APPLICATIONS OF INFORMATION TECHNOLOGY

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Dear Fellow CSI Members,

Wish you all a prosperous and productive New Year 2017.

By 2020, IDC estimates that spending on IT applications worldwide to touch US$5 trillion mark. There are many exciting cutting-edge IT applications that are disrupting the technology landscape in addition to the popular IT applications in domains such as healthcare, agriculture or enterprise such as MIS, ERP or SCM. An integration of game-changing technologies in the form of the SMAC - Social, Mobile, Analytics and Cloud stack is yet another trend that will push the envelope in IT Applications, which is the theme for the Computer Society of India (CSI) Communications (The Knowledge Digest for IT Community) January, 2017 issue.

In this issue, Cover Story article is “e-Governance Applications : An Overview” by Rabindra Narayan Behera, which is in the context of the Digital India initiative of Government of India and highlights several actionable and successful e-governance projects and initiatives. The Research front has an article titled, “A Collaborative IS Frame Work for IT Enablement of Large R&D Organization” by Gautam Mahapatra, which showcases Information System Architecture developed around ERP and PLM for an R&D Lab involved in New Product Development.

We have several articles on IT applications in domains such as healthcare, smart buildings, manufacturing and environment. Bhabani Shankar Prasad Mishra and Sabyasachi Chakraborty have given an overview on ICT advances and applications in healthcare in their article, “HealthCare after the advent of Information Technology”. Next, Parul Datta’s article, “Personalized Buildings for Smart Living” focuses on the IoT applications for smart homes. S. Rama Sree and K. Devi Priya’s scholarly article, “Application of IT to Healthcare Sector for Predictive Analysis using Cloud and R Programming” explores heuristics to predict the death rate. Next, K Govinda, “Optimal Gear Shifting for Green Environment” discusses problem of efficient gear automation according to speed and load of a vehicle on an eco-friendly objective.

Praveen Kumar Loharkar and N S Choubey’s article, “Contribution of Information Technology in Increasing Productivity of Manufacturing Sector” gives an overview of various IT deployments and tools for operational efficiency in manufacturing. Next, L Siva Prasad, Subodh Panda and S K Mourya have presented a case-study, “Solar Powered Based Biometric Attendance Device with Remotely Operation & Safety System” which can be deployed in rural settings. Sowmya Togarcheti and Nataraj Sirisilla have proposed a “Smart Park Management System – Powered by IoT”, which holds a lot of potential to solve infrastructural problems such as lack of proper parking space in public places. Debasis Chakraborty, Arati Paul and Dibyedu Dutta have showcased “WebGIS-enabled Indian Tea Gardens Information System”.

For the benefit of our CSI student members, who are entering into the placement season, Ramesh Narasimhan in his informative article, “Essential Information about Resumes” has given excellent tips on make best use of a resume and also valuable strategies for students to face interviews.

This issue also contains Crossword, CSI activity reports from chapters, student branches and Calendar of events.

We are thankful to Chair-Publication Committee and entire ExecCom for their continuous support in bringing this issue successfully.

We wish to express our sincere gratitude to all authors and reviewers for their contributions and support to this issue.

The next issue of CSI Communications will be on the theme “Operating Systems”. We invite the contributions from all CSI members and researchers on this theme. We also look forward to receive constructive feedback and suggestions from our esteemed members and readers at csic@csi-india.org.

With kind regards,

Editorial Team, CSI Communications
My best wishes to you and your family for a happy, healthy and prosperous 2017!

The month of December started on a sad note with the sudden demise of the Chief Minister of Tamil Nadu Sm. Jayalalitha. The convention planned for December 8-10, 2016 at Coimbatore had to be postponed resulting in sudden disruption of the travel plans of all the participants. The Convention has been rescheduled on January 23-25, 2017. The organizers are working on organizing the Convention on the same scale as planned earlier. We hope all the members who had planned to attend CSI 2016 in December will also do so now.

We are working on increasing the number of CSI Student Branches and help the branches to organize useful events for the student members. A list of Resource Persons has been prepared by CSI- Education Directorate and included in CSI web site. This will help the Student Branches to organize talks and seminars on topics of current relevance. On December 17, I was invited to inaugurate a CSI Student Branch in Chirala Engineering College, Andhra Pradesh near Vijayawada. Our ExecCom members are trying to open student branches in different regions. Discussions are on with Director, NIT Nagaland and several other institutions.

We are working on forming a Chapter in Nagaland and had a discussion with the IT Secretary and Commissioner of IT, Government of Nagaland on this. I travelled to Nagaland and had a meeting with Government officials and met the Governor of the state of Nagaland Hon’ble Shri P B Acharya. Nagaland is keen to improve their IT infrastructure so as to create employment in the IT Sector. We are also looking at the request from Andaman and Nicobar Islands on opening a Chapter in the islands.

A number of training programs are being planned for our Members. It includes certification trainings on Enterprise Architecture with The Open Group, Internet Governance with ICANN etc.

Members must have been wondering about the delay in organizing CSI elections. There have been some issues which will be discussed during the meeting of National Council and during AGM. But as prescribed in the CSI Constitution 2013, the election will be completed in time for the new committee to take over on April 1, 2017.

The winner of CSI-IEEE Education Award has been finalized by a jury headed by CSI Past President Mr Satish Babu and with notable academicians. The Award will be presented on January 23 on the first day of the convention.

The CSI publications are also undergoing changes. We are trying to restart publication of CSI Journal of Computing. The first issue has been compiled by the Publication Chair Dr A K Saini. I am closely assisting the Editorial team on the publication of CSI Communications.

We are glad to inform about the appointment of Ms. Vimala Sanjay as the executive head of CSI who has been operating from our Head Quarters in Mumbai from December 12, 2016. She is assisting us on major issues.

I look forward to meeting you in CSI 2016, and with best wishes,

With best wishes,

Dr. Anirban Basu
President, CSI

Dr. Anirban Basu, Bangalore, president@csi-india.org
Dear CSI’ns,

We wish you a very happy, healthy and prosperous new year!!

We have entered into a new year with many aspirations and duties ahead. Last year as a team we have strived for commendable growth of CSI with support from each and every member. We also hope the same amount of support and solidarity will be continued in this year.

Due to the sudden demise of Chief Minister of Tamilnadu, the CSI Annual Convention - CSI 2016 stands postponed.

On behalf of the Computer Society of India, it gives me great pleasure in welcoming to the 51st Annual convention of CSI being held at Coimbatore from 23rd - 25th January 2017 on the theme “Digital Connectivity - Social Impact” which is in line with the Government of India’s vision to empower our society through Technology.

The convention is being hosted by the Coimbatore Chapter for the First time. The Organising team has worked very hard to line up an exceptional series of sessions and activities for the delegates.

Meanwhile, I have visited Nashik Chapter during 12th & 13th December, 2016 and had a meeting with Fellow Srikanta Karode, RVP Prof. S S Sane, Mr. Avinash Shirode, Senior and Patron Member, Mr. Diwakar Yawalkar, Chairman, Mr. Sandip Karkhanis, Vice Chairman, Mr. Vaibhav Dabhade, Hon. Secretary, CSI Nashik, Sri Aravind Mahapatra, Sri Anurag Kange, and met many senior members of Nashik Chapter. It was discussed to host CSI Annual Convention either 2017 or 2018 at Nashik and Chapter presented an excellent presentation on overview of different activities of CSI at Nashik Chapter.

We are planning for various number of activities in this year to increase the membership. We again request all the student chapters to implement/organize student centric activities to indulge more student members in CSI.

Hearty welcome to CSI Annual Convention at Coimbatore.

Once again New Year & Pongal Greetings!!

For feedback & suggestions please write to - vp@csi-india.org.

With kind regards

Sanjay Mohapatra
Vice President, CSI

Appeal to all CSI Members

All members of CSI are requested to update their personal details such as mobile number, latest email address, address for communication and other details in the CSI membership database, if there is any change. This will help CSI to serve its members better. The change request must be supported by valid supporting proof for the change requested.

The members must provide the following details along with the request:

1. Member’s Name
2. Membership No.
3. Old Communication Address with registered email-id (with CSI) and Mobile no.
4. New Communication Address with email-id and Mobile no.

Please send the request with any one of the following document/s duly signed by the member for updating database at CSI HQ either by registered post at CSI HQ or through email to CSI HQ with copy to concerned RVP for necessary correction / change in details at: hq@csi-india.org

The following documents would be accepted for change request:
Voter ID Card / Aadhaar Card / Passport / Bank (Nationalised) Pass Book with photo / Credit Card with Photo / Driving Licence

Prof. A. K. Nayak
Hony. Secretary
One of the recent challenges India faces today is preparing its citizens and government for globalization and information and communication revolution. Information and Communication Technology (ICT) is playing a pivotal role in instituting effective e-Governance, which essentially bridges the gap between government and citizenry. Internet has become such an integral part of life that for day-to-day activities, citizens, businessmen, employees and government agencies need to transact with government through e-ways. There are basically four types of e-Government services prevailing such as; government-to-citizen (G2C), government-to-business (G2B), government-to-employee (G2E), and government-to-government (G2G) and e-Governance offers easy operability for them and their cross linkages to achieve a platform for government-to-citizen-to-government (G2C2G).

Over the years, a large number of initiatives have been undertaken by various State Governments and Central Ministries to usher in an era of e-Government. Sustained efforts have been made at multiple levels to improve the delivery of public services and simplify the process of accessing them. National government, various State governments and local self governments are moving in e-way for citizen delivery of services.

Centralised Public Grievance Redressal System: Grievance Redress Mechanism is part and parcel of the machinery of any administration. No administration can claim to be accountable, responsive and user-friendly unless it has established an efficient and effective grievance redress mechanism. In fact, the grievance redress mechanism of an organization is the gauge to measure its efficiency and effectiveness as it provides important feedback on the working of the administration. It is implemented in various National Government Departments and State Governments. Hon’ble Chief Minister receives the grievance online across the State. There are primarily one designated nodal agencies in the Chief Minister Grievance Cell. The grievances received by the Chief Minister Grievance Cell are forwarded to the concerned Departments/District Collectors who are dealing with the substantive function linked with the grievance for redress under intimation to the complainant. SMS alert facility is provided along with various MIS reports.

Standardization of District Portal: This is a National Level project with Odisha as a pioneering State. India is a Multicultural, Multilingual and Multi religion Country. It is divided into various States and District. District is the middle level administrative unit which co-ordinates with State and Union Government and provides various services to the citizens. A standardized district portal framework has been placed, which will standardize all District portals across the country. The contents and formats of the portal include; profile, geography, administrative setup, directory, peoples representatives and many more. Citizen Services such as acts & rules, e-forms, policies, enquiries, guidelines to get caste and domicile certificate, registration of documents, ration card, land records, Right to Information. Three tier system i.e. Content creation through CMS, Content moderation and citizen Portal are available through this application.

Online Donation to Shri Jagannath Temple, Puri.

Shri Jagannath Temple Administration, Puri is managing Shree Jagannath Temple. For overall development of the Temple. Various schemes are floated. Devotees across the Globe are facilitated by this system to donate online through credit and debit cards and net banking through the site http://www.jagannath.nic.in. Devotees can also online book Neelachal Bhakta Nivas and Gundicha Jatri Nivas and stay and pay bills.

Bhulekh: Land record computerization: Land record computerization is a milestone in the e-Governance activities. All the land record details such as pattas, khatians are computerized. Citizens can get land information village wise and name wise in local language, GIS based land maps are also available.

e-Procurement: One of the major area in e-Government procurement is e-Procurement. It facilitates contractors to bid online any tendering process. Digital certificates are issued to the contractors to authenticate them to this system. Government can make a transparent system in procurement through the portal.

Track the missing Child (URL: http://trackthemissingchild.gov.in): With the cyber initiative by National Informatics Centre, Ministry of Social Justice and Empowerment and Home Department, tracking the missing children in India is made easier. Every year children are missing. The portal facilitates the police and juvenile boards and the persons those children are lost can get them through this system. This facility is extended to neighboring Countries i.e. Bangladesh, Thailand etc.

Disability Commission Portal (http://scpdodisha.nic.in-e-Sakhyam): A web based portal for Disability Commission developed satisfying accessibility norms for viewing and getting services for online filling of complaints by Persons with Disabilities i.e. Differently abled persons.

The website of the Office of the State Commissioner for Persons with Disabilities (Equal Opportunities,
The manuscripts are very rare and ancient and it is difficult to visualise and access. Now the people/students/researchers/scholars across the globe can get it online. There is a demand of researchers across various Universities, Libraries to access the portal. This works like an online catalogue, where the visitor can access the digitised manuscripts like a catalogue, can search based on author, subject, category and get access to the manuscripts. There are around thirty seven thousands of manuscripts with 27 categories i.e. Veda, Ganita, Ayurveda, Jyotisha, Sanskrit Purana, Tantra etc. The visitor can get access to the first and last page of the individual manuscripts and if he/she wants to see/read complete set for research purpose, then there is a facility of online purchase through e-Payment of Credit/Debit/ATM Card/Internet Banking.

**eShramik: Building & Other Construction Worker’s Welfare Board (BOCWW):**

By this system Building and other construction workers get various benefits including medical and cycle, marriage etc advances through online payment of banks. Government also collects various cess online through this. The workers get computerized Identity cards.

Labour Helpline, RSBY Helpline, Child Helpline : Grievance Redressal through Toll Free Number and Grievance Redressal Portal. Grievances can be received through both toll free number and online and necessary action can be taken.

School Student Helpline: Grievance Redressal through Toll Free Number and Grievance Redressal Portal through http://www.studenthelplinedisha.nic.in & 18003456722

**Digital Employment Exchanges:**

Automation of employment exchanges are the need of any Government. A web based project so as to facilitate job seekers to register their name in Employment Exchanges 24X7 and get notification about the interview and finally get the employment.

This module is work like an online catalogue, where the visitor can access the monuments like a catalogue. The visitor will come to the portal and when the visitor click on the Archives Links, the visitor can see each categories archive with the first and last page to read online. This is for the demonstration of digital copy. All books & other collection save here in cataloguing format according their subject, year etc, Advance Search engine facility will be avail by that easy to search all archives, Research scholars also can register online and get the reading facility in the campus though computer.

**Smart City Mobile APP:** enables a common citizen to lodge grievance and monitor the status. This is also integrated with Grievance Monitoring System of Rourkela Municipality. Presently Citizen’s corner (for lodging and monitoring grievance) is available in this APP. Other features which are under development in the App are: Helpline, City News, Events & Notices, Maps, Weather, Tour, a general tour e-guide of city, Beautify Municipal Corporation (If there is any waste/dump lying in any ward, citizen’s can upload the image to Municipal Corporation through this functionality. Henceforth, Local Bodies can take an action as soon as possible to make city a cleaner and beautiful city.

**Swachh Mobile App:** enables local bodies officials associated with garbage cleaning operations to report
to the Administrator and Commissioner regarding daily cleaning position of garbage collection sites. Through mobile app they can take the photograph of garbage collection sites and upload the photograph having Geo tag and time stamp. If no information is received by 11 AM, then a reminder is issued through the APP to the concerned officials to clarify why the status has not been uploaded. There may be situations like vehicle breakdown, strike, accident etc where the garbage collection could not have been done is to be reported through the App. By 4 PM a memo is issued online to the concern sanitary official. The mobile APPs are android based APPs.

**Conclusion:**

With this vision the level of transparency and effectiveness in delivery of citizen services would be increased, thereby making the citizens avail all the Government services and schemes in better and cost effective manner. The eGovernance applications are no doubt the pathways for Digital India Movements.

Disclaimer: The views on the article are personal.

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**About the Author:**

[Dr. Rabindra Narayan Behera](mailto:rnbehera@nic.in) [CSI-10008694] is working as Sr. Technical Director (Scientist-F) at National Informatics Centre, Bhubaneswar. He done his Ph.D.[Computer Science] in Artificial Intelligence from Utkal University, Bhubaneswar,

**Member Editorial Board :**

1. International Journal of Computer Science and Management System (IJCMS) under Serials publications journal, [http://www.serialspublications.com](http://www.serialspublications.com)
3. Reviewer of Springer Journals, Neural Computing and Applications

He has got many awards i.e. eWorld, elndia, eMaharashtra,EDGE Information Week Magazine, Digital Knowledge Exchange and Manthan

A National Level Speaker on varied subjects including Information Technology, Speaker in Doordarshan in “Gyana Bigyan” on Cyber Security and other IT subjects. He can be reached rnbehera@nic.in

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**Kind Attention:**

**Prospective Contributors of CSI Communications**

Please note that Cover Themes for forthcoming issues are planned as follows:

- **February 2017** - Operating Systems
- **March 2017** - Software Engineering

Articles may be submitted in the categories such as: Cover Story, Research Front, Technical Trends and Article. Please send your contributions before 20th of the preceding month. The articles should be authored in as original text. Plagiarism is strictly prohibited.

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

Please send your article in MS-Word format to csic@csi-india.org

(Issued on the behalf of Editorial Board CSI Communications)

Prof. A. K. Saini
Chair - Publications Committee
A Collaborative IS Frame Work for IT Enablement of Large R&D Organisation

Gautam Mahapatra
Scientist-G, DRDO, Hyderabad

C&D (Collaboration and Development) and R&D are synonymous in present day environment, because collaboration is the critical success factor for R&D. Information System (IS) can be a great enabler for collaboration. This article talks about an IS Architecture for an R&D Lab involved in New Product Development. This IS has been developed around ERP and PLM (Product Life cycle Management) systems which enable Organization wide collaboration for Technology Management, Concurrent Engineering, Knowledge Management, R&D Project Management, System Engineering Management etc. across the Organization.

All the applications needed for R&D Organization can be grouped under three categories. i.e. Technology Management Information System (TMIS), Project and Operation Management Information System (POMIS), Logistics and Support Information System (LSIS).Event Driven Process Chain (EPC) method has been used for Process Mapping , Process Optimization and Requirement finalization. Application aggregation and its portal oriented, role based delivery was done through Access Infrastructure Software. H/W sizing was carried out to estimate the server requirements. IOPS (Input Output per second) based SAN (Storage Area Network) Storage Sizing was done to implement Information Lifecycle Management (ILM) for Organization critical data. Server Virtualization Software was used for Hardware Resource Optimization.

For application consolidation and dynamic provisioning of application load, virtualization was used. All the applications were deployed using 1200+ node Gigabit corporate Network. IT Infrastructure Management Software has been used for monitoring of entire IT landscape like Hardware, Software, and Data Base (DB) performance etc. at the IT command centre on 24x7 basis. This collaborative IS has brought innovation and facilitated cross fertilization of ideas for new product development.

1. Context and Objective
   The organisation referred here is an large R&D Lab (say LAB-A) under Govt of India. LAB-A is mainly involved in New Product Development related to defence systems. To realize these systems, LAB-A is executing number of Projects which are very large and R&D in nature. Various work Packages related to these projects are being developed at many work centers, other Research and Educational Institutions across the country.
   These projects involve different stakeholders like Users, Sponsors, Developers, Consultants, Production Agencies, Quality and Certifications Groups etc. The Technologies involved in these projects are in various stages of evolution from very less mature to mature one. To effectively manage such mega R&D projects with lot of uncertainties and challenges, LAB-A decided to implement collaborative Information Systems with following objectives
   1. To reduce Product Development time and R&D Project Risks through Dynamic Collaborative Engineering.
   2. To capture Organizational Knowledge, analyze, enhance and disseminate it.
   3. Implementation of Technology Management practices across the organization to mitigate the technical risk of R&D projects and to improve product quality and reliability.
   4. IT enabling of LAB-A through process digitization for smooth corporate governance, increased efficiency, employee empowerment and satisfaction.
   5. Achieve Information integration among heterogeneous applications by breaking functional barriers.
   6. Provide computing environment that will synergise People, Process and Technology to bring out organizational excellence.
   7. To provide a stable Application and Technology platform that meets the current needs of users and can support the future needs of our...
operation.

8. To have an integrated, software-based system for all processes of LAB-A having a common database, and to avoid duplication errors and delays.

9. To facilitate faster and improved decision making, by making relevant data/status available online and by providing analysis at single window.

10. Automate Project monitoring and have online generation of various reports, including management information reports.

11. Establishment of state-of-the-art Data Centre facility to ensure High Availability and Security of Organizational Data and Applications.

12. To achieve overall improvement of productivity, quality and reliability.

2. Process Mapping and Requirement Finalization

2.1 Requirement Collection

Functional Requirements were collected from all Technology directorates, Support areas and Project groups through Questionnaires, Presentations and interactions.

2.2 Requirement Analysis

The projected requirements were grouped, broken into workflows and linked. The attribute of each activity in the workflow was found out. First level “AS IS” processes were generated and documented.

2.3 Process Modeling

Process Modeling hides the technical details behind the scene while making the process themselves take the centre stage through a common language understood by IT community and user groups. Event Driven Process chain (EPC) method was used for process modeling. Process models for functional areas gave the answers to the following key Engineering Questions i.e. a) what functions must be performed by the Information System b) Who does what and who is responsible? c) What inputs we need to perform a function? d) What interaction exists between operation areas [like Project and Procurement] and how information flows between them? These process models were used to understand and comprehensively define the functional requirements to be fulfilled by the Information System.

2.4 Requirement Validation

The requirements form each operation area were validated by the process owners with the help of process models, presentations, discussions through number of iterations. The same was finalized and signed off. This Information Systems implemented the following functional areas to meet the stated objectives of LAB-A.

1. R&D Programme and Project Management
2. Procurement & Material Management
3. HR & Personal Administration
4. Finance Accounts, Budget and Cash Management
5. Quality Management
6. Integrated Document and Content Management Facilities
7. Technology Management
8. System Engineering Management
9. Knowledge Management
11. Concurrent Engineering
12. Maintenance Management
13. Environment, Health and Safety Management
14. Portal
15. Payroll
16. Employee Self Services (ESS)
17. Production Planning and Manufacturing of Precision Subsystems
18. Analysis, Reports and Management Cockpit

3. Building Blocks of Software Architecture and Configuration

To develop information system in-house, from scratch for the above mentioned functional areas requires very long-term commitment of investment with respect to time, cost and technical resources which is not feasible for an R&D Lab like LAB-A. The other disadvantages of this approach is that the developed applications/IS may not have optimized Benchmark Processes and Best Practices which are readily available inside the standard S/W packages like ERP.

Other than this LAB-A consider IT compliances (like ITIL/ISO 2000 etc) as opportunity to ensure growth and security. We found that ad-hoc compliance efforts are doomed to be never ending “black holes” of resources, time and money. Compliance enabled
Standard ERP Packages takes out this complexity and facilitates to meet the compliance standard effortlessly. So, we decided to develop the required IS on the top of a core ERP System, which will ensure automatic adoption of Proven Technology, Pooled Experiences, Scalability and Compliance. In such case the functional areas like Technology Management, System Engineering Management etc. which are not available in standard ERP frame work can be developed using the same core of standard ERP system.

Finalized “To Be” functional requirements were mapped into various ERP Products and the gaps were estimated to work out the customization efforts needed to fulfill the requirements of LAB-A. Initially, Various ERP Products were considered. SAP ERP was selected on the basis of Gap Analysis, Software Architecture and other important features.

Integration mechanism, integration points with SAP and other software like PLM, Primavera, MS Project, Access Control and other legacy software have been worked out through a common exchange infrastructure. PLM S/W is being used for configuration, Product Structure and Engineering change control Management. XML based Integration between SAP and PLM was done for concurrent and both directions data flow (w.r.t Drawings, Meta Data of Drawings and other important information that should be visible/displayable with in the SAP environment). The S/W Architecture is shown in figure1. For single sign on and centralized authentication Management, LDAP has been implemented. Portal was implemented for collaboration. The Applications were delivered to the users through browser based Interface.

4. Deployment and Access Mechanism
For deployment of these applications different server platforms and operating system are required. Again, some of the applications are Host Based, some are Client-Server oriented, some are Browser-based and others are legacy. Server virtualization S/W was used to run three different Operating Systems within the same server to deploy various applications. This approach helped us to optimize and consolidate the H/W resources. The other problem was that the Client devices across the organization were having different configuration, age, brand and operating system with different browser versions. Under such environment how to ensure that users get consistent experience? To solve this problem, we deployed all the applications through thin-client architecture. This also ensures rapid application deployment as there is no need for client specific application configuration.

This way all the deployment related complexity was taken to the Data Centre and users were given very transparent, simple and single window interface for accessing all the applications.

We have done two types of application consolidation i.e. Single Instance Consolidation and Functional Consolidation, to provide ease of access, reduce operating cost and to make it easier to support cross-functional operations when it interact with multiple applications.

5. Hardware Sizing and H/W Landscape Design for IS Deployment
Hardware sizing for SAP is essential to estimate the capability and configuration requirements for Server [CPU, Memory, I/O], Storage and Network and it is unique for each implementation. Hardware landscape was sized considering the following factors a) Server configuration b) Hardware Landscape - Development, Test/Quality and Production c) Deployment Scenario d) Server characteristics and its consolidation strategy e) High availability requirement – Clustering f) Software Architecture – OS flavor g) Three system landscape - Development, Test/Quality and Production h) Deployment Scenario i) Storage strategy and consolidation. j) Backup and Recovery options.

Fig. 2 : Hardware Deployment Scheme at Data Centre for the collaborative IS frame work

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using Blade Server. Two Load Balancers have been configured for dynamic load sharing between LDAP and Web Server. The clustering between DB and Application servers will ensure the high availability of CI (Central Instance) and DB components. For the entire computing landscape I/O interfaces like NIC (Network Interface Card), HBA (Host Bus Adapter) have been configured with proper redundancy and high availability. All the servers are networked in 10Gbps private server network with in Data centre using L4 switch.

5.2 Storage Sizing and Virtualization: ILM (Information LifeCycle Management) approach has been adopted for storage design. Two 32+ port fiber switches have been used to establish the Storage Area Network (SAN) for storage virtualization. Storage sizing has been done based on the IOPS requirements in the system landscape. Sizing leads to Enterprise class SAN storage with controllers. FC HBA 88Gbps have been used for server connectivity with SAN storage. For five Mission Critical servers, Path fail over and Load Balancing capability have been configured. For users of CISF/NFS file system one NAS gateway has been integrated with the disk arrays.

5.3 Backup and Recovery
One Tape Drive with 4 native FC Drives and 200+ LTO4 slots is connected to SAN for LAN Free, Server Free and NDMP (Network Data Management Protocol) backup and recovery.

6. IT Infrastructure Management Framework
It was essential to ensure the availability of this IS, as it captures all the critical data of the Organization like R&D Data, Project Data, Important Test Data, and Financial Data etc. Data centre and IT Command Centre was established for this purpose. IT Command Centre acts as a nerve centre for IT operations with Help Desk for IT support. IT infrastructure Management software was integrated with large format Display wall to provide graphical views of all IT related events/activities in various forms of statistics and alerts.

This S/W provides the following functionalities
- Automated Network Management with availability & Performance Management.
- Server Performance Monitoring and Management.
- Anti-Virus and Anti-Spam Management, Content and Service Level Management.
- Asset Management, S/W Delivery & Patch Management.
- Availability & Performance Monitoring of SAP.
- Database Performance Monitoring and Management.
- H/W and S/W Inventory Consolidation, Graphically Consolidated & Centralized Management View.

7. Challenges and Key Success Factors
In today’s Dynamic environment following are the key challenges in front of an R&D organization.
- Reduce the Product Development/R&D Time.
- Capturing and relying upon R&D learning i.e. knowledge management.
- Increased cross functional teamwork.
- Forming/Participating in Strategic alliances.
- Information Integration: Previously, in LAB-A information related to each function/directorate used to reside in stand alone manner as island and could not communicate with each other as existing IT landscape was functionally organized. As for example, financial info resides in financial system but not tight to the project plan and resources.

One of the major strength of this proposed IS framework is that it breaks the functional silos/barriers and connects and integrates the information islands. Because of this, 360 degree view of the content, relevant to a given strategy/initiative/organizational processes, is delivered role based to the individual irrespective of where information resides.

Idea Management: Generally an R&D organization don’t have necessary tool to manage the Idea generated by knowledge workers. So, very often the idea falls through the cracks. The proposed IS framework will acticate the idea management process starting from evaluating the idea, generating concept, making a prototype, and taking it to manufacturing and product life cycle.

All the above challenges can be handled in an effective way if an R&D organization enable the collaboration at the right way. Following are the Key Success Factors for implementing a collaborative IS.
- Commitment of the Top management.
- Clear objectives
- Empowered and Committed team members.
- Ability to enforce change management through out the organization.
- Buy in of the users.
- Successful Training at every level.
- Organization wide communication.
- Information System with good Technical Architecture (like Portal etc.) rich Process Inventory and Collaborative Features.

8. Conclusion
R&D is heavily dependent on collaboration. The proposed collaboration enabled IS framework most suitable for R&D organization.

In Technology front, this IS framework will implement Technology Management, R&D Project management, Quality Management, Concurrent Engineering and System Engineering Management.

In functional Management front, it will facilitate the other core areas like Precision Manufacturing, Procurement Management, Planning and Scheduling, Finance, Budget, Payroll, HR and many more.

These two aspects are linked and integrated together for smoother functioning of an R&D organization, involved in New Product Development.

This proposed framework integrates the existing Scientific S/W and utility S/W and compatible with
heterogeneous IT environment. This way it not only protects the previous IT investment but also makes available the useful information from legacy system.

In this IS framework application access become simple, secure, role-based and push the system complexity away from the user i.e. to the Data Centre. The IT infrastructure Monitoring scheme at Display wall located at the IT Command Centre will ensure IS availability to the users, Data and Applications Security and Service level agreement. With this IS framework the Industry Compliances [like ITIL/ISO 2000 etc] are achieved very smoothly.

For an R&D organization, proposed Information system framework can foster the collaboration for organization excellence. IT is the glue for exchange of Information, Innovation and Creativity. Thus in present day context for an R&D organization, IT function can not be looked upon as Support Role but as a Strategic Role.

### References


### About the Author:

**Dr. Gautam Mahapatra** is a Distinguished Graduate of Indian School of Mines (ISM), Dhanbad (presently IIT Dhanbad) and was Awarded 'ISM Gold Medal', 'Best Student Award of the Institute', and 'University Blue' for his Excellence in Academics, Sports, Co-curricular Activities. He is having 25+ years of Research and Project Implementation experience in the field of IT and Computer Science.

Presently, as a Scientist-G, he is leading the all IT initiatives of Research Centre Imarat (RCI), a premier National R&D Laboratory of DRDO. He led the design, development and implementation of Enterprise class IT Systems and Applications leading to IT Enablement of R&D Processes. His contribution in the field of IT received many Awards like ‘PSU Summit eGov Award 2014’, ‘PSU Summit ERP Implementation Award 2015’, ‘CSI Nihilent e-Governance Awards 2015’, ‘IT Person of the Year 2015’, ‘CSI Fellowship Award’, ‘Best CIO Award 2016’ etc. He is steering the Vision of Digital DRDO for IT Enablement of R&D Organization. His email gautam@rcilab.in

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An individual. 2 are friends. 3 is company. More than 3 makes a society. The arrangement of these elements makes the letter 'C' connoting 'Computer Society of India'. The space inside the letter 'C' connotes an arrow - the feeding-in of information or receiving information from a computer.
HealthCare after the advent of Information Technology

Bhabani Shankar Prasad Mishra
Associate Professor in the School of Computer Engineering at KIIT University, Bhubaneswar, Odisha,

Sabyasachi Chakraborty
School of Computer Engineering at KIIT University

What would have been healthcare and diagnosis without the modern technologies and innovations in the medical field? How should one be able to look after his/her health? In this modern world with the advent of new diseases and health issues, the development of biomedical technologies is very important. Its application knows no bounds when it comes to treating diseases, performing surgical operations, diagnosing one’s health, preparing medical formulas and much more.

In this article, we will discuss some amazing applications of Information Technology. The application of Information Technology in the field of medical and bioinformatics is very much crucial and important. More technologies are being developed to tackle the ever-increasing health issues in the modern population. Life would have been very difficult without the technological accessibility that we have in the particular field. Here are some of the top technologies that are being currently implemented and are in a strong running phase in the healthcare field.

1. **Sensors and Wearable Devices**

   Wearables for Health Monitoring

   Sensors and Wearable Devices are one of the most predominant things that run the complete system of personal health care, neuroscience, neural prosthetics etc. In the system of personal health care, we have smart bands and smart watches which analyses the complete measure of our daily activities such as steps of walking, calorie intake and amount of sleep and gives us a complete data regarding our personal care. Now if we move towards the world of neural prosthetics as now people with paralysis can move their hands and legs with the help of prosthetic limbs which they can control with the brain impulses. In the field of Neuroscience, Brain-computer Interface played a wide role in helping for certain neural discoveries and neural disorder treatments.

2. **Remote Monitoring System**

   Remote Monitoring System is playing a great role in helping patients by eradicating frequent physician visits and frequent health monitoring issues. With the advent of such technology as remote monitoring system now the patients with acute heart diseases need not visit the physician frequently for pacemaker checks and heart beat monitoring because the pacemaker which is installed in the patient’s body can now remotely send the data to the physician and the physician can now analyse and monitor the data remotely. Moreover, some physicians ask their patients to get wearables which can remotely transfer the data of patient’s body to the physician so that the physician can monitor and analyse all the data received from the wearable device of the patient. Sometimes this idea of remote monitoring of the body may sound pretty invasive but this kind of technology is very much helpful for the people suffering from serious and chronic illness.

3. **E-Prescribing/Tele-Medicine**

   E-Prescribing/Tele-Medicine is another such technology which is eliminating the complete hassle of visiting physician, waiting for long queues, travelling to far places to meet your doctor etc. E-prescribing gives a simple solution of consulting a doctor without visiting his clinic rather sitting at home and getting prescribed by him online. E-Prescribing also reduces time consumption that was earlier required to visit a doctor and it also allows the doctor to clearly understand your problem and also you to understand what the doctor is prescribing. Previously for any kind of small health issue like a headache, Stomach-ache etc you would have to run to the doctor but at this point of time, you can visit some user recommended website on the internet to get the name of the accurate medicine that you require for resolving the issue. So the E-Prescribing Technology is taking a great leap in improving the
healthcare industry to move online.

4. Pharmacogenomics/genome sequencing is another great technology where the complete world of Data Science and Big Data Analytics is present. Pharmacogenomics is a technology where it gives proper results to the role of genes and genomic variants on clinical treatment response. The Pharmacogenomics concept uses proper genome sequencing of the genetic data from a large number of patients and can predict the drug which would be much more suitable for a patient in his treatment according to his genomic variant. At times during ongoing treatment, doctors prescribe some drugs which may treat the health issue but can have serious side effects like weakening the patient, the appearance of allergies and much more also sometimes the same drug used to cure one patient may not be helpful to treat other patient and can make the situation worse. Also for different genetic variants the dosage limit of a particular drug also differs and pharmacogenomics also helps in identifying proper dosage limit for a particular genetic variant. So if a doctor uses the concept of Pharmacogenomics in prescribing the medicines and performing proper clinical treatment on patients, then curing the patients would be much easier and would be much more error free.

5. Clinical Decision Support System is a kind of health information technology system which facilitates the doctor and other health professionals with perfect decision support for prescribing medicines, clinical surgeries and some other clinical decision-making tasks. Clinical Decision Support System has increased the quality of healthcare and has improved the efficiency and patient satisfaction by dodging errors and adverse effects on patients such as mixing incompatible medications. The Clinical Decision Support System is mainly of two types

**Knowledge Based System**

[Knowledge Based CDSS Sysytem](http://www.intechopen.com/source/html/18694/media/image2.png)

- Knowledge Based System: In this kind of Clinical Decision Support System, it administers certain rules using an interference engine and gives the adequate results in the user end. The Interference Engine is mainly controlled by the Physician or the doctor and the doctor establishes certain rules in the engine which is always referred to create results.
- Non-Knowledge Based System: This kind of Clinical Decision Support System completely depends upon machine learning to fetch and calculate the result based on the clinical data provided to it. This type of system requires a huge amount of training data set to train the artificial neural networks to predict and provide appropriate health care solutions and compatible clinical medications. However, as the systems are based on machine learning and artificial intelligence so they don’t provide reasons to their calculated conclusions of the treatment that they provide so they are less used by the doctors for direct diagnosis, but this type of system can be very much useful in performing post diagnosis analysis to look into the depth of the health issue.

Thus, we can see from the above discussion as for how Information Technology is changing the modern society when it comes to healthcare and providing optimal treatment to patients. Moreover, the research that is going under the biomedical, bioinformatics and Neuroscience field has also gathered many leaps after the advent of Information Technology.

**References:**


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**About the Authors:**

Dr. Bhabani Shankar Prasad Mishra [CSI-N1258075] is currently working as Associate Professor in the School of Computer Engineering at KIIT University, Bhubaneswar, Odisha, India. His research area includes Machine Learning, Evolutionary Computing, Swarm Intelligence, Data Analytics. He can be reached at mishra.bsp@gmail.com.

Mr. Sabyasachi Chakraborty is continuing his studies in School of Computer Engineering at KIIT University. His research area includes Data Analysis and Big Data, Machine Learning, Cloud Computing, Brain Computer Interface. He can be reached at c.sabyasachi99@gmail.com.
Personalized Buildings for Smart Living

“Technology is like fish. The longer it stays on the shelf, the less desirable it becomes”.

Andrew Heller, IBM

Parul Datta
Asst. Professor, Chitkara University, Himachal Pradesh and Ph. D. Scholar at Chitkara University, Punjab

1. Introduction

While leaving room, Mr. X forgot to switch off the lights!!! Another person Mrs. Y left the gas stove on while leaving for a party!!! Like these two persons, many others might have made such blunders in their daily life. What if your building becomes smart enough to cope with such botches? To quantify individual comfort in terms of energy consumption and its impact on environment is very difficult [1]. For such scenarios, the user should be educated enough to interact with intelligent and smart devices. The concept of Internet of Things (IoT) is used to simplify such impacts. In our everyday life, including our homes and workplace, gadgets have become an imperative part of our life. We are moving towards “anytime anywhere anyone connected to anything” connectivity. With the emergence of advanced technologies like IoT, we are in a “connected” mode to the things around us. Such advancements have crept into our daily lives very sturdily. Through IoT, real world objects are a part of the Internet, seamlessly combining physical and digital world. With all this, without a second thought, we can say that IoT is the “Future of Internet”. Benefits of IoT are indisputable in every part of life. Development of IoT in current environment foresees many advances in smart cities, smart homes, digital health and other areas.

IoT can make everyday things smarter. These ‘things’ can be a network of your daily life appliances supplemented with sensors and relay information to make decisions. Maher Kayal and his team redefined the concept of IoT [1]. A demo wall was built, which was fitted with intelligent lights. Those intelligent lights stored the preferences of the user and his/her identity. Whenever the user placed his/her identity card on the wall, the wall recognized his/her preferences and lights the rooms according to his/her stored preferences.

A. IoT Architecture

![IoT Architecture](image)

The basic architecture of IoT is proposed in [3], [4] and [5] as shown in figure 2 below [3]. Each architectural layer is briefly described as: The perception layer consists of different types of sensor devices viz, RFID, ZigBee, QR code, etc. to deal with overall device management and to collect specific information by each type of sensor devices. The network layer transfers information from perception layer to upper layers and keeps sensitive information confidential from sensor devices. The middleware layer has two functions viz, service management and storage of lower layer information into the database. The application layer manages IoT applications such as smart health, smart transportation, etc. The business layer covers entire IoT applications and services management.

II. IoT Protocols

In a telecommunication connection, end points use a special set of rules and regulations to communicate with other end points in a network. Some of the IoT data protocols are discussed briefly. MQTT runs over TCP/IP that
provides ordered lossless connections. It is a client server messaging protocol which delivers messages with minimized transport overhead [6]. There are three quality of service (QoS) for MQTT protocol viz, ‘at most once’ which ensures that messages are delivered according to availability of the operating environment, ‘at least once’ which ensures message arrival and ‘exactly once’ which ensures message arrival exactly once. MQTT has an astonishing mechanism of notifying an abnormal disconnection.

For constrained nodes and constrained networks like low-power network, CoAP is used as a specialized web transfer protocol. Constrained nodes often have 8 bit microcontroller with miniature RAM and ROM whereas constrained network often have high packet error rate [7]. Request response interactive model is provided by CoAP and supports built-in services and resources [8]. CoAP meets web requirements like multicasting, minimized overheads and simplicity.

Advanced Message Queuing Protocol (AQMP) is message oriented middleware open standard application layer protocol [9]. Features of AQMP are: message orientation, queuing, routing, reliability and security. Extensible Messaging and Presence Protocol (XMPP) is a protocol for real time communication and is used in applications like instant messaging, multiparty chat, voice and video calls, etc [9].

III. Smart Buildings and their Components

There are three components of smart buildings: The first component is the electronics which need to be integrated in the appliances to make them intelligent. The second component is the built-in learning mechanism to control the appliances so that the appliances are well learned about the user preferences. This learning helps the user in controlling the appliance [1]. The third component is the building and its interaction with the environment. Hence, smart buildings may be personalized to according to user’s needs. In future, Mrs. X will be able to tell her smart phone to turn off the gas stove to prevent fire. Also, smart walls will turn on the lights and air conditioner temperature according to humidity and user preferences. Thus, life can be made a little bit smarter by monitoring the connected appliances and make them work accordingly.

References:

About the Author

Ms. Parul Datta is an Assistant Professor at Chitkara University, Himachal Pradesh and Ph. D. Scholar at Chitkara University, Punjab. She can be reached at parul.datta@chitkarauniversity.edu.in.
Application of IT to Healthcare Sector for Predictive Analysis using Cloud and R Programming

S. Rama Sree
Prof. Dept. of CSE, Aditya Engg. College, Surampalem, Andhra Pradesh

K. Devi Priya
Sr. Asst Professor, Dept. of CSE, Aditya Engg. College, Surampalem Andhra Pradesh

Information Technology, in short IT, describes any technology that activates the storage, computation and accessing information within or outside the organization by authenticated users. The devices and technologies that comes under IT are computers, mobiles, software’s, network, intranet, internet, websites, servers, telecommunications, Database Management Systems, Cloud Computing, Machine Learning, Artificial Engineering, R Programming etc. Currently, most of the organizations like Banks, Government sectors, Schools, Colleges, Universities, Healthcare sectors, Shopping malls, Companies etc. are using information systems and their applications for carrying out the general activities of storing, retrieving, sharing and analyzing information. Healthcare Sector is one important field which requires IT for implementing solutions for complex problems like X-Ray storing, collaborative sharing of patient disease details etc. for analysis and prediction. The reasons for using Cloud for the storage of health data is presented in a detailed fashion. In this paper, the application of Information Technology to Healthcare for predicting the death rate depending on few parameters is discussed. The programs for predictive analysis using Regression Models like Linear Regression and Multiple Regression are developed using R Programming. By predicting the value of death rate, measures could be taken to minimize it by taking necessary actions improving the doctor, hospital, medicine facilities.

Keywords: Information Technology; Health Sector; Cloud Computing; Regression Analysis; Linear Regression Model; Multiple Regression Model; R Programming

I. Introduction

As per the literature[1] Information Technology (IT) is the application of computers and internet to store, study, retrieve, transmit, and manipulate data, or information, often in the context of a business or other enterprise. IT is considered a subset of Information and Communication Technology (ICT). Presently, everyone is using different IT applications for accomplishing their daily activities. The IT applications include bank transactions, online recharge, ecommerce applications, bill payments, shopping, funds transfer, communication via the websites and social media apps, consumer health IT applications, mobile applications etc.. The diverse domains where IT can be used are business, healthcare, science and engineering, education, fishing fields, Home, Departmental stores, markets, office buildings, traffic and transportation, Factories, Farms, Agriculture, weather Reporting Departments, Data centers, outer space etc.. The role of IT is very crucial in the above specified areas. For example, in education system the details of students, staff and the daily activities are stored in database systems and can be retrieved later. For better understandability of concepts, teachers are also using different presentation technologies like PPT, animations, audio, video, images etc., for delivering their lectures effectively. The weather reporting departments captures temperature using sensors and stores this data in computers for reporting purpose. Similarly all other areas also use IT for performing their activities in a more effective manner.

II. IT in healthcare

A. Cloud Computing in Healthcare Sector

Healthcare is the maintenance and improvement of health using the activities of diagnosis, taking treatment, and following preventive measures. Healthcare is very important aspect in our daily lives. Various information technologies are attached for secure storage of health data and for better analysis on decision making for the health care. Health sector industries like hospitals, pharmacy companies generates huge amount of data to store the patient details, doctor details, disease details, X-rays details, the medicine details etc... Storing this data in local systems is difficult and requires purchase of huge storage servers which is a costly process. An economic solution to store the data is by using an Internet Cloud [2]. It is one of the innovative technologies which stores health data in remote servers in a secure way where an authenticated user can access the data in an efficient and effective way for better analysis. The reasons behind the healthcare industry for using cloud computing is based on the following key objectives:

1. Unlimited Cloud Storage-Cloud provides huge amount of storage space to the users based on
Regression analysis

Regression analysis (RA) is a statistical method for establishing relationships among variables. For modeling and analyzing various variables RA includes several techniques. The objective of regression analysis is to develop a relationship between dependent variable/response variable and the independent/predictor variable. Depending on the context, there exists a variety of regression models that can be applied for performing predictive analysis. A few of the Regression Models are Linear regression model, Multi Linear Regression Model, Discrete choice model, Logistic regression model, Multinomial logistic regression etc.

Machine learning techniques

Machine learning, a division of artificial intelligence, is a process of developing systems that learn from the data available. Currently, Machine Learning involves several statistical methods for regression and classification. A few of the application fields of the machine learning are credit card fraud detection, estimations, face and speech recognition, medical diagnostics etc. A few of the machine learning techniques are Fuzzy Inference Systems, Neural networks, Support vector machines (SVM), k-nearest neighbor, Geospatial predictive modeling etc.

In this paper, the focus is only on the Regression Models. Two simple and effective Regression analysis models called linear regression and multiple regression are used for the present study of predicting decisions related to health.

1. Linear Regression

The most frequently used predictive analysis technique is Linear Regression. Regression estimates are used to describe data and to explain the relationship between dependent variable and independent variable. The formula of linear regression is:

\[ y = ax + b \]

where

- \( y \) --- Dependent variable
- \( x \) --- Independent variable
- \( a \) --- Regression Coefficient
- \( b \) --- Constant

The linear regression model contains three stages –

1. Analyzing the correlation and directionality of the data
2. Establishing the model, i.e., fitting the line
3. Evaluating the validity and usefulness of the model

The uses of regression analysis are Normal analysis, Forecasting effect and Trend forecasting [3,4].

1. Normal analysis

It is used to identify the strength between independent and dependent variable. For example, the relationship between death rate and doctor availability in health dataset.

2. Forecast effect

It indicates how dependent variable is varied based on changing of independent variable. For example, how death rate is varied as the doctor availability varies.

3. Thirdly, regression analysis predicts trends and future values. What will be the death rate if doctor availability is given?

The following sample Health data set in Table 1 is considered for performing the predictive analysis with \( y, x_1, x_2, x_3 \) and \( x_4 \) as attributes.

<table>
<thead>
<tr>
<th></th>
<th>y</th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td></td>
<td>151</td>
<td>284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td></td>
<td>130</td>
<td>433</td>
<td>8.699</td>
<td>99809</td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>140</td>
<td>739</td>
<td>7.1999</td>
<td>99809</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>170</td>
<td>1792</td>
<td>8.899</td>
<td>999619</td>
</tr>
</tbody>
</table>
For the dataset, dependent variable is death rate (y) and independent variable is doctor availability (x). The steps involved in the predictive analysis based on the linear regression is described below based on R programming.

1. Carry out the analysis of gathering a dependent and independent variable values. In this, initially death rate and doctor availability are gathered. These values are considered as a training set.
2. Create a linear relationship model between death rate and doctor availability using the lm() function in R.
3. Find the coefficients from the model created and create the mathematical equation.
4. Get a summary of the relationship model to know the average error in prediction also called residuals.
5. To predict the death rate based on doctor availability, use the predict() function in R.

R Program to Predict the Death Rate based on Doctor Availability[4]

# independent vector
# Doctor availability per 1000 patients
x <- c(151,130,140,170)
# The response vector- Death rate per 1000 patients
y <- c(62,78,70,43)
# Apply the lm() function. relation <- lm(y~x)
# Find death rate based on doctor availability. The predict function
takes doctor availability as input and generates possible death rate as output.

The result of the above program is 35.97389. i.e if the doctor availability is 179 then there is probability of 35.97389 death rates. By taking these statistics, proper measurements can be considered for reducing death rate by increasing doctor availability.

In the above R program, x1 and y values are considered as vectors. lm() is a predefined function which provides the relationship between both response and predictor variables. Model summary is stored in relation variable. After completion of establishing a linear model, predict function is used to predict the death rate based on the doctor availability. The predict function takes doctor availability as input and generates possible death rate as output.

The above linear regression model is used when the response variable is based on a single predictor variable. Suppose, the death rate is based on the multiple predictor or independent variables linearly then a multiple linear regression model is to be used.

1. **Multiple Linear Regression**

In Multiple Linear regression, the response variable is based on more than one predictor variables. In this dataset, if death rate is based on doctor availability and hospital availability, then multiple linear regression is used. The formula for multiple linear regression is:

\[ y = a + b_1x_1 + b_2x_2 + \ldots + b_nx_n \]

where
- \( a, b_1, b_2, \ldots, b_n \) - coefficient variables
- \( x_1, x_2, \ldots, x_n \) - predictor / independent variables
- \( y \) - response variable

The multiple regression model for health dataset in Table 1 is developed in R by just changing the lm() function used in the above program as given below

```
lm(deathrate~doctoravail+hospitalavailability, data=input)
```

The death rate is now predicted depending on Doctor availability and Hospital availability.

### III. Conclusion

In this paper, the several applications of IT in daily life is discussed. The application of IT to Healthcare using cloud is presented along with the objectives of using Cloud Computing for this sector. The basics of Predictive analysis using Regression Models and Machine Learning techniques is illustrated. Predictive analysis is carried out using the linear Regression and Multiple regression Models taking a sample Health dataset. The programs to predict the death rate are implemented in R Programming with built-in lm() and predict() functions. By predicting the value of death rate, measures could be to be taken to minimize the death rate by taking necessary actions.

### IV. References


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**About the Authors**

**Dr. S Rama Sree** [CSI-F8000836] is a Professor in Department of CSE &Vice Principal at Aditya Engineering College, Surampalem, Andhra Pradesh, India. From the last 15 years she has been involved in teaching the under graduate and post graduate students. She held the administrative position as Head of the Department of CSE for 12 years and currently working as Vice Principal. She published 35 papers in National/International Journals & Conferences. She is a member of several Editorial & Review Boards of International Journals and also member of several professional bodies. She reviewed two text books on C Programming. She received Outstanding Faculty Award and Award for Research Excellence in 2016. Her research interests include Software Cost Estimation, Software Reusability, Software Reliability, Software Prioritization, Software Defect Prediction, Software Maintenance and Soft Computing. She can be reached at ramasree_p@rediffmail.com

**Mrs. K Devi Priya** [CSI-F8000838] working as Senior Assistant professor in the department of Computer Science and Engineering, Aditya Engineering College, Surampalem, Andhra Pradesh. She has 7 years teaching experience. She taught several subjects webtechnologies,mobile computing, database management systems,Big Data Analytics,Hadoop and Big Data etc.,Her research interests include Big Data Analytics,Cloud Computing, Network Security. She can be reached at k.deviPriya20@gmail.com
Optimal Gear Shifting for Green Environment

Prof. K Govinda
School of Computing Science and Engineering VIT University, Vellore - 632014. kgovinda@vit.ac.in

I. Introduction
The problem of efficient gear automation according to speed and load of a vehicle is discussed in this article with the aim of minimizing the fuel consumption of the engine and also reduce the air pollution and saving precious fossil fuel, which is going to be determined by rules of fuzzy logic, mechanics and geometry. The simulation of gear shifting is done with tools of “matlab fuzzy inference system” and further implement and usage of this technology in traffic control and global positioning system management is also to be presented, all of this system will need a special type of sensing device to determine the actual load on a car or truck.

II. Materials
The biggest problem the world is facing are environmental change and increasing fossil fuel prices and both of these problems plays a major role in automobile, the amount of fuel using by a vehicle and the amount of carbon emission by automobile is depends on the vehicle gearbox. In this article first part going to differentiate the multi gear vehicle and single gear vehicle and the functioning of the gear changing in a vehicle with graphical explanation with mechanical and thermo dynamical process of generation of power torque and speed.

Part 1
We come across the name of multi gear vehicle like any motorbike or car ex: hero splender having and single gear vehicle scooters like Honda active or hero maestros A multi gear vehicle has a number of gears of which one can be selected according to the speed and torque requirement, while in single gear vehicle there is only one gear.

There is a third relation which is general rule of mechanics
Speed*force = power
In circular motion the force is actually torque
Speed*torque = power eq3
From eq. 2 and 3
[Volume of cylinder]*[number of rotation]=speed*torque

Here the volume of cylinder is always constant as it’s the depends on the construction of cylinder size
Which means the
Speed*torque = k*n,
[let n= no of rotation]
Which means that speed multiplied by torque are directly propositional to the no of rotation of piston in a time unit
The no of rotation is always depends on the amount of acceleration provided by the accelerator of the vehicle,
Suppose we have fixed the accelerator at particular value
The
Speed*torque = constant
Which means if is to be increased torque value should come down and if the speed decreases torque value will get increase
Which means
Speed=c/torque  [for particular value of acceleration]
And hence
Speed is inversely proportional to the torque
From here we can discuss the use of gear, Suppose a there are two bikes running one on a plane road and one on a mountain road in upward direction. Now due to gravitational force the bike going on mountain road needs more torque then the other bike, for this requirement different types of gears are required in vehicle which can convert one torque and speed to other torque and speed value. When a input gear is smaller size then that of the input gear the speed will be low and the torque will be high. So when a vehicle with only single gear runs on a mountain road and a plane road there torque and speed requirements are different but it
can not be fulfilled in this type in this case the rings of the gear starts slipping on the shaft of engine and start wasting use of full energy.  
*Note this shaft and gear connection is an very vast automobile engineering topic and needs to read separately.

But in the case of a multi-gear vehicle, this torque speed requirement can be achieved with the help of changing the gear.

Part 2

In this article, approach of efficient gear determination will be discussed which will be found through fuzzy logic. A fuzzy logic is a type of logic that recognizes more than simple true and false values. With fuzzy logic, propositions can be represented with degrees of truthfulness and falsehood. For example, the statement, today is sunny, might be 100% true if there are no clouds, 80% true if there are a few clouds, 50% true if it’s hazy and 0% true if it rains all day. Fuzzy logic has proved to be particularly useful in expert system and other artificial intelligence applications.

The Fuzzy system works on three inputs. In actual practice these will be sensed by sensors fitted into the vehicle. But for this work, which is just the software simulation, they are interactively entered by the user through the command widow. The program asks the user to enter the values of the slope, road quality and traffic conditions on the command prompt and works using the inputs provided by the user to simulate the decision process. The rule set has 27 fuzzy rules, in addition to traditional classical logic rules. The rules use linguistic variables. One example rule is:

R1
If (((The slope of road is flat) && (The quality of road is good in terms of bumps per unit length)) && (The traffic is clear)) Then (Selected Gear is 'High')

Another rule could be

R2
If (((The slope of road is steep) && (The quality of road is poor in terms of bumps per unit length)) && (The traffic is dense)) Then (Selected Gear is 'Low').

The machine fault used for study is shown in Fig. 2. We can use that for fault diagnosis of gearbox all of tractors. It consists of: 1. Test rig for rotational system. 3. Signal analysis. It was made of five main parts: a. mechanical parts, b. pneumatic parts, c. hydraulic parts, d. lubrication system, and e. electrical and electronic parts, that each one of them was formed of many subsets. A variable speed AC motor (30 kW) with speed up to 3000 rpm is the drive (details of electromotor are given in Table 1). A piezoelectric accelerometer (ATLPC 259 model, Made in England, Fig. 3) is mounted on the flat surface Gearbox and is connected to the PLC (programmable logic controller). A variable load establisher system beside rotation of Gearbox. Eight shock absorbers (Fig. 4) under the base of testbed to cancel out vibrations.

The proposed method here is to determination of preferred gear with the help of fuzzy logic we have taken these
The value of gear is 4 for this demo

As you can see there are two dialler input which is going to decide the actually gear, the fuzzy logic takes input in fractional value and also gives output in fractional value as you can see the output here can be any of the infinite value between 1 to 4, so these value needed to be interpreted in practical form which is done by a matlab code given in later coloum.

Fig. 5: An optimal value

This slide is actually 3 dimensional surface graph of the gear changing pattern where input 1 is speed and input 2 is load and the vertical axis is the gear value, this is the matlab code which is going the fuzzy value to the actual gear output, there is requirement of a special electronic circuit to make this transformation possible which can take this output from this code and make this happens in the real circuit and then in the gearbox.

III. Conclusion

The fuzzy inference system developed here for optimal gear shifting very flexible, which will optimize the oil consumption and emission of carbon from the vehicle. As a future work this can integrated with the traffic system and GPS for optimal gear shifting in busy traffic conditions. Even the rule set may be varied to cater to the needs of different scenarios.

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4. Eisenmann, R. C. Machinery Malfunction Diagnosis and Correction, Prentice Hall, [1998].

About the Authors

Govinda Kannayaram is working as Associate Professor in VIT University, Vellore. His research area includes Data Mining and Semantic Web. Open Source, Internet and Web Programming, Cloud Computing, Smart Grid.
Contribution of Information Technology in Increasing Productivity of Manufacturing Sector

Praveen Kumar Loharkar and N S Choubey
SVKM's NMIMS MPSTME Shirpur Campus, Dhule

Introduction
The quality and quantity of Information transfer at required speed is key to success for any business enterprises. S. Qin [1] has rightly pointed out that manufacturing units exchange three things with the outside world, first is energy, second is matter and third but not the least is information. In the current industrial scenario of cut throat competitions with industries yearning for increased productivity and performance; faster, smoother and streamline information flow is need of the hour. It is required not just to stay in the competition but also to earn high profit margins.

To understand the impact of information technology in a manufacturing unit, we can divide the whole functions into different departments as listed below:
- Marketing Department
- Production Planning and Control Department
- Production/Operations Department
- Dispatch Department
- Purchase and Stores Department
- Maintenance Department
- Quality Assurance
- Administration and Human Resource Department
- Finance and Accounts

For any manufacturing enterprises the demand for production is raised through the marketing department, which is then conveyed to the production planning and control (PPC) which devises the plan for the production. This plan or schedule is further communicated to the production department which allocates its machines according to the planned sequence and manufactured products are then dispatched to the customers. All these departments are linked with a communication channel. The other auxiliary functions like maintenance, Quality assurance, purchase and stores, administration and human resource, finance and accounts are also linked as per requirement to streamline the activities at shop floor and management level.

The success of the organisation is strongly influenced by the level and extent to which information technology is utilized in the routine operations.

Information Technology in Manufacturing Setup
All the major industries use Enterprises Resource Planning softwares that link all the functions stated above with a purpose of minimise wastages and to achieve respective targets which in general are related to on time delivery of quality products. In fact, K. Bi et al. [2] have reviewed literature on carrying out process innovation with the help of information technology and stated its role in increasing productivity, reducing costs and minimizing energy consumption. This involves innovation at three fronts; equipment, technology and administration. Involvement of information technology in innovating existing equipments can be done by using computers, sensors etc. Similarly use of computer aided design and related tools come under technological process innovation. While incorporating material management system, maintenance management system, production management system, management information system comes under administration process innovation. In this context, for real time information transfer, use of RFID system has been presented by [3]. This would enable managers to take timely decisions and maintain competitive edge. Use of RFID technology would also help to keep a check on work in process inventory and give continuous feedback to the stakeholders.

Information technology has enabled top management to keep a constant record of shop floor proceedings ranging from quantity of production to machine downtime along with its reason. Use of control systems definitely aid the management to keep an eye on material movement on real time basis and generate required signals to inform various functions like purchase, production planning and control, despatch etc. regarding status of the final product. As mentioned earlier the speed with which information flows is also an important parameter of success for any organisation.

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**Fig. 1 : Typical Component Flow Chart in an Assembly line**

Information technology has enabled top management to keep a constant record of shop floor proceedings ranging from quantity of production to machine downtime along with its reason. Use of control systems...
like SCADA (Supervisory Control and Data Acquisition) enables fault finding and diagnosis even when the engineer or technician are at remote place. One such instance of how an information technology based network can assist in speeding up the machine repair is described by V. Srinivasan [4]. The author has demonstrated the use of Enterprise Asset Management (EAM) system in identifying fault of a component, raising alarm and informing technician, producing audit report, providing technician the necessary information on the component and informing supplier about the problem to enable him or her to identify whether the failure is due to design. In this way, this information network plays an important role in managing assets of the manufacturing unit which further ensures high performance of the manufacturing unit.

The role of information technology becomes more prominent for manufacturing enterprise collaboration network (MECN) [5]. These networks basically involves collaboration between different firms to make use of individual expertise in order to minimise product development life cycle and production time. Availability of robust information flow network would certainly boost up the efficacy of the whole network and conversely may affect the whole network of enterprises adversely if the information flow is not streamline. Take the case of famous just in time concept of Toyota Production System philosophy. Its success hadn’t been possible without the use of an efficient information flow system. Although networking of enterprises is really a cost effective option but corresponding information transfer pose some problems related to the technology. Some of these are stated by X. Li et al. [6]. These are basically related to reliability of data transfer, optimal distribution of resources etc. which can be an area of research.

Conclusion

To stand tall as a successful manufacturing firm in the constantly evolving technological environment, implementing and using information technology in all functions is inevitable. Many manufacturing firms have successfully incorporated information technology with lean manufacturing philosophy and reaping benefits out of it. Still there are challenges involved in the usage of information technology such as security of information being transferred and reliability of data, resources required and cost of infrastructure, optimisation of available resources etc. All these challenges provide an opportunity to all the researchers working in this domain. Solutions to these challenges will make the firms more cost effective and therefore contribute in nation’s GDP, eliminate incompetent competitors and provide ground for fair competition due to enhanced information security.

References

Solar Powered Based Biometric Attendance Device with Remotely Operation & Safety System

L Siva Prasad
Dept. of Electronics, G I E T, Gunupur, Odisha India. sivalakkoju@gmail.com

Subodh Panda
Dept. of Electronics, G I E T, Gunupur, Odisha India. Subodh.panda@gmail.com

S K Mourya
UG student, Dept. of Electronics G I E T, Gunupur Odisha India

As per Unified District Information System 2013-14, 5.57 lakh schools in India do not have electricity connection. According to Rural Electrification, Ministry of Power, 2014-15 in India, there are about 1,21,225 un-electrified villages, and 5,92,979 villages with bad power-cuts. Assuming at least one government office in 3 villages, there are more than 3 lakh offices without proper electricity. Because of the lack of proper road and electricity connectivity, many or almost no school or office is monitored properly. Because of lack of proper monitoring, the efficiency and quality of services provided by schools and offices are not improving or deteriorating day by day. To overcome this situation, there is a need to develop or design a low cost device, which works without electricity and improves the monitoring of daily activities in remotely located schools and offices. A solar powered biometric attendance system with fire safety is a low cost finger print attendance system that works with solar power. This device works with GSM technology, so updates the daily attendance of students, employees to the higher authority. It informs the safe attendance of students to corresponding parents. It also provides the alarm message to safety-people in case of any fire accidents. The main objective of this innovation is to provide a feasible, low cost technological solution to improve the quality of rural and remotely located school education and to improve the quality of services in rural offices. It also improves the safety of schools and offices.

Key Words: GSM, Biometric, Attendance, Finger Print, Solar, Fire Safety, Remote Schools

Critical Review of Status identifying gaps
Because of lack of proper monitoring, the efficiency and quality of services provided by schools and offices are not improving or deteriorating day by day. It also leads to misuse of funds allocated for schools. To overcome this situation, there is a need to develop or design a low cost device, which works without electricity and improves the monitoring of daily activities in remotely located schools and offices. A solar powered biometric attendance system with fire safety is a low cost finger print attendance system that works with solar power. This device works with GSM technology, so updates the daily attendance of students, employees to the higher authority. It informs the safe attendance of students to corresponding parents. It also provides the alarm message to safety-people in case of any fire accidents. The main objective of this innovation is to provide a feasible, low cost technological solution to improve the quality of rural and remotely located school education and to improve the quality of services in rural offices. It also improves the safety of schools and offices.

Outline of the Proposal:
Now we find many organizations aiming to save energy up to 30% or more as a result of their dedicated energy programs. Even some organizations proved around 100%. The advancement of performances has opened up new opportunities to finance energy projects. New lighting and energy efficient products are available better than early designs. Distributed generation, Smart grid technologies, fuel cells, Ground based heat pumps were not commercially available for the past few decades. The distributed generation and combined heat and power will play a crucial role in meeting the new generation needs. If we look back on the energy arena it becomes clear that energy is the key element that must be managed to ensure any organization's profitability. In view of the above vision, this Research proposal has been worked out with a detailed technical survey and systematic analysis for implementation. An illustrative approach how solar coolers will play an important role to decrease the daily load consumption of the load and how they can become zero energy building. Any organization's Energy Performance Index (EPI) is based on the ratio of annual primary energy consumption to aggregate product output. This output is developed individually by each
organization to reflect their unique mix of products and processes. Subsequent improvements or deteriorations in energy performance are reflected as a decrease or increase of EPI. However, the energy performance index (EPI) of such measures in India ranges from 200 to 400 kWh/sq m/year whereas similar buildings in developed Nations have an EPI of less than 150 kWh/sq m/year. The main research objective of this project is to evaluate the full-range of Energy Efficiency, Energy conservation and Waste minimization by calculating base building’s initial EPI value. After identifying all the basic parameters and key areas for improvement of Energy efficiency, energy conservation and waste minimization as indicated in the flow chart Fig.[1], at each level EPI value has to be decreased. Finally if it reaches a minimum level, the building is said to be energy efficient building. Now, by introducing Green building materials and approaches, the building will become a green building to get a 5 star rating[ 90 kWh/sq m/year] according to Energy conservation building code (ECBC). Finally integrating onsite renewable energy resources, a building should become a Zero energy building keeping in view of the economical benchmark.

Objectives of the Proposal

To develop a low cost multipurpose solar safety & biometric attendance system for remote offices and schools
To develop a more secured, effective and genuine attendance system.
To improve the monitoring of badly ignored rural and remotely located offices and schools.
To improve the safety of rural and remotely located schools and offices.
To develop a safety device, that works with renewable energy.
To develop a biometric device for attendance that works in schools and offices without electricity or with bad power-cuts

Expected scientific outcome of the project

1. To provide technological solution for effective monitoring of remotely located schools and offices without conventional electricity.
2. To develop a feasible, cost effective and genuine attendance system.
3. To develop cost effective fire security system.
4. To improve the security of school children by sending timely information to their parents about their reach and departure.
5. To minimize the misuse of funds by effective and secured monitoring of schools and offices.

Methodology And Modeling

(Program flow chart)

| Selection of Microcontroller, other components |
| Interfacing keyboard and display |
| Interfacign Finger print device |
| Interfacing Gas sensor |
| Interfacing GSM module |
| Interfacing Ethernet shield |
| Integration of all components |
| Design of Solar Power supply |
| Testing of device |
| Feedback from the users |
| Implementation of changes |
| Final Testing |
| Launching of the prototype/product |

Solar Power:

A stand-alone solar Photo Voltaic system for a school, home or office works independent from the public electricity grid and this is an advantage for areas where the grid is not available or not reliable. The challenge with stand-alone systems is that there may be under utilization of the available solar energy when the batteries are full there is inefficient load or there may be shortage of energy during cloudy days. Here we used PV solar panel with higher specification, so that power will be sufficient during cloudy days too.

Microcontroller:

Here we used Arduino Mega 2560, which controls all other devices like fingerprint module, gas sensor, GSM module. It converts the data received from the FingerPrintSensor(FPS) to a string that can be sent over the GSM module. It also parses the data received from the sensor and sends appropriate commands over GSM module. This device has has multiple serial ports available on the board. This makes it easy to communicate with GSM module, Gas sensor and FPS

| PV Module |
| Finger Print Module |
| Power Supply |
| Microcontroller |
| GSM Module |
| Temperature Sensor |

(Sub units of proposed model)

<table>
<thead>
<tr>
<th>Present technologies [Both National &amp; International level]</th>
<th>Novelty in this proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In present market, the available Biometric devices for attendance, work only with conventional electricity. Hence not suitable for remote schools or offices without electricity or huge power cuts.</td>
</tr>
<tr>
<td></td>
<td>In this proposal, we are developing a biometric device for attendance, which work with solar power. Hence these devices are best suitable for schools and offices without electricity or with huge power-cuts.</td>
</tr>
<tr>
<td>2</td>
<td>Biometric devices with GSM technology are available, but biometric devices with GSM and safety equipment are NOT available in the present market.</td>
</tr>
<tr>
<td></td>
<td>This proposed Biometric device has not only GSM technology, but also safety equipment in it. It calls and send message to fire station, in case of any fire accident.</td>
</tr>
</tbody>
</table>
Finger Tips Module

The module does all the heavy work of reading, identifying, and storing the fingerprint data. It can be issued several commands for all the functionalities. The module can store up to 200 different fingerprints and is capable of 360º recognition. For working the fingerprint must be registered by sending appropriate commands. On successful execution of the command it sends acknowledgement for success and Error code otherwise. The database of the prints can even be downloaded from the unit and distributed to other modules. The raw images of the fingerprints can also be retrieved from the module.

Enrolling: To enroll the fingerprint the finger is to be pressed to the module twice. Both the times it creates a template for the finger that is put on the optical sensor. On successful enrolling the device sends a unique ID pertaining to the finger enrolled. This ID can be saved and later used for verification of the finger.

Verification: In this process, if a new finger print comes it verifies with the fingerprint that already enrolled and stored in the database. It sends an ID or error code in case of successful match or mismatch of the finger prints in the database.

GSM Module:

GSM module SIM300 is being used in this project. The facilities like sending, receiving a message and sending, receiving calls can be done using this module. It has a communication that can be programmed using AT commands. The signal names for the GSM modem communication port include the following; audio input and output pins (for connecting external hands free audio devices), mute control pin, flash programming signal pins, external power pins, and receiver and transmitter pins. Here the RX and TX pins are used for the serial communication with the microcontroller. There are various AT commands to check the signal strength and connection and SIM status etc. It has an antenna to transmit the GSM signal from the microcontroller. The basic AT commands are loaded into the program of microcontroller for it to interface with the GSM module.

Temperature Sensor:

This project uses IC LM35 as a sensor for detecting accurate centigrade temperature. Linearity defines how well over a range of temperature a sensor’s output consistently changes. Linearity of a precision IC Sensors are very good of 0.5°C accuracy and has wide temperature range. Its output voltage is linearly proportional to the Celsius [Centigrade] temperature. The LM35 is rated to operate over a -55º to +150ºC temperature range. It draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air. LM35 Operates from 4 to 30 volts. Output of IC is 10mv/degree centigrade, for example, if the output of sensor is 280 mV then temperature is 28 degree C. When there is a fire accident, the atmospheric temperature around the device will be high, so the output of temperature sensor will be more. When it crosses a certain threshold value, it triggers the buzzer to ring and microcontroller sends a text message to the concerned persons. The threshold value can be changed by changing the potentiometer.

Conclusion

After developing the product, the cost of final product of each solar powered biometric and security device cost will be affordable. Usage of this devices lead to better policy making by effective monitoring of schools and offices. Eventually better utilization of funds for education and safety. Usage of this devices also lead to incorporate more facilities like video/image capture and transmission through internet, FM radio receiver for community radio lectures on mathematics, spoken English etc. Installation of these devices in large number of schools, we can collect the data on attendance and security of schools and offices. By proper analysis of this data, more effective policies can be made to improve the education and safety in rural areas.

Reference

[1] Rishabh Mishra, Prashant Trivedi, Prof. B. Majhi, Project Report on “Student Attendance System Based On Fingerprint Recognition and One-to-Many Matching” 2011
Smart Park Management System
– Powered by IoT

Sowmya Togarcheti and Nataraj Sirisilla
Assistant Manager, Tata Consultancy Services

One of the biggest challenges that people of India face today is lack of proper infrastructure to cater to the increasing population and specifically, the increasing concentration of people in urban and semi urban areas. With migration of a majority of people to tier 1 and tier 2 cities for various reasons, there is an increase in the population concentration which is far ahead than the rate of increase in infrastructure in these cities. This expansion coupled with lack of infrastructure is one of the major challenges that we are facing today in urban pockets of the country. Lack of proper parking space in public places is a direct consequence of inadequate infrastructure coupled with inefficient management of existing infrastructure. Evolving technology can be leveraged to create innovative methods to handle the parking space issues. This paper focuses on how IoT can be leveraged to resolve the parking space challenges by proposing novel system for efficient parking space management. It explores and presents the possibility of connecting and managing various parking spaces and implementing this new management system called Smart Park Management System (SPMS).

1. Introduction
With increase in opportunities in the urban areas, country demographics are changing. There is an exponential increase in the number of people moving to tier I and tier II cities to explore opportunities. This will have an impact on the infrastructure.

Given this scenario, imagine a situation on a normal weekend when people tend to take a break outside of their houses. Be it shopping or a movie, the major challenge which all of us are facing today is parking. Lack of proper parking space in proportion to the size of the building is a clear failure of infrastructure planning which needs to be remediated. Now-a-days, it is extremely difficult to have a hassle-free experience of going to a commercial complex and easily find a parking space.

The crux of the proposed solution short-range device or an IoT-enabled sensor (SRD). SRDs will be simple rugged ultrasonic sensors embedded in the parking slots to detect parking availability. This sensor emits short-range signals which can be decoded for the availability of that particular parking slot. The data emitted by this device will be received by the reception box (RB) which will be placed at the centralized location in the parking area. ZigBee or any other short range radio interface can be used as communication mechanism between SRD and RB. The primary functionality of this RB is to collect the data from all the devices and send that to the third-party service provider hosting the server over the internet. This server in this paper will be referred to as Smart Park Server (SPS). SPS receives the data from RB and this data will be stored and updated continuously in a specific format tagged with unique identifiers such as Device ID, unique ID for the parking area, parking slot, area zip code, location and so on. Stored data is processed and shared with various parking space vendors and other interested groups who subscribe to SPS. Users can choose the parking slot at run time and book it directly using their mobile app.

This paper is organized into the following sections: Section 2 explains the solution. Section 3 presents the detailed solution and the various modules involved. Section 4 focuses on how all the stakeholders benefit by the solution. Section 5 proposes a revenue model. Section 6 concludes the paper.

2. SPMS - Introduction
This section introduces the solution.
There can be multiple SRDs in a particular parking area. All these SRDs will be configured by the owner of the RB. On configuring, SRDs start emitting data to a centralized RB within the parking area. RB acts as an aggregator of the information shared by SRDs and in turn sends this information over Internet to SPS. SPS collates the data from various RBs which have the subscription, processes the data and prepares information which is pushed to the registered user’s mobile app and also shared with vendors (parking space owners) and other stakeholders who have subscribed to this data. Vendors (parking space owners) will have an option to modify/override the data shared by SPS and send it back to SPS in case of exceptions and which is in turn pushed to user’s mobile app at real-time. User’s mobile app will have a unified view displaying the location to be visited based on the GPS coordinates, parking situation in the selected location and the available slots in the particular parking area. The user can make the choice from the available options to book the slot from the mobile even before reaching the location. SPS brokers information between the user and the third-party vendors and the added advantage of leveraging IoT is that the users get near real-time and relevant data which results in a hassle-
free experience.

Leveraging the emerging technology of Internet of Things (IoT), GPS, Data processing and Mobility, all the mentioned independent entities can be connected to create a framework which helps to implement the proposed Smart Park Management System (SPMS).

The proposed solution and the sequence of activities in a typical use case are illustrated in the following sequence diagram:

![Fig. 1 : SPMS Sequence Diagram](image)

1. User installs the mobile application and registers the application with SPS.
2. SPS sends the credentials to the user's mobile application.
3. The vendor registers the individual SRDs in the RB.
4. On configuration, RB gathers the data from SRDs that are registered and shares this data with SPS over the internet (after configuration, SRDs continuously send quantity data to the registered RBs).
5. SPS processes the data received from RBs. It also shares this information with the subscribed vendors and other parties.
6. On receiving the data from SPS, vendors and other parties optionally process the relevant information and pushes it back to SPS.
7. SPS processes the information considering the updates, if any, maps it to the relevant users based on the GPS coordinates/geographic locations and pushes the information to the respective mobile app of the user.
8. User’s mobile app displays the available slots in nearby parking lots based on real time location and availability. User can then choose the slot and book it in advance.

![Fig. 2 : SPMS System Overview](image)

### 3.1 Mobile Application

Users will be able to download the mobile app from respective app stores. The app will be registered with SPS using the user’s name, mobile number, unique ID, and payment details. This app primarily provides an interface for the user to view and book parking spaces available within a predefined radius based on their real time location.

![Fig. 3 : Mobile app screen (illustrative screen)](image)

#### 3.1.1 Slot Dashboard

This dashboard displays a snapshot comprising various locations that can be visited, parking situation in the location, and slot availability. The user can directly select the slot and the time for which the slot is required and book the slot (illustrated in Figure 3). On selecting the slot, the user clicks BOOK to book the parking slot in that particular location. The dashboard will also have an option to share the success message on the relevant social media of the user. This increases the credibility of the service in the user’s social circle thereby increasing the number of users using this service.

![Fig. 4 : Slot Dashboard (illustrative screen)](image)

### 3.1.2 User Perspective – Before & After SPMS

The following table gives a snapshot of the ‘before’ and ‘after’ scenarios of SPMS from a user perspective.

<table>
<thead>
<tr>
<th>Before SPMS</th>
<th>After SPMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>User has no prior information about the available parking slots in a particular location.</td>
<td>User has the mobile app which displays near real-time information.</td>
</tr>
<tr>
<td>User is forced to wait or change the location if there is no available slot.</td>
<td>User books the parking slot in advance even before going to the venue.</td>
</tr>
<tr>
<td>User should devote extra time to find and wait for a parking slot.</td>
<td>User books a parking slot and drives directly to the slot without any extra time.</td>
</tr>
</tbody>
</table>

### 3.2 SPMS - Solution detail

This section explains the proposed solution in detail. It also specifies the various modules in the system and their communication mechanism. The proposed system will have four modules – Mobile application, Short-range Devices and Reception Box, Smart Park Server, and Parking space vendors (illustrated in Figure 2). The description of each module is presented in the following sections.

3.1.2 Profile Configurator

This interface deals with the one-time configuration of user’s details. It includes the information of users such as user name, mobile number, payment details and permanent address. On registering, a unique ID is generated by the application which the user should enter to complete the registration. This unique ID will now be tagged to the user’s profile. This information will be registered with SPS. It ensures that the user information and mobile app info are tied together with unique identifiers. The app also provides options to the user to save several locations as favorites.

3.2 Short Range Devices and Reception Box

Every parking slot will have an SRD placed in it in a strategic location. These SRDs will be designed to emit the signals based on whether a vehicle has been parked in that slot. This information is sent to RB with which they are registered (vendor managing this implementation will register each SRD with a unique ID with the RB). RB will gather the information from SRDs and send it over Internet to the SPS. This data capsule will have availability information of the slot, unique ID of the SRD/Slot, which will be processed at SPS.

SRDs can be rugged ultrasonic sensors with short range RF capability like ZigBee/Bluetooth. RBs will be able to interface with SRDs using short range RF and transmit the same over the internet via Wi-Fi to SPS Server.

3.3 Smart Park Server

This is one of the important modules of the System. This server [SPS] sends near real time information to the user. The server receives the information from various reception boxes as input and then stores it, updating the same continuously. This information is also shared with parking space vendors and any other agencies (like advertising agencies) who have subscribed to SPS. Parking space vendors have an option to override the data shared by SPS and share it back with SPS in case of exceptions. SPS brokers timely, realistic and specific information between users and vendors which is key to ensure a hassle-free parking experience. The communication between the vendor and SPS is done over Internet.

3.4 Parking Space Owners / Other Vendors

This module deals with the information of various vendors. Every vendor interested in this business model should register and subscribe to SPS Service. This registration will result in a unique ID for the vendor’s server which can get connected to SPS Service periodically and get a dump of parking area and slot availability data. Parking Space Owners will have an option to override the parking availability information and share it back to SPS in case of exceptions. Other vendors like advertising agencies can push contextual information/offers to the users booking the parking slot. The communication between the vendor and the server is done over Internet.

4. Leveraging Digital Technologies

This proposed system leverages the latest and evolving digital technologies such as IoT, Social, Mobile, Analytics and Cloud (iSMAC) to have a seamless experience of parking in today’s metros.

SPS can be handled by an independent entity and it is ideal to have this service hosted on Cloud. As this service needs to cater to huge volumes of users and vendors alike, hosting this service on Cloud would ease achieving economies of scale, optimize infrastructure, and improve accessibility. Also this being a novel business proposition, leveraging Cloud would help in minimizing CAPEX.

Analytics

One of the key pillars of this solution is data gathering in near real-time from all stakeholders, brokering and processing the collected data to transform it into relevant information for stakeholders. Analytics plays a key role in monitoring and improvising this solution from user, vendor and SPS perspective. With the huge volume of data, being exchanged and it being information-centric proposition, leveraging Analytics will lead to better and apt decisions.

Social

Users form the major stakeholders in the entire system and the SPMS mobile app utilize the social media to share experiences which in turn will lead to better decision making for all stakeholders in their respective areas. Social media presence is defacto for users and this solution leverages it to build on the credibility of the vendors/services.

Internet of Things (IoT)

SRDs proposed in the solution leverage the evolving IoT. SRDs are short range devices which transmit signals pertaining to a vehicle being parked in a particular slot to a reception box which in turn communicates this data to SPS. SRDs enable capturing and transmitting near real-time data which is a key differentiator of the solution.

5. Benefits of the Solution

This section deals with how the proposed system provides benefits by creating a new business opportunity in the market in addition to adding value to all the stakeholders involved. SPS Service is a new business proposition which can be ventured into either by Parking space owners / mall chains or preferably new business entities who can consolidate and offer parking space...
as a commodity.

5.1 Nurturing New Business through IoT

With the proposed solution, the concept of parking will undergo a sea of change. SPS Service is a new business opportunity which involves interfacing with vendors/parking area owners through SRDs and RBs to share the information and interfacing with users through a mobile app. Implementation of this solution would need production, installation and maintenance of SRDs, Reception Boxes, processing and sharing information with stakeholders.

5.2 Adding Value to Involved Entities

This section details the value add to the various entities/stakeholders involved in the proposed solution. The value-add will be discussed individually for every entity.

5.2.1 Users

Here’s how the user will be benefitted:
- The user does not have to wait in long queues or spend extra time in identifying a parking slot in a given area.
- The user can check the slot availability on mobile app and book the slot for the required duration and date.
- To summarize, it is a novel and hassle-free experience for the user.

5.2.2 Third-party Vendors/Parking Area Owners

Here’s how the vendors will be benefitted:
- The vendors understand parking availability in a particular location managed by them at near real time.
- The parking area owner can drastically cut the manpower to manage the parking.
- The parking area owner can convert the unused slots to serve the users who come to the establishment without prior parking. This way, the owner can handle more users there by ensuring a hassle-free experience to the user.
- When a user shares the availed offer, it increases the credibility of the vendor in the user’s social circle. This results in more advertisement to the vendor.

5.2.3 SPS (Service)

It is a plethora of opportunities for the server provider:
- A new business opportunity focusing on information collection and brokering.
- Data monetization by sharing relevant and timely information to the stakeholders in the value chain helping them experience a hassle-free traffic experience.
- Can build a strong network across industry verticals such as Mobility and Content Service Providers.

5.3 Revenue Model

This section deals with the probable and suggested revenue model for the proposed system. This revenue model includes recommendations for all the stakeholders.
- The user can be charged an annual nominal amount or a one-time payment for download of the mobile application.
- The reception box providers can charge the parking space owners/SPS service providers on a monthly basis availing the services. An additional cost can be covered for the annual maintenance.

- SPS Service provider will have subscription-based model for the vendors and the other agencies for sharing the information which helps them get connected to their users’ requirements at near real time. It can also sign an AMC with the vendors and other agencies who register and subscribe to the service.
- Other agencies can also subscribe to SPS Service and push relevant promotions or advertisements back to users through SPS. Slot parking materialized through these promotions can garner revenue to the agencies.

6. Conclusion

The proposed system will create new business avenues in the service industry. The new and unique way of parking will result in time, effort and cost saving for the parking space owners, and expand its reach. The proposed system will optimize the entire parking experience.

7. Acknowledgments

We would like to thank the CSI team for providing us the platform to publish our solution.

8. References


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About the Authors:

**Sowmya Togarcheti** (CSI-1160501) has over 9 years of experience in the Industry in software development and technical communication. She is working as an Assistant Manager in Tata Consultancy Services with deep experience in documentation consulting, customer and stakeholder management. An avid reader, she prefers spirituality and political journalism.

**Nataraj Sirisilla** (CSI-1160504) has over 16 years of experience in IT Industry in Digital Enterprise solutions, Presales and Customer Relationship management. He is currently working as a Consultant - Presales and Solutions in Tata Consultancy Services. An avid gadget-enthusiast, he is passionate about enterprise mobile solutions.
WebGIS enabled Indian Tea Gardens Information System

Debasish Chakraborty, Arati Paul and Dibyedut Dutta
RRSC-East, NRSC, ISRO, Kolkata

Introduction

India is the world’s second largest producer of tea after China and its export has been an important foreign exchange earner for the country. The industry is about 170 years old and Indian tea is known for its aroma and taste. Due to favourable environment and high return there is progressive increase in number of tea gardens. Monitoring and managing these tea gardens physically is time consuming and also man power intensive. Maintaining the quality and targeted export of tea requires reliable and latest information of tea gardens to the stake holders throughout the nation. Hence, there is a need to have a tea garden information system of the nation for enhancing the management activities.

India Remote Sensing Satellite data viz CARTSAT and LISS-IV are capable of generating geospatial information of tea gardens. Web GIS is a kind of GIS that combines GIS and web technology. The reach of the GIS system multiplies manifold while implemented through the Internet [Devaraju et al., 2007]. Not only it serves a large number of users, it also enables access of the geospatial information without intensive investment in resources. These remote sensing and GIS technology have been used as a management tool in several areas viz. natural resource [Singh et al., 2012, Pal et al., 2014], water resource [India WRIS, 2015], health facilities [Hazr in et al 2014] and road networks analysis [Sarup et al., 2012]. These applications were developed for sharing and disseminating spatial information which in turn helps in decision making.

Web GIS enabled Indian Tea Gardens Information System [Tea GIS portal] is developed using Web GIS technologies to store, access, analyse and disseminate spatial and a spatial information for managing and monitoring tea gardens of India. The spatial and a spatial data are linked using unique key to locate and visualize the uprooted, replanted, disease and wild animals affected gardens over the satellite images for enhancing the monitoring activities. The portal displays and overlays the spatial extent of layers in multi scale viz. section, garden, district and state for better visualisation and analysis. It presents tea garden land use statistics in tabular and graphical form for better utilization of garden area. It facilitates to identify gardens in proximity to a factory or vice versa which helps in planning infrastructure. The portal identifies small gardensto analyse its facilities viz. road connectivity, distance to factory for improving tea production. Section wise shade tree density [percent canopy cover] can beanalyzed for improving tea quality of the garden. The spatial and a spatial data are integrated with the portal and found as useful solution for monitoring and managing tea gardens pertaining to West Bengal and Assam state in India.

Application development

In present application three tier architecture has been followed. The first and second tires include client[Browser] and application server[Tea GIS portal] respectively, whereas GIS server [ArcGIS Server] and database server [MySQL] reside in third tier (figure 1). Geo spatial layers of gardens of West Bengal and Assam generated using CARTOSAT-1 and LISS-IV data under the project entitled “Tea Area Development and Management using Remote Sensing and GIS” carried out at RRSC-East, NRSC, ISRO, Kolkata have been in corporated in the application. Initially the spatial database along with ancillary data of tea gardens was generated. Subsequently the Tea GIS portal is developed using AcGIS Server, MySQL, PHP and Flex programming language. The raster and vector data are shared over the Internet in OGC-WMS standard using ArcGIS Sever. The PHP accesses and shares the a spatial data stored in MySQL. Subsequently flex is used to consume and present the services in a customized form to the user.

Interface and components

An interactive user friendly Tea GIS portal have been developed for monitoring and managing the tea gardens in India. The home page of the portal provides brief description of Indian Tea, metadata, site map, help, upload/download facility, etc. On successful authentication the home page enables user to navigate to the geo-visualization module that includes GIS functionalities pertaining to the portal. The application interface includes map viewer, quick search, table of contents, legend, overview map, scale bar, map switching button sand menus. On successful authentication the home page enables user to navigate to the geo-visualization module that includes GIS functionalities pertaining to the portal. The application interface includes map viewer, quick search, table of contents, legend, overview map, scale bar, map switching button sand menus.
The search tool of the application facilitates in searching the location of a garden in a district or state. It helps user in searching uprooted/re-planted garden that in turn can be displayed over satellite image for monitoring the plantation activities and also shows the gardens/factory/settlements that are in proximity to a selected location. User can measure distance/area, view surface profile and print map using different tools in the application. The figure 3 is showing the output of the surface profile of an area. The Bookmarks tool of the menu helps to save the current map extent for future.

The ‘FAQs’ tool enables to render a spatial information on map based on query such as gardens having wild life incidence/water logging/diseases etc. The garden land use statistics for state/district/garden level can be generated and presented in the form of pdf report containing map, chart (pie/column) and tabular data using ‘Garden land use’ tool. The Land use and its statistics of a garden are shown in figure 4. Query Builder helps to build SQL queries on a thematic Layer. ‘Garden Area’ tool classifies tea gardens into large and small gardens and generates report along with statistics. ‘Shade Tree Density’ tool categorises sections based on % canopy cover that is useful for managing shade in tea gardens.

Fig. 2 : Application interface

Fig. 3 : Output of surface profile tool.

Fig. 4 : Garden Land use and its statistics.

Conclusion
The TeaGIS portal under Indian circumstance is developed to store and share spatial and aspatial information in an integrated manner for disseminating the information over the web in a customized form to various stake holders of tea industry. The unique key, that links the spatial and aspatial data, enables viewing of aspatial information spatially in GIS platform for better assessment. The application provides various useful GIS tools for spatial data visualization, analysis, query, rendering and report generation. The TeaGIS portal enables users of limited GIS knowledge in enhancing their decision making process with reduced operation cost and time. Application is demonstrated by integrating the spatial and non-spatial data of tea growing districts of West Bengal and Assam state of India and found useful in monitoring and managing the tea gardens.

About the Authors:

Dr. D. Chakraborty [CSI-I1502984] received Master degree in Mathematics from HP University, Himachal Pradesh and obtained Ph.D in Image Processing from Jadavpur University, Kolkata. He is currently working as Scientist and System Manager of Regional Remote Sensing Centre- East, NRSC, ISRO, Kolkata. His research interests include remote sensing satellite image processing and GIS. He can be reached at deba.isro@gmail.com.

Ms. Arati Paul [CSI-I1503410] is working as Scientist in Regional Remote Sensing Centre- East, NRSC, ISRO. She has completed B.Tech in computer science and Engineering. Her area of work includes remote sensing, GIS, image processing and data analytics. She can be reached at aratipaull@yahoo.com.

Dr. D. Dutta received M.Sc degree in Agricultural Sciences from B.C.K.V, West Bengal and obtained Ph.D from Indian Agricultural Research Institute, New Delhi. He is currently working as General Manager of Regional Remote Sensing Centre- East, NRSC, ISRO, Kolkata. He can be reached at ddisro@gmail.com.

References

- IndiaWRIS, 2015, From: http://nrsc.gov.in
Essential Information about Resumes

Ramesh Narasimhan
Resource Director, HI Talent Training, Chennai

What is a Resume

Resume is a French word meaning “summary”. That is precisely what your resume is – a summary of the pertinent facts about yourself … your personal, educational, and work history. Although most standard dictionaries spell the word with accents (resume), it is common usage to omit the accents. We do not use accents for resume. The word is commonly pronounced REZ –oo (like book) – may.

For the professional, managerial, and office applicant, the resume has become an indispensable job – hunting tool because the resume is so often the deciding factor in determining whether the job – seeker gets that sought – for interview with the employer. A good resume often acts as “one foot in the door”. Though the primary purpose of a resume is to obtain an interview, even during the interview, a well – prepared resume will be of additional advantage to the applicant for it will provide an important focal point for the conversation between the applicant and the prospective employer.

How to make the best use of your Resume?

An obvious, but limited use of your resume is to send it as answer to an advertisement, or to a firm where you know an opening exists. If you are employed, we urge caution in answering a “blind” ad. It could be that you are employed, we urge caution in answering a “blind” ad. It could be that you

A broader use of your resume is to “ferret” out your own openings. We suggest the following aids:

(i) Chamber of Commerce – get a list of firms in the area in which you wish to work. You may obtain a list of industries and firms in any given area by writing to the chamber of commerce in that area (or nearest large city). Some chambers charge, many do not. Your local library is also a good source of information. After obtaining the list, pick out the firms which could logically use your services, and for which you would like to work. (For example : Confederation of Indian Industry)

(ii) The Classified Telephone Directory– The “Yellow Pages” can provide a valuable source for jobs. Thumb through these pages.

(iii) Trade Magazines – If you are a specialist in some field, you should refer to the trade magazines and newspapers that cater to your area of specialization.

(iv) Employment Agencies – There are many reliable and active employment agencies that can save you considerable “leg-work” in locating openings. The telephone Yellow Pages give a complete listing of all agencies in your area. There is a growing trend toward specialization among employment agencies. Ask around, then select the agency most active in your field. After registering with an agency, cooperate fully with it. Help the agency to do the job you have asked it to do. Incidentally, many jobs procured through employment agencies are employer – fee paid – no cost to you.

(v) Help Wanted Columns – Get the newspaper in your area that is known for is its “help wanted” columns

(vi) Situations Wanted – You yourself can insert an ad in the so-called situation wanted column of a newspaper. This is seldom a fruitful method of locating worthwhile openings. However, sometimes it’s worth a try. Situations wanted ads in trade papers or trade magazines often bring better success.

Do not confine your approach to large and well – known firms. There are many well – paying, challenging positions in small and middle – sized companies and it is folly to neglect them. Try some of each – large, middle – sized, small. In short, unless you are in highly specialized fields try them all.

Your resume cannot and will not do its work and the rest is up to you.

Winning at Interviews

Helpful Hints for the Interview

The purpose of the Interview is to evaluate your :

1. Personality
2. Background and Qualifications for the Job Sought

The following are suggestions for you to observe in order to do your best in each of the foregoing areas in which you will be appraised during the interview.

Personality

Appearance – Be Neat and Look Clean. Simplicity in your Attire is advised – but do not go to Extremes. Here is a special Word of Advice to Female Applicants. A little touch of “colour” here and there won’t hurt. It goes without saying that one dresses differently sized, small. In short, unless you are in highly specialized fields try them all.

Your resume cannot and will not “work” unless you put it to work for you. Your results will be in direct proportion to your conscientiousness in getting it into circulation.

After your resume (with covering letter) has been received, you may be called for an interview. Your resume has done its work and the rest is up to you.

Poise – Be in Command of yourself at all times. Show confidence during the Interview – but not cockiness. Do not resort to objectionable Mannerisms to Control Nervousness.

1. Don’t talk too much
2. Don’t chew gum
3. Don’t fidget in your seat
4. Don’t show over-anxiousness

www.csi-india.org
You may feel nervous during the interview – so what? It’s Natural under the circumstances. But even if you are ill at ease, it is very unlikely that the Employer knows that you are. Don’t spotlight your nervousness by outward actions.

Frankness – Be very direct in your statements. Don’t try to use embellishments in your remarks. Also, if you do not know the answer – say so.

Vitality – Show that you are interested. Be Alert – but, again, we urge moderation.

Background and Knowledge of Subject
It is understood that, before you go to the interview, you must be prepared to show that you know what you are talking about. Be sure that you review your entire background before you take the interview, so that you will express yourself in a Well-Organised manner during the interview.

The use of correct English is obviously very important in order to make a good impression in any interview.

Interview Strategy

Within the two basic categories listed above, the Job seeker is advised to make a Further Study or Particular Pointers. The Following Items of Interview Strategy have been Developed from the Experience of Hundreds of Interviews. They will prove immeasurably useful if applied to your own interview.

Your Physical Position:
Never Lounge on Sprawl to Show that you are ill at ease. Sit erect, not too stiffly. Do not smoke unless given permission to do so. Never fuss with your clothing or with ash trays.

You’ll probably be a Bit Nervous, but the employer expects that and makes allowances for it.

Your outward attitude:
Act Natural, not in a cocky manner. Never apologize for your weaknesses, concentrate on bringing out your strong points. The employer may think that an outward show of over confidence may be your means of hiding a weakness.

Don’t be a comedian:
The employer is not listening to you to hear your wise cracks or small talk. He considers the interview a serious matter and expects you to do so too. Also, his time is limited and he doesn’t expect to be amused by applicants who come to see him about a position.

Don’t try to take over:
Giving the impression that you are trying to dominate the interview will do you no good. Let the employer give you the clues. Answer his questions with facts, then wait for his next question with facts, then wait for his next question. Don’t try to use up all the interview time on a single point.

Pay Attention:
Your entire background before you to show that you know what you are to the interview, you must be prepared

Don’t bring a pile of exhibits or samples:
The interview room isn’t the place to show your letters of reference, clogging, s written papers, etc., unless you have been specifically asked to bring them.

Don’t try “Soft soap”:
Be pleasant and act natural, but remember that the employer isn’t auditioning you for a TV Commercial unless, in fact, he is. You can lose the job by overdoing the personality business.

If you know some person in the company, personally or through an association, don’t play it up or try to hide it.

Interview Preparation

A Handy Question - Bank

Here is a Handy Question – Bank for Interview Preparation

Researching the Organisation
- Who owns the Organization? What is its Product/Service?
- How is the Organization Structured?
- How many Offices, Centers, etc.

Don’t spend too much time about your present job:
The employer knows what you are doing now; he is considering you for a better and/or different job. Try to word all your answers in terms of the job for which you are being considered.

Don’t give the employer the answer

Admit your error:
Admit errors you may make:
If some point comes up during the interview in which you have made an error or fact or judgment, don’t be afraid to admit it. The employer knows that you are on the “hot seat” answering his questions without any chance for prolonged consideration or research. Admit your error.

The employer either knows all the technical language that is involved in your work, or he isn’t interested in it. He is interviewing a person, not a walking technical manual.

Watch your grammar:
Avoid the use of slang and be careful to use your best English during your interview. The employer may be alert for slips or grammar, slang or poor word usage.

Don’t bring extraneous matters or tell long anecdotes. If you have to tell about some personal experience, keep it short and leave out minor details.

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Admit errors you may make:
If some point comes up during the interview in which you have made an error or fact or judgment, don’t be afraid to admit it. The employer knows that you are on the “hot seat” answering his questions without any chance for prolonged consideration or research. Admit your error.

Don’t spend too much time talking about your present job:
The employer knows what you are doing now; he is considering you for a better and / or different job. Try to word all your answers in terms of the job for which you are being considered.

Keep to the point:
Don’t bring up extraneous matters or tell long anecdotes. If you have to tell about some personal experience, keep it short and leave out minor details.

Don’t over-play your technical knowledge:
The employer either knows all the technical language that is involved in your work, or he isn’t interested in it. He is interviewing a person, not a walking technical manual.

Watch your grammar:
Avoid the use of slang and be careful to use your best English during your interview. The employer may be alert for slips or grammar, slang or poor word usage.

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Researching the Organisation
- Who owns the Organization? What is its Product/Service?
- How is the Organization Structured?
- How many Offices, Centers, etc.
they?

- How many different Departments does the organization have? How many Employees are in each Department?
- Is the Organization Secure and Well Established? What is its Reputation?
- What are its Weakness?
- What are the Strengths of the Product / Service?
- What are the Weakness of the Product / Service?
- How does the Organization Sell its Product / Service?
- What are and where are its customers?
- What is it Market Share?
- It is Market Share Expanding?
- What is the Market itself like?
- Is the Market Expanding?
- Who are the organization’s Competitors?
- What are the competitors’ products / service, strengths, weakness, market share and so on?

Listen to the Question
Look at the interviewer Be friendly
Be polite Be calm
Expand your answers Be positive
Put across your strengths
Substantiate your answers Be truthful

Don’t....
- Be a Creep
- Be over familiar Drop names
- Don’t........
- Be a Creep
- Be over familiar Drop names
- Don’t........
- Be a Creep
- Be over familiar Drop names

Family Questions :
- When were you born?
- Where were you born?
- Where do you live?
- How long have you lived there?
- Do you like living there?
- Where did you live before that?
- Did you prefer living there?
- What do your parents do?
- What do they think about your application for this job? Do you have any brothers or sisters?
- What do they do?

Leisure Questions :
- How do you Relax?
- What Interest do you Have?
- Do you have any Hobbies?
- Do you like Sports?
- Do you play and Games at all?
- Do you belong to any Teams?
- Do you belong to any Clubs?
- Do you belong to any Societies?
- What exactly Do you Do?
- Do you read much? What do you Read?
- Which Newspaper do you read?
- Why do you like it?
- Which Page do you read first?
- What sort of books do you read?
- What is your favourite author?
- Why do you like him/her?

Education Questions :
- Which School / college did you Attend?
- How long were you there?
- Did you like it?
- What did you most like about School / College?
- What did you least like about School / College?
- What did you think of your Teachers?
- Which was your best Subject?
- Was your worst Subject?
- Which was your favorite subject?
- Which subject did you like the least?
- Why did you choose to study these subjects?
- What did you think of your exam results?
- To what would you attribute your success?
- Why did you do badly?
- What else did you do at school / college?
- Where you a prefect?
- Where you in any clubs or societies?
- Did you play for any school teams?
- What did you do during school holidays?
- What made you decide to go to university?

“Experience’ Questions”
- How did you get your present / last job?
- What exactly do you do?
- Tell me what you do in an average day?
- What do you like most about the job?
- What do you like least about the job?
- What parts of the job do you find difficult?
- What is the hardest thing you have had to do?
- What have you achieved in the job?
- What have you failed to achieve in the job?
- What do you think of your boss?
- What are his / her good points?
- What are his / her bad points?
- Could you do his / her job better?
- What do you think of your colleagues?
- What do they think of you?
- What does your boss think of you?
- How much do you earn?
- Why do you want to leave?
- Why do you want to join this organization?
- What do you know about this organization?
- Tell me what you know about our products / service?
- What qualities do you need for this job?
- What can you offer?
- Why should we employ you?

Tricky Questions :
- How much money do you want?
- Why have you left this section blank?
- Where you sacked?

Sell me this!
- What would you do if ...
- What do you think of...
- Tell me all about...
- Where will you be in ten years time?
# Resume of Ramkumar

## 1. Address For Communication (Present)  [Permanent]

## 2. Residence Telephone (with STD code)

- Email ID :
- Mobile Phone :

## 3. Professional Qualifications

- B. Tech in Computer Science, SAACE, Chennai, 2000
- MBA from Columbia University, USA, 2004

## 4. Academic Profile

<table>
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<th>Period</th>
<th>Electives</th>
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## 5. Professional Experience Summary

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<th>Designation</th>
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## 6. Honours and Awards

- Distinction in B.Tech Degree Program
- Graduate Assistantship in MBA Program

## 7. Training History

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<th>Trainer</th>
<th>Topic</th>
<th>Awards</th>
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## 8. Faculty History (Optional)

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<th>Organisation</th>
<th>From</th>
<th>To</th>
<th>Faculty Subject</th>
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</table>

## 9. Significant Accomplishments

- Junior Scientist Award 1998
- Sony Award for Best Invention 2000

## 10. Personal Background

- Born 25 June 1980 at Chennai
- Indian
- Pleasing : Height : 175 cm, Weight : 60 kg
- Excellent, no physical limitations
- Normal
- Col, Kumar : Retired Army Officer
- Single
- Valid Licence for Four / Two Wheelers
- Indian Passport Valid upto Feb. 28, 2015
- Willing to relocate in India / Abroad
- Others : Languages, Schooling, Hobbies, Sports, Clubs, Membership of Association [MMA, IEEE, CSI], Affiliation [NCC, NSS]
11. References / Citations / Testimonials (List Names only : To be Produced on Request)

<table>
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<th>3.</th>
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<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>On Character</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
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12. Highlights of Professional Experience (on a new page)

<table>
<thead>
<tr>
<th>Year</th>
<th>Company</th>
<th>Role</th>
<th>Experience</th>
</tr>
</thead>
</table>

Job Responsibilities: International Marketing in Large Systems covering Asia Pacific Region as Head of Sales, Located in Singapore, Frequent Traveler.

Significant Achievements: Managed Sales Team as Head for Large Systems, comprising 250 personnel and exceeded Sales Targets Set by Corporate Office Consistently, for the last Two Years.

Awards: IBM Lifetime Award and Citation given during last year, towards Highest Individual Sales Performance for Large Systems Department – World – Wide

For Each Company listed (in 5 above), namely Professional Experience Summary please give Job Responsibilities, Significant Achievement, etc., (In Reverse Chronological Order)

About the Author:

Mr. Ramesh Narasimhan (CSI Life Member) is Resource Director, HI Talent Training, Chennai. He is a B.Tech in Mechanical Engineering from IIT Madras and MBA from Washington DC, USA with 40 years Managerial Experience with, TATAS, Birlas, DCM Groups, etc. He is currently Coach and Mentor for Career Skills and Youth Development Initiatives for Honorary Causes such as CSI, IIT Madras, Alumni Association Etc., He can be reached at ramesh.narasimhan@gmail.com

(ADVERTISING TARIFF)
Rates effective from April, 2014

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<th>COLOUR</th>
<th>MECHANICAL DATA</th>
</tr>
</thead>
<tbody>
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<td>Colour Artwork (Soft copy format) or positives are required for colour advertisement</td>
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</tr>
<tr>
<td>Back Cover</td>
<td>₹ 50,000/-</td>
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<tr>
<td>Inside Covers</td>
<td>₹ 40,000/-</td>
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<tr>
<td>Full Page</td>
<td>₹ 35,000/-</td>
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<tr>
<td>Double Spread</td>
<td>₹ 65,000/-</td>
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<tr>
<td>Centre Spread</td>
<td>₹ 70,000/- (Additional 10% for bleed advertisement)</td>
</tr>
<tr>
<td>Full Page with Bleed</td>
<td>28.6 cms x 22.1 cms</td>
</tr>
<tr>
<td>Full Page</td>
<td>24.5 cms x 18.5 cms</td>
</tr>
<tr>
<td>Double Spread with Bleed</td>
<td>28.6 cms x 43.6 cms</td>
</tr>
<tr>
<td>Double Spread</td>
<td>24.5 cms x 40 cms</td>
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Special Incentive to any Individual/Organisation for getting sponsorship 15% of the advertisement value.
Special Discount for any confirmed advertisement for 6 months 10%.
Special Discount for any confirmed advertisement for 12 months 15%.
All incentive payments will be made by cheque within 30 days of receipt of payment for advertisement.
All advertisements are subject to acceptance by the editorial team.
Material in the form of Artwork or Positive should reach latest by 20th of the month for insertion in the following month.
All bookings should be addressed to:

Computer Society of India™
Unit No. 3, 4th Floor, Samruddhi Venture Park, MIDC, Andheri (E), Mumbai-400 093.
Tel. 91-22-2926 1700 • Fax: 91-22-2830 2133 | Email: hq@csi-india.org

www.csi-india.org
CrossWord » Durgesh Kumar Mishra  
Chairman, CSI Division IV Communications  
Professor (CSE) and Director Microsoft Innovation Center, Sri Aurobindo Institute of Technology, Indore.

Test your knowledge on Big Data
Solution to the crossword with name of first all correct solution provider[s] will appear in the next issue. Send your answer to CSI Communications at email address csic@csi-india.org and cc to drdurgeshmishra@gmail.com with subject: Crossword Solution – CSIC December 2016 Issue.

ACROSS
3. A set of procedures  
5. An object-oriented programming language  
8. A small program that makes static pages’ interactive  
9. A digital currency  
11. A piece of semiconductor used in ICs  
12. A junk mail  
13. An API that enhances the functionality of a browser

DOWN
1. A computer program typically installed on the mobile  
2. A high traffic website  
4. A tool to monitor data packets of the network  
6. A protocol converter  
7. A software framework for big data  
10. An organizational internet

We are overwhelmed by the response and solutions received from our enthusiastic readers  
Congratulations!

All nearby Correct answers to December 2016 month’s crossword received from the following reader:
• Dr. Sandhya Arora, Professor, Cummins College of Engineering for Women, Pune  
• Ms. Priyanshu Jadon, M.Tech., Sri Vishnav Vidhya Peeth, Indore  
• Mr. Alok Tiwari, DAV, Indore  
• Ms. Kirti Patil, Asst. Professor, MET’s BKC Institute of Engineering, Nashik

Solution for December 2016 Crossword

BRAIN TEASER

P I G X N A D I R O A L B M I C K M A N I F O L D K T S
N E A T L I N E B E A M O C D U Y I T Y S A S H R Y
AHMEDABAD CHAPTER

"World Habitat Day-2016" was celebrated by The IEI Gujarat State Centre and Gujarat State Technician Chapter in association with The Institution of Electronics and telecommunication Engineers, CSI Ahmedabad Chapter and GESIA IT Association on October 03, 2016. Theme Speaker of the program was internationally renowned telecom inventor, entrepreneur, development thinker and policy maker Dr. Sam Pitroda. More than 300 participants attended this event to hear and learn from great inventor Dr Sam Pitroda. Dr. Sam Pitroda talks about the journey of Information Technology as well as his move and thought about the digital india. Points which Dr. Pitroda covered in his speech were: History on digital India. Where currently we are today in the digital world & its challenges. How to move ahead in the next decade with digital India. Lastly interaction with the audience to solve their queries and doubts. He shared the digital India started in early 18s when governor of India decided to setup National Informative Center. Idea was to use network to connect data all over in all field like agriculture, education and all other filed. This was ages behind when the technology was not friendly as it is today in these 35 year of implementing the idea. In today’s time the power of computer is not just available in desktop but in wrist watch today.

AMRAVATI CHAPTER

Two weeks Short Term Training Program On “Internet of Things and Advances in Embedded System” was organized by the Department of Information Technology, Prof. Ram Meghe Institute of Technology and Research, Amravati (M.S.) in collaboration with CSI Amravati Chapter during 21st Nov. 2016 to 30th Nov. 2016. The Short Term Training program was inaugurated by Dr. Rajkamal (Professor and Director, Medicaps Inst. of Sci. and Tech.& Former Vice Chancellor Devi Ahilya University, Indore) as a Chief Guest and Hon.Dr. Nitin Dhande, Chairman of Vidarbha Youth Welfare Society as a President of the inaugural function. The function was inaugurated in presence of the Mr. Yuvaraj Singh Chaudhari, Secretary, Vidarbha Youth Welfare Society, Dr. G. R. Bamnote, Dean, Faculty of Engineering & Technology SGB Amravati University Amravati and Chairman, CSI Amravati Chapter, Dr. N. W. Kale, Principal, Prof. Ram Meghe Institute of Technology and Research Badnera, Prof. A. P. Bodkhe, and Dr. Mrs. V. M. Deshmukh, Convener of the STTP and MC, CSI Amravati Chapter.

CHENNAI CHAPTER

CSI Chennai Chapter organised a presentation on “Trends in retailing in the digital era” on 19th Sep 2016. Mr. H. R. Mohan, Chairman, IEEE Professional Communication Society welcomed the gathering and briefed on the growth of online retail and how ICT is critical in the e-commerce business. Mr. S. Sundaresh, Chairman, IEEE Technology and Engineering Management Society formally introduced the speaker Mr. V. Rajesh, Retail and Shopper Behaviour Expert with extensive experience in the retail business for over three decades in organisations such as TCS, Reliance Retail, Future Group and RPG Retail. Mr. Rajesh in his presentation said that Retail as a business usually associated with stores has undergone change over a period and now has gone online. In this process, the core business orientation and focus has undergone a paradigm shift. The focus has shifted from the front end to the back end and has necessitated an integral role for Information Technology to manage a business which is increasingly dependent on scale and size. He added that the digitalization influences of shoppers behaviour has also led to significant changes in how the business is being conducted and values can be created. The presentation covered the retail trends under three broad areas such as Business models; Physical, Online, Multi-channel, Omni channel, etc; Shopper behaviour; Key expectations and behavioural aspects and Role of IT in retail.

CSI Chennai Chapter organised a presentation on "Excellence through Innovation" on 6th Oct 2016. Mr. H.
R. Mohan, Chairman, IEEE Professional Communication Society (PCS) welcomed the gathering and briefed on the need to be creative and innovative to survive and excel in the competitive business environment. Mr. T. R. Vasudeva Rao, Vice Chairman, CSI Chennai formally introduced the speaker Dr. Rekha Shetty, a popular author, successful entrepreneur and the managing director of Farstar Distribution Network Ltd. whose long term Innovation Initiative, using 47 thinking tools has helped many enterprises in a steep increase in profits, reduction in costs, while improving customer satisfaction and employee participation levels. Her presentation objectives included: Innovating happily and creating a profitable organization; new approach to create a higher Happiness Quotient; developing a written plan for happy, productive organization; learn the art and science of improving your Happiness Quotient and creating an epidemic of happiness in your organization by improving the Happiness Quotient in both personal and official life. This tailor-made program was to help each participant develop a time bound, detailed plan to cultivate happy organizations. She had quoted many live examples for the same like how it happened in organisations such as Ashok Leyland, TATA Steel, HSBC, Sriram Group etc. This program was lively, interactive, effective and extremely enjoyed by over 65 participants who had attended the programme. Mr. Sakthivel, Chair, IEEE Computer Society proposed the vote thanks.

Mr. S. Arumugam, Past Chairman of the chapter opened the meeting and welcomed all members for participation and then he handed the proceedings over to Mr. Venkat Kailasam, Chapter Treasurer for presenting the financial statements for the year 2015-16. Mr. Venkat Kailasam, Chapter Treasurer, updated the participants on Chapter’s income and expenditure details and explained the total assets and liabilities position. Members enquired details about establishment expenses and the process that is being followed with respect to service tax payments on hall rent receipts. He briefed the current process and explained the on account adjustment with HO. Members suggested that the same should be settled from now on a monthly basis and it has be uploaded in cloud accounting system promptly. Treasurer agreed to the suggestion. After detailed review and discussion, the financial statements as presented was proposed for adoption by Mr. P R Rangaswami and seconded by Dr. M. Sunderasan. Subsequent to financial statements review, Dr. G Radhamani, Secretary of the Chapter thanked all the members present.

Chapter organized a Guest Lecture on “Big Data: Hype and Reality” in Assembly Hall, PSG College of Technology, Coimbatore on 9th December 2016.

The function has started with opening remarks by Mr. Vishnu Potty, Chapter Coimbatore, Vice President - CTS, Coimbatore. The chief guest Dr. C. Mohan IBM Fellow, IBM Research Center, USA delivered lecture on Big Data by explaining the basic concepts and the 4 Vs of big data like Volume, Velocity, Variety and Veracity. The Big Data is used in various fields like Financial and economic macro-modeling, Consumer modeling, computational recommendation systems, Web searching, Similarity search systems, Fraud detection and failure prediction.

He also discussed on the “Big Data Market: 2016 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts”. The report he presented includes the market size forecasts for Big Data hardware, software and professional services from 2016 through to 2030. The forecasts are further segmented for 8 horizontal submarkets, 14 vertical markets, 6 regions and 35 countries.

The chief guest Dr. C. Mohan elaborated on hadoop
technologies. He also shared his knowledge on the topics emerging big data stack, Big data research projects, Data Scientist and Apache spark.

Dr. G. Radhamani, Secretary, CSI Coimbatore Chapter delivered vote of thanks. More than 350 faculty, students and chapter officials participated in the seminar.

KOLKATA CHAPTER

Techno India College of Technology, Newtown, Kolkata, organized a Workshop on Android Technology in collaboration with the CSI Kolkata Chapter on 17th of December 2016, for the Class 10th and 12th students of various schools of Kolkata. Among the dignitaries present during the inauguration were Prof J K Mondal, Chairaman, CSI, Prof S Chaudhury, Mr Subir Lahiri and Dr. Ambar Dutta. The students were given assignments on specific related topics which would be judged and Certificates of Merit would be handed out to the selected students.

Seventh Lecture Meeting on “Wearable Sensors” was held on December 3, 2016 at CSI Kolkata Chapter. The expert talk was given by Dr. Madhurima Chattopadhyay, Professor & Head, Applied Electronics & Instrumentation Engg. Department, Heritage Institute of Technology.

A General body meeting of CSIKC was held on 5th November 2016 to construct various committees, budget and theme of the Annual Conference of CSI 2017.

NASHIK CHAPTER

The new office of CSI Nashik Chapter was inaugurated by CSI fellow Mr. S. R. Karode and Dr. S. S. Sane, RVP, Region VI on 12th December, 2016. CSI Fellow, Patron, Past Chairmen, Senior Members and Managing Committee members were present in large number for inauguration program. Every member were happy to see well equipped Training Room, Projector, Office premises.

Mr. Sanjay Mohapatra, Vice President cum President Elect visited Nashik on 12th December, 2016. Meeting was organized by CSI Nashik Chapter with Mr. Mohapatra, which was attended by CSI Fellow, Patron, Past Chairmen, Senior Members and Managing Committee members. CSI fellow Mr. S. R. Karode and Dr. S. S. Sane, RVP, Region VI welcomed Mr. Sanjay Mohapatra. Mr. Diwakar Yawalkar, Chairman, CSI Nashik was thankful to Mr. Mohapatra for his visit and presented details of activities conducted by CSI Nashik. In this meeting Mr. Sanjay Mohapatra suggested few point to improve Student, Institutional as well as Individual membership. He was happy with overall development of Chapter. He also expressed satisfaction on conducted and proposed CSI Nashik activities.

Mr. Sanjay Mohapatra also visited Chapter office at new location and expressed happiness for well equipped office and training facility. He guided Chapter to make maximum and effective use of the facilities. He wished the chapter progress and good team work being done by chapter.

NOIDA CHAPTER

CSI Noida Chapter has organized one day National Workshop on Information Security, Cyber Forensic & Big Data in the Campus of Monad University, Ghaziabad Uttar Pradesh, on 26th Nov. 2016. Prof. (Dr.) Ram Chandra Hon. VC Monad University has given welcome speech and elaborated about the aims & objective of the workshop to the students/faculty members / and research scholars in the seminar hall of Monad University.

Prof. Manohar Lal has deeply explained the use of computer education in India & its use for protecting the cyber crime in the country. He has also said that Internet is an double sword knife and we should harness its potential for the benefit of knowledge society

Chief Guest Prof. (Dr.) K K Aggarwal in his inaugural address
has said that UID is the biggest data base in the world and it has reversed the old statement in new way “Invention is the mother of necessity” in the present internet age. He has also said that we should protect our debit card, credit card & bank credentials by using strong password in the present age of cashless economy.

Mr. V K Shukla Add. Advocate UP Government has said that the use of internet has become very important for communication in offices & courts & cyber crime has also increased in the recent times. He has also said that Internet has encouraged the field of education, business and knowledge, but at the same time it has also taught new techniques to cyber criminals to hack the sensitive data.

Mr. Anuj Agrawal has given hands on training to the participants of the workshop on memory forensic & data forensic & has given tips to secure the login id & password from cyber criminals. He has also given various tips to protect from cyber criminals in case of theft of crime.

RANCHI CHAPTER

5th International Conference AITISM’16 was held on 26-27 November, 2016 at Ispat Bhavan, Ranchi, India. It was organised by CSI Ranchi Chapter in association with Indian Institute of Metals (IIM), Ranchi Chapter and Microsoft Innovation Centre, Indore.

CSI Ranchi Chapter organizes Conference titled “Automation & Information Technology in Iron & Steel Making” every 2 years at Ranchi.

The AITISM is a bi-ennial conference series which started in the year 2008. It focuses on key issues of Automation and Information Technology implementation in Steel Industry. As India strives to produce 300 million tonnes of Steel by the year 2025, the key challenge will be how to make Indian steel cost competitive in the world market. Also, there is a need to make high quality and special steels to support “Make in India” campaign. Automation and IT has a big role to play for this dream to come true.

AITISM’16 was a congregation of “Know-How” the technology vendors, IT Solutions providers and Steel Manufacturers to deliberate upon what India needs and how it will be achieved. There were extensive deliberations by eminent speakers, IT experts from industry and academia from across different organisation involved in implementation of Automation & IT in Steel Industry under plenary, technical sessions, and manufacturer’s presentation of this International Conference benefited the participants and delegates.

Around 400 participants, from 40 different Organisations and countries (India, Germany, France, Australia & China), comprising of Automation & IT experts from Steel Industry, Academia and Technology Providers deliberated upon the implementation of new generation Automation & Information Technologies in Steel Industries like IT in Business Functions, SMART computing, Industrial Internet of Things [IIoT], Robotics & Embedded Systems, instruments for on-line Elemental Analysis, advancement in Wireless Control Systems, Unmanned Aerial Vehicle Systems for Steel Industry etc.

A number technology providers led by ThermoScientific, SMS group, Lotus Wireless, Vishwa Group & RealTime Instruments, Parker, PriMetals, Rockwell Automation, Berthold Technologies, Parcitech, Schneider Electric, Siemens India, Baumer India Pvt Ltd, Toshniwal Industries will be presenting state of art Automation & IT implementations and technologies through Manufacturer’s Presentation, Technical Exhibition and Paper presentations.

The Conference provided ample opportunity for sharing state-of-the-art Automation and IT Technologies and solutions in all the areas of iron & steel making. Interactions with domain experts and pioneers in the field deliberated upon the challenges & opportunities, Steel Industry is facing today. Steel Industry as whole has benefitted by interactions and knowledge shared during the Conference.

The Conference was inaugurated by Honorable Chief Guest and Padma Shree Nalini Ranjan Mohanty. Other guests were Mr. Stephen Nel, from ThermoFisher Scientific, Dr. Anirban Basu, President, CSI, Mr. B N Thakur, Executive Director, RDCIS SAIL, Mr. Neeraj Mathur, Chairman, Mr. A K Paul, Chairman, Indian Institute of Metal, Ranchi Chapter, Shri Sanjeev Kumar, Chair Vice-Chairman and Shri Anup Prasad, Chapter Secretary.

VELLORE CHAPTER

CSI Vellore Chapter organized a one day workshop on “Big Data and Hadoop” on 12/12/2016 at VIT University. Ms. B. Sumitra, AGM, BHEL, Ranipet explained introduction to data, information and the evolution of big data in 20th century and described the framework components of Hadoop and languages used for big data programming, around 60 life members and students participated in the workshop.

Organized by Prof. G. Jagadeesh, Prof. R. Rajkumar, Prof. K. Govinda, RVP VII.
<table>
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<tr>
<th>REGION-I</th>
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<tbody>
<tr>
<td><strong>The NorthCap University, Gurgaon</strong></td>
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<tr>
<td>3-11-2016 - IT TOMBOLA competition</td>
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<td>3-11-2016 - Coding Competition</td>
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<td><strong>JB Institute of Technology, Dehradun</strong></td>
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<td>2-12-2016 – Student Branch Inauguration</td>
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<tr>
<td>14-11-2016 - Workshop on Recent Trends &amp; Developments in Computer Science, Education: Challenges &amp; Opportunities</td>
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<th>REGION-I</th>
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<tr>
<td><strong>Model Institute of Engineering &amp; Technology, Jammu</strong></td>
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<tr>
<td>19 &amp; 20-11-2016 - CSI J &amp; K State Student Convention</td>
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<th>REGION-III</th>
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<tbody>
<tr>
<td><strong>Sagar Institute of Science &amp; Technology, Bhopal</strong></td>
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<tr>
<td>12-11-2016 – Student Branch Inauguration</td>
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<tr>
<th>Acropolis Institute of Technology &amp; Research, Indore</th>
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<tr>
<td>16-11-2016 – Expert Lecture on Analysis and Design of Algorithms</td>
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<td>16-11-2016 – Expert Lecture on Computer Network</td>
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<td>REGION-III</td>
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<tr>
<td>IPS College of Technology &amp; Management, Gwalior</td>
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<tr>
<td>Dr K V Subba Reddy College of Engg. for Women, Kurnool</td>
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<td>8-12-2016 – Competition on Website Designing</td>
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<tr>
<td>27-11-2016 – One day FDP on 2K16</td>
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<td>Raja Rajeswari College of Engineering, Bangalore</td>
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<td>21-10-2016 – National Level Technical Symposium TRIGGER 2k16</td>
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<td>NBKR Institute of Science and Technology, Nellore</td>
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<td>4-11-2016 – Event on Mock the Press event</td>
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<td>REGION-V</td>
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<tr>
<td>Sasi Institute of Technology &amp; Engineering, Tadepalligudem</td>
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<tr>
<td>Gayatri Vidya Parishad College for Degree &amp; P G Courses, Visakhapatnam</td>
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<tr>
<td>10-12-2016 - Guest Lecture on Cash Less Transactions</td>
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<tr>
<td>Marri Laxman Reddy Institute of Technology &amp; Management, Hyderabad</td>
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<tr>
<td>2 &amp; 3-12-2016 - FDP on Project Based Training on Advanced JAVA</td>
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<tr>
<td>17 &amp; 18-12-2016 - Two day Workshop on Big Data Analytics</td>
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<tr>
<td>CMR Technical Campus, Hyderabad</td>
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<tr>
<td>15-12-2016 - Guest Lecture on Job Market vs Technologies &amp; Preparation using Programming work bench - Self learning tool</td>
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<tr>
<td>9 to 12-12-2016 - Three Day Workshop on IBM Bluemix &amp; Internet of Things</td>
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### REGION-VI

**SNJB’s Late Sau. Kantabai Bhavarlalji Jain College of Engineering, Nashik**

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>9-12-2016</td>
<td>One Day Short Term Training Program for Preprimary Teachers</td>
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<tr>
<td>12-12-2016</td>
<td>to 16-12-16 - State Level One Week Short Term Training Program on Internet of Things</td>
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### REGION-VII

**Valliammai Engineering College, Kattankulathur**

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<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>24 &amp; 25-11-2016</td>
<td>Two days Faculty Development Programme on CS6008 Human Computer Interaction</td>
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**Rajalakshmi Engineering College, Chennai**

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<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>16 &amp; 17-12-2016</td>
<td>Two day workshop on Python Programming</td>
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**SASTRA University, Thanjavur**

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>29-9-2016</td>
<td>Dr Ravichandran &amp; Mr Rajesh Rajalingam during Guest Lecture on IBM Bluemix Unveiled</td>
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<tr>
<td>1-10-2016</td>
<td>Mr Raghuraman Pandi &amp; Dr Manjula during workshop on Big Data Analytics with Hadoop</td>
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### REGION-VII

**Er Perumal Manimekalai college of Engineering, Hosur**

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>13-7-2016</td>
<td>Prof. Keerthika, Dr. Madhusudhanan &amp; Dr. Chitra during Seminar on C-programming-Learn to code</td>
</tr>
<tr>
<td>18 &amp; 19-8-2016</td>
<td>Dr Chitra &amp; Mr Aravindhan during hands on Training Android Application Development &amp; Layout</td>
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<td>REGION-VII</td>
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<tr>
<td>College of Engineering, Thalassery</td>
<td>College of Engineering, Thalassery</td>
</tr>
<tr>
<td>12-11-2016 – Student Branch Inauguration</td>
<td>17-12-2016 – Inauguration of Student Branch</td>
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</table>

Student branches are requested to send their report to [sb-activities@csi-india.org](mailto:sb-activities@csi-india.org) with a copy to [admn.officer@csi-india.org](mailto:admn.officer@csi-india.org).

Chapters are requested to send their activity report to [chapter-activities@csi-india.org](mailto:chapter-activities@csi-india.org).

Kindly send high resolution photograph with the report.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Details &amp; Contact Information</th>
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<tbody>
<tr>
<td></td>
<td><strong>National Conference on Challenges and Opportunities in Computer Engineering, NCCOCE’17</strong>, Christ University, Bengaluru. Supported by: CSI Division IV &amp; CSI Bangalore, Chapter; Contact: Dr. Samiksha Shukla, 9880462311, Mr. Naveen J, 9994289908, <a href="mailto:nccoce17@christuniversity.in">nccoce17@christuniversity.in</a>, <a href="https://christuniversity.in/news/national-conference-on-challenges-and-opportunities-in-computer-engineering-2017">https://christuniversity.in/news/national-conference-on-challenges-and-opportunities-in-computer-engineering-2017</a></td>
</tr>
<tr>
<td>17-18, 2017</td>
<td><strong>INDIACOM 2017</strong>, Organized by Bharati Vidyapeeth’s Institute of Computer Applications and Management (BVICAM), New Delhi <a href="http://bvicam.ac.in/indiacom/">http://bvicam.ac.in/indiacom/</a>  &lt;br&gt; Contact : Prof. M. N. Hoda, <a href="mailto:conference@bvicam.ac.in">conference@bvicam.ac.in</a>, <a href="mailto:indiacom2017@gmail.com">indiacom2017@gmail.com</a>, Tel.: 011-25275055</td>
</tr>
<tr>
<td>MARCH 01-03, 2017</td>
<td><strong>I International Conference on Smart Computing and Informatics (SCI -2017)</strong>, venue : Anil Neerukonda Institute of Technology &amp; Sciences Sangivalasa, Bheemunipatnam (Mandal), Visakhapatnam, Andhra Pradesh, <a href="http://anits.edu.in/sci2017/">http://anits.edu.in/sci2017/</a>  &lt;br&gt; Contact: Prof. Suresh Chandra Satapathy. Mob.: 9000249712</td>
</tr>
<tr>
<td>03-04, 2017</td>
<td><strong>First International Conference on &quot;Computational Intelligence, Communications, and Business Analytics (CICBA - 2017)&quot;</strong> at Calcutta Business School, Kolkata, India. Contact: <a href="mailto:som.cs@live.com">som.cs@live.com</a>; (M) 94754 13463 / (O) 033 24205209</td>
</tr>
<tr>
<td>APRIL 08-10, 2017</td>
<td><strong>ICSE 2017</strong> - International Conference on Soft Computing in Engineering, Organized by : JECRC, Jaipur, <a href="http://www.iscs2017.com">www.iscs2017.com</a>  &lt;br&gt; Contact : Prof. K. S. Raghuwanshi, <a href="mailto:hod.it@jecrc.ac.in">hod.it@jecrc.ac.in</a>, Mobile : 9166016670</td>
</tr>
<tr>
<td>JUNE 05-30, 2017</td>
<td><strong>Workshop on LAMP (Linux, Apache, My SQL, Perl/Python)</strong>, Jaypee University of Engineering and Technology, Raghogarh, Guna - MP, <a href="http://www.juet.ac.in">www.juet.ac.in</a> Dr. Shishir Kumar (<a href="mailto:dr.shishir@yahoo.com">dr.shishir@yahoo.com</a>) 9479772915</td>
</tr>
<tr>
<td>OCTOBER 28-29, 2017</td>
<td><strong>International conference on Data Engineering and Applications-2017 (IDEA-17)</strong> at Bhopal (M.P.), <a href="http://www.ideaconference.in">http://www.ideaconference.in</a>  &lt;br&gt; Contact : <a href="mailto:conferenceidea@gmail.com">conferenceidea@gmail.com</a></td>
</tr>
<tr>
<td>DECEMBER 21-23, 2017</td>
<td><strong>Fourth International Conference on Image Information Processing (ICIIP-2017)</strong>, at Jaypee University of Information Technology (JUIT), Solan, India, <a href="http://www.juit.ac.in/iciip_2017/">http://www.juit.ac.in/iciip_2017/</a>  &lt;br&gt; Contact : Dr. P.K. Gupta (<a href="mailto:pkgupta@ieee.org">pkgupta@ieee.org</a>) (Off) +91-1792-239341 Prof. Vipin Tyagi (<a href="mailto:dr.vipin.tyagi@gmail.com">dr.vipin.tyagi@gmail.com</a>)</td>
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COMPUTER SOCIETY OF INDIA
COIMBATORE CHAPTER

Welcomes you

Host: Coimbatore Chapter
23, 24 & 25 JAN 2017
LE MERIDIEN, Coimbatore.

DIGITAL CONNECTIVITY - SOCIAL IMPACT