. The client need not know the area and different subtleties of each accessible information asset. Autonomy, it is all the time the case that coordinated assets have a place with various associations or research

Fig. 1: Basic Agent

Fig. 3: Structure of Agent

Fig. 4: Agentification approaches

Fig. 5: Integration Procedure - Overview
While a great many people are happy to share their information, they would prefer not to lose power over choices for their information source. Hence, the engineers of an incorporated framework don’t as a rule have any power over the fundamental frameworks, which are self-sufficient. Heterogeneity, in an open and various condition it is extremely regular that a few or the entirety of the information sources are not the same as one another. Coordinating heterogeneous databases includes additional work in order to guarantee the right relationship of information between the data frameworks. Agents normally spread the basic parts of information incorporation.

Conclusion

Biology is an information concentrated science and an enormous number of information sources are freely accessible. Information sources are incorporated to empower more elevated level inquiries to be replied by joining their information. Integration is a perplexing assignment expecting to give a brought together perspective on the fundamental assets, while wiping out potential specialized and semantic heterogeneity. The “mediation way to deal with integration is broadly utilized and most bioinformatics mix frameworks make use—in various degree—of it”. Agent technology is a “multi-disciplinary research field joining work from circulated frameworks, AI, and social (e.g., agent associations and correspondence) and monetary (e.g., sell off conventions) sciences”.

References


About the Author

Prof. S. Balakrishnan (CSI Membership 2060000034) is a Professor at Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India. He has 17 years of experience in teaching, research and administration. He has published over 15 books, 3 Book Chapters, 16 Technical articles in CSI Communications Magazine and over 100 publications in highly cited Journals and Conferences. His professional awards include: 100 Inspiring Authors of India, Deloitte Innovation Award, Cash Prize ₹ 10,000/-, from Deloittee for Smart India Hackathon 2018, Patent Published Award, Impactful Author of the Year 2017-18, Best Faculty – Computer Science and Engineering, Teaching Excellence Award, I2OR - Bright Researcher Award, Best Outstanding Faculty Award, Best Teacher Award, Best Research Paper Award, Best Book Publication Award and Best Book Chapter Award, Special Contributor Award and Star Performer Award. His research interests are Artificial Intelligence, Cloud Computing and IoT. He has delivered several guest lectures, seminars and chaired a session for various Conferences. He is serving as a Reviewer and Editorial Board Member of many reputed Journals and acted as Session chair and Technical Program Committee member of National conferences and International Conferences at Vietnam, China, America and Bangkok. He has filed/published Patents on IoT Applications.
## DELEGATE DETAILS

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*Delegate fee includes convention kit, refreshment, lunch and convention dinner

*Accompanying Person fee includes refreshment, lunch and convention dinner.

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<td>11 and above</td>
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### PRE-CONVENTION TUTORIAL

(15th January 2020) Inclusive of GST @ 18%

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<td>Tutorial + Convention</td>
<td>₹ 1000 + Convention as applicable</td>
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Amount in Words

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2020 International Conference on Computer Science, Engineering and Applications (ICCSEA 2020) aims to strengthen the collaboration and provide a forum for academicians, professionals and researchers to discuss and exchange their research results, innovative ideas, and experiences in all aspects of Computer Science, Engineering and Applications, as well as to identify emerging research topics and define the future directions to achieve the development of computing technologies.

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Blockchain Technologies
IoT and Industry 4.0
Computational Intelligence
Reconfigurable Computing Systems
Computing Ethics
Soft Computing
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Thanks & Regards
Prof. (Dr.) Sanjay Kumar Kuanar
Convener, ICCSEA 2020 | http://iccsea2020.in/

CSI President visit to The Ramakrishna Mission Vidyamandira,
Belur Math, Howrah, West Bengal.

CSI President Prof. A K Nayak meeting with Principal and Vice Principal Maharaj and Faculty members of Department of Computer Science & Electronics on 13th November 2019 and discussed for opening a Student Branch at The Ramakrishna Mission Vidyamandira, Belur Math, Howrah, West Bengal.
CSI Bihar -State Student Convention-2019

Reported by Mr. Subhash Chandra Pandit, SBC, CSI Student Branch, NSIT, Patna

November 16, 2019, CSI Student Branch of Netaji Subhas Institute of Technology, Bihta, Patna organized the Prestigious State Student Convention of Bihar on the theme Blockchain at its campus. Prof. A K Nayak, National President of CSI was the Chief Guest and inaugurated the convention. He addressed the participants with an enthusiastic speech. He focused on the importance and future prospects of BLOCKCHAIN. Guest of honor were Md. Shams Raza, Regional Vice-President, CSI Region-II and Dr. Shailesh Srivastava, Chairman, CSI Patna Chapter & Head Digital Government Research Center. Gopal Krishna, Bihar State Student Coordinator briefly outlined CSI activities in Bihar.

The function commenced with National Anthem followed by Saraswati Vandana and traditional lamp lighting by the dignitaries present. Dr. S V Pandit Dean Academic, NSIT welcomed the guests by presenting mementos and baby plants. Mrs. Sarita Chaudhary, HOD, CSE introduced the event. Mr. Pradeep Kumar, Assistant Professor, CSE coordinated the convention as the organizing chair. Mr. Subhash Chandra Pandit, Assistant Professor, CSE proposed vote of thanks as CSI Student Branch Coordinator. Dr. Raju Haldar, Assistant Professor, IIT Patna was the keynote speaker, he discussed applications & tools of BLOCKCHAIN and crypto-currencies. Mr. K L Ambastha, HOD-IT, ISM Patna gave the thematic address.

Various student activities and inter college competitions were organized in this convention. Paper Presentation, Poster Presentation, Panel Discussion, Debate and other activities were held during the convention. About 300 students and 30 delegates from more than 10 colleges of Bihar participated in the convention. Members of panel discussion were Dr. Julie Banerjee, Incahrge-UG Programs, Mr. Rakesh Kumar, Senior Member, CSI & IT Consultant Bihar Government and Mr. Anshuman Arya, Assistant Professor, Amity Patna. Some of the participating institutes were IIT Patna, NIT Patna, BIT Mesra, Patna Women's College, IGNOU Patna, LNMI Patna, ISM Patna, Amity Patna. Industry Presentation was given by ICETL Pvt. Ltd.

The valedictory session to mark the conclusion of the convention was held during the second half of the day with felicitation and prize distributions. "Winners of inter college competitions were awarded by medals, certificates and cash prizes". The delegates, as well as the student participants from NSIT and other educational institutions expressed deep sense of satisfaction over the quality of events organized and made this event a grand success. Few notables among them are Mr. A P Singh, Dr. Swastika Sinha, Mr. Rajani Ranjan, Dr. Jyotirmayee Dalei, Mr. Akash Singh, Mr. Abhijeet Pandey, Mr. Varun Pandey, Mr. B K Prasad. CSI student members also contributed to this event make it successful, some of them are Mansi, Salik, Shaurya, Sanju, Ayush Aman, Shantanu, Aditi, Sunakshi, Prafull, Faiza, Sandeep, Priti, Shriya, Divyanka. The CSI State Student Convention concluded with vote of thanks by Mr. Devashish Gautam, Assistant Professor, Department of Mechanical Engineering, NSIT.
Digital Security and Privacy

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

CSI Chennai Chapter in association with Department of Computer Science, Anna Adarsh college for Women, Chennai organized a presentation and panel discussion on "Digital Security and Privacy" on Saturday 16th November 2019. Prof. J. Jerald Inico, Hony. Secretary of CSI Chennai Chapter was the Master of Ceremony for the entire programme. Chapter Chairman Dr. E. Iniya Nehru welcomed the gathering and elaborated on the pros and cons of internet and digital data.

Vice Chairman Prof. P. V. Subramanian, Treasurer Mr. Anatha Padmanabhan, Past Chairman Mr. Vasudeva Rao, MC members Mr. Rajaraman, Dr. Prema Kirubakaran and Mrs. Sree Suba witnessed the programme and felicitated the guest speakers. Mrs. Ranjana, Assistant Professor, Anna Adarsh College for women introduced the speakers with their contribution to the Digital Security and Privacy.

Mr. V. Balu, Cyber Advocate started the session on privacy with a quote that "we are digitally naked". Without knowing the impact of privacy, everyone is sharing texts, audio, video in a unsecured environment. Impeachment of data and instances of Mr. Donald Trump and Google CEO Mr. Sundar Pichai’s explanation on data breach before US lawyers were briefed. Data insecurity was explained with yesterday, today and tomorrow events as "Mobile in our hand, data in their hand" and the crowd applauded with great acceptance. China has banned Google, Whatsapp and facebook as they strongly believe that "Non-sense is given at free of cost". A strong warning implied with the quote "If anything is illegal, so don’t try it at all".

Mr. Jude Collins from EY explained how to build digital trust with effective Cyber Program. He compared Global trends and Indian trends on Digital security with samples from OLA and Uber marketing. Why cyber-attacks are increasing? And who is attacking us? were also discussed. A careless employee can be the reason for data hacking and only people around us are the hackers. The monetary value of Cyber-attacks were also evaluated. A picture of Cyber security workforce expectations connected with job opportunities in digital field was explained. CISO (Chief Information Security office) in Infosec wheel was pointed out well. "Cyber security is not an IT problem, it is everyone’s problem” was hammered into everyone’s sense.

The Panel Discussion was headed by Mr. Ravishankar Ranganathan, AVP-K7 Computing, the panellists including Mrs. Lavanya, Additional SP Cyber Crime, Cyber Advocate Mr. V. Balu, Mr. Jude Collins, Mr. Naveen K K, Security Service Manager, IBM and Mr. Ashiq Ramachandran, budding Entrepreneur in Cyber Security. Ms. Lavanya was briefing on cyber data security and data protection in Police department. She also elaborated the government initiatives to curb cybercrime with a website www.cybercrime.gov.in and the openings for the experts in police. Mr. Naveen spoke about security fissure handling and the opportunities in armed forces. Mr. Ashiq gave a note on social engineering with data theft without our knowledge.

To encourage punctuality, a lucky draw was conducted and prizes were given. The presentation ended with Vote of Thanks by Dr. Hannah Vijayakumar- HoD, Department of Computer Science, Anna Adarsh College for Women.
CSI Regional Student Convention for Region-II at MCKV Institute of Engineering, Liluah, Howrah

The program started with Lord Ganesh Vandana to mark the auspicious beginning of the CSI Regional Student Convention (Region-II) and followed by felicitation of the dignitaries. Prof Saikat Maity, Hon'ble Vice Chancellor of Maulana Abul Kalam Azad University of Technology, Kolkata, preside the inauguration program and other dignitaries are Sh. Kishan kumar Kejriwal, Managing Trustee and Prof (Dr.) Buddhadeb Chattopadhyay, Principal of MCKV Institute of Engineering along with Dr. Somnath Mukhopadhyay, Regional Student Coordinator, CSI, Region-II were present on the dais and deliver their speeches.

Chapter Chairman Mr. Gautam Hajra, Dr. Aniruddha Nag, Vice Chairman cum Chairman Elect, CSI Kolkata Chapter, Dr. Diganta Sengupta CSI State Student Coordinator, Mr. Sourav Chakrabarty, Secretary, CSI Kolkata Chapter and Mr. Snehasis Banerjee, Treasurer, CSI Kolkata Chapter. First keynote speech was delivered by Prof. Dipti Prasad Mukhopadhyay, Electronics and Communication Sciences Unit, ISI Kolkata on Random Forest and second keynote speech was given by Dr. Arpan Pal, Chief Scientist and Research Area Head, TCS Innovation Lab, Kolkata on Internet of Things (IOT). Around 300 students were present during the keynote speech and other events takes place throughout the day.

CSI Presidet Prof. A K Nayak delivering the validictory address

The paper presentation takes place in two parallel sessions and the Judges were Prof. Subimal Kundu, Fellow, CSI and Dr. Diganta Sengupta from CSI Kolkata chapter. In total 60 papers were received and after review process 44 papers were rejected due to poor quality. 16 papers were selected and presented finally by the students and best three presented papers were awarded prizes and certificates.

In ICT quiz 14 teams participated initially and 07 teams qualify for the second round and the three teams enter the final round and winners were awarded with medals, certificates and mementos.

CSI State Student Convention for West Bengal at JIS College of Engineering, Kalyani

On 14th November 2019, CSI West Bengal State Student Convention 2K19 was organized with the theme of Machine Learning and Internet of Things, organised by CSI Student Branch of JIS College of Engineering, Kalyani West Bengal.

Dr. Malay R. Dave, Principal, JIS College of Engineering delivered his welcome address. After his motivating words, honourable Prof. (Dr.) A. K. Nayak, President of CSI delivered a priceless inaugural speech. Then, Mr. Gautam Hajra, Chairman, CSI Kolkata Chapter, Mr. MD Shams Raza, Regional Vice President of CSI, Region-II and Dr. Somnath Mukhopadhyay, Regional Student Coordinator, Region II, CSI, address the audience. Honourable Chief Guest Prof. (Dr.) Saikat Maity, VC of MAKAUT addressed the gathering and highlighted about the bridge between industry and academia. Finally, the session was concluded with the Vote of Thanks by Dr. Partha Sarkar, Vice Principal of JIS College of Engineering.

After a short break, the convention resumed with the keynote address by Prof. (Dr.) J. K. Mandal, Dept. of CSE, University of Kalyani, followed by Mr. Atul Prakash Agarwal, Managing Director, APT Software. Mr. Snehasis Banerjee, Scientist in TCS Research gave a beneficial speech from the student's point of view on Career/ Job opportunities. The session was concluded by a CSE Alumni, who talked about his own experiences, lightening the path of the student’s upcoming unseen future. The convention includes research paper presentation, coding competition and technical poster competition as three parallel events. After the declaration of results, Mr. Sudipta Sahana, the Student Branch Counsellor of CSI Student Chapter, JIS College of Engineering, shared his experiences associated with this event. The eventful day was drawn to a conclusion by the Dr. DharmPal Singh, the Head of the department of Computer Science and Engineering. The Long day ended by distributing the certificates of participation.
Karnataka State Level SBCs Meet at AIMIT

Reported by Mrs. K A Anitha Venkatesh, CSI State Student Coordinator, Karnataka

State Level CSI Student Branch Counsellors Meet for Karnataka was organized for the first time in Mysore by Mrs. K. A. Anitha Venkatesh, State student coordinator of Karnataka on 3rd November 2019 at AIMIT (Adithya Institute of Management Information Technology) Mysore. Professors designated as CSI Student Branch Counsellors from various Engineering colleges from across the state were participated and showed their enthusiasm to know about the activities that can be conducted for the benefits to Institutions and students. Mrs. K.A. Anitha Venkatesh welcomed all the participants. Mrs. K.A. Anitha Venkatesh created awareness to all the participants “About CSI” which was a unique feature of the meet that was totally enjoyed and appreciated by the participants. She also briefed about the objectives of calling the meet and the various activities like symposiums, workshops, seminars, product exhibitions, technical competition’s that can be conducted at the college, state, regional & international levels. She also provided guidelines regarding the formalities to be followed for seeking the technical & financial support from the national body to conduct state, regional & national level events. The participants were informed to nominate for various awards constituted for the student branch members & counsellors that was already mailed to the SBCs which would be presented during the 53rd CSI annual convention that will be held at KiiT, Bhubaneshwar, Odisha during Jan 2020. During the meet all the queries by the participants were clarified by the office bearers of CSI Mysore chapter. The meeting was presided by Mysore Chapter Chairperson Mrs Aruna Devi, former Chairman B S Vishwanath Rao, Immediate Past Chairman Prof M S Veerendra Kumar, Hon Secretary J. G. Venaktesh, MC member J.V.Shrivatsa & Vote of Thanks was proposed by Vice Chairman Prof Mohamed Minhaj. More than 25 members participated in the meet making the event successful. The meeting came to an end with Post lunch, a photo session followed by a feedback by the participants. Prof Mohammed Minhaj, Vice chairman Mysore Chapter appreciated the participants to come from far off places that too on a Sunday to know more about CSI & bring CSI to greater heights by percolating the benefits of CSI to the members and student community.

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<th>Themes for CSI Communications</th>
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ASANSOL ENGINEERING COLLEGE, VIVEKANANDA SARANI, ASANSOL, WB (REGION-II)

The CSI Student Wing of Asansol Engineering College, Vivekananda Sarani, Asansol-713305, West Bengal was inaugurated on 11th November 2019. The student branch of AEC was opened with a total of 676 students. Mr. Gautam Hajra (Chairman, CSI Kolkata Chapter) was the Guest of Honour for the inauguration ceremony.

The inauguration ceremony was followed by a seminar on “IoT and Machine Learning”. The Speakers for the seminar were Dr. Anirban Mukhopadhyay, Professor, Department of Computer Science and Engineering, University of Kalyani, Kalyani, West Bengal. Dr. Somnath Mukhopadhyay, Asst. Professor, Department of Computer Science & Engineering, Assam University, Silchar-788011 Regional Student Coordinator, Region II, Computer Society of India. Mr. Hrishav Bakul Barua Embedded Systems and Robotics Research Group Tata Research & Innovation Labs, Kolkata.

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY, HYDERABAD (REGION-V)

The CSI Student Chapter at MRCET for the departments of IT was inaugurated on 2nd November 2019 by Dr. V S K Reddy, Principal, MRCET along N. S. Gowri Ganesh, HOD, IT. After lighting the lamp, Dr. V S K Reddy, Principal, MRCET welcomed everybody and he stressed on the need for students to associate themselves with organizations like Computer Society of India.

Mr. G V Seshu Kumar, Immediate Past Chairman, CSI Hyderabad Chapter and Global Head, Wipro for Virtual Desk spoke about the different activities of CSI. He stressed to organize various events related to CSI such as tutorials, seminars, conferences etc. for the benefit of the student & faculty community. Then Mr. Prashant Sahoo, DevOps Engineer, certified Block Chain Expert and Scrum Master, TCS delivered a talk on "Block Chain Technology". Blockchain owes its name to how it works and the manner it stores the data, namely that the information is packaged into blocks, which link to form a chain with other blocks of similar information. Once the data is recorded in a block it cannot be altered without having to change every block that came after it, making it impossible to do so without it being seen by the other participants on the network. The program was a grand success and paved way for many such endeavours in future.
JYOTHISHMATHI INSTITUTE OF TECHNOLOGY & SCIENCE, KARIMNAGAR, ANDHRA PRADESH (REGION-V)

CSI Student Branch (JITS-CSI Student Chapter) for the academic year 2019-2020 was inaugurated on 7th November 2019. The esteemed chief guest for the inauguration was Dr. K. Seetha Ram Babu, Chairman, CSI-Hyderabad Chapter highlighted the importance of Job versus Career, Multi-Disciplinary Projects, Skills to be acquired, Industry Scenario and Upcoming New Technologies. Principal Dr. G. Lakshmi Narayan Rao, Academic Dean Dr. S.V.S Rama Krishnam Raju, Convener and HOD-CSE Dr. R. Jegadesan, Co-Convener, Mrs. P. Pranitha, Coordinator R. Satya Teja, Faculty Member and CSI student president, Vice President and organizing committee and participants have participated and made the program a grand success.

FILL & FLAIR is a technical event in which 50 Students are participated in this we have three categories. Technical missing letters, Identifying Company logos and tag lines and Technical connecting pictures. C-COLLESIUM is an event in which 95 students are participated. In this event multiple choice questions are asked about the C- language. ZIG-ZAG is one more event for which 90 students were participated. This event based on C-programming language in which we move little bit forward instead of asking the basic questions to the programming part in which it is wrongly coded and jumbled and the participant as to execute the program in correct order.

JAIN COLLEGE OF ENGINEERING AND TECHNOLOGY, HUBBALLI, KARNATAKA, (REGION-V)

The CSI Student branch at Jain College of Engineering and Technology, Hubballi, Karnataka was inaugurated on 18th November 2019. Ms. Mahima and Ms. Mahalasa rendered the invocation to invoke the blessings of the Almighty. Dr. Sindhu P. Menon, Head-CSE delivered the welcome address. The dignitaries lighted the lamp to mark the beginning of an auspicious event. Prof. Sadanand Pamadi highlighted the various initiatives taken up by CSI. Dr. Prashanth Banakar, Principal delivered the presidential remarks. He stressed on the need for students to take up various research-oriented projects and how such professional bodies can help in the same. CSI Student branch Coordinator Prof. Venkatesh Ekbote was introduced to the gathering. Vote of thanks was proposed by Prof. Guruprasad Konnurmath.

The event was followed by a talk by the guest, Dr. Anbunathan R. on “Digital Transformation” and how the various technologies like IoT, Block Chain, Big Data, Deep Learning and many more are changing our lives. He also narrating these with supportive videos and real-life examples. He opined that if the students are well versed in these areas, then they will end up in multiple job offers. He also encouraged students to become entrepreneurs and stressed on the fact that students must involve themselves in real world projects and exhibit them through various channels.

ADICHUNCHANAHIRI INSTITUTE OF TECHNOLOGY, CHIKKAMAGALURU, KARNATAKA (REGION-V)

CSI student branch was inaugurated at Adichunchanahiri Institute of Technology on 14 November 2019 as part of Children’s day celebrations. Various Students clubs were also Inaugurated on the same occasion. The inauguration function in the presence of all the
students from Computer Science and Engineering. The chief guest of the function was Dr Jayantha K S, Principal, Malnad College of Engineering. Dr Jayantha Inaugurated the function and in his Chief Guest address highlighted the need of enrollment in various clubs and its benefits in building character and Professionalism. Dr. C T Jayadeva, Principal, Adichunchanahiri Institute of Technology was the president of the function. Dr. Pushpa Ravikumar, HOD, Dept. of Computer Science and Engineering and Dr. Sunitha M R, Professor, Dept. of Computer Science and Engineering were present. The inauguration function was followed by cultural activities from the members of the Cultural club.

MIT World Peace University-
CSI Student Chapter inauguration (Region-VI)

MITWPU- CSI Student Chapter has been inaugurated on 9th Nov 2019 followed by one day hands on workshop on UI/UX design. Mr. Abhay Pendse Past-Chairman CSI Pune Chapter, Dr. L. K. Kshirsagar Principal, MIT, Pune, Dr. V. Y. Kulkarni, HoD, Computer Engineering Dept., MIT, Pune and Dr. B. M. Patil, Secretary, CSI Pune Chapter were present for the inauguration event. The inauguration is followed by Keynote speech on “Introduction to UI/UX Design” by Mr. Tarun Jakhodia, Equal Expert, Pune.

The session is continued by Ms. Nikita Pathak. She took hands on workshop on UI/UX design. She also gave mini projects to students. Total 50 students attended this workshop. UI/UX is recent trends in Industry now a days. The session was full of useful information for the participating students and was a very interactive affair.

The entire event was organized by Prof. Pradnya V. Kulkarni and Prof. Mamta S. Bhamare. Mr. Harsh Mehta and Rujul Walwekar (Student members of CSI).

Call for Paper for CSI Journal of Computing

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 : csijournal@csi-india.org with a copy to aknayak@iibm.in. CSI Journal of Computing.

Prof. A K Nayak
Publisher
FDP was conducted in three sessions, the first two sessions were handled by Mr Santhosh Naganathan, Senior Manager, Cognizant Digital Business – Cognizant Technology Solutions on Artificial Intelligence and Machine learning. An interesting concept was featured regarding Blockchain, which is a technology that can help track transactions between users in a public ledger which was developed originally for Bitcoin technology as well as its need in this era. A quite good set of examples on AI was also highlighted. The real importance of structured data, unstructured data and MongoDB along with various products of AI was brought to our notice. How the AI is working in Desko Company was also delivered.

The second session was the Machine learning concepts which is quite popular these days. The different online courses for machine learning in different websites were informed, which would really help us learn more on this concept. The basic idea behind machine learning, data bridge, Microsoft Azure platform were very useful. An example demo was also presented which made us learn better regarding these concepts. Machine learning is a vast area which focused on Amazon Web Service; a good coverage was given on different fields of Machine Learning. Concepts on Lambda Architecture, Dev Ops and AI implementation were also covered in that session.

In the third session, Dr. S. Sridevy, MC Member introduced the speaker. The last session was taken over by Mr. R. Saravana Kumar, CEO, Sarvam Institute of ENTE & Research, Former Director - Cognizant Technology Solutions on Inculcating Life Skills. This is worth as it was one of the basic needs. What a life skill is? what are its benefits, the different types of skills- hard skill and soft skill and their importance were highlighted. Communication and Interpersonal skills which are important were covered with a video of seven Cs of Communication. Best problem-solving techniques, five why techniques, time management, five traits of a successful leader all were incredibly enlightened with astounding videos. There were around 60 participants from various colleges including faculty members and Industrial members. Dr. G. Radhamani, vice chairperson proposed the vote of thanks.

CSI Kancheepuram Chapter Organized a six days faculty development programme on D2F - Database to Forensics in association with Department of Information Technology of SRM Vallianmai Engineering College from 2nd November to 8th November 2019 at SRM Vallianmai Engineering College. Mr Ramprakash Ramamurthy, Zoho Corporation, Chennai explained the basic concepts of Big data with real time examples. Ms R Thermozhi, Asst Professor gave an elaborate lecture about data independence and data integrity, data security, data sharing, data redundancy and emerging database technologies. Dr S Narayanan, Asst Professor briefed the basic methodologies of Data Analytics and configuration of Hadoop with hands on session. Mr R Sankaranarayanan, Asst Professor delivered and highlighted the basic concepts of Cyber Forensics and its impact on the society with case studies – Credit card Fraud, Blackmailing, Illegal money Transfer. Ms. S. Shenbagavadi, Asst Professor who gave a lecture on Transaction management with real-life examples. She had given a demo on Data management, Data definition and Transaction control language queries. Dr A R Revathi, Associate Professor, delivered lecture on Database Applications. She correlates application of database in the field of Data Analytics, Data mining and Data warehousing. Dr S Jeyalakshmi, Asst Professor gave an overview delivered on Java Database Connectivity. During the FDP, the Participants were visited the VENDAR TV, to know about the Data Security and Networking in the TV Channel. Mr Rangaraj Pandey, CEO, VENDAR TV addressed about the Data Security and Networking in the TV Channel. Mrs S. Shenbagavadi, Asst Professor who gave a lecture on Transaction management with real-life examples.

In the third session, Mr R. Saravana Kumar, CEO, Sarvam Institute of ENTE & Research, Former Director - Cognizant Technology Solutions on Inculcating Life Skills. This is worth as it was one of the basic needs. What a life skill is? what are its benefits, the different types of skills- hard skill and soft skill and their importance were highlighted. Communication and Interpersonal skills which are important were covered with a video of seven Cs of Communication. Best problem-solving techniques, five why techniques, time management, five traits of a successful leader all were incredibly enlightened with astounding videos. There were around 60 participants from various colleges including faculty members and Industrial members. Dr. G. Radhamani, vice chairperson proposed the vote of thanks.
with live experience. Mr. Giri. V. V, Information Security, Consultant, Chennai, had delivered a lecture on Cyber Security and Forensics. The Final session was handled by Ms R Saranya, Asst Professor who explained the importance of Big data in Information Technology. The Event was Organized under the Guidance of Dr B Chidambaramarajan, Chairman, Kancheepuram Chapter.

MYSORE CHAPTER

The Department of Computer Science & Engineering organized the 4th National Level Technical Competitions “TECHNO SPECTRUM-2019” on 16th October 2019 in association with CSI Mysore chapter. This National Level Technical Competitions “Techno Spectrum - 2019” provides a platform that aims to inspire the young brains to think innovatively, present their original work, share and exchange ideas with their counterparts from all over India with professionals and academicians. The Technical competitions included events like Google Hunt, Project Innovation Idea, Web Design, Predict the Output, Blind Coding, Technical Quiz and Pictionary.

Chief Guest Mr. Ravindra Patil, Sr. Scientist, Healthcare Solutions, Research India, Philips Innovation Campus, Bengaluru, Guest of Honour Mr. Supreeth Y S, Co-Founder and CEO, Tequed Labs, Bengaluru, Smt. Vanaja B Pandit, Hon. Secretary, GSSS(R), Dr. Shiva Kumar M, Principal, GSSSIETW, Mysuru and Dr. S Meenakshi Sundaram, Professor & Head, Department of Computer Science & Engineering, GSSSIETW, Mysuru were present for the inauguration.

The Chief Guest Mr. Ravindra Patil shared his experiences and knowledge gained in the Industry. He motivated the young minds citing the contribution of engineers in our day to day lives. He also spoke about perseverance and resiliency that is the need of the hour to be successful in whatever venture the students may decide upon like turning out to be an entrepreneur or to seek employment.

The participation in technical fests like symposia, guest lectures by industry experts, industrial visits, presentations in conferences will certainly build the confidentiality of individuals and enriches technical knowledge and skills indirectly and will be ready to face the challenges of the industry.

The Guest of Honour Mr. Supreeth Y S in his speech highlighted “Innovation is the key to success”. He motivated the students to learn to be creative, think out of the box and participate in technical competitions like Hackathons and take up a real challenge in turning out one’s idea to an innovative product. Also he enlightened his speech by adding the fact that exploring and familiarizing in advanced areas in Information Technology will certainly add value and students can be successful by solving real time problems in the industry.

Smt. Vanaja B Pandit, Hon. Secretary, GSSS(R) in her address shared her best wishes to all the participants to participate in the various events organized and to win prizes. Dr. Shiva kumar M, Principal in his speech appreciated the students for their keen interest shown towards Techno Spectrum 2019. He reminded the students of technical skills that are required to be successful in placements. Participating in such Symposia creates an opportunity to know their level of technical skills in par with students of other institutions.

Udaipur Chapter

One Day National Workshop on Cyber Security and Big Data held on 4th November 2019 in Department of Computer Science & Information Technology, JRN Rajasthan Vidyapeeth (Deemed to be University), Udaipur, in collaboration with CSI Udaipur Chapter. The workshop was inaugurated with the lighting of the lamp by Chief Guests Col Prof S S Sarangdevot, Hon’ble Vice Chancellor, JRN Rajasthan Vidyapeeth (Deemed to be University), Technical Expert Prof Priyanka Sharma, Director, Department Of Information Technology & Telecommunication, Raksha Shakti Police University, Gujarat, Prof. Manju Mandot, Director Department of Computer Science & IT, Dr. Bharat Singh Deora, Chairman, Computer Society
of India, Udaipur Chapter. In the beginning of this special event Dr. Bharat Singh Deora greets guests, staff and participants by giving welcome speech. Col. Prof. S.S. Sarangdevot also expressed his views on technological advancement which is necessary according to the time and discussed its pros and cons.
In this workshop, Prof. Priyanka Sharma started her session by flashing the light on extensive use of computers in our day to day life and how we are losing our privacy, personal data and causing the issue of cyber threat. Moving forward she describe the most common Cyber Attack types – like Denial-of-service (DoS) and distributed denial-of-service (DDoS) attacks, Man-in-the-middle (MitM) attack, Phishing and spear phishing attacks, Drive-by attack, Cross-site scripting (XSS) attack etc. She also explains how to protect sensitive and information.
Prof. Manju Mandot discussed the concept of big data as voluminous data is everywhere as in both structured and unstructured form, that inundates a business on a day-to-day basis. Big data can be analyzed for insights that lead to better decisions and strategic business moves.
The main objectives were to create awareness about cyber threats and how to protect the confidentiality, integrity, and availability of both information and information systems. The session was very interactive.
Dr. Bharat Singh Deora, convened the Workshop, the vote of Thanks was given by Dr. Manish Shrimali. The program was managed by Mrs. Priyanka Soni. The members of the Organizing committee were Dr. Gaurav Garg, Dr. Dinesh Shimali, Dr. P.S. Shaktawat, Mr. Dilip Choudhary. The participants benefited immensely from the workshop and motivate to build their career in cyber security.

CSI REGIONAL STUDENT CONVENTION REGION III (RSC 2020)

Date: 24th – 25th January, 2020

Host Institute: Faculty of Technology and Engineering, CHARUSAT, Changa, Anand, Gujarat.

Chandubhai S Patel Institute of Technology, (CSPIT) & Devang Patel Institute of Advance Technology and Research (DEPSTAR)

Theme: Industrial IoT, Data Science and Machine Learning

Register Here: https://www.charusat.ac.in/CSIRSC2020/

EVENT LIST:

Workshops:
- Human-Computer Interaction with AWS Alexa
- Identification of Objects using NVIDIA Jetson Board & Machine Learning
- one day workshop on the Internet of Things (IoT)
- Workshop on Sentiment Analysis/ Recommendation System/ Reinforcement Learning

College Events:
- Codemantra (Java, Python, R)
- Paperless Poster Presentation: Idea or Paper on IoT or ML/Data Science
- Project Presentation
- Quiz Technova
- Group Discussion
- SDLC or UML

School Events:
- Fastest finger first – Quiz
- Dumb Charades
- Programming: C, Python
- HTML Tags usage
- Paper/ Poster presentation on Technological trends in IT
- Debate

COORDINATORS:
Prof. Ashwin Makwana, SBC
Prof. Porth Goel, SBC
Prof. Aniruddh Fataniya, Faculty Coordinator
Prof. Malini Dave, Faculty Coordinator

Email Id: csirsc2020@charusat.ac.in
Mo. No. : 9408119169 / 9662123479 / 9033303982 / 7016211254

Accommodation:
Rs. 300 Per Participant per day

SPONSORS:

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<tr>
<td>Manav Rachna International Institute of Research &amp; Studies, Faridabad</td>
<td>Supreme Knowledge Foundation Group of Institutions, Hooghly</td>
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<td>23-9-2019 - Innovative Project Competition cum Exhibition (Avishkar - a Tech Expo)</td>
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<td>REGION-V</td>
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**B.M.S. Institute of Technology & Management, Bangalore**

- 22-10-2019 to 26-10-2019 - Open Short-term Course on Data Analytics & Visualization using R & Python with case studies
- 22-10-2019 to 26-10-2019 - Open Short-term Course on Internet of Things with Raspberry Pi, Pic-18 and Arduino

**Maharaja Institute of Technology Thandavapura, Mysore**

- 24-10-2019 - Workshop on Machine Learning and its Applications

**Sai Vidya Institute of Technology, Bangalore**

- 1-10-2019 - Hands-on training in Python

**B.N.M. Institute of Technology, Bangalore**

- 25-10-2019 & 26-10-2019 - Workshop on Circuit Prototyping

**Aditya Engineering College, Surampalem**

- 14-10-2019 to 18-10-2019 – Event on Become Coder (Problem Solving Skills)
### REGION-V

<table>
<thead>
<tr>
<th>Institution</th>
<th>Event Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Joseph Engineering College, Mangaluru</td>
<td>26-10-2019 - Start a start-up: Become an Entrepreneur</td>
</tr>
<tr>
<td>New Horizon College of Engineering, Bangalore</td>
<td>26-10-2019 - Workshop on Mobile Application Development using Android</td>
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<td>26-10-2019 - Alumni Talk</td>
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<tr>
<td>Srinivas Institute of Technology, Mangalore</td>
<td>10-10-2019 – Hands-on Workshop on DotNet Framework using c#</td>
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<td>26-10-2019 – Event on Hacktober Fest</td>
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<tr>
<td>Anurag Group of Institutions, Hyderabad</td>
<td>25-10-2019 &amp; 26-10-2019 – Event on Block Chain Technology</td>
</tr>
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</table>
### REGION-VI

<table>
<thead>
<tr>
<th>College of Engineering, Pune</th>
<th>Sipna College of Engineering and Technology, Amravati</th>
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### REGION-VII

<table>
<thead>
<tr>
<th>Panimalar Institute of Technology, Chennai</th>
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<tr>
<th>SRM Valliammai Engineering College, Kattankulathur</th>
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<th>SVS College of Engineering, Coimbatore</th>
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<tbody>
<tr>
<td>1-10-2019 - Seminar on Data Structures</td>
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</tbody>
</table>
CSI STPI YITP AWARD 2020

National Round
17th January, 2020 at Bhubaneswar

For further details contact:
Mr. Apoorva Agha
Mob.: +91-94153 16183 | Email: apoorvaagha@gmail.com

FROM CSI STUDENT BRANCHES

REGION-VII

Rajalakshmi Engineering College (Autonomous), Chennai

- 5-10-2019 - Opportunities in Cyber Security
- 5-10-2019 – Event on Tech-a-Thon Project Contest

Mount Zion College of Engineering & Technology, Pudukkottai

- 17-9-2019 - Seminar on Digitalization an Endless Era
- 20-9-2019 - Workshop on Mobile Application Development using Phonegap Tool

Hindustan Institute of Technology and Science, Chennai


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.

Smart Technologies for

Computer Society of India

CSI STPI YITP Award 2020

CSI Communications | December 2019
COMPUTER SOCIETY OF INDIA
Proudly Presents
5th CSI Discover Thinking
PROGRAMMING CONTEST 2019

Computer Society of India (CSI) is pleased to announce the National Level Student Programming Contest exclusively for students all over India in association with Reliscore, a leading online skills assessment platform.

WHAT
A Programming contest for individuals in C, C++, Java, Python, PHP, C#, JavaScript, Ruby, Go, or Perl.

WHEN
Online round on Saturday
21 DEC’ 2019

FOR WHOM
College students pursuing any Undergraduate or Postgraduate course across India

PRIZES
Top 50 get Complimentary registration (worth Rs 5000) to CSI 2020 - Annual Convention of CSI to be held at Bhubaneswar

HOW TO PARTICIPATE
Step 1 - Register Online at the below link before 19th December 2019

Step 2 - Online Round: The contest is for 2 hours from the time you log in between 8AM and 8 PM on 21st Dec 2019

Step 3 - Online Round: Top 10% of students from above Online Round would log in between 8AM and 8 PM on 30th Dec 2019

Step 4 - TOP 50 will be invited to participate in CSI 2020 at Bhubaneswar from 16th Jan to 18th Jan 2020. They will get Certificate of Achievement for the Contest and Certificate of Participation for Convention

Last date of Registration: 19th December 2019

COMPUTER SOCIETY OF INDIA

Computer Society of India (CSI) is the largest body of IT professionals in India formed in 1965. It is registered as a “Not for Profit” society and has 72 chapters across the country with over 1 lakh members comprising academicians, professionals and researchers. (www.csi-india.org)

5th CSI DISCOVER THINKING PROGRAMMING CONTEST

CSI has been conducting “Discover Thinking” series of Online Programming Contests for the last few years to provide students a platform to showcase their programming skills. The 5th edition of this contest is to be conducted with the support of Reliscore (www.reliscore.com) as the testing partner.

For any clarifications & Contact
Mr Gnanasekaran,
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Mobile: 9840341902; Email: admin.office@csi-india.org

Dr Ranga Rajagopal,
National Convener, CSI Programming Contest
Mobile: 9442031004; Email: rangarajagopal@gmail.com
CSI 2020
53rd Annual Convention of
Computer Society of India™

DIGITAL DEMOCRACY - IT FOR CHANGE

www.csi-india.org/csi2020
www.csi2020.in

Host: Bhubaneswar and Cuttack Chapter
16-18 JAN 2020
@ KIIT, Bhubaneswar, Odisha