

Vol. 12 :: No. 2 :: Apr – Jun 2017

Message from the Chairman



Dear IEEE Members,

I am indeed happy that the second issue of the IEEE India Council Newsletter is being published on time. It shows that IEEE IC team is going ahead with purpose very strongly. For this reason my appreciation to all who contribute to make this happen.

Google offers an Applied CS with Android an educational program designed to give college juniors and seniors an opportunity to enhance their knowledge of data structures and algorithms in a hands-on way. Google conducted a weeklong pilot program at G H Raison College of

Engineering as requested by IEEE IC. Now the program has been named as 'Google IEEE India Council Applied CS program'. This program is open to any IEEE student/YP/WIE/GSM, who has attended one course in Java and advances in algorithms. The program will be launched nationwide in July/August 2017 at 100 branches in India. I appeal to all section Chairs to make this program a grand success. For any clarification, please write to IEEE IC Secretary.

IEEE IC will give the following awards in 2017 for which VC, Awards, has made necessary arrangements: a) IEEE India Council Outstanding Student Branch Award and b) IEEE India Council Outstanding Volunteer Award. At the IEEE IC, discussions are at advanced level to institute sponsored IC Awards under IC-WIE AG. IC has principally approved instituting the awards. These IC awards will be in line with IEEE awards and will follow IEEE awards guidelines.

VC, Industry Relations, has a busy schedule to engage Industry Partners with sections/institutions/ organizations for five programs, which will be made known in due course of time.

IEEE IC SAC is working very hard on the structure and activities, which were about organization of two conference calls with 30 students volunteers of all sections. The students are working in teams for graphic design, industrial relation, newsletter editorial, social media, webinar, SB networking etc. This is very good and timely effort, which will bring value to IEEE IC SAC activities.

IEEE IC along with IEEE India Office is taking up the issues of renewal of IETE, IEI and other MoUs. We are also on the job to update the IC Execom members about all MOUs with industries, so that events can be organized at Section level in association with these industries.

I should mention about the report on INDICON, which was prepared and shared by Prof. Anil Roy, indicating popularity of the INDICON and high number of downloads of recent INDICON papers. We are all very happy and feel proud of such notable achievement. I am also happy to inform you that IEEE India ADHOC-2017 has been formed by IEEE HQ. IEEE IC is playing active role in the activities of this ADHOC committee, which will play a leading role in formulating long term strategies for IEEE in relation to India. I will be failing in my duties, if I do not mention that we are having overwhelming participation in all the IC Face-to-Face as well as WebEx/ConCall meetings. IEEE IC Execom has also taken a very positive decision to include the IC Chapter Chairs in the Execom meetings. I express my gratitude to all who are taking such active interest in IEEE IC activities/initiatives. I am looking forward to meet you all again in person in Cochin during the IC F2F meeting to be held in tandem with TenSymp 2017.

With sincere fraternal greetings

Sivaji Chakravorti
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Message from Editor

H.R. Mohan

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Dear readers,

We are presenting the second quarterly issue of India Council Newsletter (ICNL) for the year 2017. This issue of ICNL is of 70 pages comprising of event reports from various Sections, regular columns, articles on current interest topics, useful announcements and web links. We are happy to inform that we had received a positive and encouraging feedback for the first issue of ICNL Jan-Mar 2017. We wish to state that all efforts will be made to come out with informative and interesting issues of ICNL with your continued support..

We are pleased to inform that the current issue of ICNL features various events, such as international conferences, distinguished lectures, YP, WIE activities held in the Bombay, Hyderabad, Kerala, Madras, Pune and UP Sections along with an activity report of PES of IC. We thank the chairs of these Sections and the conveners of the events for sending the reports as per guidelines to facilitate publishing. IC Chair Dr. Sivaji and IC Secretary Dr Preeti have coordinated with the Sections in getting these reports in time and we thank for their support too. For the forthcoming issues, we expect the reports from all the Sections to be sent to the newsletter directly at ieee.icnl@gmail.com as per the guidelines available at <https://goo.gl/DcVPmx> as well as at <https://goo.gl/rh3lsm>

Dr. Sivaji Chakravorti, chair, IC in his message has outlined the various initiatives of IC based on the IC execom deliberations held monthly including the face to face meeting held in Kolkata in Apr 2017. We are sure the year will be vibrant with multi-faceted activities which we expect will have good participation from all our members.

ICNL wishes to thank the authors of the following informative and interesting articles published in this issue.

- Why I love Arduino by Prof. V. Lakshmi Narasimhan, University of Botswana, Botswana. This article explains how Arduino microcontroller helps to learn about controlling electronic and electrical gadgets.
- The article on “Smart City” by Dr M V Chilukuri, Associate Professor, Power Systems and Smart Grid, VIT University, Vellore is an introductory one highlighting the core infrastructure elements for a better quality of life and sustainable environment.
- How e-waste is handled by unauthorized e-waste recyclers in India by Mr. T. Udhayakumar, SRM Univ., et.al is a sequel to the last issue article on e-waste. It features the gaps between authorized e-waste recyclers vs. unauthorized e-waste recyclers and highlights the need for an efficient e-waste management system.
- Reengineering Education and Classroom Learning for 21st Century Innovation Economy In India by Mr. Chhaya Ballav Sahoo, Human Potential Development Science Pvt Ltd is a timely article stressing the need for the Indian graduate students to acquire higher levels of education and training to succeed in today's and tomorrow's competitive economy.
- Energy is a driving force for global economy. With the climate change becoming an issue all over the world, renewable energy has become a most important source of clean power with solar and wind playing a major part in the energy generation. The hybrid technology combining solar and wind has many advantages. The article “Solar Wind, Hybrid Renewable Energy Systems” by Mr. Venkat Kumar Tangirala, President- India and South East Asia, WindStream Energy Technologies India Pvt. Ltd., provides an excellent overview of hybrid systems featuring many successful implementations.
- Energy being both scarce and expensive, its accounting, saving and energy productivity measures are important. The article on “Energy Accounting – Importance of Electronics and Computing” by Mr. T Jayaraman, Founder Director, SECO Controls Pvt. Ltd. & EQuad Engineering Services Pvt. Ltd, a seasoned consultant explains energy accounting systems and associated business opportunities.

IT in March – May 2017 by Prof. S. Sadagopan, Director, IIIT Bangalore is a part of our regular column in ICNL and provides a broad overview on various important happenings in the IT and Telecom sectors in India. We are sure that readers will find the information and the related links provided in the column “Information Resources” compiled by the editor Mr. H.R. Mohan, is interesting and informative. The “Announcements” column features valuable inputs to the members and opens door to various opportunities.

The ICNL congratulates Mr. Ramchandra Yadav from Jhansi & Mr. N.Senthilnathan from Perundurai, the two lucky winners (out of 100 plus participants) of the ICNL Readers Quiz-17q1. They will receive the cash award of Rs. 500/- each soon. We are sure the readers will participate in the current ICNL Readers Quiz-17q2.

We re-iterate our wish to make ICNL a source of information to our members. We look forward to activity reports from IEEE OUs, articles and research findings on current interest topics from the academic community, articles sharing the experiences and best practices from professional members. Happy reading of ICNL-17q2.

IEEE Bombay Section Events

Latest Developments in LoraWAN Technology



As part of the celebrations of BS@40 (IEEE Bombay Section @ 40) an expert talk on “Latest developments in LoraWAN technology” was organised on May 17, 2017. The speakers were Mr Peter Thomsen, CTO & Co-founder of Orbiwise SA, Switzerland and Mr V S Shridhar, Senior Vice President and Head of the Internet of Things (IoT) Business Initiative at Tata Communications

Mr Thomsen provided an overview of the technology, while Mr Shridhar spoke on how industry is adopting

this technology and a few use cases.

OrbiWise is a Switzerland based Global Solutions Provider, which developed the network solution for LoraWAN, the emerging LPWAN standard for IoT. LoraWAN is designed for extreme low power operation with devices being able to operate up to 10 years on normal AA batteries. The talk featured an overview of the LoraWAN technology including network topologies and advanced features such as dynamic link adaptation, encryption/authentication, roaming, location estimation, device classes, etc. The speaker also touched on the Lora-Alliance eco system that today has over 400 members and is the key driver for the success of Lora.

In the second session, an overview was provided about an Implemented Network Solution by Tata Telecommunications who have piloted key Tata Group companies on Lora. The speaker explained how industry is adapting this technology through detailing of a few use cases.

The combination of Peter Thomsen who took the audience through the details of the technology from an insider's point of view and that of Sridhar from TataComm who sketched a broad canvas of use cases and applications especially by the Tata Organisation was indeed complementary.

One could clearly see that the predominantly industry based audience found value in being exposed to such cutting edge technology, just the kind of event to commemorate BS@40. The speakers were honoured with mementos handed over by two industry seniors from the IEEE Bombay Section Life Members Affinity Group.

The expert talk was facilitated by Mr Ashok Jagatia, Past Chair and Mr Abhay Phansikar, Vice Chair IEEE Bombay Section.

Obituary: Mr A.K. Banerjee



IEEE India Info regrets to announce the demise of Mr AK Banerjee, Immediate Past Chair of the Section (2014-15), and Past Chair Bombay LMAG (2010-13). He passed away on 6 April 2017.

Mr Banerjee an alumnus of College of Advanced Technology, Birmingham. (1965) was engaged for much of his career in Petrochemicals, Power plants, Refineries and infrastructure projects.

He was a member of IEEE since 1966 and was among the earliest members of IEEE Bombay Section when it was formed in 1976. More at <http://ieeebombay.org/tribute-to-akb/>

French Prez Macron launches 'Tech Visa' to woo tech industry: French President Emmanuel Macron on Thursday launched 'French Tech Visa', a fast-track four-year residence permit for entrepreneurs and their families. Talking about the need to reduce regulation and become a "country of unicorns", Macron said, "We want the pioneers, the innovators, the entrepreneurs of the world to come to France and work with us on all possible innovation."

Hyderabad Section Events

Volunteer Training Programme



The IEEE Hyderabad Section conducted a volunteer training program on 19th Mar 2017 in which the office bearers of the chapters, affinity groups and sub sections were the participants. Dr. Lakshminarayana Merugu, Section Chair, after highlighting the purpose of this programme, briefed the audience about current membership statistics and discussed about the reporting requirement of section, chapters, AG and Sub sections. He elaborated on the best practices of an outstanding large section and encouraged the office bearers to put their best volunteering efforts in the current year.

From the future directions committee (FDC), Mr. Satish presented the demographics of the survey conducted in the month of February 2017 towards finding the expectation of the section members. It was evident from the survey results that the three main reasons for people to take up IEEE membership are knowledge sharing, networking, and career development. The FDC would deliberate on these matters and prepare the vision and mission statements along with the goals of Hyderabad section in line with the expectations of its members.

Dr. Atul Negi presented on the topic of transformation of member to volunteer in which he highlighted the needs and expectations of a volunteer. He also stressed on the need of volunteer training and providing a comfortable working environment for the volunteer and finally the appreciation and due recognition that a volunteer should receive for his efforts. This will help in building a good ecosystem wherein members would look forward for long term productive volunteering.

Mr. N. Venkatesh, Secretary discussed on the method of planning events by an IEEE entity. He discussed about choosing the topic, speaker, event publicity through vtools & ENotice, aptness of venue, logistics and speaker felicitation. He also clearly classified the activities that are to be taken up during the event and after the event like report submission, L31 reporting and settlement of accounts.

Mr. Maruthi Rao, Vice chair elaborated on the chapter, AG and Committee operations. He stressed on the importance of knowing the chapter members by using SAMIEEE and the various methods in which one can reach out to chapter members in specific and also to all section members in general. He highlighted on the important “do’s and don’t’s” for conduct of the event. He proposed that an email group/WhatsApp group comprising of secretaries of all chapters should be started to facilitate efficient communication between members.

Mr. Sreenivas Jasti, Treasurer presented the details of Rebate that the section is entitled to, based on membership status and activity bonuses. He released an accounting template planning the events and the events are to be presented to the Section EC for prior approval in this template only. He briefly discussed about financial reporting via NetSuite and the challenges before the section in the accounting aspect.

An important issue regularly faced by the section is the conduct of conferences by colleges and request for technical co-sponsorship for these conferences. Mr. Satish from the Conference Committee discussed the format for application for co-sponsorship by IEEE Hyderabad Section and the common issues the conference committee is facing in according permission for these conferences.

Mr. Madhav Negi, Membership Development chair discussed about the MEE framework which is all about designing programs that would benefit all segments of memberships like student, GSM, Professional, YP and WIE in a method that deeply engages the members and provided them with a good experience so that they enjoy being an IEEE member and continue their membership.

Mr. Abhay Joshi, Section Student Representative presented on the expectations of the students from the section. He also highlighted on the type of activities that would lead to satisfaction of student members and enjoy volunteering for IEEE.

Mr. Vinit, Chair, Young Professionals, elaborated about the constraints of young professionals and the challenges faced by them in volunteering for IEEE. He discussed about the importance of mentoring young professionals who are the future IEEE leaders. He also shared a few recent success stories of the YP affinity group in the form of conduct of AICSC and Technology Entrepreneurship Summit.

Finally, Dr. S. Lakshminaryana spoke on the activities conducted by Vizag Bay Subsection and proposed plan of events for the year 2017. A total of 45 members attended this meeting and it was very beneficial for all the participants. All the presentations in this day long meeting are an important volunteer resource and they are made available on the section website and can also be downloaded from <https://drive.google.com/open?id=0B5iq4Kpt29r8cEN6amRvc0d3WE0>

Distinguished Lecture Programme



The IEEE CAS/EDS Chapter of Hyderabad Section organized a DLP by Prof. Manoj Saxena, Associate Professor at Deen Dayal Upadhyay College, University of Delhi, New Delhi, India on 12 May 2017. The DLP tour comprised of two Technical talks. The first DL was on the topic - "Fundamental Insights into Channel and Gate Engineered Double Gate Junction-Less Transistor for Low-Voltage Low-Power Analog and Digital Circuits" at Muffakham Jah College of Engineering and Technology,

Hyderabad. About 38 persons participated in this DLP including 11 IEEE members and Section chair Dr. Merugu Lakshminaryana.

During the execom meeting held over lunch, various aspects of support from EDS society to local chapters were shared by Prof. Manoj. As an outcome of this meeting the EDS/CAS chapter is planning to conduct a Mini Colloquia in the later part of 2017.

The second DLP was on "Impact of Dielectric Pocket on Different Gate Geometry MOSFET Architectures for Improved Analog and Digital Performance" at Vasavi College of Engineering, Hyderabad. This DLP attracted 50 participants and had a very informative interaction for about 30 minutes. Renowned authorities in the field of Electron Devices – Prof. Satyam, Prof. Rajaram, Prof. N.S. Murthy attended the talks.

Obituary: Dr. R.K. Bagga



IEEE India Info regrets to inform the members the demise of Major Gen. Dr. R K Bagga, a dedicated volunteer of IEEE.

He had served as the Chair of IEEE Hyderabad Section during 1995- 1996. He brought IEEE India Council to Hyderabad as its Chairman for 1997-1998. With more than three decades of membership in IEEE, Dr. Bagga earned the IEEE Life Senior Membership grade. He passed away on 23rd March 2017 at his residence in Hyderabad.

Synapse - IEEE Hyderabad Section Newsletter

The IEEE Hyderabad section has organised a no. of interesting events with good member participation. The prominent ones include: All India Computer Society Conference and Technology Entrepreneurship Summit. Further, the various subsections like Ananthapuram subsection and Guntur subsection which were inaugurated recently have also conducted good events. The newsletter of IEEE Hyderabad Section is named "Synapse" which features them all is available at <https://goo.gl/qSuOJq>

Samsung has launched 'The Frame', a 55-inch television which turns into a photo frame when it is not being used to watch TV or movies, at nearly ₹1.3 lakh. The Frame is preloaded with 100 art pieces, and users can buy individual artworks or upload their own. The 4K HDR TV comes with four HDMI ports and three USB ports.

Kerala Section Events

Young Professionals: EXCELLENTIA

The Excellentia was conducted as two editions, one in Kochi and the other is Trivandrum. The aim of excellentia was to prepare the student attendees and to impart insight on how to appear for a placement drive. The combined participation of 60+ student members was seen in both the events.



The Excellentia 1.0 was conducted on 29th January 2017 at Albertian Institute of Science and Technology, Kalamassery. The program was organized for the student members of IEEE, intending to improve a candidate's performance and to give an insight on how to prepare and present oneself for a placement drive. The event was formally inaugurated by Dr. Suresh Nair, Chair, IEEE Kerala Section. The first session titled "The art of Resume Making, Group Discussions and Interview Tips" by Mr. Vijay S Paul, Electronic Communications Coordinator, IEEE Kerala Section was a perfect beginning of the workshop. The next session was on "How to sell yourself and win an Engineering Gig" handled by Mr. Rahul Ramesh, CTO, Entri.me. The concluding session by Mr. Shahim Baker, Chair, IEEE Kerala Young

Professionals took the participants to the nuances of technical knowledge that will bag them the confidence to clear a technical interview round.



The Excellentia 2.0 was conducted on 11th February 2017 at Heera College and Technology, Thiruvananthapuram. The program was organized for the student members of IEEE, aimed at imparting information to improve a candidate's performance and to give a full-fledged insight on how to appear for a placement drive, delivering the rightly chosen information by reputed industry and subject experts.

The first session was on 'Re-Discovering your Resume' by Mr. JaiKrishnan Nair, Volunteer, IEEE Young Professional Volunteer

and Senior Systems Engineer at Infosys. The session covered everything about resume and its Do's and Don'ts. Brilliant inputs by Mr. Ajmal Shah on the topic added an edge to the event. This was followed with a talk by Mr. Bibin P Thomas which gave instructions on how to prepare for a Group Discussion prior to the interview. A mock interview for students was conducted by Mrs. Anusha Anand (Sr. Project Executive, InApp) and Mr. Jithin Krishnan (Scientist/Engineer, SCTIMST), as the interviewee. Post lunch, the next session in line was 'Cracking Your Interview' by Mr. Varghese Cherian, Industry Coordinator, IEEE Kerala Section and Head, Technology Services, UST-Global who enlightened the students on the various aspects of the interview. The next session was handled by Mr R S Nithin, took a brief session on the various job opportunities that are out there, egging on the students to find Internships with reputed firms and how Government also needs a pool of people with good technical knowledge in IT.

Young Professionals: IEEE Job fair -2017



IEEE Job Fair was an opportunity for the attendees to evaluate different organizations and whether the opportunity they've applied for aligns with their professional interests, skills, values, and goals. The event had participation from 51 student branches across the IEEE Kerala Section and was held on 18th, 25th and 26th of February 2017. With 350+ IEEE volunteers support in various stages of the event, Job Fair laid the foundation for an array of career paths. The entire squad of volunteers was well appreciated for all determination and well coordination of the event.



IEEE Kerala YP Affinity Group in association with IEEE SB of Government Engineering College, Thiruvananthapuram conducted STEP 2017 v1.0 (Student Transition & Elevation Partnership) on 22nd April 2017. It was a well-organized event which aimed at bringing together IEEE members graduating in 2017.

This one day event began with Mr. Jishnu Krishna, Volunteer IEEE Kerala YP, leading the gathering through the IEEE Code of Ethics. Mr. Abey, Coordinator STEP welcomed the gathering to the event. Mr. Shahim Baker, Chairman, IEEE Kerala YP presided over the inaugural ceremony.

Prof. V.K. Damodaran, Advisor, IEEE Kerala YP, inaugurated the ceremony and addressed the gathering about the importance of IEEE, when engineering students transform into professionals. He explained about various societies which can contribute to the technical knowledge in one's career. In his speech, he also mentioned that IEEE Kerala YP group had won almost all the awards that a YP AG can receive, which itself is symbolic of how vibrant the young professional community in Kerala is. Further he explained how IEEE can contribute to various global scenarios like 5G, climate change and so on. He also assured the participants that continuing with IEEE will definitely be beneficial for the young professionals as it is all about passion and satisfaction.

Mr Biju, SBC, IEEE GEC, reminisced about his experience as an IEEE member in Barton Hill College. Then Mr. Adithya, SB Chair, expressed his joy to host the event at GEC Barton Hill. The inaugural ceremony was concluded by Mr. Ashwin Raj, event head of STEP 2017 v1.0 delivering the vote of thanks. The event witnessed an overall participation of 18 student members from various SBs across Kerala Section.

The first session on "Self Mentoring" and its importance in one's life was by Mr. Paul Ansel, Secretary IEEE Kochi Subsection.

In the next session on "Support for Startups in Kerala" by Mr. Shahul Hameed, Secretary, IEEE Kerala YP explained about various startup missions undertaken by Govt. of Kerala. He also explained about different stages like pre-incubation, incubation and acceleration. He advised the budding entrepreneurs about the importance of having domain knowledge or experience in leading a startup. Various investment processes, Youth entrepreneurship development programmes and organizations involved in supporting these startups viz. TIE Kerala chapter, Headstart Foundation, IEEE YP entrepreneurship group were also discussed.

In the post lunch session on "Journey ahead with Young Professionals" by Mr. Bibin Parukoor Thomas, Vice Chair, IEEE Kerala YP gave insights on areas like networking, technical assistance, personal development provided by the YP community of IEEE. He also shared his own experience with the IEEE YP community.

In the panel discussion with five experienced professionals -- Mr. Jithin Krishnan, Mr. Nandan S, Mr. Bibin Parukoor Thomas, Mr Shahul Hameed and Mr. Shahim Baker, queries regarding research was dealt by Mr. Jithin and academic related topics by Mr. Nandan S and the rest handled the questions related to industry and startups were addressed. Several questions also came up regarding the areas of higher education as well as the importance of industrial experience in teaching profession. The event came to a conclusion with the valedictory note by Mr. Shahul Hameed and photo session.

Report by: Sridev Shyam K.V, sridevshyam.k.v@ieee.org

SOLAIRE – Training on Solar Plant Installation



Educational Activities team of IEEE Kerala Section organized a two day training program on solar plant installation, SOLAIRE at Mar Baselios College of Engineering and Technology, Trivandrum, Kerala on 22nd and 23rd April 2017. The session was exclusively for the students who are interested in the field of non-conventional energy & Solar P.V. The event was successful with a participation of 51 students from various colleges in Kerala. This makes a bearing for students to explore into the world of non-conventional energy. The training program was led by Mr. Shan S., Chartered Engineer, MNRE, Govt. of India, Mr. Jayaraj from Electrical Inspectorate, Govt. of Kerala and Mr. Ajith Gopi from ANERT, Govt. of Kerala.

Prof. V. K. Damodaran, Life Senior Member, IEEE, the chief guest at inauguration addressed the students providing an excellent abstract on opportunities and scope in the field of solar installations. The inaugural session was presided over by Mr. Nandan S., Secretary, Educational Activities, IEEE Kerala Section. Dr. M. J. Jayashree, HOD, ECE Dept. of MBCET and Ms. Divya N. A., Asst. Prof, EEE Dept. MBCET, attended the inaugural function.

After the inauguration, session on introduction to non-conventional energy and solar PV systems was anchored by Mr. Shan S. Mr. Jayaraj from Electrical Inspectorate gave an overview of energization approvals and inspection. These lecture sessions were followed by practical sessions and demonstrations.

The second day sessions mainly focused on the design of solar on-grid and off-grid plants. The sessions were handled by Mr. Shan S. and Mr. Ajith Gopi from ANERT. These sessions provided a platform to the students to shape their will and seem to be a beacon of inspiration for a bright tomorrow. The event turned out to be a huge success due to active participation from many students and the efficient organizing by the team. The general feedback from the participants was that the sessions helped them to learn new things and kindled their curiosity.

Report by: Mr. Nandan S, snandan.nair@gmail.com

IEEE Kerala Section WIE Affinity Group Events

Electrification Project held on 16th Feb 2017 at Edamulackal Panchayat, Kollam



well appreciated by Kerala State Government.

A tribal colony in Kollam, Kerala, India with under privileged people was chosen and their houses were electrified. This program was initiated by IEEE WIE AG of TKM College of Engineering Student Branch and executed in association with IEEE SIGHT, IEEE PES and Kerala State Electricity Board. This project was done as a part of “Sampoorna Vidyutha Valkarana Yatnam” (Complete Electrification Project), an initiative by the Kerala Government. The main objective was to provide reliable electricity to the houses. They have electrified 28 houses, which were in darkness for the last 35 years. 55 IEEE student members and 5 faculty members were involved in this project. The project was

WIE Wave

In connection with International Women's Day, IEEE WIE AG of Kerala section also conducted a series of programs in different student branches, under the name 'WIE Wave'. Starting from the planning to the execution, everything were exclusively done by girls. Each Hub found a way to reach out to its student members through workshops, tech talks, seminars, etc. More than 80 events were conducted across Kerala, in one week, each parading the never fading fire and passion within them. Staying true to its name, it was indeed a WIE Wave! Few programs are listed below.

WIECON held on 8th March 2017 at Sreechithira Thirunal College of Engg, Thiruvananthapuram.



A Woman in Engineering Conference was organized by IEEE SCTCE SB in view of International Women's Day.

The conference had a panel of notable and renowned speakers including VSSC Scientist Ms. Subha Warriar, renowned author and columnist Ms. Khyrunnissa, Film Director Ms. Vidhu Vincent, Former Chief Secretary of Kerala Mr. Jiji Thomson and Former Secretary of IEEE Kerala Section Ms. Sarada Jayakrishnan.

Ladies Who Stole The Lime Light held during 7-10 Mar 2017 at College of Engineering, Thiruvananthapuram

IEEE SB CET conducted a week full of WIE events including seminars, tech talks and marathons graced by the presence of Gomathi, the former Chair, Kerala Section and the first women engineer of Kerala. In addition to this, WIE AG took a step different from the usual events and submerged itself in the world of fantasies, comics and super heroes! The volunteers made merchandises, exhibits and cosplay projects.

Athena held during 9-11 Mar 2017 at Govt. Engg College, Kannur

The IEEE WIE AG of Govt. Engg College, Kannur conducted a series of workshops including Workshop on Signal Processing for Biomedical Application handled by Dr. Thasneem Fathima, Asst. Professor, MES College of Engineering. And another workshop on Participatory Theatre handled by Dr. Ramani Ramachandran, Lecturer in Psychology at Calicut University.

AUTOMANIA Workshop held on 12th May 2017 at MES College of Engineering, Kuttippuram

WIE AG of IEEE MESCE SB conducted a technical workshop AUTOMANIA, on how to befriend your vehicle, exclusively for girls. The first session started with introductory class on traffic rules etc while the second part was set of mechanical workshop where the participants had hands-on experience on trouble shooting and such of automobiles.

Report by: Sathi Krishnan, sathikrishnan@ieee.org

Facebook reveals use of AI to tackle terrorist content: US social media giant Facebook has revealed that it uses artificial intelligence (AI), including image matching and language understanding, in addition to its human reviewers to identify and remove terror-related content from its platform. This comes as Facebook faced pressure from governments to identify and prevent the spread of "terrorist propaganda" on its service.

CIA hacked Wi-Fi routers for years: WikiLeaks: Leaked secret documents posted by WikiLeaks on its website revealed that the CIA has been hacking home, office and public wireless routers for years in an effort to carry out covert surveillance. The documents further revealed that the CIA had by mid-2012 developed implants for roughly 25 different devices from 10 different manufacturers, including Asus, Belkin, D-Link, Linksys and Netgear.

Indian government portal was hit by WannaCry ransomware: The MCA21 portal of Ministry of Corporate Affairs, which is used by companies for making filings, was hit by the WannaCry ransomware attack last month, according to an official document. The attack was "presumably" one of the first such attacks on a Government of India portal. As per the document, the system servers were formatted and the systems were redeployed

Madras Section Events

VIT University, Chennai Campus & IEEE CIS: Winter School -2017



IEEE CIS Madras Chapter and School of Computing Science & Engineering, VIT university, Chennai organized 2017 IEEE CIS Sponsored Winter School on “Computational Intelligence: Fundamental Theory and Practical Applications” during 2nd to 6th Jan 2017. The CIS Winter School had totally 14 presentations, two panel discussions and two Hands-on training sessions. Presidential address was given by the Chancellor of VIT University, Dr. G. Viswanathan. 50 participants attended and benefited from this Winter School.

The Winter School speakers included:

- Dr. Jagannathan Sarangapan, Missouri University of Science and Technology
- Dr. Vaidehi Vijayakumar, Dean / SCSE, VIT University Chennai Campus
- Dr. N. Kumarappan, Professor, Annamalai University, Chidambaram and Chair, IEEE CIS Madras Chapter
- Dr. T. Thyagarajan, MIT, Chennai
- Dr. G. Saravana Kumar, IIT, Madras
- Mr. Ankush Rai, Research Associate, VIT, Chennai
- Dr. A. Nayeemulla Khan, VIT University, Chennai
- Dr. R. Jagadeesh Kannan, VIT University, Chennai
- Dr. Narasimhan Sundararajan, NTU, Singapore
- Dr. Suresh Sundaram, NTU, Singapore
- Dr. R. Venkatesh Babu, IISc, Bangalore
- Dr. Dipti Prasad Mukherjee, Indian Statistical Institute, Kolkata
- Dr. Stefano Squartini, University of Marche Ancona, Italy
- Dr. Swagatam Das, Indian Statistical Institute, Kolkata
- Dr. Ponnuthurai Suganthan, NTU, Singapore

SSN College of Engineering, Kalavakkam: 2017 IEEE International Conference



IEEE SB and IT Dept. organized 2017 IEEE International Conference on Computer, Communication, and Signal Processing with a special focus on IoT, on 10th & 11th Jan 2017. 67 papers were presented out of 115 received from all over India and abroad. Distinguished speakers included:

- Prof. Yong Meng Teo, Dept. of Computer Science, National University of Singapore
- Prof. Vitaliy Mezhuvey, Dept. of Computer Systems, and Software Engineering, University of Malaysia, Pahang
- Mr. Murugan Achanaicker, Engineering Manager – COE, Magna Closures, United States
- Dr. V. N. Mani, Scientist- E, DeitY
- Dr. S. Krishna Kumar, Senior Technical Officer, DRDO, Avadi
- Dr. R. Venkatesh Babu, Associate Professor, IISc Bengaluru
- Mr. Arun Kumar, Manager – Global Technology Office, CTS Chennai

The organizers of the conference were Dr. T. Nagarajan, HOD/IT, Dr. T. Sree Sharmila and Dr. S. Karthika, both Assoc Prof.

Ola Co-founders booked for playing pirated music in cabs: Bengaluru police has registered a case against taxi-hailing startup Ola and its Co-founders Bhavish Aggarwal and Ankit Bhati for allegedly playing pirated music on Ola's in-car entertainment platform. The complaint accuses Ola of illegally downloading and streaming audio tracks of popular Telugu and Kannada movies. Police has reportedly seized hard disks used by Ola to store the songs.

Karunya University: Int. Conf. on Innovations in Electrical, Electronics, Instrumentation and Media Technology



IEEE SB and Dept. of Electrical Technology organized the IEEE PELS sponsored International Conference on Innovations in Electrical, Electronics, Instrumentation and Media Technology (ICIEEIMT 2017) on 3rd & 4th Feb 2017. Dr. S. Sundar Manoharan, Vice-Chancellor of Karunya University presided. 73 papers were presented. Notable speakers included:

- Dr. Israel Cohen, Prof/Electrical, Technion Institute of Technology, Israel
- Dr. M K Radhakrishnan, Vice-President, IEEE Electron Devices Society
- Dr. Keval J Kumar, Adjunct Faculty, University of Pune

Karpagam College of Engineering, Coimbatore : International Conference on Electronics and Communication Systems (ICECS)



IEEE SB and ECE Dept. organized the International Conference on Electronics and Communication Systems (ICECS) on 24th and 25th Feb 2017.

This conference was technically sponsored by IEEE Product Safety Engineering Society - Madras Section.

Out of 163 papers submitted, 54 were accepted for presentation

International Conference

Prathyusha Engineering College, Chennai: AEEICB-17 –



IEEE SB was an active organizer of AEEICB-17, An International Conference on “Advances in Electrical, Electronics, Information, Communication and Bioinformatics” in association with IETE and CSI held on 27th Feb 2017. 175 papers were accepted for the conference and this included papers from USA, Taiwan, Malaysia, China, Egypt, and Sri Lanka, Iran etc. The Conference was inaugurated by Mr. Godwin Brewart, General Manager, Head - Facilities & Support Services, Tata Communications Transformation Services Limited and Mr. S. P. Karthikeyan, Scientist-E , Open Technology Group, National Informatics Centre (NIC), Chennai, Ministry of Electronics; Information Technology, Government of India. There were invited technical talks from eminent personalities from Industries and Organisations viz., IITM ,Caterpillar, TNEB, MIT, Chennai, Anna University, IEEE-WIE, Chennai and IGCAR. The valedictory function was graced by Dr. Nadarajan Nantha Coumarane, Director of Technologies, Aricent Technologies. Dr. Ramesh P.L.N; Dr. M. Moorthi, Prof/ECE and Mr. M. Vasu, Advisor addressed the participants.

Sathyabama University, Chennai: SILICON -2017



Presentation.

IEEE SB organized a national level technical symposium, “Sathyabama Inter Collegiate Level IEEE Conference - SILICON -2017” on 15th and 16th Feb 2017. Dr. M.A. Atmanand, Chair-IEEE Madras Section, delivered the inaugural address and released the "Book of Abstracts - SILICON-2017" and the first copy was received by Dr. G. Sundari, Dean (Student Affairs). 272 participants enthusiastically participated in the events viz. Brain Storm, Crack with Creativity, Scrambled Circuit, Code in the Dark and Paper

VIT University, Vellore Campus: “Hackbattle”



IEEE CS SB organised a 24 hour Hackbattle (Hackathon) from 3rd Ma to 4th Mar 2017.

The team with first position won a cash prize of Rs. 20,000/- for their App, Visualize.

This App scans 2-D images and creates a 3-D image of it making it easier for people to perceive and learn.

IEEE Industrial Applications Society Madras Chapter: Technical Awareness session on Smart Cities



The IEEE – IAS, Madras Chapter in association with IE(I), TNSC Committee and L&T Construction Ltd Td organized a technical awareness session on “Smart Cities” on 4th Mar 2017 at the Convention Center, L&T Construction, Manapakkam, Chennai.

At the inaugural session, Mr. S. Rajavel , Sr. VP & Head, Water, Smart World & Communications and Chairman, IEEE-IAS Madras Chapter

welcomed the gathering and Mr. R Srinivasan, VP & Head, Smart World & Communications (SW&C), Vice-Chairman- IEEE IAS Madras Chapter delivered the keynote address. Dr. G. Ranganath FIE, chairman, IE(I), TNSC and Mr. H R Mohan, Vice Chair, IEEE Madras Section offered felicitation and spoke on the role of professional societies in the Smart Cities Initiatives.

The various presentations in this awareness session included:

- Smart City Mission – Progress by Mr. JVS Ramakrishna, Head – Business Development & Customer Relations, Smart Infrastructure (SW&C).
- Smart City and Urban Challenges by Mr. Shankar Arumugham, National Director, Head – Strategic Consulting, JLL.
- L&T Smart City Projects by Mr. James Caton, Chief Business Officer, Smart Infrastructure (SW&C).
- Smart Cities - Bankers’ Perspective by Mr. Raghu Kesavan, Senior Infrastructure Specialist, World Bank.
- Presentation by The Institution of Engineers (India) TNSC Committee
- Presentation on IEEE & IEEE IAS by Mr. Milan Kumar, Head- Engineering & Services, Solar Business, L&T Construction

Panimalar Institute of Technology: IEEE CS Distinguished Lecture Programme on Use of Gamification in Education



The Dept. of ECE, IEEE SB, WIE & CS organized a IEEE CS Distinguished Lecture Programme on “Use of Gamification in Education” on 15th Mar 2017.

The lecture was given by the distinguished speaker Dr. Fakhru'l Hazman Yusoff, Faculty of Computer and Mathematical Science (FSKM), Universiti Teknologi MARA (UiTM), Malaysia on 15th Mar 2017.

Dr. T. Jayanthi Principal Delivered the presidential address. Mr. M. Arun, IEEE SBC coordinated the event.

800 Google Play apps found to have data stealing malware: Over 800 Android apps on Google Play have been fouinfected with a "silent" data stealing and leaking malware called 'Xavier'. The malware is capable of downloading and executing other malicious codes, as well as stealing users' personal and financial data. The categories of infected apps include photo manipulators, utilities, and wallpaper apps among others.

IEEE CS Distinguished Lecture



A distinguished lecture on “Data Driven Infographics” by Dr Fakhru'l Hazman Yusoff, Senior Lecturer, Faculty of Computer and Mathematical Science, Head, Spatial Visual Analytics Research Group, Universiti Teknologi MARA (UiTM), Malaysia was jointly organized with IEEE Madras Section, IEEE CS, PCS, TEMS and CSI Chennai Chapter on 15th Mar 2017. The speaker gave an overview on infographics in perspective of information technology. Several techniques being used to implement data driven infographics were also

evaluated during the lecture. A discussion on the latest research being conducted in the area and the future trends of the data driven infographics technology was the highlight of the lecture.

SSN College of Engineering: Int. Conf. Conference on Power and Embedded Drive Control (ICPEDC-2017)



IEEE SB and EEE Dept. organized a three day IEEE International Conference on Power and Embedded Drive Control (ICPEDC-2017) during 16th to 18th Mar 2017 on the theme of ‘Recent Trends in Power and Embedded drive control towards the creation of green energy and smart world’. Guests of Honor included Dr. Prahlad Vadakkepat, Associate Professor, National University of Singapore, Singapore; Dr. Mahesh K. Mishra, IIT Madras; Dr. Naayagi Ramasamy, New Castle University, Singapore; Dr. S. Paramasivam Director, Research, Danfoss Industries Pvt. Ltd., Chennai and Dr. R. Jayashri, Assoc Professor, University of New South Wales, Australia. The Chief Guest of the inaugural was Dr. M. A.

Atmanand, Former Director and Scientist, NIOT & Chairman, IEEE Madras Section. A panel discussion on ‘Modern Trends in Embedded Systems’ was moderated by Dr. V. Kamaraj. The conference, which saw 40 oral presentations, was sponsored by IEEE Madras Section, IEEE Power Electronics Society, CSIR & CTS.

SRM University: ALPHA - IEEE Entrepreneurship Summit 2017



The IEEE Madras Entrepreneurship and Innovation Committee in association with SRM IEEE Student Branch organized ‘ALPHA’- The IEEE Entrepreneurship Summit 2017 on 18th March, 2017. It included a great line up of dignitaries alongside Mr. HR Mohan, (Vice chairman, IEEE Madras Section), Mr. Nivas Ravichandran (Young Professional Coordinator, R10) and Mr. Vijayakumar (SB Counsellor & HOD/EEE, SRM), heretofore portraying bandwagon of panel discussion.

The following speakers gave in the valuable insights of their experience in the different aspects of the entrepreneurship world,

- Isaac John Wesley (Founder & CEO at Inkmonk) on “Building an nline Market Start-up”.
- R Sampath (Co-Founder & CEO at BeWo Technologies) on “Last Mile Opprtunities”.
- Deepak John (Founder & CEO at Pupa Clic) on “Build, Develop and Operate”.
- Ratheesh Krishnan (Manager-L&D at SPI Cinemas) on “Workshop: Business Model Canvas”.

- Thirukumaran Saravanan (Co-Founder at MetARVRse) on “Riding the 4.0 ARVR Wave”.
- Siddharth Ram (Head of Admissions at SV.CO) on “Start at College”.
- Harish Srinivasan (Co-Founder at Infinite Engineers) on “Revamping Education”.

Alpha succeeded in engaging the budding entrepreneurs and start-up enthusiasts with the fellow entrepreneurs and offered them a remarkable exposure to the start-up world. It provided the participants with the opportunity to meet experts from the different start-ups, interact as well as to network with them. Moreover, it offered an ideal platform for those who had a preset idea in mind and wished to build a start-up out of it.

Besides catalyzing a social shift to encourage entrepreneurship, Alpha also aimed at fostering grassroots innovations, innovations in hubs and collaboration with different organisations.

IEEE COMOC Distinguished Lecture



The IEEE Communications Society Distinguished Lecture on “Security Challenges and Opportunities in

SDN/NFV and 5G Networks” by Dr. Ashutosh Dutta, AT&T, New Jersey, IEEE Communications Society

Distinguished Lecturer, Director Industry Outreach - IEEE Communications Society, IEEE 5G Initiative Co-Lead was organized jointly by IEEE Madras Section, IEEE COMSOC, IEEE CS, IEEE PSES, IEEE CSS & IEEE RAS on March 21, 2017 at Anna University Chennai.

Dr. Ashutosh Dutta discussed on how the telecom operators and service providers can leverage SDN/NFV to provide flexible and cost effective service without compromising the end user quality of service (QoS). He also discussed on the virtualized Evolved Packet Core (EPC), virtualized IP Multimedia Services (IMS), Virtualized Residential Gateway, and Virtualized Next Generation Firewalls. He addressed on the various security challenges and opportunities introduced by network virtualization, network slicing, and software defined networking. Further, he highlighted some of the ongoing activities within the standards communities and illustrated a few deployment use case scenarios.

Dr P Sakthivel, Chair, IEEE CS welcomed the gathering and Mr P Subramanian, Chair, IEEE COMSOC introduced the speaker. The lecture was attended by UG/PG students, research scholars, faculty and professional members from industry.

Report by: P. Subramanain, surya602@yahoo.co.in

SSN College of Engineering: WiSPNET–2017: IEEE International Conference on Wireless Communications, Signal processing and Networking



The ECE Dept. of SSN College of Engineering hosted the 2nd edition of three day IEEE international conference on Wireless Communications, Signal processing and Networking (WiSPNET 2017) during 22-24 Mar 2017 on the theme ‘Advancement in Information Communication towards the creation of Smart World’. This conference was technically sponsored by IEEE MAS Section, IEEE ComSoc Madras and financially

supported by DST – SERB, New Delhi, ISRO, Bangalore & Pearson Education Pvt. Ltd.

The conf. received 1450 papers of which 600 papers accepted and 561 were registered. Around 500 papers were presented in 63 technical sessions held in four parallel tracks in three days.

Dr. LajosHanzo, IEEE Distinguished Lecturer of both the Communications Society and the Vehicular Society, University of Southampton, UK, Dr. OzanTonguz, Professor, Electrical and Computer Engineering, Carnegie Mellon University, USA, Dr. David Akopian, Professor, Electrical and Computer Engineering, University of Texas at San

Antonio, USA, Dr. Giacomo Morabito, Associate Professor, Department of Computer Engineering and Telecommunications, University of Catania, Italy, Dr. Raed Mesleh, Vice Dean, German Jordanian University, Jordan were the Guest of Honours of the Inaugural function. They had also delivered keynote talks during the conf.

A total of 6 tutorials were conducted with Dr. Raed Mesleh, Dr. Kota Solomon Raju, CSIR-CEERI, Pilani, Mr. Viyay Anand, Director, Aricent, Mr. Vishal Sharma, Engineering Manager at Intel, Bangalore, Dr. Santi P. Maity, Professor, Dept. of IT, Indian Institute of Engineering Science and Technology, Shibpur and Mr. Vishwas Lakkundi, IoT Specialist & Consultant, Bengaluru as resource persons.

The conference also hosted two workshops, titled 'New Technologies in 5G' and 'Visible Light Communications' and one Panel Discussion on '5G and Internet of Things'.

Dr. S. Radha was the conference chair and Dr. R. Kishore, Asso.Prof / ECE, Mr. N. Prabagarane, AP / ECE were the organizing chairs for the event.

IEEE TEMS & VIT University, Chennai Campus: National Seminar on "Digital Transformation in Indian Industry"

IEEE TEMS along with VIT Chennai organized a two day national seminar on "Digital Transformation in Indian Industry" on 10th & 11th Mar 2017. The seminar was well attended with 55 delegates from industry and student & academic community. The esteemed guests at the inaugural session were Dr. Sivakumar, Director, CVRDE, Mr. Srivats Ram, MD, Wheels India Ltd, Mr. HR Mohan, Vice Chair, IEEE Madras Section and Dean, VIT, Chennai.



The seminar covered various topics such as Digitalization of Enterprises, Industry 4.0, Industrial IOT, Digital Manufacturing, Digital Retailing, Digital Product Development, Digital Analysis and Product Design, Business Analytics, Operative Analytics and Digital Workforce through the following 15 invited talks by eminent experts from industry, Academia and R&D institutions.

- Trends in Digitalisation of Enterprises by Mr. B. Pon Manivannan, Principal Technology

Leader, L&T Technology Services

- Digital Transformation Overview by Mr. Murali Meenakshi Sundaram, Consultant, CTS
- Retailing in the Digital Era by Mr. Rajesh, Retail & Supplier behaviour Expert
- Digital Manufacturing by Mr. Ayyappan Ramamurthy, Technical Director, Siemens PLM Software
- Industry 4.0 by Mr. Murali Chandrahasan, Head - Engineering IT Solutions & Services, L & T Technology Services Limited
- Digital Product Development by Mr. Upendra, General Manager, Renault Nissan Technology Development and Business Center
- Connected Cars by Mr. Vinod Venkateswaran, Industry Principal - Engineering Services, Infosys
- Digital Transformation in Automotive Industry by Mr. Sreegururaj, Senior Manager, Mahindra R&D
- Digital Manufacturing by Mr. Joe Ajay, EOS
- Future Connected Trucks by Mr. Sureshkumar, Divisional Manager, Smart Engineering, Daimler India Commercial Vehicles Pvt. Ltd, Chennai
- Business Analytics by Mr. Sudeesh, Senior Program Manager, Verizon
- Design Analysis and Product Improvement - Case Study by Dr. V. Balamurugan, Scientist, CVRDE, DRDO
- Digital Workforce by Dr. V. Umasankar, Professor, SMBS, VIT, Chennai
- Digital Product Development – Case Study by Dr. S. Sundaresh, Chair IEEE TEMS and DRDO Distinguished Fellow, DRDO, Chennai
- Operational Analytics by Dr. Sudarsanam, Prof. Business School, VIT, Chennai.

Dean VIT, Chennai and Dr. Sundaresh Chair, IEEE TEMS Madras distributed the certificates to the participants.

Microsoft unveils Modern Keyboard with fingerprint reader: Tech giant Microsoft has unveiled a new "Modern Keyboard" with an integrated fingerprint reader. Unlike its predecessor Surface Keyboard, the Modern Keyboard has

the ability to use a cable for a wired connection instead of wireless. The new keyboard will work with Windows 10, MacOS, and the latest versions of Android and is priced at \$129.99.

Dr. N. G. P. Institute of Technology, Coimbatore: Intl. Conf. on Innovations in Green Energy and Healthcare Technologies-2017



IEEE SB along with EEE and Biomedical Engineering Depts organized IEEE International Conference ICIGEHT-2017, from 16th to 18th Mar 2017, in association with Florida Atlanta University, KMCH and IEEE Madras Section. The theme of the conference, 'Innovations in Green Energy and Healthcare Technologies' proved popular, attracting about 500 delegates. Distinguished speakers included:

- Dr. A. Alphones, Prof/EEE and Programme Coordinator (Research), Nanyang Technological University, Singapore
- Dr. Parag G Shah, Ophthalmologist, Dept. of Paediatric Retina and Ocular Oncology, Aravind Eye Care System, Coimbatore
- Dr. P. V. Manivannan, Prof/Mech, Indian Institute of Technology Madras (IITM)
- Dr. G. Sai Narayanan, HCL Technologies, Chennai
- Mr. J. Stephen, R & D Manager, Akas Medical Systems, Chennai
- Mr. J. Visweswaran, Senior Academic Technical Consultant, NI Systems (India) Bangalore
- Dr. R. Karthikeyan, CTO, Teclever Solutions
- Mr. Chaitanya Srinivas Lanka, Senior Clinical Application Specialist, Restorative Therapies Group, India Medtronic Pvt Ltd, Hyderabad
- Mr. F. Mohammed Akmal, Senior Executive, Digital Factory, Siemens Ltd, Coimbatore

A record number of 520 papers were received from various countries out of which 250 papers were selected and 140 papers were presented. Dr. Nalla G. Palaniswami, Chairman, KMCH presided over the conference. Dr. Thavamani D Palaniswami, Secretary; Dr. O. T. Buvaneshwaran, Chief Executive Officer, KMCRET; Dr. J. Sivakumaran, Chief Operating Officer, KMCH; Dr. K. Porkumaran, Principal; Mrs. J. Vijayalakshmi, Senior Manager, Biomedical Engineering, KMCH; Dr. S. Prabakar, Head/BME; Dr. M. Gopinath, Prof/EEE and Dr. S. Jaganathan, Head/EEE addressed the participants.

SSN College of Engineering: ICBSII 2017



2017 IEEE Third International Conference on Biosignals, Images and Instrumentation, was organized by the IEEE SB, Dept. of Biomedical Engg and Centre for Healthcare technologies in association with IEEE MAS Section between 16th to 18th Mar 2017. The organizers of the conference were Dr. A. Kavitha, Head/BME, Ms. R. Nithya AP/BME and Ms. M. Dhanalakshmi AP/BME. ICBSII 2017 received international speakers such as Mr. Omar Saleh, Founder and CEO of Recyl3Dc, Canada; Ms. Nicole McCallum, Executive Director, Recycl3D; Dr. Laxmi Iyer, MD, Biotechin,

Asia Singapore; Dr G.Sudhir Ortho Spine surgeon, SRMC; Dr. Debdoot Sheet, AP/EEE, IIT Kharagpur; Dr. Devanathan Raghunathan, Chief Medical Officer, Advanced First Aid Research Pte. Ltd, Singapore Eye Research Institute, Singapore; Mr. Hrushikesh Garud, Technical Lead, Advanced Driver Assistance Systems, Embedded Processing Texas Instruments (I) Pvt. Ltd. and Mr. G. Karthikeyan, Co-Founder, Wildbox technologies, Singapore. 42 papers were presented for the conference.

Villagers to get free legal advice via video conferencing: The government has launched a new initiative called 'Tele-Law', which will provide free legal assistance to people in rural areas, through video conferencing. Training will also be provided to village women, who will act as paralegal volunteers for villagers. Government-appointed lawyers will provide advice and training on issues like women and child rights, domestic violence and land disputes.

Kalasalingam University, Krishnankoil: 2017 IEEE International Conference



IEEE SB organized the international conference on “Intelligent Techniques in Control, Optimization and Signal Processing (INCOS'17)” during 23rd to 25th Mar 2017. Distinguished speakers included:

- Dr. B. Yegnanarayana, INSA Senior Scientist, IIT, Hyderabad
- Dr. Swagatam Das, AP, ISI, Kolkata
- Dr. K. Rajasekharam, Deputy Director-DSTARS, DRDL, Hyderabad
- Dr. S. S. Dash, Professor- EEE, SRM University, Chennai

- Dr. Kyung-tae Kim, Professor, Hannam University, South Korea
- Dr. Stella Morris and Dr. Ezra Morris Abraham, Assoc Prof, UTAR, Malaysia
- Dr. N. Kumarappan, Prof, Annamalai University, Chidambaram
- Dr. S. Hosimin Thilagar, Prof, Anna University, Chennai
- Dr. K. Ramar, Professor (Retd), IIT, Madras

Dr. S. Shasi Anand, Director; Dr. D. Devaraj, IEEE SBC and Dr. P. Aruna Jeyanthi, HOD/EEE also addressed the participants.

Hindustan University, Chennai : Intl. Conf. on Sustainable Environment and Energy (ICSEE 2017)



IEEE SB and Depts of EEE & Civil organized a two-day International Conference on Sustainable Environment and Energy (ICSEE'17) on 6th and 7th Apr 2017 at Hindustan University.

The conference attracted 260 participants of which 150 of them presented papers in tracks namely Structural/ Construction Engineering, Environmental Engineering, Hydrogen Production & Storage and Renewable Energy. The Resource persons and distinguished speakers included:

- Dr. Valerie Keller, Senior Scientist, University of Strasbourg, France
- Dr. Ajayan Vinu, Professor on Nanomaterials, University of South Australia, Adelaide
- Dr. R.N.Das , GM, BHEL
- Mr. K.Saravanan, Vice President, Eversendai Construction
- Dr. B.Vishwanathan, Professor Emeritus, IIT Madras

Dr. Elizabeth Verghese, Chancellor; Dr. G. Ilavazhagan, Director-Research and Dr. Jessy Rooby, conference convener addressed the participants. The conference was organized with the support of IEEE PES, Indian Concrete Institute (ICI) and Dept. of Science and Technology (SERB).

SA Engineering College: International Conference



IEEE SB and ECE Dept. in association with IEEE Photonics Society organized International conference on “Emerging Trends In Information And Communication –EMTIC 2017” on 6th & 7th Apr 2017.

Mrs. K. S. Geetha, Asst. General Manager, BSNL, Rajiv Gandhi Telecom Training Centre, Chennai was the chief guest.

IEEE Madras Entrepreneurship and Innovation Sub-Committee: Design Thinking Workshop



The IEEE Madras Entrepreneurship and Innovation Sub-Committee in partnership with TiE Chennai organized the “Design Thinking Workshop” on 19th Apr 2017 at IIT Madras Research Park.

The guest speaker was Mr. Arun Jain, Chairman, Intellect Design Arena

The workshop gave a comprehensive idea about how career building, skill development, entrepreneurship can be tackled with a design focus.

VIT University, Vellore campus: International Conference on Innovations in Power and Advanced Computing Technologies (i-PACT 2017)



Vellore Institute of Technology (VIT) University-Vellore, School of Electrical Engineering (SELECT) in association with VIT- IEEE Nuclear and Plasma & Science Society (NPSS) had organized an “International Conference on Innovations in Power and Advanced Computing Technologies (i-PACT 2017)” technically co-sponsored by IEEE Madras Section to during 21st and 22nd April 2017. The focus of the conference is to provide a unique platform for exchange of ideas and synergy among researchers, academicians, industrial experts and entrepreneurs across the globe in a gamut of divergent engineering and technology disciplines. State of the art innovations in power and advanced computing technologies including latest research trends and developments in emerging areas such as smart and micro grids, automatic control & computing technologies in Green Commercial Buildings, Molecular Imaging, Smart Photonic Systems, Cognitive Computing etc are deliberated during the conference.

i-PACT 2017 has received an overwhelming response from the participants and researchers with more than 700 research papers received, 420 papers were shortlisted after extensive review process and over 350 registered participants from several countries. 22 parallel sessions for presentation of research papers on a wide variety of themes such as Renewable Energy Systems, Signal Processing, Communication Engineering, Soft-computing & Big Data Analytics was presented. In addition, a galaxy of 21 keynote expert lectures will be delivered by industry experts and researchers from world-class universities, both national as well as international such as RMIT University- Australia, Nanyang Technological University-Singapore, IBM Systems -Singapore, University of Malaya, Federal University of Maranhao, Brazil and Universiti Teknologi – Malaysia, University of Moratuwa- Sri Lanka, Aswan University- Egypt, Naresuan University- Thailand, CSIR-National Aerospace Laboratories-India, Department of Atomic Energy- India, IITs, NITs etc. Shri. S. Rajavel, Sr. Vice President & Head - Water, Smart World & Communications, Larsen & Toubro Limited, Chennai was the chief guest. Shri. Venkat Kumar Tangirala, President, Windstream Energy Technologies India pvt. Ltd, Dr. Saad Mechkief, Professor, University of Malaya, Malaysia, Dr. Narayana Prasad Pathy, Dean Academics, IIT, Roorkee and Dr. H. R. Mohan, Vice Chairman, IEEE Madras Section were the guest of honour.

A panel discussion on “Smart Energy Grid Engineering” was organized on the first day of the conference. Smart Grid, Smart Energy, Smart building Automation, IOT and Cognitive Computing were the topics of discussion. The highlight

of i-PACT 2017 was the congregation of experts and researchers from around the globe which provided the much needed impetus for joint collaborations, interactions and exchange of expertise.

NASA SpaceApps Challenge 2017



SpaceApps is a NASA incubator innovation program. For 48 hours across the world, problem solvers join in for NASA's International Space Apps Challenge, one of the largest hackathons in the World. VIT, Vellore being one of the seven locations in India out of 200 across the globe this year from 183 countries. Empowered by open data from NASA, IEEE-SB at VIT offered hobbyists, colleagues and friends a chance to solve perplexing challenges in new unexpected ways this 29th and 30th of April, 2017.

The Hack started at 9:00 a.m. on the 29th of April 2017 with around 150+ participants witnessing healthy participation from institutions like IIT Madras,

SRM Univ., VIT Chennai and 15 other colleges from Mysore, Coimbatore, Bangalore and Trichy. There was a Hack Shop with all possible electronic components like raspberry pi3, Arduino, Mpu050 and sensors at the disposal of the participants at all times during the hack. Mentors from Bellatrix, Endurance International Group (Mayank Sehgal) and Lattice Innovations (Soutra Bhattacharya) joined the hack to guide and assist the participants with their projects. A researcher at the US Army Aero flight dynamics Directorate at NASA enlightened the participants in the field of Data Science via Skype conference.

The Vice Chair and Chair, SAC, IEEE Madras Section Mr. H.R. Mohan along with Madras Section Executive Committee member, and the SAC Co-Chair Dr. S. Koteeswaran and Treasurer of IEEE Madras, and the Chair of IEEE CS, Dr. P. Sakthivel were the Guests of Honour for NASA SpaceApps event.

The Hack came to an end after the pitching of prodigious projects by the participants. Three teams namely Team Go (VIT Vellore), Team Tech-Narvi (Sri Krishna College of Engineering, Coimbatore) & Team Kepler (VIT Vellore) won the Challenge held at VIT Vellore by addressing problems related to finding water resources using satellite images, predetermining and improving safety for beach-goers and creating a virtual space-ship simulator respectively. These teams get a chance to participate at the Global-level Challenge being organized on 5th May 2017.

Panimalar Institute of Technology: ICIETET'17



IEEE, SAE, ISTE, IETE, CSI & ICTACT supported the Second International Conference on Innovative & Emerging Trends in Engineering and Technology held on 15th May 2017.

The distinguished speakers included Dr. R. Srinivasan, Member Secretary, Tamil Nadu State Council for Science and Technology & Dr. T. Jayanthi, S.O (H+), Head of Real Time Systems Division, Electronics and Instrumentation group, IGCAR, Kalpakkam. Dr.T.Jayanthy, Principal presided over the conference.

St. Peter's College of Engineering and Technology: International Conference



IEEE SB, IT & ECE Depts organized the 3rd IEEE International Conference on Sensing, Signal Processing and Security" on 4th and 5th May 2017. 97 papers were presented for the conference.

The distinguished speakers were: Dr. Ian Ton, Multimedia University, Malaysia; Dr. A. Gopal, Senior Scientist, CEERI; Dr. S. Swamynathan, Anna University, Chennai; and Dr. Sithu D.Sudarsan, ABB, Bangalore.



The seventh edition of the IEEE MAS Student Project Funding started in the year 2010-2011 for the IEEE student members of UG courses for the year 2016-2017 was successfully carried out with final demonstrations on 20th May 2017. An eminent panel of judges evaluated the demonstrations of the student projects. Six projects were selected for the funding. The students of these selected projects will receive the project completion certificate and cash prizes of varying amount as specified in the table. At the start of the SPF demo event, Dr. T. Micheal Kumar, Secretary, IEEE Madras Section welcomed the project team members, faculty members, panel of judges and the invitees. Project demos were validated for the working model by the judges and graded them for cash awards which were finalised by Dr. P.A. Manoharan, Chairman and Dr. S. Elangovan, Co-Chairman of SPF sub-committee and approved by Mr. H.R. Mohan, Vice Chairman, IEEE Madras Section and Dr. Sakthivel, Treasurer, IEEE Madras Section. At the valedictory function, Mr. C. R. Sasi, Ombudsman and Past Chair, IEEE Madras Section addressed the student participants on the importance of the projects in their career. Dr. P. A. Manoharan, Chairman, SPF highlighted the process adopted for the SPF. Mr. H R. Mohan, announced the list of projects selected for Project Funding for the period 2016-17 and congratulated the prize winners and also appreciated the others for their efforts. The event concluded with the vote of thanks by Dr. S. Elangovan, Co-Chairman, SPF. All the student participants were provided with travel support.

Student Projects Selected for Funding for the year 2016 – 2017

Sl. No.	Project Title	Name of the Student	Name of the College	Funding (Rs)
1.	Synthesis and characterization of Cadmium oxide nanocomposite materials for cervical cancer diagnostics	Ms. Sri Valli Meena S Ms. Vedhajanani Y S Ms. Vignesha Priya B	Rajalakshmi Engineering College	15000
2.	Robotic book scanner	Mr. Vinoth K Mr. Velagapudi Deepak Mr. Reddivari Sai Saran	Panimalar Institute of Technology	12000
3.	Vehicle detectors for blind spots to prevent accidents	Ms. Nithila Shereen R	Karunya University	10000
4.	Bhrty Artana	Mr. Simerna Jayanthi Sushil	KCG College of Technology	8000
5.	Implementation of secure LPG stove assistance system using IOT	Mr. Hariharasudhan M	Knowledge Institute of Technology	6000
6.	Intelligent security system based 24/7 lockers	Ms. Naomi sherin Lilly A Ms. Velayini S	Dr. Sivanthi Aditanar College of Engineering	4000

The above are only the select events held at various SBs and the IEEE Madras Section. IEEE MAS LINK, the monthly newsletter features all the events and the issues are archived in a shared folder at <https://goo.gl/nrpibv> They can also be accessed from the archives website at <http://ieeecs-madras.managedbiz.com/link-web/index.html>

IEEE Pune Section Events

Young Professional Affinity Group: Training on MATLAB



A three day training programme to Electrical Professionals on “MATLAB for Electrical Engineers “ form 9th to 11th March 2017 was organized by Dept. of Electrical Engineering , PVG’s COET in association with Young Professional Affinity Group, IEEE Pune Section.

The participants which included few from start-up companies were given training on the use of Simulink and various block sets of MATLAB as a professional software. Few of them were the start-up companies.

The resource person was Mr. Hrishikesh Mehta, from Kuber Technologies, Varanasi. With his wide experience in automation and control, he had conducted theory as well as practical sessions. The practical sessions were well appreciated by the participants as it consisted of software and hardware coordination and control. The delegates were happy with the content of course covering basic scripts, functions, blocksets as well as GUI etc. A total of 35 participants, of which 12 were IEEE members and 15 were students benefited from the programme,

Women In Engineering Affinity Group: International Women Day



International Women Day was celebrated by WIE AG, IEEE Pune section at PCCOE College Akurdi on 25th March 2017 on the theme “Women Empowerment” was organized in association with IBM and Google Women Techmakers Group (WTM), Pune.

Dr. Rajashree Jain, Vice Chair, WIE, IEEE India Council and Secretary IEEE Pune Section and Ms. Lekha Panikulangara IEEE WIE Pune Chair for 2017 were present at the programme and shared details about IEEE Pune Section WIE, and how it is beneficial for student and women professionals. Dr. Rajashree Jain in her well appreciated inspirational talk shared on how women play multiple roles and face challenges at home and work yet they move ahead successfully in their professional career. She also shared her own experiences that motivated many women, who could relate to their own lives.

In an overview session. Mr. Swanand Gadre, Advisory Software Engineer, IBM covered the Watson capabilities and Watson APIs which was useful to the young women students and faculties on exploring Watson APIs for analytics and cognitive capabilities. The faculties and student requested for a follow session where they could get hands on experience on IBM Bluemix and IBM Watson.

In a fun filled activity on collaboration and networking, by Pranoti Nandurkar, along with the briefing about Women Techmakers, a quiz and fun activities were conducted for participants. Goodies and gifts were presented to active participation. Five teams were asked to demonstrate activities for women role in society. Students grouped into 5 teams and enacted skits to show the role played of women at home and offices and add value as individuals in society. A total of 19 faculty members and 37 students participated in this programme.

Education Society Chapter: Workshop on “Computing with Fun”



A workshop on “Computing with Fun” was conducted on 13th and 15th April, 2017 at Sungrace School, Pune. It was a part of the series of workshops under “Cultivating Creativity and Curiosity in Children (Quadra-C)” program conceptualized by the Education Society of IEEE Pune Section.

The workshop was conducted by the Education Society in association with the Rotary Club of Pune Horizon, Pune. The main objective of this workshop was to introduce concepts related to Algorithmic thinking, Reasoning, and Decision making in relation to Computational Science. The students participated in this event had no earlier exposure to computers, except in the use of Internet. Emphasis during the workshop

was on evolving basic logic necessary for development of Computer Algorithms through interactive games. Number Sorting was taken as an example and participants were made to evolve the necessary logic behind sorting, through numerous games. Initially, they were made to learn the methodology behind sorting to specific types of numbering sequences, understand the mistakes and correct them. Later they were made to evolve the logic for sorting random sequences. Many practical applications for number sorting were also explained to them. Participants were also introduced to concepts of ‘Looping’ and ‘Decision Trees’ and how they are useful in writing efficient programming. In the beginning, children were made to understand and appreciate the need for Computing, Calculating and Communicating and how all the three aspects are integrated in modern devices. The workshop was attended by 37 children of Std X. Certificates were distributed to all by Shri Vijai Pillai, Director, Sun grace School. All participants were immensely happy with the workshop and desired to have more of such workshops.

Compiled by Dr.(Mrs). Rajashree Jain, rajashreejain@gmail.com

Startup to launch 24x7 open self-driving store in China: Swedish startup Wheelys is launching a 24x7 open self-driving store called 'Moby Mart' in China's Shanghai. The store uses artificial intelligence and computer vision to navigate streets and carries items like fresh food, sneakers and magazines. Users will need to scan the items they're taking, and an app will deduct the amount from users' account when they leave the store.

Google buys 300 modular apartments at \$30mn for US employees: In the wake of skyrocketing rents in the Silicon Valley, Google has ordered 300 units of modular apartments for its employees from a startup called Factory OS, in a deal worth up to \$30 million. Modular homes are completely built in a factory and assembled like puzzle pieces onsite. This process reduces the cost of construction by 20-50%.

Amazon store tech prevents shoppers from seeing price online: Amazon has been granted a patent for a new technology that prevents its in-store shoppers from checking prices of products online. The technology allows Amazon to intercept network requests like URLs and search terms that happen on its in-store Wi-Fi. Amazon can also use requested information to sell shoppers the products they are looking online.

Every Indian would consume 11GB data/month by 2022: Report: According to Ericsson Mobility Report 2017, every smartphone user in India would consume 11GB data a month by the year 2022, growing at a compound annual growth rate (CAGR) of almost 40%. The report listed fast smartphone adoption, changing users' behaviour, and disruptive pricing strategies as the reasons behind the increase in data consumption.

Google Drive to offer automatic backup of any folder on PC: Google's cloud storage tool Google Drive will be launching a new app called Backup and Sync on June 28. The tool will allow users to choose folders they want to backup instead of having to place them inside the Drive folder. However, users will only be able to backup data up to 15 GB on the Drive for free

UP Section Events

Amity School of Engineering and Technology: 7th international conference CONFLUENCE-2017



The Dept. of Computer Science & Engineering, Amity School of Engineering and Technology (ASET) organized a two-day 7th international conference CONFLUENCE-2017 themed on “Cloud Computing , Data Science and Engineering” at Amity Campus, Sector-125, Noida during 12-13, Jan 2017.

This two day conference was organized in academic partnership with University of Massachusetts, Lowell, USA, University of Florida, USA, Memorial University of Newfoundland- Canada, University of Cape Town-South Africa, Queen's University Belfast-UK, University of Melbourne, Australia. Confluence is an initiative taken to nurture the talent and promote innovation as per the vision of Amity's Founder President Dr. Ashok K. Chauhan, who believes in outcome based actions with long term sustainability and under the dynamic leadership of Chancellor Dr. Atul Chauhan.

CONFLUENCE 2017 welcomed 40 international guests from 20+ countries including USA, UK, Australia, Canada, Malaysia, New Zealand, South Africa, Philippines, Netherlands, Scotland and Singapore. There has been overwhelming response for research paper submissions and 539 research paper submissions were received on Cloud Computing, Data Science & Engineering from faculty members and Ph.D. scholars both at national and international level. With well designed review process, only 149 manuscripts including papers from foreign universities (Argentina, Australia, Ethiopia, Germany, Greece, Iceland, Japan, Malaysia, New Zealand, Philippines, Russia, South Africa, Taiwan, USA, United Arab Emirates and United Kingdom), that met stringent requirements of high scientific quality and significance, originality, and priority were accepted and presented during the two days of Confluence in various technical sessions. All the papers registered and presented will be submitted to IEEE for publication in IEEE Xplore Digital Library and all published papers would be indexed in SCOPUS.

Prof. (Dr.) Ajith Abraham, Director, Machine Intelligence Research Lab, USA; Prof. (Dr.) Jan van den Berg, Scientific Director, Delft University of Technology, Netherlands; Prof. (Dr.) Simeon Simoff, Dean (School of Computing, Engineering and Mathematics), University of Western Sydney, Australia; Prof. (Dr.) Patrick Hanghui Then, Associate Dean Computing, Head of Advance Informatics Consultation and Research Group, Swinburne University of Technology, Australia; Prof. (Dr.) Haim Levkowitz, Chair, Computer Science Department, University of Massachusetts, USA; Prof. (Dr.) Balvinder Shukla, Vice Chancellor, Amity University Uttar Pradesh; Prof. (Dr.) D. K. Bandopadhyay, Chief Advisor, Founder President Office; Prof. (Dr.) Abhay Bansal- Jt. Acting Head, Amity School of Engineering & Technology & Head, Department of Computer Science & Engineering; Prof. (Dr.) M.K. Dutta, Jt. Acting Head, Addl. Dir., ADET, HOD (ECE), ASET, Amity University Uttar Pradesh; and Prof. (Dr.) K.M. Soni, Deputy Dean, Domain Engg. & Technology, Amity University Uttar Pradesh participated in the inaugural session of the Conference along with other 25 distinguished international guests.

Welcoming the distinguished gathering, Prof. (Dr.) Abhay Bansal said that 7th International Confluence focuses on “cloud computing, data science and engineering” and will act as a platform to discuss and deliberate upon trends and issues pertaining to it. He called upon the students to make the most out of their interactions with the corporate leaders and world renowned Academicians, which will give them a deeper insight into the Industry.

Through a wide range of keynote speeches, tutorials, special sessions like CEO Forum and Plenary session audience witnessed new ways to deal with the challenges faced in areas of cloud computing, data science and engineering.

During the conference, Amity University signed 12 MoU's. The first alumni meet “ASET CSE alumni connect 2017” was successfully hosted with 75 alumni's participating and strengthening their bond with the alma mater.

The valedictory session was graced by Prof. (Dr.) G.P. Li, Director, California Institute of Telecommunications and Information Technology, University of California, USA, Prof. (Dr.) Dennis Peters, Head of Department of Electrical and Computer Engineering, Memorial University of Newfoundland, Canada, Prof. (Dr.) Virendra Kumar C. Bhavsar, Honorary Research Professor, University of New Brunswick, Canada, Prof. (Dr.) S. N. Singh, Professor, IIT Kanpur & IEEE R10 Conference and Technical Seminar Coordinator, India, Prof. (Dr.) Mohammad S. Obaidat, Chair Department of Computer and Information Science, Fordham University, USA, Prof. (Dr.) Parma Nand, Auckland University, New Zealand, and Prof. (Dr.) Keshav Dahal, University of the West of Scotland, Scotland.

Amity Leadership Awards were presented during this session and in presence were many reputed and senior dignitaries from the Industry. These included Mr. Sanjay Khajuria, Vice President, Nestlé India, Mr. Anuj Agarwal, Managing Director, Blue Dart Express, Mr. Praveen Saharya, Director, Tom Ford, Mr. Vibhu Mahajan, Chief Operating Officer, Choko la, Mr. Ashok Sharma, Head, Products & Marketing, Escorts, Mr. Vipin M. Sharma, Head Delhi & UPW and Mr. Rajesh Bajaj, Cluster Head, Reliance BIG TV, Mr. Sudhir Aggarwal, Vice President, Thomson Reuters South Asia Pvt. Ltd., Mr. Raman Roy, Founder, Quattro Global Services, Mr. Rahul Mittra, CEO, Wave Cinemas, Mr. Sameer Garg, Vice President and Mr. Manish Kaushik, Asst. Vice President, Axis Bank, Mr. Niraj Singla, Vice President, Zee Entertainment Enterprises, Mr. Sanjai Saxena, Vice President, Tech Mahindra (Digital IMEA Region), Mr. Sushil Kumar, Development Centre Head, Infosys, on behalf of Dr. Vishal Sikka, CEO, Infosys, Ms. Padmaja Ruparel & Mr. Raman Roy, Co-Founders, Indian Angel Network, Mr. Rajan S. Mathews, Director General, Cellular Operators Association of India & Ms. Ruchi Dhawan Sharma, Head, Talent Acquisition, Max Life Insurance.

Also academic awards were conferred upon to distinguished academicians for their significant contribution in their respective fields. These included Prof. (Dr.) Haim Levkowitz, Chair, Computer Science Department, University of Massachusetts, USA; Prof. (Dr.) Simeon Simoff, Dean (School of Computing, Engineering and Mathematics), University of Western Sydney, Australia and Prof. John Yearwood, Head of School, Faculty of Science Engg. & Built Environment, School of Info Technology, Melbourne Burwood Campus, Deakin University.

The two day Conference ended on a high note with all the international guests being taken for a visit to The Taj Mahal, Agra, the beautiful historical monument, on 14th January.

Report by: Prof. (Dr.) Abhay Bansal, abansal1@amity.edu

IIIT Allahabad: Workshop on Advanced Research in Microelectronics (WARM)



IIIT Allahabad organized four days “Workshop on Advanced Research in Microelectronics (WARM)” from 26th to 29th January 2017. This workshop was accomplished with specialized training program (on the design of analog and digital integrated circuits using commercial technology design kits and simulation tools, fabrication methods etc.) in the Department of Electronics & Communication.

The speakers in this workshop from Industries were Mr Nitin Jaiswal (FreeScale Semiconductors (NXP)) and Mr. Sumit Srivastava (Synopsis). “Prof. B.R. Singh, Dr. Manish Goswami and Dr. Prasanna Kumar Misra” were from the academics. In this 4 day workshop, focus on design and verification of analog and digital integrated circuits with exposure to the latest EDA tools was given. More emphasis on laboratory work was given during the workshop. In addition to this, physical design and verification of VLSI systems was also covered. The workshop formally inaugurated by Director of IIITA, Prof. G.C. Nandi.

The expert lectures delivered included:

- “VLSI Technology- Importance and Role in Design” by Prof. B.R. Singh
- “SRAM Design and Memory Architecture” by Mr. Sumit Srivastava, Synopsis.
- “Design of CMOS analog sub circuits” by Dr. Manish Goswami.
- “Design techniques for VLSI system design” and “Low Power Design Techniques” by Dr. Prassana Kumar Misra
- “Aspect of functional verification in a complex system on chip” by Mr. Nitin Jaiswal, Free Scale Semiconductors (NXP)

The participants learned about

- Schematic and layout design of inverter with simulation using Spectre simulator under the Supervision of Dr. Manish Goswami and Dr. Prassana Kumar Misra.
- Digital design flow in Encounter RCX process under supervision of Dr. Manish Goswami and Dr. Prassana Kumar Misra.

The workshop ended with a feedback and valedictory session, in which the participants provided their feedback and received their certificates presented by Dr. Manish Goswami & Dr. Prassana Kumar Misra

Report by: Dr Manish Goswami, manishgoswami@iita.ac.in

MNNIT Allahabad: IEEE International Conference on Advances in Mechanical, Industrial, Automation and Management Systems (AMIAMS-2017)



The conference was organised by the Department of Mechanical Engineering, Motilal Nehru National Institute of Technology (MNNIT) Allahabad during February 3-5, 2017 to promote excellence in scientific knowledge and innovations in mechanical engineering and related disciplines to motivate young researchers. The conference was organised under the technical sponsorship of IEEE UP Section and IEEE Robotics and Automation Society. DRDO and MNNIT Allahabad were the

financial sponsors for the event. The official website of the conference is <http://www.mnnit.ac.in/amiams2017/>

Each of the 129 papers received was peer double blind reviewed by the technical committee members and the selection of 76 papers for oral presentation was done based on the basis of originality, content, completeness, organisation and clarity to meet conference themes.. 68 papers got registered out of which 62 papers were presented in the conference.

A printed book of abstracts and an e-proceeding were published. Furthermore, the selected papers that fit in the scope of IEEE would be considered for publication in IEEE Xplore® (as per the guidelines of IEEE). Efforts are being made to publish the remaining papers in the reputed International Journal having good impact factor.

The inaugural ceremony held on 3rd February, 2017 was attended by over around 200 persons. Dr. N Eswara Prasad, Director, DMSRDE Kanpur, Chief Guest, Prof. G. C. Nandi, Director, IIIT-Allahabad, Guest of Honour, Prof. Rajeev Tripathi, Director, MNNIT Allahabad, Prof. Rakesh Narain, Head, Mechanical Engineering Department and General Chair, Dr Manish Gupta, Organizing Secretary, Dr. Mukul Shukla, Finance Chair, Dr. Rajeev Srivastava, Organising Chair along with the various Conference Chairs, faculty members of the Institute and students were present at the inaugural ceremony.

The conf had five keynote lectures and they were delivered by: Dr. N Eswara Prasad, Director, DMSRDE Kanpur, Prof. G. C. Nandi, Director, IIIT-Allahabad, Prof. B. N. Datta from Northern Illinois University, Prof. Akhtar Kalam, from Victoria University, Australia and Dr. Chai Ching Tan from Mae Fah Luang University, Thailand.

Eminent scientists from research organisations such as DRDO, DRDL, ISRO, IGCAR, CSIR-CMERI etc and also the faculty members and research scholar from IITs, NITs, various other universities and institutions participated in the conf for their oral paper presentation.

Three best paper awards were presented include: (i) 'Combustion and performance characteristics of a diesel engine using emulsified diesel prepared by ultrasonicator' authored by Pijush Kanti Mondal and Bijan Kumar Mandal (ii) 'Steering atrategy for a multi-axle wheeled vehicle' authored by Vinit V Jagirdar and M W Trikande (iii) 'Manufacturing experiences of large stroke welded disc bellows for nuclear applications' authored by S C S P Kumar Krovvidi, Sreedhar B.K, Mahendran N, Padmakumar G, Raghupathy S, Sudhakar Naik and Gopalakrishnan R.

AMIAMS-2017 was considered by the participants as a well organised, finest and one of the best conference in its domain.

Report by: Dr. Manish Gupta, mgupta@mnnit.ac.in

ABES Engineering College, Ghaziabad: International Conference on Computational Intelligence & Communication Technology (CICT-2017):



ABES Engineering College, Ghaziabad organized its 3rd International Conference on Computational Intelligence & Communication Technology; CICT-2017 on 9th and 10th February 2017 with the technically co-sponsored from IEEE UP Section. The conference provided a forum for researchers, engineers, and students alike to share their state-of-the-art research and developmental work in the broad areas of pervasive computing and communications. The conference featured with a diverse mixture of interactive forums, core technical sessions of high quality cutting-edge research papers; targeted workshops on exciting topics; live demonstrations of pervasive computing in action; insightful keynote speeches; panel discussions from domain experts and posters on emerging ideas.

The conf. received around 400 research papers from 12 countries. All reviews to select best papers are being done through EasyChair, a popular web based conference management system. Finally, 129 papers were selected after blind reviews by select expert panel from all over the world. All accepted as well as presented papers of the conference by duly registered authors, submitted to IEEE for possible inclusion on www.ieeeexplore.org. The Panel of speakers Consists of Prof. Mohan L. Kolhe, University of Agder, Norway, Prof. S.N. Singh, IIT Kanpur, Prof. J. Ram Kumar, IIT Kanpur, Prof. Arvind Chaubey, NIT Jamshedpur, Dr. T.C. Shami, DRDO, Dr. Rehan, AMU Aligarha and experts from industries Mr. Sunil Wattal, IBM and Ms. Sangeeta Garg, TCS who had delivered their keynote address.

Report by: Dr. Munesh Chandra Trivedi, munesh.trivedi@gmail.com

Amity University: 4th International Conference on Signal Processing and Integrated Networks (SPIN 2017)



The Fourth International Conference on Signal Processing and Integrated Networks (SPIN 2017) was held on 2-3 February 2017 in the Amity University Campus, Noida Delhi NCR, India. This conference was technically co-sponsored by IEEE UP Section.

SPIN 2017 was aimed to bring together scientists, academicians and industrialists working in the field of Signal Processing and Integrated Networks to discuss new ideas and promote research work. The conference had a very high quality technical programme consisting of 122 contributory papers and 18 invited talks. Overall this conference had 29 sessions and all the sessions were very nicely managed by expert session chairs. The sessions were highly interactive and thoughtful.

There were sessions on Image Processing, Medical Signal Processing, Audio Signal Processing, Communication Engineering, Biometrics and Forensics, Wireless Sensor Networks, VLSI, Medical Image Processing, Network & Security, Devices and Embedded Systems, Signal Processing, Data Mining and Optimization, Antenna & Radar, Soft Computing and Adhoc Networks & Cognitive Radio etc.

The invited talks were delivered by researchers throughout the world from countries like UK, USA, Japan, Canada, Korea, New Zealand, Finland, Taiwan, Hong Kong, Spain and other European Countries etc. The invited speakers of this conference include:

1. Prof. Carlos M. Travieso-Gonzalez, Vice-Dean, University of Las Palmas de Gran Canaria, Institute for Technological Development and Innovation in Communications (IDeTIC), Signals and Communications Department, Campus Universitario de Tafira, Spain.
2. Prof. Brian Barsky, Computer Science Division School of Optometry, Berkeley Center for New Media, Berkeley Institute of Design Arts Research Center, Berkeley University of California, Berkeley, USA
3. Prof. Javier Barria, Reader, Department of Electrical and Electronic Engineering, Imperial College, London, UK
4. Prof. Jae Hong Lee, Dept. of Electrical and Computer Engineering, Seoul National University, Seoul, Korea.
5. Prof. Waleed H. Abdulla, Deputy Head of Department (Research), Department of Electrical and Computer Engineering, The University of Auckland, New Zealand
6. Dr. Yusuke Tahara, Graduate School of Information Science and Electrical Engineering, Research and Development Center for Taste and Odor Sensing, Kyushu University, Japan
7. Professor A.H. Sadka, Director of Centre for Media Communications Research, Brunel University, London, UK.
8. Prof. K. Gopalan, Department of Electrical and Computer Engineering, Purdue University Northwest, Hammond, USA
9. Prof. Yi Qian, Professor Department of Electrical and Computer Engineering University of Nebraska-Lincoln
10. Prof. Jorma Skyttä, Professor, Electrical engineering, Department of Signal Processing and Acoustics, Aalto University, Finland
11. Prof. António Dourado, University of Coimbra, Portugal, European Union
12. Prof. Sri Krishnan, Associate Dean, Canada Research Chair, Ryerson University, Canada
13. Dr Kush R Varshney, Manager, Data Science Theory and Algorithms, Solutions and Mathematical Sciences, IBM Thomas J Watson Research Center, USA
14. Prof. Zoran Ivanovski, European University, Skopje, Republic of Macedonia, Europe
15. Prof. Sotiris Skevoulis, Professor Of Computer Science, Seidenberg School Of CSIS, Pace University, USA
16. Prof. Hsing Luh, National Chengchi University, Taipei, Taiwan
17. Prof. King Ng Ngan, Chair Professor, Department of Electronic Engineering, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong
18. Prof. Alfredo Rosado Muñoz, ETSE. GPDD. Dpto. Ingeniería Electrónica, Universidad de Valencia, Valencia. Spain

SPIN-2017 also attracted contributions across the world from countries like, USA, UK, Canada, China, Germany, Russia, South Africa, New Zealand, Portugal, Austria, Finland, Republic of Macedonia, Hong Kong, Taiwan, Australia, Sweden, Czech Republic, Costa Rica, Spain, Turkey, Kuwait, Jordan, Bulgaria, Korea, Japan etc. SPIN-2017 had attracted contributory scientific papers from 25 states of the country out of 28 states which means that it has attracted the attention of the research community. Apart from reputed technical institutions, SPIN-2017 has attracted contributory papers from research centres like ISRO, Indira Gandhi Centre for Atomic research, Sarabhai Institute of Science and Technology and also from Industry like TCS, Amazon, Tata Elxsi, Cadence Design Systems etc.

The feedback from the participants, authors, session chairs, invited speakers were very appreciative of the conference. The student participation was a marked feature in this conference. The conference concluded with a valedictory function on 3rd Feb 2017. The conference organizers had organized a complementary trip to Agra for visit of the Taj Mahal and Agra Red Fort for all the invited speakers and the delegates on 4th Feb 2017.

Report by: Prof. Malay Kishore Dutta, Email-mkdutta@amity.edu

MJP Rohilkhand University, Bareilly: 2nd International Symposium “IoT-SIU 2017”



The Faculty of Engineering and Technology, MJP Rohilkhand University in association with IEEE UP Section organized a two-day 2nd International Symposium on “Internet of Things: Smart Innovation and Usages” (IoT-SIU 2017) from 28 Feb to 01 Mar, 2017.

The symposium was inaugurated by the chief guest Prof Brijendra Singh, Lucknow University, Prof. Mushahid Husain, Hon’ble Vice Chancellor, MJP Rohilkhand University, Mr. Vivek Pandey, SAP Consultant, IBM, New Jersey, USA, Prof. A. K. Gupta, Dean, FET, MJPRU, Bareilly and other members of governing board. After the opening remarks by the program coordinator

Dr. Vinay Rishiwal from MJP Rohikhand University, the souvenir was released.

In the first day, keynote lectures were given by Mr. Vivek Pandey, SAP Consultant, IBM, USA on “Challenges and Scope in IoT” and by Prof. D. K. Lobiyal, JNU, New Delhi on “IoT and Wireless Sensor Networks”. In the second half, research papers were presented by the authors in two parallel sessions.

In the second day, Dr. N. Singh, Department of CS, AIT, New Delhi delivered a keynote talk on “Association rule Mining on Big Data” Mr. Aditya Bhale, from DreamUni Pvt Ltd, New Delhi spoke on “Recent ongoing technologies and approaches in IT industry”. In the third and fourth sessions, research papers were presented. The symposium ended with a valedictory session in which certificates and prizes were distributed. At the end, Dr. Vinay Rishiwal concluded that the overall symposium was informative for the entire participants.

Report by: Dr. Vinay Rishiwal,, rishi4u100@gmail.com

Quantum School of Technology: Symposium on 3D Printing and Allied Technologies



IEEE SB at Quantum School of Technology, Roorkee had organized a two days Symposium on 3D Printing and Allied Technologies during 21st and 22nd April 2017. The symposium was inaugurated by Mr. Ajay Goyal, Chairman, Quantum Global Campus, Roorkee, Dr. S.C. Handa, Director General, QGC, Dr. Gulshan Chauhan, Director, Quantum School of Technology, Roorkee, Dr. Arun K. Lall,

Professor, Dept. of Mechanical Engineering, PEC University of Technology, Chandigarh and Er. Ramnath Bhat, Engineer, Skyfi Education Labs Pvt. Ltd., Bengaluru participated in the inaugural session.

Dr. S.C. Handa welcomed the gathering Mr. Raunak Gupta, convener of the provided the highlight of the symposium and added that IEEE SB provides the best of opportunities to all the budding engineers, researchers and professors who are keen to garner information and explore in the field of R&D. Dr. Arun K. Lall in his keynote address on Product Development and Rapid Prototyping elaborated about the benefits of rapid prototyping and its associated techniques. He also highlighted the various RP techniques such as Stereo Lithography, Laminated Object Manufacturing, Selective Laser Sintering, Fused Deposition Modeling, Solid Ground Curing, 3D Printing and Laser Engineered Net Shaping.

Er. Ramnath Bhat familiarized the participants with the technical and practical aspects of 3D printing. He had demonstrated by printing few of the selected designs made by the participants during the symposium.

There were total 29 registered delegates for the symposium. After the symposium, an offline exam was conducted by the Skyfi Education Labs Pvt. Ltd., Bengaluru and on the basis of this exam they had provided the top 10 participants with distinction certificate. At the end of the symposium, Dr. Gulshan Chauhan, Director presented vote of thanks

Report by: Mr. Raunak Gupta, raunak31rp@gmail.com,

I.T.S Engineering College, Greater Noida : International Conference on “Advancement in Energy Drive & Control, ICAEDC-2017”



Department of Electrical & Electronics Engineering of I.T.S Engineering College, Greater Noida organized a DST Sponsored Two Days International Conference on “Advancement in Energy Drive & Control, ICAEDC-2017” during April 7-8 2017, supported by IEEE, to celebrate 25 Years of Journey of IEEE U.P. Section, India (R10).

The conference was started with a lamp lighting ceremony by honorable Chief Guest Mr. Dinesh Jain, President-Legal & Corporate Affairs, UFlex Ltd, Distinguished Keynote Speaker - Prof. Abul Hasan Siddiqi, Ex Pro-Vice-Chancellor, AMU & Visiting Consultant, ICTP, International Keynote Speaker - Mr. Antonio Vilei, ST Microelectronics, Lece Italy, Mr. Himadri Endow, Ex-Head Alstom Grid & SM- IEEE, Mrs. R. Mahalakshmi, DGM-Customer Services, Yokogawa, India, Mr. Piyush Chandra Ojha, VP-CABCON, India, Mr. Nitin Jain, Director and Chief Operating Officer, Aviconn Solutions Pvt. Ltd., Dr. Vineet Kansal, Director- ITSEC, Dr. Gagandeep Arora, Dean Academic, Dr. Sanjay Yadav, Dean Student Welfare in presence of HOD's, faculty members, delegates and scholars from IIT's, NIT's, Govt. Institutions across the country.

Dr. Monika Jain, General Chair of ICAEDC-2017 presented the objectives and program highlights. Director-Dr. Vineet Kansal while welcoming the gathering highlighted the key aspects of present technological advancement in the field of Energy Drive and Control and emphasized on the need of such platform to share the new innovations, research and ideas to face the challenges in technological transformation into reality. Dr. Kansal also highlighted the best practices that ITS-EC facilitated the students & faculty for creating an environment of quality research.

In the felicitation, Prof. A.H Siddiqi, Mr. Vilei & Mr. Endow briefed about the need of collaboration between industry and academia for perfect learning and continuous development in research and innovations.

Chief Guest, Mr. Dinesh Jain, President UFlex Ltd. delivered the inaugural address in which he highlighted the importance of young and dynamic engineers, research scholars, industry and academia to take initiatives in transformation of advanced technologies facing the real socio-economic challenges. It was followed by release of “Conference Proceedings ICAEDC-2017” by Chief Guest, Distinguished Speakers and Dignitaries of I.T.S Engineering College. The inaugural session came to an end with the vote of thanks by General Chair, Dr. Monika Jain

In the first technical session Prof. Abul Hasan Siddiqi, Ex-Pro VC, AMU delivered a keynote address on “Mathematical Models & Methods of Oil Industry”. It was followed by another keynote address on “The Internet of Things Revolution: Smart Cities & Smart Industry” by Mr. Antonio Vilei, ST Microelectronics, LEECE, ITALY.

Four other consecutive sessions included: “Trends in Microgrid Management” by Mr. Himadri Endow; “Application of Mathematical Modeling in Energy Drives” by Dr. V. N. Jha, Prince Sattam bin Abdulaziz, University; “Advancement and Skill Challenges in Instrumentation & Automation” by Mrs. R. Mahalakshmi, DGM-Customer Service Division, Yokogawa, Bangalore; and “IoT in Building & Home Automation” by Mr. Nitin Jain, Director & COO, Aviconn Solutions Pvt. Ltd.

ICAEDC-2017 had received over 200 papers from all over the world. 54% papers were accepted for inclusion in the proceedings. The entire peer reviewed selected papers will be considered for publishing in Springer Proceedings.

The paper presentations sessions were held in parallel with session chairs: Dr. Hemant Ahuja Prof. & Head, ABESEC Ghaziabad, Dr. Madhur Deo Upadhyay, Professor, Shiv Nadar University; Dr. Noor E Zarhira, Dean Student Welfare, Sharda University; Dr. Monika Jain, Prof. & Head, ITSEC; Dr. Gauri Katiyar, Asso. Professor, ITSEC; Mr. Rajiv Ranjan, A.P, ITSEC; in three tracks – “Smart Grid, Green Energy, IoT & Industrial Security”, “AI, Robotics & Computer Vision, Control & Automation” and “Power Electronics, Machines & Drives, Signal Processing & Communication”. Around 45 authors have presented their papers on first day of ICAEDC-2017.

Day 2 of ICAEDC-2017 started with felicitation ceremony to distinguished keynotes Mr. Piyush Chandra Ojha, VP, CABCON, India, Dr. M.A Ansari, Professor, GBU, Greater Noida and Mr. Anil Goel, Retd. DGM-NTPC by General Chair, ICAEDC-2017, Dr. Monika Jain. It was followed by a series of keynote sessions on “Microgrids – The changing paradigm for Grid Control”, “Renewable energy scenario and its future scope in India” & “Power Scenario in India and present challenges”.

35 papers were presented in the paper presentation sessions held in parallel with session chairs: Dr. M.A Ansari, Professor, GBU, Greater Noida; Dr. Jay Singh; G.L. Baja; Dr. Monika Jain, Prof. & Head, ITSEC; Dr. Gauri Katiyar, Asso. Professor, ITSEC; Mr. Upendra Agarwal, A.P, ITSEC; Ms. Kalpana Hazarika, A.P, ITSEC; Mr. Nitin Kathuria, A.P, ITSEC in three.

The two days conf. came to an end with a valedictory session, followed by vote of thanks by General Chair, ICAEDC-2017. Around 300 delegates and scholars actively participated in this conference.

Report by: Rajiv Ranjan, rajivranjan.eee@its.edu.in

India Council IEEE PES Chapter Events

Silicon Institute of Technology Bhubaneswar: 7 day course on 'Design, Sizing, Installation and Modeling of Solar PV System':



This seven day course on 'Design, Sizing, Installation and Modeling of Solar PV System' was held during 29th May and 4th Jun 2017. It was attended by 25 participants from industry, academia and utility sector. The course was aimed to help students, industry personnel, academicians to bridge the gap between theory and practice of solar photovoltaic (PV) systems and equip the participants with the theory of solar PV with its balance of system (BOS) and teach them about real time sizing of PV systems with economic consideration, knowledge of real time operation, maintenance & troubleshooting of PV systems and seek employment in solar industry. While the industry personnel gain technical know-how of solar systems for their in-

house installation, the students and researchers get sufficient pre-requisite required for their solar based hardware projects. The resource persons for this course included: Prof. Seema Behera; Prof. (Dr.) R.P. Panda; Prof. Dipak Ranjan Nayak; Prof. M. Bikash K. Sahoo; and Experts from solar industry. Prof A.K.Tripathy, Chairman, IEEE India Council PES Chapter IEEE addressed the participants on 'New materials for PV cells'.

India Council Face to Face Meeting



Group photo taken at the India Council Face to Face Meeting held at Kolkata on 16th Apr 2017

Microsoft's AI first to reach a perfect Ms Pac-Man score: Maluuba, a deep learning team acquired by Microsoft, created an artificial intelligence system that has become the first player to reach a perfect 999,990 score in Ms Pac-Man Atari 2600 version. Several people have failed to reach the game's top score due to its intentional lack of predictability, with the players only coming as close as 266,330.

Swimming robot unveiled to inspect Japan's nuclear leak site: Japan-based developers have unveiled a swimming robot to inspect the country's 2011 Fukushima nuclear meltdown site. The 2-kilogram remote-controlled robot, 13 cm in diameter to help avoid various obstacles, can withstand high levels of radiation.

IT in March – May 2017



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Highlights in general

- **Elections to five Indian States** – UP, Goa, Punjab, Uttaranchal and Manipur announced on January 4, 2017; five stage Elections stretch till March 8, 2017; results on March 11, 2017 were a resounding victory for the ruling party BJP
- Attack on professionals in USA of Indian origin - Srinivas Kuchibotla in Kansas in February and Harish Patel in South Carolina in March - creates panic among Indian community in USA
- **State Bank of India (SBI)** creates history with the **merger of five smaller banks** (SBBJ, SBH, SBM, SBP and BMB) on April 1, 2017; joins the global Top 50 Club with 550+ million customers, 59,000 ATM's and 24,000 branches, 725+ million accounts and 180+ million transactions / day
- With President of India signing into law the four **GST** Legislations on April 13, 2017, GST is closer to ready
- India's "**South Asia Satellite**" launched by ISRO on May 5, 2017
- China's own passenger plane C919 launch on May 5, 2017
- **Emmanuel Macron** elected **French President** - youngest in decades - on May 7, 2017
- **Ransomware** virus impacts computers in nearly 100 nations on May 13, 2017
- **Iran** re-elects **President Rouhani** on May 21, 2017
- A terrorist shoot in London on March 22, 2017 kills 5; Manchester terrorist attacks in UK on May 22, 2017 kills 22

Products

- **Lenovo** launches **Moto G5** in India in April 2017
- **Microsoft** launches **Windows 10S** and **Surface Laptop** on May 2, 2017
- **Nokia 3310** launched in India at a special price of Rs 3,310 on May 16, 2017
- **Google** launches **Android O** on May 18, 2017

Markets

- **Dow Jones** broke the 21,000 mark the first time on March 1, 2017 after President Trump delivers his "Address to the Nation"
- India's stock market indices BSE index **Sensex** and NSE index **NIFTY** reach record levels (29,500 and 9,100 respectively) on March 15, 2017 post State Election results; Sensex crossed 31,000 on May 26, 2017
- **Snapchat** IPO creates history; more than \$ 24 Billion value on March 2, 2017, but loses steam in the next two weeks!
- **TechMahindra** acquires **CJS** (U-based healthcare IT Services company) for \$ 110 million on March 6, 2017
- **HP** acquires flash-based storage company **Nimble Storage** (India-born Varun Mehta and Umesh Maheshwar founded) for \$ 1 Billion on March 7, 2017
- **Intel** buys Israel-based computer vision company focused on autonomous vehicle (driver-less car) **Mobileye** for \$ 15 Billion on Mar 13, 2017
- **Idea** and **Vodafone** India merge on Mar 19, 2017 to create the largest telecom operator in India with 400 million customers
- **Airtel** acquires **Tikona's** 4G business for Rs 1,600 crores on Mar 23, 2017
- **Tesla** market capitalization exceeds **GM** in April 2017
- **NASDAQ** touched 6,000 first time ever on April 24, 2017
- **HPE** Services and **CSC** merge to become **DXC Technology** on Apr 3, 2017
- **Cisco** acquires SD-WAN Startup **viptela** on May 1, 2017 for \$ 610 million, analytics startup **Saggezza** on May 4, 2017 (founded by India-born Arvind Kapur and Socka Suppiah) and AI start-up **MindMeld** for \$125 Million on May 11, 2017
- **Apple** buys AI firm **Lattice Data** on May 13, 2017 for \$ 200 million

Indian IT companies

- **FlipKart** acquires **eBay India** operations in April 2017
- IT companies' talk of layoff causes fear psychosis with employees talking of "labour union" in May 2017
- Mobile wallet leader **PayTM** becomes a "payment bank" on May 23, 2017

MNC Companies in India

- **Apple** Accelerator to support iOS development by Indian developers starts operations in April 2017
- **SAP** invests \$ 50 m in Bangalore innovation center; to hire 2,500 in 2 years
- **Bosch** to hire 3,000 engineers in India in Year 2017
- **Shell** announces a new a Tech Center in Bangalore (the third center globally after U.K. and Netherlands) on Apr 1, 2017
- **Panasonic** setting up R&D unit in Bangalore in association with Tata Elxsi
- **Time Inc.**, starts Center of Excellence in Bangalore in April 2017
- **Apple** starts assembling iPhone SE in Wistron facility in Bangalore in May 2017
- **Panasonic** sets up Center of Excellence in partnership with TCS in India in May 2017
- **General Motors** decides to close down India ops; **Volvo** decides to start India operations, **Kia Motors** is talking of starting India operations - all in May 2017

Education & Research

- **Indian Institute of Science**, Bangalore is the 8th among the Top 10 global small universities (Best Small Universities in the World for 2017, **Times Higher Education Ranking**); tops the **NIRF** (National Institutional Ranking Framework) 2017 list announced on April 3, 2017 for the second time

People

- **Airbnb** CEO Brian Chesky visits India in March 2017 and talks positively about Indian market
- Prime Minister **Narendra Modi** and PayTM Founder **Vijay Shekhar Sharma** in **Times 100** "Most influential" 2017 list
- **Apple's Phil Schiller** in Bangalore to launch Apple Accelerator program to support iOS and Spark programming language developers in early April 2017
- **Australian PM** and **Bangladesh PM** visit India in April 2017
- **Mukesh Ambani** in Forbes "game changers list" 2017

Telecom

- **Tata DoCoMo** imbroglio got over by April end with High Court ruling
- **Idea** and **Vodafone** India merge on Mar 19, 2017 to create the largest telecom operator in India with 400 million customers

Startup scene

- Mobile wallet leader **PayTM** becomes a "payment bank" on May 23, 2017
- **SoftBank** invests \$ 1.4 Billion in PayTM and joins PayTM board in May 2017

Interesting mobile Apps

- Universal mobile banking App **BHIM** gets AADHAAR support; launched by PM on April 14, 2017

Interesting numbers

- 29 million handsets sold in India during Jan-Mar 2017
- India has 1170 mobile phone and 24 million landline **subscribers** on March 31, 2017 (TRAI Press release 37/2017 dated May 19, 2017)
- Forex reserves reach \$ 373 Billion on May 5, 2017
- Indian bourses market capitalization touches \$ 2 trillion in May (with Stock to GDP ratio of 0.88)
- 17 million **Zomato** users' data was lost in May 2017
- On May 22, 2017 **Xiaomi** sells 250,000 **RedMi** 4 phones in 8 minutes!

Professor Sowmyanarayanan SADAGOPAN is the Director of IIIT-Bangalore. These are his personal views. He has been writing about IT in India for two decades, with monthly columns in Times of India (1999 – 2003), Financial Express (2004 - 2007), IT Magazine (2008 - 2011) and IEEE India Newsletter (2012 - 2015). He can be reached at ss@iiitb.ac.in

Information Resources



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Sunlight-powered purifier could clean water for the impoverished: One-tenth of the world's population lacks clean water. Now, researchers report they have developed a cheap solar still, which uses sunlight to purify dirty water up to four times faster than a current commercial version. The raw materials cost less than \$2 per square meter. The technology will “allow people to generate their own drinking water much like they generate their own power via solar panels on their house roof,” says Zhejun Liu, a visiting scholar at the State University of New York (SUNY) in Buffalo and one of the study's co-authors. <https://goo.gl/MifKe8>

Special Report: The Full Cost of Electricity (FCe): It is an interdisciplinary initiative of the Energy Institute of the University of Texas. The goal of the project is to identify and quantify the full-system cost of electric power generation and delivery—from the power plant to the wall socket—and inform public policy discourse with comprehensive, rigorous, and impartial analysis. The FCe- study employs a holistic approach to thoroughly examine the key factors affecting the total direct and indirect costs of generating and delivering electricity. The project synthesizes the expert analysis and different perspectives of faculty across the UT Austin campus, from engineering, economics, law, and policy. <https://goo.gl/tlu86v>

Self-taught artificial intelligence beats doctors at predicting heart attacks: Doctors have lots of tools for predicting a patient's health. But—as even they will tell you—they're no match for the complexity of the human body. Heart attacks in particular are hard to anticipate. Now, scientists have shown that computers capable of teaching themselves can perform even better than standard medical guidelines, significantly increasing prediction rates. If implemented, the new method could save thousands or even millions of lives a year. <https://goo.gl/OWWUCn>

Take that, Europe. Computer modeler aims to give U.S. lead in weather predictions: From below the conference table comes the thrum of incoming phone alerts. The new weather forecast has rolled in, and the climate scientists, even though it's not typically their business, dig out their phones to look: snow tomorrow—hardly unusual for early February in Princeton, New Jersey. But the weather models have the storm breaking severe, dumping a foot or more. A snow day seems likely. Across the table at the Geophysical Fluid Dynamics Laboratory (GFDL), Shian-Jiann “S. J.” Lin is not convinced. He is the master of 20,000 lines of computer code that divide the atmosphere into boxes and, with canny accuracy, solve the equations that describe how air swirls around the globe. For decades, Lin's program has powered the long-term simulations of many climate models, including GFDL's—one of the crown jewels of the U.S. National Oceanic and Atmospheric Administration (NOAA). Now, Lin's domain is expanding to a different side of NOAA: the short-term weather forecasts of the National Weather Service (NWS). By 2018, Lin's program will be powering a unified system for both climate and weather forecasting, one that could predict conditions tomorrow, or a century from now—and do it faster and better than current models. His work will soon be guiding mayors planning not just for snow plows, but also rising seas. <https://goo.gl/Fxfy7r>

This new solar-powered device can pull water straight from the desert air: You can't squeeze blood from a stone, but wringing water from the desert sky is now possible, thanks to a new spongelike device that uses sunlight to suck water vapor from air, even in low humidity. The device can produce nearly 3 liters of water per day for every kilogram of spongelike absorber it contains, and researchers say future versions will be even better. That means homes in the driest parts of the world could soon have a solar-powered appliance capable of delivering all the water they need, offering relief to billions of people. <https://goo.gl/bjLHJn>

New software can track many individuals in a crowd: In 2015, more than 2000 people died in a stampede during the Hajj pilgrimage in Saudi Arabia. In 2013, two terrorists deposited backpacks carrying bombs at the Boston Marathon and slipped away, leaving three spectators to die. If technology could in real-time track and analyze the movement of individuals in dense crowds, we might better predict dangerous pileups or spot suspicious behavior, saving many lives a

year. A pair of researchers has just taken a large step in that direction, writing software that for the first time can track hundreds of people in a crowd simultaneously. <https://goo.gl/MPzEC7>

Treating Depression With Deep Brain Stimulation (DBS) Works—Most of the Time: DBS, which involves brain surgery for the implantation of electrodes and then constant pulses of stimulation to maintain its effects, may sound like a radically experimental treatment to administer to people suffering from depression. But it's based on a successful DBS treatment for Parkinson's disease that improves patients' tremors and other motor symptoms; about 150,000 Parkinson's patients around the world have received an implant. <https://goo.gl/fiUGDi>

Now free: citation data from 14 million papers, and more might come: Consider this: A scientist publishes a study citing other papers. Those cited papers, in turn, cite studies that came before them. But much of that citation information—which is often of great interest to scientists tracking research trends and hot topics—has not been available freely. Enter the Initiative for Open Citations (I4OC), a project aiming to make citation data free to all, formally announced today by six organizations, including the Wikimedia Foundation, publisher Public Library of Science, and the open-access journal eLife. So far, the initiative has partnered with 29 journal publishers to enable anyone to access citation data from about 14 million papers indexed by Crossref, a nonprofit collaboration that promotes the sharing of scholarly information. And more publishers are likely to sign on, says Mark Patterson, executive director of eLife, in Cambridge, U.K. <https://goo.gl/y23QbX>

Nice Performance Management: Effectiveness Through Accountability: Performance management is clearly becoming a priority for organizations interested in the twin drivers of long-term success – workforce optimization (WFO) and increased customer satisfaction. In fact, SaddleTree Research reported an astounding increase in demand for performance management solutions in 2015. Take an innovative approach to WFO. Evaluate factors in employee behavior that drive success by focusing on these key measurements: Goal Management; Opportunity Identification; Agent Engagement; Agent Guidance; and Agent Collaboration. <https://goo.gl/n81f11>

What is the Blockchain and Why is it So Important?: Blockchain is growing in importance. Increasingly organisations have to explore what this revolutionary technology will mean for their business. Marc Andreessen from the well-known VC firm Andreessen Horowitz calls it as big an invention as the internet. Last year, in my Big Data Trends prediction for 2016, I already foresaw that 2016 would become the year of the Blockchain and now also Gartner has included in their Hype Cycle for Emerging Technologies. Many organisations are already exploring the possibilities of the Blockchain, although primarily still in the Financial Services industry. The R3 Partnership is a consortium of 45 of the biggest financial institutions, investigating what the Blockchain means for them. Next to the R3 consortium, four of the biggest global banks, led by Swiss bank UBS, have developed a “Utility Settlement Coin” (USC), which is the digital counterpart of each of the major currencies backed by central banks. Their objective is to develop a settlement system that processes transactions in (near) real-time instead of days. A third example is Australia Post, who have released plans for developing a blockchain-based e-voting system for the state of Victoria. The possibilities of the Blockchain are enormous and it seems that almost any industry that deals with some sort of transaction, which would mean any industry, can and will be disrupted by the Blockchain. As a result, it is likely that many of these industries will face job losses since intermediaries will be needed a lot less. <https://goo.gl/PIDoOH>

Artificial Intelligence, Automation, and the Economy: Accelerating artificial intelligence (AI) capabilities will enable automation of some tasks that have long required human labor. These transformations will open up new opportunities for individuals, the economy, and society, but they have the potential to disrupt the current livelihoods of millions of Americans. Whether AI leads to unemployment and increases in inequality over the long-run depends not only on the technology itself but also on the institutions and policies that are in place. This 59 pages report examines the expected impact of AI-driven automation on the economy, and describes broad strategies that could increase the benefits of AI and mitigate its costs. <https://goo.gl/m5a4SE>

Kaleidoscope on the Internet of Toys: Safety, security, privacy and societal insights: This paper gives an insight on safety, security, privacy and societal questions emerging from the rise of the Internet of Toys, meaning Internet Connected Toys that participate along with the wave of other domestic connected objects, the Internet of Things in increasing the ubiquity of the ICT within our everyday, closer to ourselves and our children more than ever. What changes and challenges 24/7 Internet connected devices, and Connected Toys particularly, will bring in our Society? What precautionary measures Parents, Teachers, Health Carer but also Industry and Policymakers need to take for protecting our children's play, safety, security, privacy and social life? Based on which considerations? In which timeframe? The paper offers a kaleidoscope of six experts' views on the Internet of Toys, each exploring the topic and raising questions under a specific angle: Public and industrial discourse; Safety, security and privacy concerns; Social robot-children interactions; Quantified-self of the Childhood; Nature of Play and finally Possible benefits of higher collaboration between research and Internet Connected Toy Industry. <https://goo.gl/dBhMfX>

Watch this robotic manta ray speed through the water: Building a robot is easy. Building a robot with soft, bendable parts is still doable. But building a soft robot “fish” that can swim as well as the real thing: a much trickier

task. But now, a team of scientists in China has gotten much closer, creating a robotic fish that can swim twice as fast as the next best bot of its kind. The 9.3-centimeter-long fish (18.5 centimeters including its tail) can also swim for more than 3 hours on one battery charge, thanks to a clever propulsion system that acts like a muscle. The new system could lead to lifelike bots that can explore the ocean, monitor water quality, and discover new creatures. <https://goo.gl/42koT2>

8 Ways Business Intelligence Software Improves the Bottom Line: Can business intelligence (BI) solutions, software that helps organizations mine and analyze big data and small, help your company improve its bottom line? To find out, CIO.com asked dozens of BI experts and IT executives. Here are their eight top suggestions regarding how you can get a positive return on your BI software investment. <https://goo.gl/0AbV7r>

Serverless computing: the basics: The cloud, goes the old joke, is just someone else's computer. That's true; except that it's a computer that's probably better run and more frequently patched and better secured than yours, that you didn't have to pay for, that you can rent by the second and that offers services that let you work at a much higher level than powering on a server and installing software on it yourself. You may think of the cloud as being about scale and cost savings, but even more important are the abstractions it introduces: storage services and data services rather than hard drives, application services rather than virtual machines, software-controlled networks rather than physical cards and cables you have to connect. As cloud has moved from IaaS to SaaS to PaaS, adding monitoring, data analytics and machine learning as well as development frameworks and application services, the level of abstraction has kept increasing. <https://goo.gl/T0vFA3>

Ransomware: It Makes You 'WannaCry': It may be a silly name, but it certainly is not a silly topic. You are likely aware of the recent ransomware attack known as WannaCry that has infected more than 230,000 computers in 150 countries since Friday, May 12th. Among the notable victims are the National Health Service and FedEx, that have been asked for ransom payments in bitcoin. Recent attacks like these have brought to our attention the importance of enterprises to protect themselves and their customers. <https://goo.gl/npLRw5>

Container Technologies Overview: Containers are lightweight OS-level virtualizations that allow us to run an application and its dependencies in a resource-isolated process. All the necessary components that are required to run an application are packaged as a single image and can be re-used. While an image is executed, it runs in an isolated environment and does not share memory, CPU, or the disk of the host OS. This guarantees that processes inside the container cannot watch any processes outside the container. <https://goo.gl/3V6Qx0>

Solving the "IoT Is Hard" Problem: Have you ever tried something that looked easy but turned out to be hard (or damn near impossible)? An IoT developer platform comes to mind. Assembling an IoT solution is one of those things that appears deceptively simple. Connect a device to the Wi-Fi and send data to an Internet software application. Recent evidence has suggested that IoT is a lot harder than it looks. CBInsights has reported a slowdown in IoT investments. While this could be a coincidence, it could also indicate that IoT is surprisingly difficult to pull off. <https://goo.gl/BfTwPO>

Tech resume samples and resources: Examples, expert advice, formatting and more: When it's time to update your resume, you may find it difficult to figure out how to effectively highlight your accomplishments while keeping the document concise. With the tech resume resources available here, you'll see how to rework your technical resume to make it stand out from the crowd. <https://goo.gl/szbQMJ>

Here's Why Every Millennial Needs a Mentor in the Tech Industry: Millennials are often unfairly given a bad rap for doing things that other generations also do on a regular basis. They're easy targets and older professionals like to give them a hard time. So, this article isn't meant to be a hit piece on millennials. Rather, it's meant to expose something that's true: Every millennial who has aspirations of being successful in the tech space needs an older mentor. <https://goo.gl/Vrizhp>

50 Tools Your Startup Probably Needs: Your startup is all about disruptive, game-changing ideas. However, to make that idea into a business you not only need your strategy, but you also need many tools to build your business out. Think about adding these 50 tools. <https://goo.gl/Sek69b>

How to Write Email with Military Precision: In the military, a poorly formatted email may be the difference between mission accomplished and mission failure. During my active duty service, I learned how to structure emails to maximize a mission's chances for success. Since returning from duty, I have applied these lessons to emails that I write for my corporate job, and my missives have consequently become crisper and cleaner, eliciting quicker and higher-quality responses from colleagues and clients. Here are three of the main tips I learned on how to format your emails with military precision. <https://goo.gl/2Dqauu>

Why I love Arduino



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Arduino microcontroller is an excellent way to learn about controlling electronic and electrical gadgets. Arduino is a freeware and even their IDE (Integrated Development Environment) is a freeware. Their hardware is also free - meaning that you can download their PCB designs and just build them yourself - no royalties need to be paid. Developing small projects with big impact are possible with Arduino, e.g., Talking Microwave oven, Coffee-pot, Bike Turn Signals, Medical devices, Singing shoes, Mood Light, Swimming snake, RFID cat door, RFID enabled clothes washing, Gas detector, Own Your Robot, Weather station, Agricultural sensor network and many other useful projects. Check the following sites: www.instructables.com, www.adafruit.com and www.arduino.cc

You can teach students a lot of input devices (e.g., sensors, stepper Motor, Blue tooth and Internet connectivity, etc) and output devices (e.g., LED, robotic motors, etc). The hardware systems are "stackable" – i.e., you can stack the LED PCB on top of the Robotic motor or vice versa - they all have simple common interoperable interfaces.

Everyone can learn this - the programming language is extremely simple. Your grandfather can learn the basic techniques within 15 minutes -;) I am sure he will then start programming this himself - I am very serious about this. Yes, yes, even computer scientists can learn this in a matter of 1-2 minutes. I think all School kids must be introduced to this. They are bright and willing to learn and they are fast learners too (hum, unlike yours truly -;)

There is an equivalent one - probably cheaper and with better functionalities - I have not yet checked out, called MicroBit from the UK <http://microbit.org/> which is really sexy. Yes, I was going thru' their website and it is really truly appealing.

I plead and appeal to all of you that this technology must be introduced to School children and then to all our engineering students and also to our medical and nursing students. This will also lead to a number of projects that could be applied for funding to many organizations.

Several projects are available at: <http://www.instructables.com/id/Arduino-Projects/>

- Tweet-a-Pot
- 3-Dimensional LED cube
- World Clock
- Bike Turn Signal
- Get your own EEG and ECG machines
- Singing shoes
- Mood Light
- Swimming snake
- RFID cat door
- Gas detector
- Your Own Robot
- Weather station

MicroBit (<http://microbit.org/>) is another popular microcontroller available along with a fancy set of paraphernalia using which one can create several interesting applications.

The Arduino platform is useful to teach and experiment with IoT (Internet of Things). Many projects are possible, including the following:

- Precision Agriculture
- Precision instrumentation
- Chicken incubator design (also baby incubator - well, Humidicrib design - including for prenatal baby monitoring)
- robotics and micro-robotics
- embedded systems
- in-body sensors
- and many many more.....

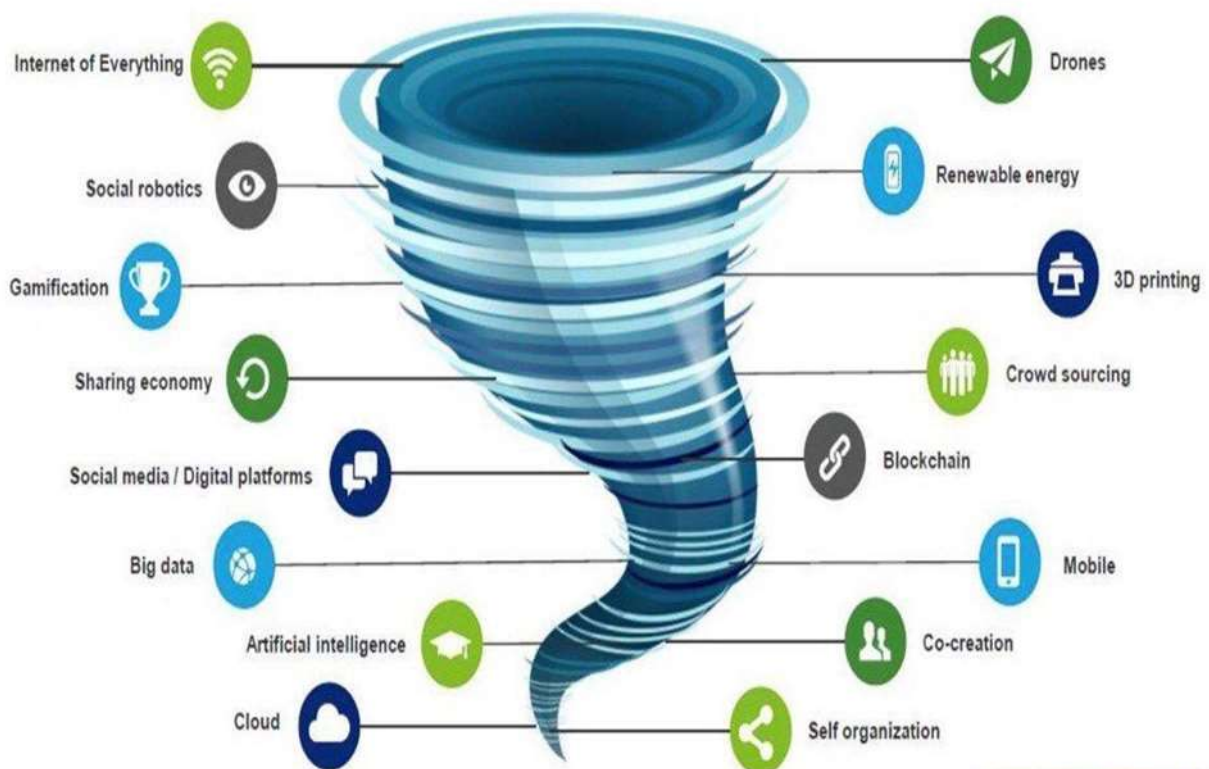
For bigger project: e.g., Precision Agriculture, you can deploy an array of DHT22 sensor (which measures both temperature and relative humidity - in soil, air and in-plants as well) and create a sensor networks - then you can try other such sensors for monitoring pH values, Phosphate, etc, etc. Bingo, your local agri-based village would become the centre for Precision Agriculture.

eHealth project could potentially develop Lab-In-A-Briefcase to perform more than 1000 clinical tests in rural settings and send the results via the Internet or cell phone.

Some pretty pictures using Arduino:



16 Emerging Technologies Exponentially Impacting Our Lives



source healthcon @mikequindazzi

Smart City

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The Indian Government is planning to develop around 100 smart cities in the next couple of years and in the first phase 20 cities were selected through ‘**Smart City Challenge**’. In the second phase another 13 cities were selected for metamorphosis as future Smart Cities. The Government is going to fund an average Rs 2350 Crore for each “Smart City” as a part of their development program.

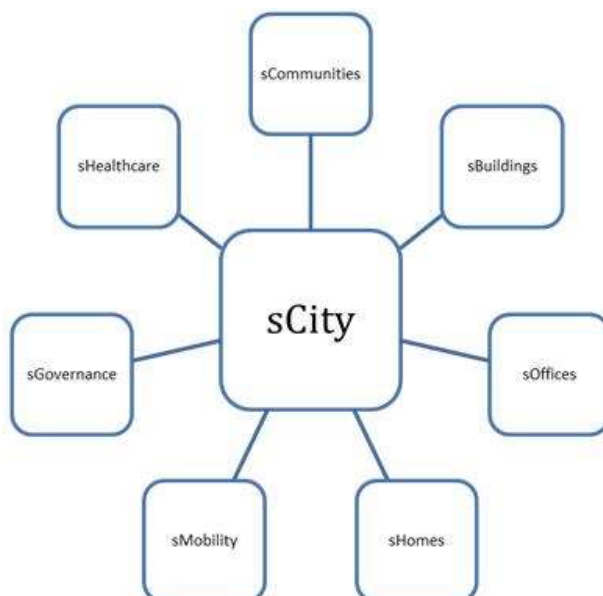
It should be noted that the idea to develop ‘**Smart Cities**’ is indeed visionary and Prime Minister Shri Narendra Modi should be given full credit for taking the initiative in this regard to provide better quality of life to the public as well as to improve the infrastructural condition of cities which have been dormant for decades. It is heartening to see that the Prime Minister is taking the right step in this direction through ‘**Swachh Bharath**’ campaign. In fact, there can be no quality of life if the cities are not clean and highly polluted. Furthermore, poor planning can lead to a complete breakdown of infrastructure and hamper disaster prevention and rescue operations during catastrophes like floods and earthquakes.

The Indian economy has undergone great changes in the last decade with increasing salary levels, movement of people to cities from rural areas, usage of smart phones, purchase of cars etc. However, the infrastructure like roads, highways, electricity, transport etc. remain the same in major cities and do not keep pace with the development and increased population.

It doesn’t augur well for a country with 5 lakh engineers graduating every year. It shows a lack of will and vision to upgrade the infrastructure to meet the demands of the 21st century. In addition, if Rs 2350 crore is sufficient to make an Indian City ‘SMART’ then many state governments need not wait for funds from the Central Government but spend their own money. It is a clarion call from the Indian Prime Minister to state governments to focus on infrastructural development and plug in to a digital economy sooner to create next generation jobs in eGovernance, Healthcare, Clean Cities, Green Buildings and Smart Transportation using latest technologies.

What is a Smart City – sCity?

Currently, there is no simple or clear definition of a smart city and this lack of definition leads to confusion and failure. A Smart City is conglomeration of Smart Communities and Smart Community is a collection of Smart Buildings, Smart Offices & Smart Homes. The word ‘Smart’ in all these elements has five characteristics (a) Sustainability (b) Safety (c) Security (d) Efficiency (e) Economical (f) Intelligent with an objective to improving the environment and reducing carbon emission thus providing a clean environment and a better quality life to public.





Smart Offices/Homes should have Smart Appliances. In addition, all of these should have Smart Meters for Energy Monitoring and Conservation which is called a Smart Grid. Basically, a Smart Grid is an Intelligent Grid which provides Reliable and Quality Electricity Supply with Safety and Security in a Sustainable manner. **Thus ‘Smart Grid’ is the key to the development of ‘Smart City’ in terms of Energy Safety and Security as it connects smart communities, smart buildings, smart offices and smart homes in other words all entities of a city.** It is essential that a Smart City should have the following core infrastructure elements for a better quality of life and sustainable environment:

- **Electricity Supply:** 24 × 7 × 365 days reliable and quality electricity supply. Reducing SAIDI and SAIFI on Electricity Distribution through Power Quality Monitoring System.
- **Water:** Continuous Water Supply, Water Conservation, Rainwater Harvesting, Quality Drinking Water, Appropriate infrastructure for storing and managing water during floods and droughts.
- **Safety & Security:** Safety and Security systems at all public & private places including safety personnel. Safety at Industries and Factories should be of highest standards.
- **Transportation** (Rail, Road, Ports and Air Infrastructure): Traffic Lights with CCTV at all junctions, Proper main roads (3/4 lane) with markers. Road over/under bridge. Clean Railway Stations and Airports with CCTV monitoring.
- **Online Govt. Services:** All government services should be available online to avoid traffic congestion and made a paperless, transparent, corruption free service.
- **Disaster Prevention & Rescue:** Resources for disaster prevention and rescue
- **Traffic Control:** Complete traffic control on all main roads with CCTV & Police on 24×7
- **Clean & Green Solutions:** Waste collection and disposal from all residences/buildings
- **Health Services:** High quality health care services for public at hospitals with no scope for cheating and looting.
- **Green Buildings:** Enforcing energy audit and conservation for buildings with 1 MW load. Sustainable design and construction of residential and commercial buildings with safety and security.
- **Policy, Law and Order:** Strong law enforcement through policy and framework
- **Education & Awareness:** Citizens must be educated and trained to follow rules and regulations at public places through awareness programs. There is a need to educate the educated to abide the law.

The objective of the concept of a Smart City is to provide clean, sustainable and safe environment with intelligence to improve efficiency and economy. This in turn will contribute towards the development of nation with reduced carbon emissions. India has the potential and resources to develop smart cities like Malaysia and Singapore. However, we fall short in maintaining discipline and need to enforce strong laws like Singapore. Some of the steps that city administration needs to take before thinking of smart city is to implement ‘Swachh Bharat’ and make the cities clean and enforce traffic rules. It will certainly enhance the image as well as act as a catalyst for sustainable development of cities and providing quality of life.

Smart City Roadmap

It is important to note that using LEDs for street lighting is a preliminary step in energy conservation but developing “Energy Efficiency Act” for buildings, institutions and industry which consumes more than 1MW is mandatory step and Govt should enforce ‘Energy Efficiency’ a must for smart city. Energy Consumption in Buildings, Transportation and Industry needs to monitored to improve the efficiency through innovative solutions. Water Supply, Sanitation and Waste Management is compulsory for all Smart Cities through innovative solutions. eGovernance is the key to develop Smart Cities as many services can be provided through online and internet kiosks to improve customer service and avoid corruption.

SMART CITIES SCORE CARD – 6 STAR RATING

Project Areas	Sustainable	Efficient	Economical	Secure	Intelligent	Safe
Energy						
Water						
Transportation						
Safety						
Security						
Governance						
Health						
Disaster						
Waste						
eCommerce						
Public Policy						
Tourism						
Education						
Engagement						

The skills most in demand from the 2017 top companies

TECHNOLOGY Web Programming Java Development Cloud & Distributed Computing	FINANCIAL SERVICES & INSURANCE Software Engineering Management Web Programming Java Development	HEALTHCARE & PHARMACEUTICAL Healthcare Management Project Management Sales
RETAIL & CONSUMER PRODUCTS Social Media Marketing Web Programming Software Engineering Management	MANUFACTURING & INDUSTRIAL Project Management Business Development & Relationship Manager Engineering	GOVERNMENT, EDUCATION & NON-PROFIT Process & Project Management Web Programming Java Development
MEDIA & ENTERTAINMENT Web Programming Software Engineering Management Java Development	OIL & ENERGY Project Management Software Engineering Management Engineering	PROFESSIONAL SERVICES Social Media Marketing Web Programming Statistical Analysis & Data Mining
TELECOMMUNICATIONS Project Management IT Infrastructure & System Management C/C++	AUTOMOTIVE & TRANSPORTATION C/C++ Software Engineering Management Java Development	Methodology: Data based on recruiter Inmails sent April 2015 to April 2017 targeting prospective hires across all functions for the 50 LinkedIn Top Companies in the U.S.

Reengineering Education and Classroom Learning for 21st Century Innovation Economy In India – Develop Human Potential than Human Resources



Chhaya Ballav Sahoo

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India must convert its youth into a skilled workforce. More than 500 million Indians are younger than 25. By 2050 India is expected to overtake China as the world's most populous nation, and over the next five years will be responsible for nearly a quarter of the increase in the world's working-age population. Already, India has almost a third of the available labour supply in low-cost countries. These figures represent an enormous competitive advantage for India in its emergence as an innovation economy, including as a supplier of skills to the world. However, the widespread perception that it has unlimited employable human resources has changed.

India has a growing shortage of skilled workers—caused largely by workforce development and education systems that do not respond adequately to the economy's needs. To fully unleash its potential, India must address three constraints that prevent many of its workers from acquiring the skills needed to contribute to the innovation economy:

1. Inadequate delivery of basic skills to both formal and informal sectors;
2. Underinvestment in enterprise-based training and inadequate quality of vocational education and training;
3. And insufficient transfer of market-relevant knowledge creation skills at the higher education level, particularly by universities not in the top tier.

To increase productivity in both the formal and informal sectors, increased efforts are needed to combat illiteracy and provide basic skills. India's high illiteracy limits the population's capacity to acquire the basic skills needed for an innovation economy and curbs the productivity potential of the informal and lower-skill sectors. Reading and writing skills are low even among the literate population. Low worker education contributes to low firm productivity. The country has taken significant steps to reach its high enrolment rate of 94 percent in elementary education, though quality continues to suffer. In contrast, secondary education (grades 9–12) enrolment remains low, at 38 percent.

This low secondary education enrolment creates a bottleneck impeding the supply of students for tertiary education. A focus on memorization, use of out dated curricula, and chronic teacher absenteeism have led to an education system that does not prepare students for a market that increasingly rewards problem solving, communication skills, teamwork, and self-learning. Despite a variety of programs to develop skills in the informal sector, the resources directed to the sector are not aligned with its size and the diversity of skills needed.

India's higher education system needs to produce more scientists, engineers, and other Masters and PhD graduates with skills matched to the needs of the innovation economy. Universities are the cradle for sustained creativity and innovation. But India's demand for highly educated, skilled workers outstrips its supply. The high demand is fuelled partly by India's popularity as an R&D destination for multinational corporations luring away domestic talent, and partly by the blossoming of India's IT and ITES sectors. To maintain its share of global knowledge services, India will need 2.3 million knowledge professionals by 2010. Instead, it may face a deficit of up to 0.5 million workers.

Despite the prestigious standing of several Indian institutions of higher learning, the education system's output remains uneven. Quality training continues to concentrate on islands of excellence: 80 percent of doctorates in engineering are awarded by 20 leading institutions, and 65 percent of doctorates in sciences come from 30 institutions.

India produces fewer than 7,000 PhDs a year in the faculties of science, engineering, and technology. The lack of skilled researchers and knowledge creators is manifested in low output of high-quality scientific research. Furthermore, weak links with industry have created a mismatch between the needs of the market and the skills of the highly educated

workforce. Only 10–25 percent of general college graduates are suitable for employment. In addition, India has a small number of high-quality management programs, and even they are inadequate to support the growing need for management and supervisory skills in both knowledge-intensive and lower-skills sectors.

Unfortunately, too many educational institutions continue to segregate academic and technical skill instruction and provide students with only limited opportunities to explore career options and participate in work-based learning activities developing the skills. Some educational institutions are reluctant to promote career exploration and career-oriented education, because they believe these practices discourage students from pursuing higher education.

The trends are clear and profound:

- ❖ India's population is growing and becoming more diverse.
- ❖ More children are enrolling in our nation's schools, increasing the pressure on the capacity of schools and straining the resources of qualified teachers.
- ❖ Too many adults are entering the workforce with poor basic academic and workplace skills, far from the high level of technical skills required for employment.
- ❖ The "Digital Divide," the documented inequity of access to computers and the Internet for certain groups, threatens to exacerbate the economic disparities that already exist based on education and other factors.

These trends present the Indian education and training systems with an enormous challenge: To expand the capacity to help learners, both young and old, attain high levels of academic and technical skills achievement.

If Indian companies cannot fulfil their requirements for technical jobs with qualified workers, ultimately India's economic competitiveness will suffer.

There is an urgent need for graduate students to be made aware of opportunities and pathways into occupations. One of the major obstacles to preparing for an career is a lack of knowledge regarding the skills required for jobs and how those skills can be acquired.

To address this need, our efforts is to guide students and educational institutions and organizations to increase careers and their skill requirements. There are obvious advantages that could result from such a awareness campaign — particularly for underserved populations with our knowledge sharing efforts.

In a large and diverse nation like the India, there are youth and adults in many different places and circumstances who may be interested in joining the govt. and private workforce, but they do not know how.

Individuals exploring options within the job market want to know about specific opportunities within their knowledge, skills and attitudes. Additionally, they need to know what skills, knowledge, aptitudes, and experience are required to perform different types of jobs. Finally, job seekers need to know the steps in education, training, and the job searching techniques required to secure an job.

Multiple skills are required for the formation of human capital. Besides of intelligence and language skills, motivation, self-regulation and social integration play an important role. The formation of cognitive skills depends on self-regulatory, non-cognitive skills and vice versa and may vary between individuals and throughout the life span. Skill formation continues from birth until old-age and feedback effects between families, schools, peer groups and the labour market are important for individual development. The formation of skills is a cumulative, synergetic process which is affected by the environment, genetic endowments and both formal and informal investments in education.

As you begin this process of education and training, remember that acquiring new job skills is not a once-in-a-career event. As technology continues to change and evolve, every one of us needs to make learning a lifetime habit.

Actions needed are the following:

- Use innovative approaches to improve the quality of primary and secondary education.
- The government should revamp the primary and secondary education system by modernizing curricula and creating a more flexible, market-responsive education system. New approaches must be experimented with to address existing problems.
- Strengthen basic skills for the informal sector.
- The government should continue to invest in programs that combat illiteracy. It also should facilitate transfer of skills to the informal sector by supporting NGOs that provide training to meet the needs of the informal economy.
- These skills include training instructors, developing curricula, and encouraging external financing of informal training programs.

Enterprises need stronger incentives to invest in worker training and in vocational education and training that better meet market needs. Indian employers' underinvestment in worker training places India at a competitive disadvantage. A firm's capacity to create or absorb knowledge depends on the skills and training of its workforce. Yet only 16 percent of Indian manufacturing firms provide in-service training, either in-house or external—compared with 92 percent in China.

New communication technologies, together with the explosion of graduate labour, enable TNCs to locate more of their R&D in low-cost locations. In auto design, research and production, there is a growing tendency to exploit the lower labour costs of scientists and engineers in China and India and to engage in joint ventures with local elite universities. The globalisation of high skills is also being used by Western TNCs to speed up the process from 'innovation to invoice' by using 24 hour design teams, where projects follow the sun, moving from one time zone to another at the end of the working day. This process has been extended beyond manufacturing to the service sector, where high end work in financial services, including consultancy, is now moving to low cost locations, especially India.

Recommendations follow:

1. Strengthen enterprise-based training.
2. The government should help ensure that the benefits of in-service training are widely recognized by enterprises while also providing strong financial incentives—such as matching funds—for firms to invest in such training.
3. Improve vocational training. India's vocational education and training systems have been unsuccessful in producing graduates able to meet market needs, particularly because of a lack of interaction with industry in curriculum development.
4. Aligning these systems with market needs requires restructuring—including private participation in the management of systems, curriculum development, and system financing; and stronger performance incentives for vocational education and training institutions.

Every Indian graduate student needs to acquire higher levels of education and training to succeed in today's and tomorrow's economy. As the digital revolution unfolds, we realize that job security cannot be dependent upon a academic qualification, certificate and individual identity.

Job security rests on the skills, knowledge and attitude you carry with you

— your **“employability skill,”**
“employability profile,”
“career readiness,”
“career management,”
“professional readiness”
and “work readiness”.

That is why we hope you see it in your best interest to take an active role over your own skills, knowledge and attitude development while learning at the educational institutions. Of course, you will need to make sure you have the solid **“employability skill,” “employability profile”, “career readiness”, “career management”, “professional readiness” and “work readiness”** demanded by 21st Century high performance companies.

You may also find it necessary to upgrade specific technical skills based on your personal likes, aptitudes, and job market opportunities. You can tap into a wide variety of resources to develop your skills. Skill development centres, One-Stop Career Centres, and skill-based centres can help you access career planning tools, employability profile, as well as the employability skills, technology skills, and other educational courses you will need.

Canada rules that all new cellphones must be unlocked: Canada's wireless regulator has decreed that all new smartphones must be sold unlocked and ordered carriers to unlock devices for free. The telecom users in the country had to pay nearly \$50 to unlock cellphones when switching operators as the devices were locked by the carriers. The move was prompted by public criticism on the unlocking fees.

Startup aims to impregnate 40-yr-olds with "designer babies": US-based startup Darwin Life aims to help women aged over 40 get pregnant with "designer babies". The treatment is called 'spindle nuclear transfer', often referred to as a three-parent-baby technique, and it is outlawed in the United States. Company's Founder John Zang has said that the firm will offer the service only overseas for now..

Amazon will be 1st company worth \$1 trillion: E-commerce giant Amazon would beat Apple and Google to become the first company with a \$1 trillion market cap, New York University professor Scott Galloway has said.

Solar Wind, Hybrid Renewable Energy Systems



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Introduction

Energy drives global economic activity. The living standards of the people across the world is on the rise and with ever expanding population, the total demand for energy is expected to increase by 21% by 2030, according to estimates from IEA, 2015. While catering to the energy demands of the people is a priority, Governments across the globe have an obligation to ensure that the climate is protected for future generations. Hence, there is a lot of emphasis on sustainable renewable energy across the world.

According to a report from World Economic Forum, the energy sector influences the vibrancy and sustainability of the entire economy – from job creation to resource efficiency and the environment. Major shifts in the sector can have a strong ripple effect throughout the economy as evidenced in Japan following the 2011 earthquake, or by the recent volatility in oil prices. Making the energy supply more cost effective, reliable, secure and environmentally sustainable thus contributes to the long-term resilience of economic development.

Supported by technology advancements, ever increasing energy demands, steep reduction of manufacturing costs and enabling policies, the deployment of renewable energy solutions has seen a remarkable growth in the past decades. Renewable energy solutions not only improves the energy security but also assists communities in energy accessibility, job creation and fewer adverse climate change impact. According to a report by IEA, the renewable energy sector is expected to provide employment to over 24 million people by 2030.

Trivia:

Do you know that peak demand in India is 140 GW and our installed capacity is 260 GW. Despite this, we have power shortages and blackouts. This is due to insufficient fuel availability and excessive costs (NITI Aayog - Report on India's Renewable Electricity Roadmap 2030 – Feb, 2015)

Renewable Energy

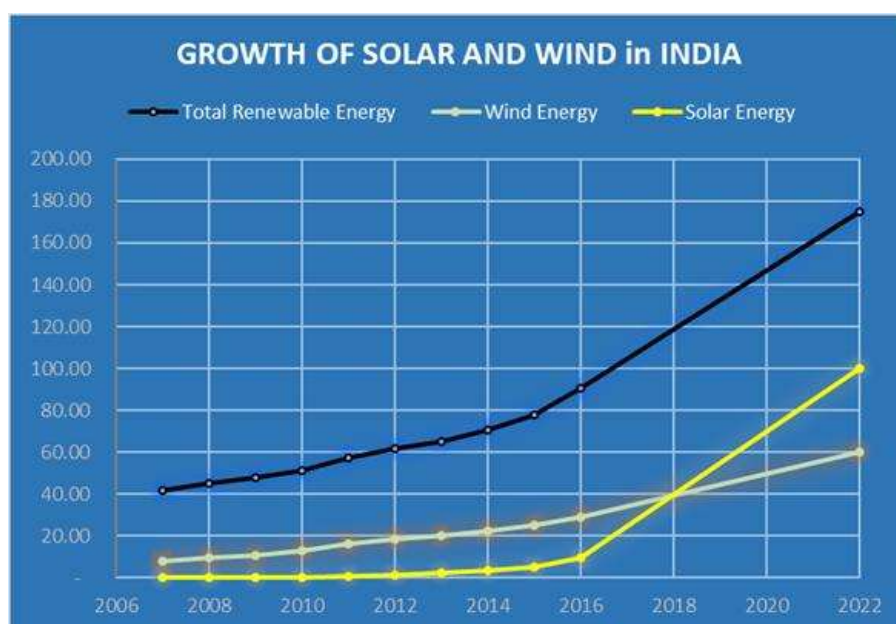
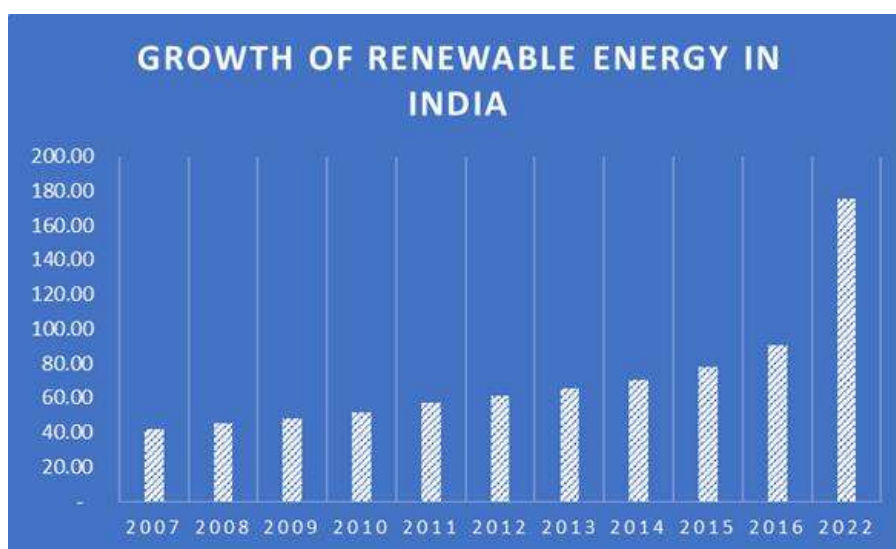
Renewable energy is free source of energy, clean, affordable, and effectively infinite. It produces no emissions and results in cleaner air. The renewable energy cannot be depleted like fossil fuels. Fossil fuels are limited, and will be unavailable but the same scenario will not happen with renewable energy sources because Sun will continue to shine, wind will continue to blow.

Renewable energy generation systems like Solar, Wind and Bio are the promising and the most important renewable energy technologies. The wind power industry is one of the fastest expanding industries because of rapid growth of installed capacity.

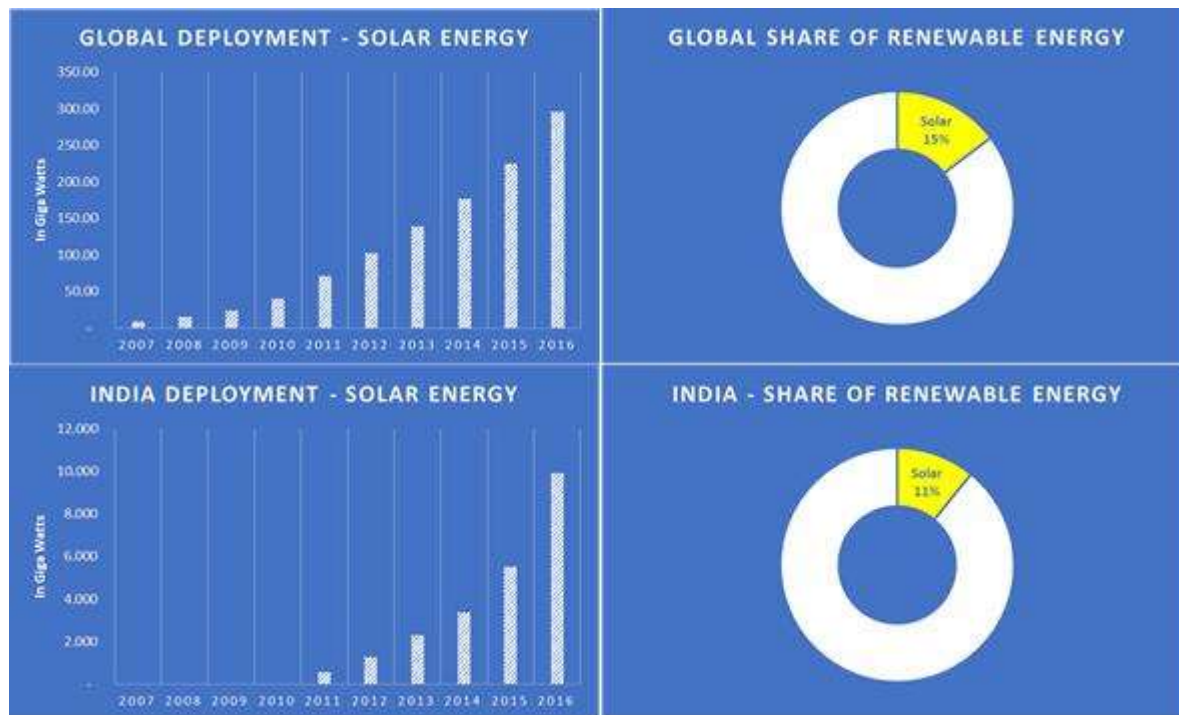
According to a report by Bloomberg, the amount of energy produced using fossil fuels will see a sharp decline in the coming few years while energy produced through clean energy sources will increase substantially. The most preferred sources would be Solar and Wind.



At the end of 2016, Hydro Energy contributes to about 50% of the capacity, Wind – 31% and Solar about 11%. India has been steadily investing in its renewable energy sector and is expecting to increase its overall renewable energy capacity from 90 GW in 2016 to about 175 GW in 2022.



Solar Energy



Solar power is derived from Sun's radiation. It is interesting to note that the energy that Sun provides to earth for an hour can meet the energy demands of the entire planet for an year. However, we are able to harness only 0.001 percent of that energy. Solar Energy was not very popular due to inefficiencies in the systems and higher cost. However, due to higher energy demand, the technology has been improved considerably making it a very efficient source of clean energy.

Solar Energy contributes to about 15% of global renewable energy production. The installed capacity of Solar Energy worldwide has increased from about 9.2 GW in 2007 to about 296 GW in 2016 at a CAGR of 312%. India has made rapid progress from 2010 in Solar Energy, increasing its capacity from a meagre 0.6 GW in 2010 to about 9.9 GW by 2016.

Trivia: Longyangxia Dam Solar Park is the world's biggest solar farm. It is a 850 (MW) photovoltaic power station in Qinghai, China.

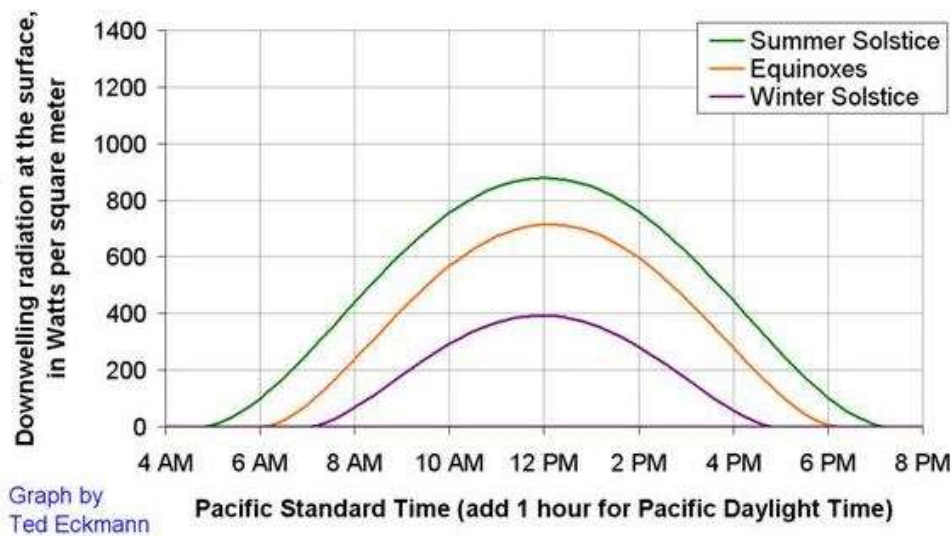
Solar Energy has many advantages.

- ✓ It is a clean source of energy
- ✓ Abundance of the resource – according to estimates by Government of India, India can generate 10,000 GW of solar energy
- ✓ Sustainable
- ✓ Needs less infrastructure compared to traditional fossil fuel based power generation units
- ✓ Easy and Quick Installation
- ✓ Very less carbon footprint for manufacturing of the photovoltaic cells
- ✓ No noise during operations, hence can be installed in residential neighbourhoods
- ✓ Power can be generated at the place of consumption
- ✓ Low cost of operations
- ✓ Technology advancements have driven down the cost of production
- ✓ Affordable. Government Policy on Solar Energy has improved the affordability further
- ✓ Suitability – according to Government of India estimates, most parts of the country are suitable for installation of solar energy units, including Space

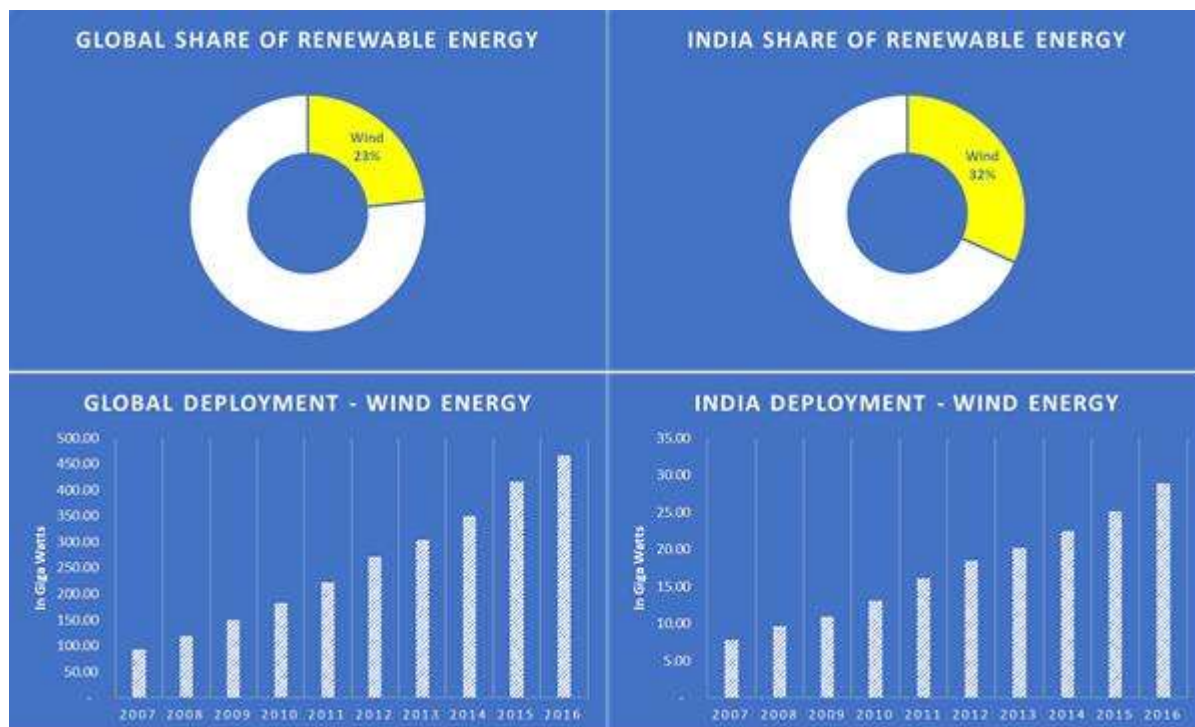
While it has many advantages over traditional energy generation options, it has its share of drawbacks

- Available only for 20% to 30% (4 to 6 hrs) in a day
- For mass production, it requires large surface areas
- Power storage is expensive as it requires more batteries for storage during non-sunny days. Also, solar batteries are relatively expensive

- Seasonality of the source. Power generation reduces dramatically during times of cloud cover
- Not suitable for power generation across all regions
- Efficiency of Solar panels – at present the panels can only convert about 22% of the available sunlight to electricity. Efficiency of the panels can be improved further



Wind Energy



Wind is technically a form of solar energy. Winds are caused by the heating of the atmosphere by the sun, the rotation of the Earth, and the Earth's surface irregularities. Wind energy is derived from the winds that blow across lands and seas. Wind turbines convert the kinetic energy in the wind into electricity. For as long as the sun shines and the wind blows, the energy produced can be harnessed to send power across the grid

Wind power, as an alternative to fossil fuels, is abundant, renewable, clean, widely distributed, consumes no water, and uses little land. Wind farms are established where there is abundance of wind to generate power and is supplied to the grid. Variance in wind speed makes the wind energy unreliable, hence it is always used in conjunction with other energy sources. Offshore wind farms provide more reliable wind energy however they are very expensive to build.

Wind Energy contributes about 23% of global renewal energy production and about 4% of the global energy production. As of 2015, Denmark produces nearly 40% of its electrical power from wind. India produces about 32% of its renewable energy from wind. While the current capacity is about 29 GWs, India aspires to grow that to about 60 GWs by 2022.

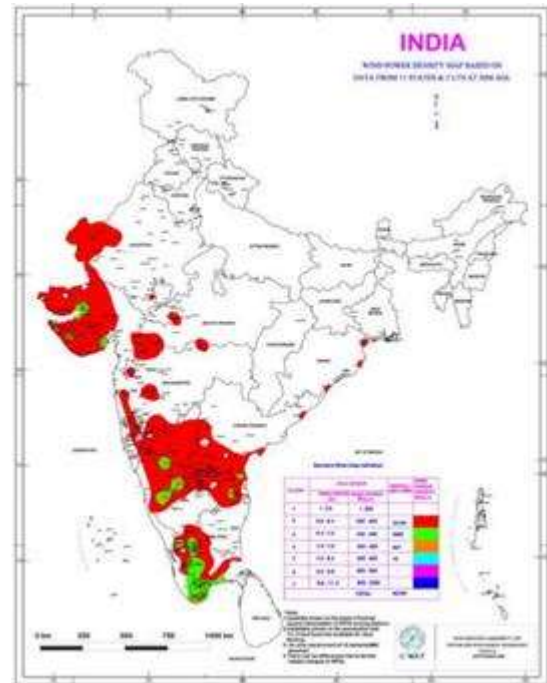
Trivia: Gansu Wind Farm in Gansu, China has the largest installed capacity of over 6,000 MW. The farm is expected to produce 20,000 MW by 2020. India has the world's third biggest wind farm at Muppandal in Tamil Nadu, which generates about 1,500 MW.

Advantages of Wind Power

- ✓ Is a clean source of energy. According to the Wind Vision Report, wind has the potential to reduce cumulative greenhouse gas emissions by 14%, saving \$400 billion in avoided global damage by 2050
- ✓ Sustainable -
- ✓ Larger Capacity in lesser Space
- ✓ Availability of Modern Technologies
- ✓ Can be Built on Existing Farms
- ✓ Does not consume water like the conventional electricity sources
- ✓ Negligible carbon foot print in manufacturing of the equipment
- ✓ Job Creation - In 2016, the wind energy sector invested more than \$8.8 billion of private capital in the U.S. economy to build projects and employed more than 101,000 workers (approximately 30% women, 11% veterans, and 25% minorities), according to the 2017 U.S. Energy and Employment Report.

Disadvantages of Wind Power

- Cost of power – The cost of power generated by wind mills is directly dependent on the wind speed at the site. At lower wind speeds, the cost of wind power is more than the traditional power sources
- Huge installation costs – While the wind energy systems are very expensive to manufacture and install, most of the locations suited for wind energy are in remote places making it even more difficult and escalates the cost of installation
- Noise Pollution – Wind turbines create noise hence not very suitable for installation in residential areas
Visual Impact to Landscape – Typically wind turbines are setup at a height of 50-80 mts above the ground and hence impacts the view of the landscape
- Danger to wildlife – While the danger to wild life from wind energy is far less compared to traditional sources, birds have been killed flying into rotating turbine blades. Hence wind energy is not suitable for ecologically sensitive areas
- Seasonality – Wind energy across geographies is seasonal, hence the reliability of wind energy is low
- Suitability – Wind energy is not suitable for every geography. In India, only 4 states are very well suited for sustained wind energy
- Higher transmission costs – Since wind mills/farms are established in remote areas, high costs are incurred to setup new transmission lines to connect to the grid

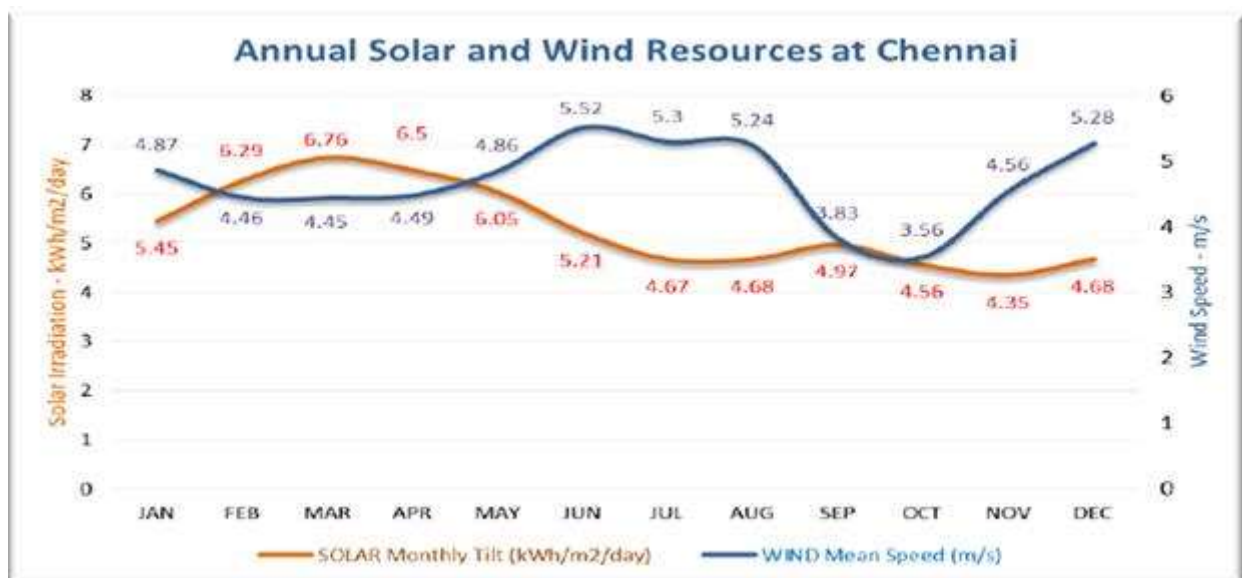


Trivia: The Gansu Wind Farm in China has an installed capacity of 6000 MW. However due the intermittent and unreliable nature of wind power, low demand and higher transmission costs, many wind turbines have been shut down. Big doesn't mean Best.

Is there a way to combine the positives of both Wind and Solar power units to offset the drawbacks that they individually have and still be effective?

The answer to this question is YES. We can combine both Wind and Solar power units to offset the drawback that they individually offer and still be more effective. The solution is **HYBRID ENERGY**.

Hybrid Energy combines the forces of Solar and Wind to generate electricity. It is interesting to note that the natural resources required for Wind and Solar complement each other and hence a hybrid setup can generate more power reliably than a Solar or wind energy plant individually. The below figure shows the Solar irradiation and wind speeds in Chennai. When you notice the graph closely, you will notice that when the wind energy decreases, the solar irradiation picks up and vice versa, thus ensures continuous production of energy across all seasons and all times of the day.



A hybrid system will help improve the efficiency of the batteries, as the charging and discharge cycles are more uniform, thus reducing the cost of the batteries and improving its life. As a Hybrid system depends both of Solar and Wind, the area required for deployment is also greatly reduced. Below are some of the major advantages of the Hybrid System.

Advantages of a Hybrid System

- ✓ More energy density (energy per sq. meter) can be obtained
- ✓ Best suitable for distributed energy
- ✓ Based on the location and the availability of wind and solar sources at the location, the design of the system can be altered to gain the best from the available sources
- ✓ Battery will work efficiently as continuous power generation can be obtained therefore, smooth charging and discharging can be seen
- ✓ Low cost of operations
- ✓ Increased efficiency – Since the energy density is more, the system can operate at a much higher efficiency than traditional wind and solar systems
- ✓ Because of increased efficiency, hybrid energy systems can be deployed at places of consumption, thus reducing the costs of transmission and transmission losses
- ✓ Lower installation costs compared to Solar and Wind energy only installation
- ✓ Cost of power is much lesser than power from the grid over its life time
- ✓ Due to continuous power generation, there is even an option to supply power to the grid, at times of low usage thus making it more efficient and economical
- ✓ Effective space utilisation – Hybrid systems when designed well can occupy much less space than traditional wind only or solar only installation. Thus, more energy can be produced from the same space



Design of the hybrid system is very important to ensure that the benefits are fully realised. WindStream Technologies Inc has designed a very effective Hybrid Energy solution that is very reliable, modular, scalable, efficient with a very high ROI.

The SolarMill® that WindStream Technologies' manufactures is based on a modular, scalable, distributed renewable energy system designed and optimized for on and off grid installations. At its core is a highly efficient wind energy device, utilizing three (3) low-

profile vertical axis wind turbines (VAWT) mounted on a single base. The units can be interconnected to increase energy production capability in low speed and turbulent wind environments commonly found at lower elevations.

To provide more consistent energy generation than a “wind only” or “solar only” system, WindStream Technologies' SolarMill® incorporates Photo Voltaic (P.V.) technology within a compact footprint, creating the greatest energy generation density for any product on the market. The hybrid concept of the SolarMill® is unique, seamlessly utilizing wind and solar energy generation in one unit. This allows the product to be an effective solution in markets where the natural resources available for wind or solar energy alone do not justify investment into any small wind product. The SolarMill is simple, efficient and cost-effective way to utilize available wind and solar resources in “India”.

Performance of a well-designed Hybrid System

- ✓ Roof top Wind and Solar Hybrid Energy System.
- ✓ 24-hour power production capability.
- ✓ Higher power density per square foot.
- ✓ Scalable power generation.
- ✓ Mechanical braking at high-speed winds beyond 18.5 m/s.
- ✓ Appropriate for on or off grid applications.
- ✓ Offsets peak energy pricing for grid tied systems.
- ✓ Minimizes backup battery storage requirements.
- ✓ Online tool for power generation monitoring.
- ✓ Power generation starting at 2 m/s wind speed.
- ✓ Easy to mount on any rooftop; no complicated masts, guy wires, or towers.
- ✓ Simple ballasted installation that avoids roof penetration.
- ✓ Visually engaging design complementing building façade.
- ✓ Environment-friendly, silent operation.
- ✓ Cost effective.

Let's compare the benefits of a Hybrid System with Solar and Wind only Installations

	Solar	Wind	Hybrid*
Production	<ul style="list-style-type: none"> • Daytime only • Production varies on the irradiation availability • Dependence on weather conditions • A typical 10KW system generates about 14,850 KW/Year 	<ul style="list-style-type: none"> • Production varies on the wind availability • Higher cut in speed (avg. of 3m/sec) • Production is intermittent and is seasonal 	<ul style="list-style-type: none"> • Produces day and night (24x7x365) • Takes advantage of the complimentary Solar and Wind sources • Reduces the variability in renewable energy production • Low cut in speed of 2m/sec • A typical 10KW system generates about 16,000 KW/Year
Cost of installation	<ul style="list-style-type: none"> • Moderate installation costs • Based on the nature of installation, land costs are accrued • 10 KW on grid system costs about 8.5 Lakhs 	<ul style="list-style-type: none"> • Very high installation costs because of the system as well as the land • Usually Wind Farms are established in remote areas, hence high costs are incurred to setup the transmission lines • 10 KW on grid system costs about 15 Lakhs 	<ul style="list-style-type: none"> • Moderate installation costs • Land requirements are minimised due to increase in energy density • 10 KW on grid system costs about 9 Lakhs
Maintenance	<ul style="list-style-type: none"> • Less maintenance required • Battery replacement costs are high due to inefficient charge and discharge cycles 	<ul style="list-style-type: none"> • High Maintenance & replacement costs due to wear & tear of the gears • Battery replacement costs are high due to bad charge and discharge cycles 	<ul style="list-style-type: none"> • Very Minimum/no maintenance costs involved in the system • Lesser than Solar only solution, as the number of solar panels are less • No gears in the system

			<ul style="list-style-type: none"> • Batter replacement costs are minimal as the batter charge and discharge cycles are more uniform
Payback Period	<ul style="list-style-type: none"> • 6-8 Years 	<ul style="list-style-type: none"> • 10-13 years 	<ul style="list-style-type: none"> • 6-8 Years
Cost per KWH	<ul style="list-style-type: none"> • \$0.05 – 0.15 	<ul style="list-style-type: none"> • \$0.1 – 0.2 	<ul style="list-style-type: none"> • \$0.02 – 0.1
Impact on Environment	<ul style="list-style-type: none"> • Silent Operation • Less impact on environment than traditional systems 	<ul style="list-style-type: none"> • High Noise pollution • Less impact on environment than fossil fuel based solutions. • However, wind mills may harm/kill birds • Some trees have to be destroyed to setup the transmission lines 	<ul style="list-style-type: none"> • Silent Operation • Lower impact than Solar only solution, due to lesser use of solar panels
Energy Efficiency	<ul style="list-style-type: none"> • Energy Density of about 13W/Sqft 	<ul style="list-style-type: none"> • Variable 	<ul style="list-style-type: none"> • Energy Density is 30W/Sqft
Area required for a 10KW system	<ul style="list-style-type: none"> • 100 Sqmtrs 	<ul style="list-style-type: none"> • 100 Sqmtrs 	<ul style="list-style-type: none"> • 70 Sqmtrs
Better Life	<ul style="list-style-type: none"> • Low to Medium, as the batteries are charged only during the day time 	<ul style="list-style-type: none"> • Low to Medium, as the batter charge cycle is dependent of variable production 	<ul style="list-style-type: none"> • High, as the batteries are charge cycles are more uniform (charged 24x7x365)

Note: * Hybrid System as designed by WindStreamTechnologies

The SolarMill™ can generate power at wind speeds as low as 2m/sec to about 18m/sec and is so modular in design that it can be configured to generate the best energy density at any given site. Their hybrid system is scalable to setup a huge hybrid energy farm or setup on any kind of a roof top. WindStream Technologies has deployed their solution across many facilities in India and across the world.

Installation Pictures



A 10 KW Hybrid Installation @ Industrial area Shamherpet, Hyderabad



A 1.75 Kw installation on Railway Crossing

SPECIALITY APPLICATIONS:



11Kw Installation for Telecom Tower



Mobile Mill



40Kw Power Mil installation for Mini Grid application.



MW Scale Installations

Partnering with Educational Institutions

WindStream Technologies was launched in 2008 to create low-cost hybrid, renewable energy solutions for urban, suburban, and on and off-grid environments. In 2009, WindStream partnered with the Purdue Research Center in New Albany, Indiana to perform research and development. Since then, WindStream has opened its doors to student groups for tours of the manufacturing facility and interviews with our engineers. Have a look at our efforts in educational

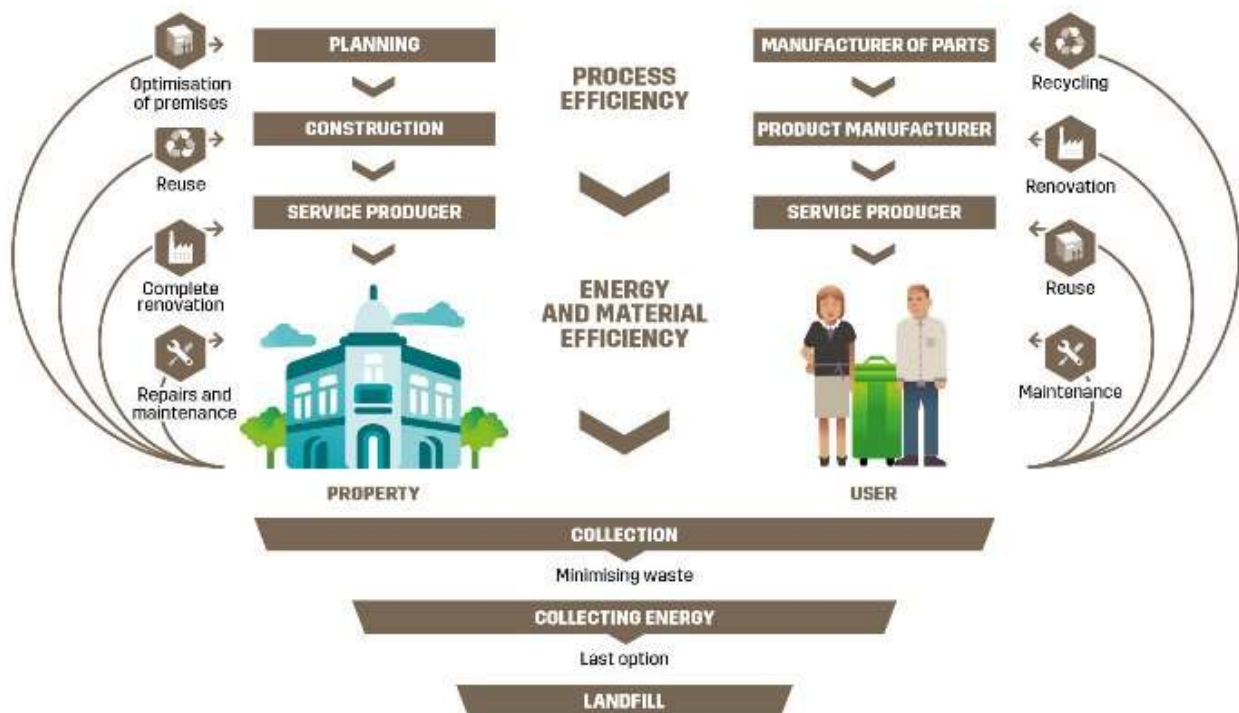
outreach in the pictures below featuring students from South Ripley Elementary School, Columbus Signature Academy, and Jennings County's Summer Enrichment Program.



Conclusion

With ever increasing energy demands and an urgent need to safeguard the world for the future generations, every country in the world is modifying their energy policy to decrease their reliance on fossil fuels and invest in renewable energy. According to a report by [BP](#), world has witnessed a growth of 213 TW-Hours in renewable power generation, which is the largest increment on record. Renewable Energy sector will continue to witness huge demands and will generate millions of jobs around the world. Due to the seasonality and variability in wind energy generation, more and more people are now focusing on the Solar energy. However, due to unavailability of the solar radiation at all times of the day, Hybrid Energy Solutions will be the norm of the future.

Circular Economy and a more efficient use of resources



Source & Courtesy: <http://www.lassila-tikanoja.fi/en/company/lt-in-society/Pages/building-the-circular-economy.aspx>

How e-waste is handled by unauthorized e-waste recyclers in India

The gaps between authorized e-waste recyclers vs. unauthorized e-waste recyclers

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Introduction

The origin of the e-waste has been identified from the core of the electronic market. In India, the E-waste sector is considered as one of the fastest growing industry. The reason behind such situation has been recorded due to the rapid growth in the electronic market and the increasing obsolescence of the electronic waste in India especially in the relation to mobile phones that have acquired a notable place in the E-waste industry. Globally, 50 million tonnes e-wastes are being gathered and in India, the rate of e-waste has increased with 15% in the last five years (Krishnamurthy et al. 2017). On the other hand, the ways of handling can be managed in terms of controlling the hazardous impact of e-waste if it could be stored safely in the household. Thus, handling e-wastes in a non-professional manner, it could deliver negative impact to the human health and the environment as well. This report intends to evaluate the ways in which the unauthorised recyclers are handling the E-waste management in India and also sheds light on the aspects that manifest gap between the formal and informal e-waste handling in India. Thus, the relative facts are being delivered in the following manner.

Concept of unauthorised or informal e-waste recyclers

The maintenance of the e-waste management and the rules related to it has become one of the most prominent difficult challenges faced by the EEE in India. On the other hand, other reason caters to this is that many stakeholders are involved in such business and the act of e-waste management has been conducting in an informal manner since last several years. The concept of unauthorised e-waste management can be defined in terms of stakeholders who are not liable and authorised for handling and controlling certain aspects of E-waste management and consider an unsystematic and illegal way of e-waste Apart from this, unauthorised e-waste is the fact of storing the electronic items that are intended for distempering in an unhygienic manner. It is realised from the report of manufacturer's association for information technology (MAIT) that more than 90% of the e-waste materials are being dismantled in the remote colonies in the cities in an unhealthy and disorganised manner, unaware of the hazardous impact of such aspects on the society and environment as well. Another prominent challenge in this regard is that the current e-waste collection involves the monetary exchange in which the people charge money for providing their unused electronic items Such involvement increases the interest of the non-official e-waste recyclers and incorporates challenges for the government to resolve it.



Figure: figure showing only 12% of mobile phone e waste is being generated in India in comparison to other types of E waste.

Source: (Perez 2015)

The two most prominent e-waste handlers in Delhi have confirmed the fact that the cost of e-waste collection should be subsidised by the government as the whole process is observed to be cost consuming day by day. It is also realised that one of the biggest challenges for the e-waste recycler is to deal with the mindset of the common people regarding e-waste like mobile phones recycling (Perez 2015). The mobile phones are also recycled in an unauthorised manner in India as the mobile phone users sell their dismantled or old devices to local e-waste outlets in instead of providing it to the authorised e-waste collector. Such act influences the increase in the local e-waste collectors to perform the collection in an illegal and informal manner that involves monetary exchange. In this context, it is imperative to mention that due to the informal e-waste handling more than \$1.8 billion financial loss can be recorded in India only.

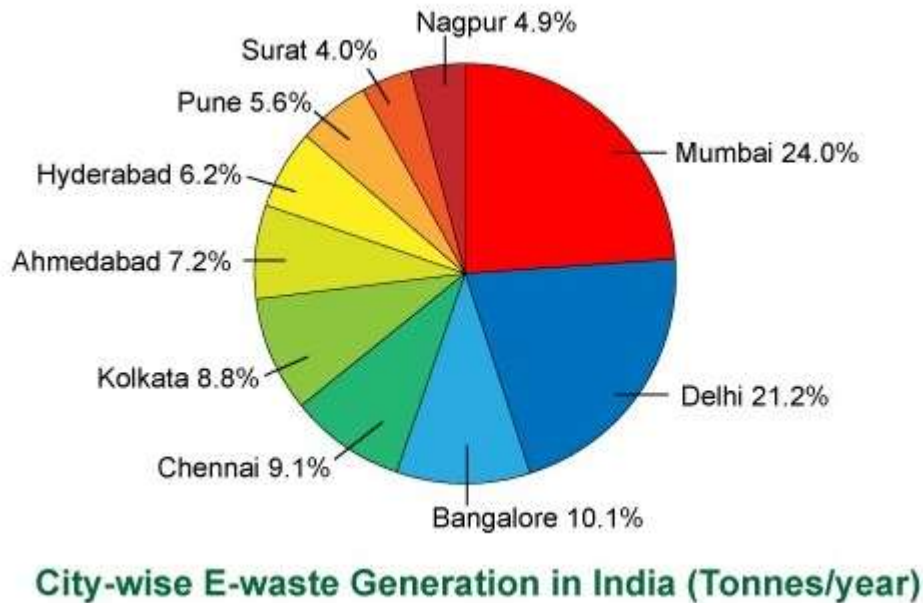


Figure: the figure showing the city wise e waste generation in India. Source: (Friends 2015)

E-waste management by unauthorized recyclers

In India, there are several depictions about the rules and regulation in the course of e-waste management. Here the discussion can be concentrated on the ways in which unauthorised e-waste recyclers handle e-waste in an illegal and unorganised manner. From the report and survey presented by times of India in 2016, it is realised that 90% of the e-waste goes to the unauthorised recyclers (Industry & Industry 2010). On the other hand, it is also realised that most of the common people used and practice the idea of recycling through giving their unused electrical electronic equipment to a scrap dealer who eventually delivers it to an unauthorised e-waste recyclers. This is considered to be one of the unorganised methods for unauthorised recyclers to accumulate e-waste in India. Along with this, common man disposing of the e-waste materials through municipal garbage and almost 66% of the Indian population disposed their e-waste materials to their own housing premises as a garbage storing site (Friends 2015). Such delivery of ignorant and careless behaviour of the common mass encourages the unauthorised recyclers to expand their market.

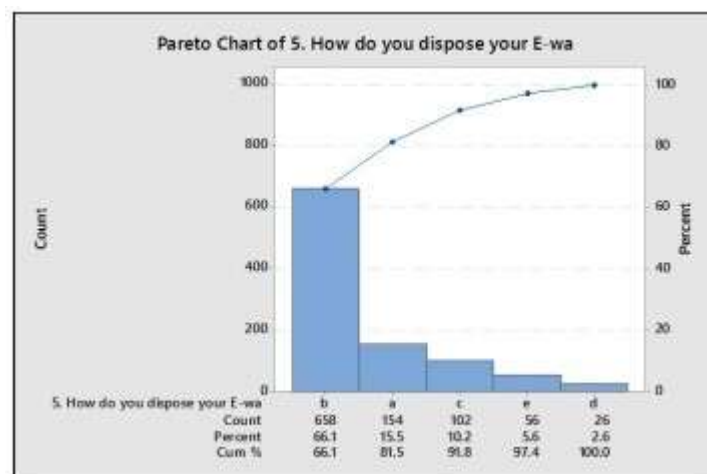


Figure: different methods of e waste handling including authorized and unauthorized.
Source:Udhayakumar.T (India-Chennai E-Waste Handling Survey 2016)

Gap between authorized and unauthorized e waste recyclers in India

The e waste management in India has been appearing one of the most discussed challenges among the e waste handlers due to the continuous emergence of the illegal and unauthorized e waste recyclers. In 2016, 90% of the total e waste has been recorded to be occupied by the illegal e waste recyclers while the authorized recyclers hardly get opportunity to get in touch with the actual process of recycling (Imperative, 2015). The reason behind such condition has considered being the ignorance and lack of awareness regarding the legal way of e waste disposal. Thus, a gap has been identified between the two aspects which can be cited in terms of the differences of its outcomes. In relation to the unauthorized e waste recycling, it is realized that through the illegal e waste management practices the environment is able to consumer hazardous elements like lead, heavy metals, mercury, carcinogens and dioxins. On the other hand, following table would help in understanding the gap between the authorized and unauthorized recyclers.

Authorized e-waste recyclers	Unauthorized e-waste recyclers
<ul style="list-style-type: none">• The legal way of managing e waste is able to provide a proper consequence to the e waste materials.• The legal recyclers are authorized by the government itself along with the pollution control committee in Delhi.• Most of the population are unaware regarding the source of approach in relation dismantle electrical electronic equipment.	<ul style="list-style-type: none">• Unauthorized waste recycling delivers harmful chemical and element to the environment.• The unauthorized waste recyclers acquire the e-waste materials from the local garbage collector (Imperative, 2015).• Unauthorized recyclers have invested in using applications that are able to attract individuals who want to get rid of their old electronic equipment.

Thus, such aspects have delivered insight regarding the difference in practices of the two parties in relation to e-waste management in India Therefore, it can be suggested that more acute and strict regulations must be incorporated I the legal structure of e-waste management system in India.

Conclusion

In conclusion, it is realised that e-waste management system in India is vulnerable to many exposures and exploitations due to the lack of awareness regarding e-waste management and disposal. Though, the common mind-set of the global population exhibits that e-waste management is such a petty topic to talk about and India is no exception in this regard. Instead of the fact that India holds the fifth place in the global market to be the producer of e-waste and more than \$1.8 billion are getting wasted each year due to improper handling of e-waste. Thus the main focus in this report has been given on the ways in which unauthorised recyclers handle e-waste and the gap of the functional difference between authorised and unauthorised recyclers in it is realised the unauthorised recycling of e-waste practices causes environmental hazards along with health effects. On the other hand, the illegal practices invite more corruption and difficulty for the authorised recyclers as the common mass is unaware regarding the sources to contact. It can be suggested that more specific and strict regulation should be incorporated in the context of restricting unauthorised recyclers in India and more survey for generating awareness among common people would help in participate in a healthy e-waste management practices.

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Museum of Failure features Google Glass, Apple Newton: The Museum of Failure in the Swedish town of Helsingborg has added Google Glass and Apple Newton. While the Google Glass displayed information in a smartphone-like hands-free format, Apple marketed Newton as a personal digital assistant with handwriting recognition. Notably, the Museum of Failure celebrates ideas that failed to translate into consumer hits.

Energy Accounting – Importance of Electronics and Computing

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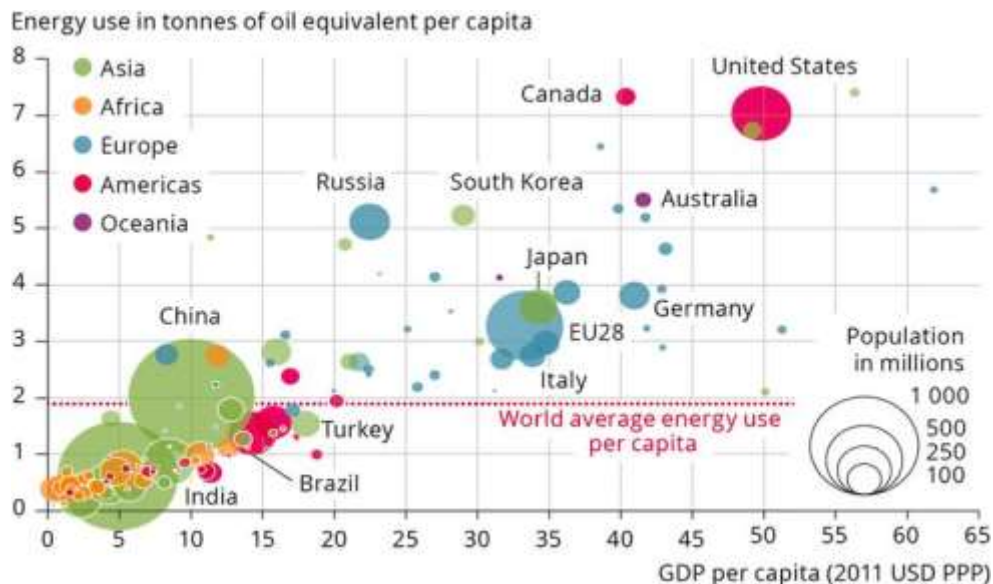
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A. INTRODUCTION

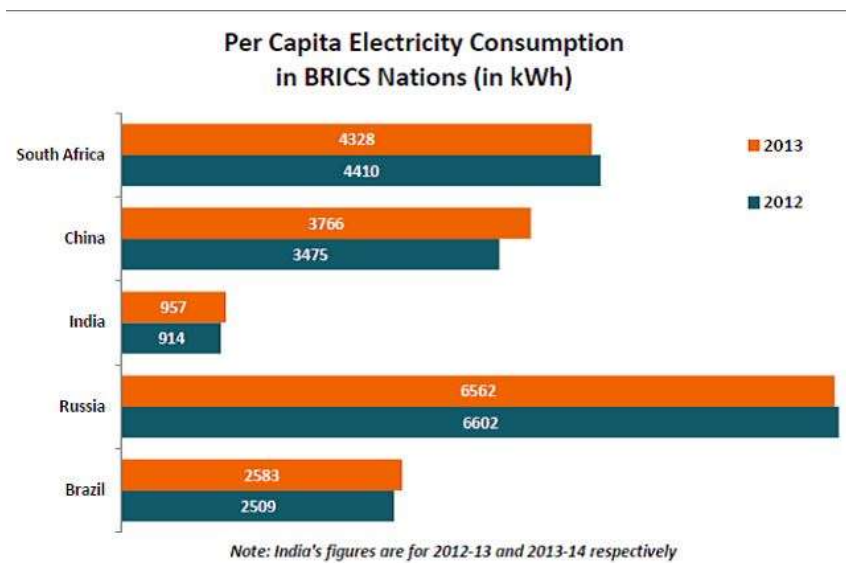
Indian Economy is now entering the second generation of reforms. The quantitative restrictions are almost non-existent. The tariff barriers are crumbling down. This situation, coupled with high finance charges; Poor international penetration, protected labour and bloated bureaucracy leave no other option than to improve productivity.

Three options available are labour productivity, raw materials and energy. The first is time consuming and requires cultural change, though many industries are showing signs of success. The second one is technology and equipment intensive, requiring large investment, and with low return on investment. The energy conservation option in many cases have very high returns, (direct pay back in weeks or months), relatively low investments and proven technology. **It is ironic that most of the Indian industries accept partially proven technology for production with very high investments, while insisting on many similar practice for energy conservation before implementation.**

One primary indication for nation's growth is GDP. It is obvious that energy use has a close correlation with GDP growth

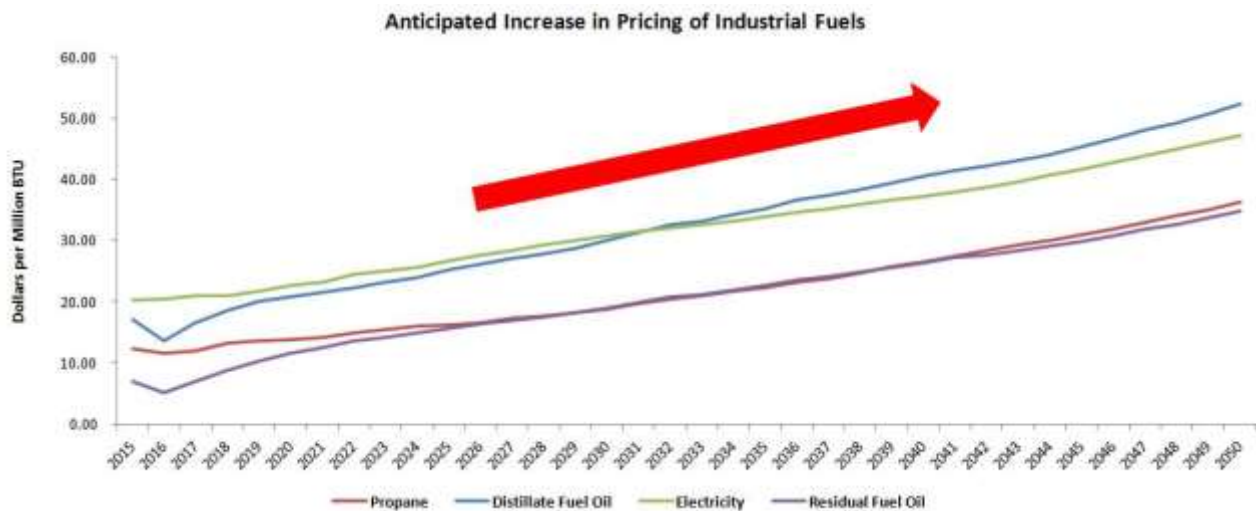


The possible increase in India's energy use is also reflected in the BRICs comparison



Energy being both scarce and expensive, and the fact that energy saving is independent of any other productivity measures, is being realised by many industries.

This information from US department of energy is a good indicator of how industrial energy costs are set to rise – and any investment on energy conservation would be cumulative.



The past few years are changing the outlook of many industries, as they have realised that the energy saving option is not only attractive, but requires low lead time compared to other areas. Thus, there is a higher interest in energy conservation than before. The passing of the energy conservation bill has unfortunately dampened the individual industries energy conservation program by directing the focus to benchmarking than self improvement along with designated industries concept.

When the industries start looking at Energy as a proportion of Value addition, instead of looking at Energy as a percentage of turnover, paradigm is likely to change (Value addition, for simplicity is taken as Sales Turn Over – (Raw Materials + Consumables))

A Cement Manufacturing Unit			
Parameter	2015-2016	2015-2014	2014-2013
Turnover	75362.5	61947.19	65684.96
Raw Material	20751.84	13677.43	13264.88
Energy	11907.11	14373.93	16514.05
Energy Expense as a % of TurnOver	16%	23%	25%
Energy as a % of Value Addition	21.8%	29.8%	31.5%

A Sugar Manufacturing Division			
Parameter	2015-2016	2015-2014	2014-2013
Turnover	239541	226504	194548
Raw Material	132708	139482	124560
Energy	7672	6640	5045
Energy Expense as a % of TurnOver	3%	3%	3%
Energy as a % of Value Addition	7.2%	7.6%	7.2%

A Pigment Manufacturing Firm			
Parameter	2015-2016	2015-2014	2014-2013
Turnover	22522.16	17388.67	15327.82
Raw Material	10353.91	7539.6	6268.79
Energy	1085.61	1289.42	1329.5
Energy Expense as a % of TurnOver	5%	7%	9%
Energy as a % of Value Addition	8.9%	13.1%	14.7%

***All values are in Lakh Ruppes**

Summing up, the need for using energy carefully is

- Energy is scarce
- Energy is expensive
- Energy saving does not affect any other productivity measure
- Energy saving helps environment
- Hence,

Energy has to be used carefully

B. MANAGEMENT TOOLS

For managing anything, the tools are the same, be it finance, project, inventory, sales, or **ENERGY**. The tools of management are listed below in their sequence.

1	Measure	<u>One Can Manage Only What Is Measured</u>
2	Account	Without Accounting, Measured Values Are Just Figures.
3	Analyse	Change Can Occur Only With Analysis
4	Formulate Action Plan	An Action Without Plan Is Inco-ordinated.
5	Implement	The Final Action, Without Which There Is No Profit.

Energy management too, has to follow the same steps. In case of energy, two intermediate steps are used after analysis. They are:

- 1). Identify Savings Potential.
- 2). Estimate Commercial Feasibility.

The above approach, would lead to proper management of energy, and anything else would be less scientific.

C. CURRENT APPROACH

Presently all energy conservation starts with energy audit. An energy "auditor" is sought, and a study of the existing operations is conducted over a week or a fortnight. They see the operation on those few days, and come out with some standard recommendations. Some of them get implemented, and some energy is saved. Even the implemented standard solutions - the results are far lower than expected. The industry compares itself with the bench marked energy consumption. If they are near the top, they get convinced that the best has been done. Otherwise, the size and age of the plant, or investment constraints are the reasons for higher energy usage.

Thus, the momentum is lost, and precious energy gets wasted.

To sum up

Energy management should be

- **Measurement**
- **Accounting**
- **Analysis**
- **Identify energy saving potential**
- **Ensure commercial feasibility**
- **Formulate action plan**
- **Implementation.**
- **Back to Step Measurement for a Dynamic and Continuous Process - A Pursuit Towards excellence**

But the current approach is

- **Call energy auditor - get recommendations**
- **Implement some - Save some energy**
- **Implement others - Face difficulty or no savings**
- **Compare performance with Similar industries - (Bench Marking)**
- **Be complacent if closer to the best**

Which Misses The First Three Steps. This Situation Leads To Some Question, Which, When Probed Becomes Disturbing.

D. DISTURBING QUESTIONS

Let us start with each question which arises after an energy audit - implementation cycle.

1. Have we achieved the lowest possible energy conservation?

Most industries, immediately after an energy conservation exercise, say that they have done the "**best they could**". Does that mean that there is some more to be done or that the constraints are larger? Does it mean that the industry knows exactly, the amount of energy which can be saved, but found them commercially non-viable? It is but a fact that most of them may not have the thermodynamic base, to know the theoretical minimum, and the present efficiency levels. It is but unfortunate, that most leading energy consultants feel that thermodynamics based analysis would lead to nothing - Forgetting for a while that thermodynamics at the minimum tells how close one is to the "**ultimate**" in energy conservation.

2. Have we chosen the best method?

Each company knows that it has chosen the proven method of energy conservation. But many of them are not sure if they have chosen the best method and that there is no further scope of improvement. For example,

- *While thinking of a variable speed drive to a pump or blower, theoretical requirement by understanding the process better, (or improving their efficiency) could get missed*
- *While looking at installing a recuperator in the exhaust, the possibility of reducing the exhaust loss by process optimisation might not have been studied thoroughly.*

With energy accounting, the exact quantification ensures that the one method is chosen before analysing all the possibilities.

3. Are the achieved savings being maintained?

To quote an experienced senior person

"When an investment proposal is taken to the management, the proposals for saving on raw materials are always given the first priority. It is because, the management can not only visualise the savings, but have a system in place for continuous monitoring. The energy conservation proposals, on the other hand, are always treated on the merit of the person proposing it. It is finally granted on the personal commitment by the proposer. The management knows that after the initial monitoring, no one knows if the energy savings are sustained"

The exceptions are where energy is used almost like raw material.

4. Can We State With Confidence That None Can Better Than Us?

Most industries believe that they have done the "*best they can*". If an industry does better, "*their operating conditions are different*" - else "*we are presently on top and we would keep it up*". Thus, while the industries achieve considerable energy savings, none is sure if others can be better. Being number one in energy management thus becomes a guessing game. Energy accounting changes this, as everyone knows the exact quantum wasted, and in most cases, what is not done is known.

5. Do we have plan for the next 5 / 10 years?

The energy saving proposals are part of the annual budget. Thus, some proposals can get carried over for number of years, and some of them get approved almost immediately. With a long term master plan, it would be easy to have achievable targets and also reach them. With energy accounting as the base, it is possible to even work out more than one alternate method of energy saving, and choose the more attractive one at the time of implementation

The present practice

- The energy auditor looks at energy conservation potential
- Looks for areas for saving of energy than auditing energy usage.
- Recommends "PROVEN" measures which match observations, based on "Check List"
- Savings are great in early stages - then the savings and interests tapers off
- Large hidden potential for savings never get exposed.

Imagine financial management, without accounting, Energy management without Energy accounting would be similar. It is possible to achieve large savings without systematic approach, but it would never be complete.

The energy accounting ensures 100% coverage of all energy usage, and ensures that the audit and expert functions are separated from the basic accounting.

The following would be the roles of the industry, auditor and the expert.

Company	Maintain energy accounting
Auditor	Check for the correctness of account and apply conventional solutions
Expert	Find ways for saving energy beyond conventional methods and ensure result

Thus, for effective energy management, energy accounting becomes the proper base.

E. BASICS OF ENERGY ACCOUNTING

It is to be acknowledged that the concept of energy accounting is in its evolution stages, and lot more refinement is possible as the time goes by. **The basic framework has to be consistent, if a useful system has to be the final result.** The guidelines are as follows.

- * Avoid Sampling Situations - Not only data is collected over a long period, action is based on continuous data collection.
- * Account for Energy as we account for Money - Group the energy as expenses are grouped, go into detail where required, ensure input and output (like income - expenditure) are balanced.
- * Energy Accounting to be a regular feature - It is continuous like financial accounting
- * Verify - Each data is verified by at least one other method (Theoretical estimation, alternate form of measurement etc.,)

This results in

- Correct and accurate information
- Improved awareness

Both the above, result in better base for Energy Management.

F. ENERGY ACCOUNTING METHODOLOGY

The energy accounting is divided into two major divisions

1	Macro accounting	Accounting for the same form of energy
2	Micro Accounting	Accounting of energy in a single equipment - where change of energy form is involved

G. MACRO ACCOUNTING

The macro accounting, is basically balancing the input and the usage of the same form of energy

- in different departments
- in different sections
- And in different equipment.

If we can have accurate metering for each of the equipment, the accounting would simply be a question of arithmetic. In reality, it is too expensive to have meters, and also to ensure that each meter is recorded.

Even if one can install and record all the meters, the accuracy of the meters would always leave a gap in the balancing.

Hence, prudential energy accounting has to have a method for validating the meter, and also be able to have a method for estimating the energy consumption independently for cross verification with meter readings. Thus, judicious use of meters, and estimation methodology would provide the base for macro accounting.

It is due to this reason, initial accounting starts with about 80 % accuracy, and slowly increases the accuracy over a year or two. The final accuracy of balancing would be between 95 and 99%, due to the limitation of accuracy of the meters, and small losses. Of course, there are smaller areas, where the accounting would yield better accuracy where it matters.

Since energy accounting goes into detail even in smaller areas, the actual un-accounted loss would be far less than the 1% imbalance of the overall accounting.

The broad steps are listed below:

1. Separate each energy form.
2. Measure/estimate the consumption by each section/ department/ equipment - for each individual energy form
3. Compare with the total input of the respective energy form.
4. Validate the measurement by comparing the measurement with estimation / vice-versa.
5. Ensure that the incoming and the consumption of each energy form is balanced.

H. MICRO ACCOUNTING

Micro accounting is estimating the useful energy in any individual equipment, using thermodynamics, and estimating the losses by measurement of various parameters. This helps us to know both the quantum of losses, and their nature. It then becomes possible to analyse and reduce these losses to the extent possible.

The thermodynamic useful energy is the absolute theoretical minimum energy consumption required. The losses which can be minimised by closer maintenance of the parameters can be saved by better operation or control.

The modification in the design of the equipment, or the way energy is used is the saving by technology modification.

By monitoring the parameters, working out the energy balance and comparing with the theoretical minimum, we can exactly estimate the possible savings by improved control.

The quantification of the losses separately, the cost benefit of using different technologies for containing the losses can be estimated very precisely. When these data are available on regular basis through energy accounting, it becomes possible to monitor the savings achieved by implementing the energy conservation projects, and do it on a continual basis.

The basic methodology is as follows:

Take a single equipment.

1. Use thermodynamics to find the useful energy (that which is required by the product/ process).
2. Measure and estimate the loss of energy as radiation, sensible /latent heat in exhaust, leakage etc.,
3. Total all losses and the useful energy.
4. This should balance with the input energy to the equipment, once the loss estimate is done accurately.
5. Ensure that this is done on a continuous basis for each batch/ shift/ day , based on the process.

I. PERIODICITY OF ACCOUNTING

The data can be split into two types.

1. Those which vary depending on production
2. those that remain constant due to the basic design.

The data which varies, such as production, energy consumption, hours of operation etc or accounted depending on the logging frequency. For convenience, if there is no data logging, this can be once a shift or once a day.

The constant data are, those which could vary only over a longer duration, due to deterioration or changes in the ambient. Some of the examples are surface temperatures of the walls of the heating equipment, compressor / pump efficiencies, loading of constant loaded machinery etc.. These data could be taken / checked once a month or once in three months, based on the expected variation, as reflected in energy accounting. These data are also checked, if the macro energy accounting shows gross imbalance, after it was established for consistency.

By properly documenting all the constant data, it also gives one, an idea of the loss of energy due to deterioration, say of insulation, or worn vanes in pumps etc.,.

J. ENERGY ACCOUNTING RESPONSIBILITY

The Energy accounting requires *team* effort, and involvement of personnel from various departments. The members of the team have to work in co-ordination, preferably under a single leader / champion.

The members from the following department are recommended

1. Production
2. Utility
3. Maintenance
4. Technology
5. Accounting

It is estimated, that only about four to five hours per week would be required for energy accounting by each member after the system is set up, while longer involvement would be required during the setting up of such a system.

K. INSTRUMENTATION

It is but obvious that accounting cannot be done without measurement. It is also a fact that the measurement has to justify the investment on the instrument. Since such precise justification could be difficult, and uncontrolled investment cannot be justified, basic maximum investment budget can be taken as 1% of the energy usage in that particular area / equipment in any year. Even this investment is to be judged on the basis that either

- (a) The existing instrumentation do not give sufficient data for estimation
or
- (b) The accounting variation on estimation is large enough, that we scope for saving energy by actual measurement.

One expects that all the investment requirements in instruments for energy accounting in a typical plant, would be covered over two year's budget of 1% of the cost of energy in each year. The point to remember is

What you cannot measure - cannot be controlled

L. ROLE OF ELECTRONICS IN INSTRUMENTATION

The cost of the instruments are further controlled, by stressing the repeatability and reliability of the instrument rather than the accuracy. The cost of instrument increases drastically with specification calling for higher accuracy, while the energy accounting can be managed with lesser accuracy, if the inaccuracy is consistent.

With phenomenal development in micro controllers, one can drastically reduce the cost of instrumentation by two means.

- Look for lower cost sensors – whose characteristics can be programmed into micro-controller or ability to calibrate on field by feeding values to the controller.
- Sensors need to be only as accurate as the economy desires – rather than specifying 0.1 % accuracy for all sensors. For example, water level monitoring can work very well with 5% accuracy.

Another aspect of retrofitting the instrumentation is wiring. Thus, any improvement of affordable RF (or any wire free) communication for limited distance to integrate with available Ethernet connection in industry can make a huge difference in speed of implementation.

M. REPORT GENERATION

The information, when not formatted, looks and feels like junk, as it unusable.

The reporting format has to take into account the following- while maintaining the core requirement of energy accounting – which is comparison of estimation Vs actual and bring out the Gaps between the two.

1. The purpose of the information – chronological trend or relationship etc.
2. The required value and the value of the “cause” or primary parameter
3. The variation in primary and resultant parameter – (eg: steam fuel ratio, unit per component (weighted basis), energy per kg etc.)

The report would have to be different at operator's level, floor/operational manager's and general management.

- The operational report would be predominantly in engineering units.
- The operational manager's report would be a judicious mixture of engineering and monetary values.
- The top management report would be predominantly in monetary value.

This would enable correct actionable pointers at each level.

Since these data and trends would have to be properly organised, stored for long duration and displayed in different combinations, use of databases and programming in selected database management languages would be essential.

By viewing the same data in different formats, the dominant causes gets highlighted for prompt and correct actions

N. AI AND ML IN ANALYSIS

Variations in energy consumption are always due to many parameters. Some of these parameters are under operational control, some are under management control and some are not under any internal control.

Thus, it is essential to filter out those influences which are not under one's control and also isolate to the extent possible the influence of parameters under control while analysing the data.

Since this become complicated, usually an expert's service who is able to "instinctively" zero in the dominant factor is sought after. With modern advances in technology, AI (artificial intelligence) and ML (machine learning) where required – can not only analyse the gaps, but help in converting them into opportunities.

O. POSSIBLE BUSINESS OPPORTUNITIES

Thus, the energy accounting throws open many areas of business opportunities. An attempt is being made to list them out, but it is not exhaustive but only illustrative.

- Low cost sensor development
- Wireless sensor electronics
- Battery / battery-less RF transmission packages for sensors
- Embedded simple communication protocols
- IOT sensors
- Data base management
- Reporting software / services
- Analytical software / services
- Specific energy conservation services/ product/ control systems
- General data analytical – covering large equipment/ processes of single equipment of single vertical to multiple equipment of multiple verticals.

Just a generalised building energy management itself is likely to offer large business opportunity.

About the Author:

An IIT madras 1974 graduate - T. Jayaraman - often referred to as Teejay is the Founder and Managing Director of SECO Controls Pvt. Ltd an energy based engineering company - which is the sole Indian manufacturer of oxygen analyzers.

"Teejay" is an Industry veteran in the engineering and energy field and is a consultant in energy auditing for over 40 years. He has been the National President of Indian Association of Energy Management Professionals and also accredited as the best energy auditor for the year (2009) by the State Government.

He is also the founder director of Indian Council for professionals in energy efficiency business.

The firm regularly trains on Electrical Safety, Operational Excellence , Energy and Electrical Utility Management.

Some of the clients include Accenture, Idea Cellular, Dubai Airport, Saudi Cements , Midas Safe Srilanka, SPIC, DCW, Enfeild, L&T Infotech, TAJ Hotels, Sundaram Motors, EICHER

Jayaraman's passion in teaching and mentoring led him to interact with a lot of youngsters only to realize that they had just the theoretical knowledge and minimal practical knowledge thus leading to the birth of the idea for E-Quad Engineering Services Pvt. Ltd. His commitment on environment is reflected in design of his office building and home - with 0% discharge ! in both buildings.

Top 10 Rules For Success

Jack Ma is a Chinese business magnate who achieved major success and became a billionaire by founding Alibaba group, a family of successful Internet-based businesses. Jack Ma started his business with \$20,000 that his wife and friend helped him raise.

1. Get used to rejection
2. Keep your dream alive
3. Focus on culture
4. Ignore the #LittleMan
5. Get inspired
6. Stay focused
7. Have a good name
8. Customers are #1
9. Don't complain, look for opportunities
10. Have passion

Watch the 8m 27s video at
https://youtu.be/9e_mqibZc-Q

Bill Gates consistently ranks in the Forbes list of the world's wealthiest people. He's one of the best-known entrepreneurs of the personal computer revolution. He is also the second-most generous philanthropist in America, having given over \$28 billion to charity.

1. Have energy
2. Have a BAD influence
3. Work hard
4. Create the future
5. Enjoy what you do
6. Play bridge
7. Ask for advice
8. Pick good people
9. Don't procrastinate
10. Have a sense of humor

Watch the 12m 51s video at
<https://youtu.be/wq-gba5nMrc>

Azim Premji is an Indian business tycoon, investor and philanthropist. He's the chairman of Wipro Limited, and informally known as the Czar of the Indian IT Industry.

1. Find your purpose
2. Fail as fast as you can
3. Cherish your strengths
4. Be persistent
5. Get ideas from customers
6. Earn your rewards
7. Deal with disagreements
8. Disrupt your industry
9. Practice
10. Start small

Watch the 9m 01s video at
<https://youtu.be/hev7OtdDe2M>

Mark Zuckerberg is an American computer programmer and Internet entrepreneur. He's best known as one of five co-founders of the social networking website Facebook.

1. You get what you spend your time doing
2. Get feedback
3. Make mistakes
4. Only hire people who you would work for
5. Make a change in the world
6. Learn from the people around you
7. Build a really good team
8. Give the very best experience
9. Care the most about it
10. Social bonds are critical

Watch the 13m 26s video at
<https://youtu.be/HMpWXQpogqI>

Sundar Pitchai is an Indian American business executive. He's the Chief Executive Officer (CEO) of Google Inc.

1. Think about what's next
2. Empower people
3. Ideas matter
4. Take risks
5. Be an optimist
6. Solve problems
7. Follow your dreams
8. Have a good morning routine
9. Do what you love
10. Push yourself

Watch the 8m 42s video at
https://youtu.be/iAls_gorac8

Sachin Tendulkar is the only player to have scored one hundred international centuries. He's widely regarded as one of the greatest batsmen of all time.

1. Chase your dreams
 2. Have confidence
 3. Be a good person first
 4. Compete hard and with respect
 5. Always be prepared
 6. Don't give up
 7. Execute your plans
 8. Follow the right path
 9. Be a team player
 10. Become a legend
- Bonus: Be disciplined.

Watch the 13m 45s video at
https://youtu.be/8u_qJ22bY9c

Courtesy & Source: <https://www.youtube.com>

Compiled by: H.R. Mohan, hrmohan.ieee@gmail.com

Announcements

INDICON – 2017: 14th IEEE India Council International Conference 2017

IEEE INDICON conference is an annual event started by IEEE India Council. Every year it has been hosted by one of the Sections in India, in the areas of Computer Science Engineering, Electrical Engineering, as well as Electronics and Communication Engineering. The 14th edition of the conference, INDICON-2017, is organized by IEEE UP Section at IIT Roorkee during 15-17 Dec 2017.

Over the past few years, INDICON has emerged as a well-recognized and an eagerly anticipated event in the country because of its high quality technical sessions, keynotes and also for the networking opportunities that it provides. Authors are invited to contribute original research papers. The papers that are accepted after review, registered and presented in the conference will be included in the Proceedings of IEEE INDICON-2017. All accepted papers and posters presented in the conference will be published in IEEE Xplore.

Important Dates:

Paper Submission: Jun 20, 2017

Notification of Acceptance: Oct 05, 2017

Camera Ready Version: Oct 20, 2017

Tutorial Proposal: Jul 15, 2017

Tutorial Announcement: Aug 15, 2017

For more info, please visit the conf. website at <http://www.iitr.ac.in/indicon2017/>

IEEE TENSYP 2017 – Technologies for Smart Cities

IEEE TENSYP 2017, the Spring conference of IEEE Region 10, will be held during 14-16 July 2017 at Le Meridien, Cochin, Kerala, India. IEEE TENSYP 2017 will be the meeting point of researchers, industry and the Government and will explore the latest developments in the technologies for Smart cities. Cochin itself has been selected by Government of India, to be developed as a Smart city. TENSYP 2017 will also feature high quality tutorials, workshops and Industry sessions, as well as keynotes from prominent research and industry leaders.

For more info and to register please visit the conf. website at <http://www.tensymp2017.org>

2017 SIGHT Projects Proposal Deadlines

The SIGHT Steering Committee is soliciting proposals for project funding. The committee will review proposals during three periods in 2017 and will grant awards of US\$500 - \$19,999.

Submission deadlines to the final phase for the year 2017 is August 15, 2017

Please see the Request for Proposals at <https://goo.gl/sdpbS1>

APNIC 44 Conference and Fellowships

APNIC 44 conference aims to provide a valuable opportunity to contribute to discussions about Internet operations, technologies and development.

The event brings together Internet engineers and networking experts, government representatives, Internet business leaders, and other interested parties from around the world to learn from training workshops and tutorials, attend technical presentations, discuss policies, and extend social and professional networks with like-minded peers.

The conference is proudly hosted by TWNIC and Taichung City Government

The conf. dates: 7-14, Sep 2017

Venue: The Splendor Hotel Taichung, Taichung City, Taiwan 403 :

APNIC offers a limited number of Fellowships in three categories - professional, youth and returning—to community members in the region's developing economies to attend and participate in APNIC meetings.

The Fellowship covers Registration Fee, Travel, Twin Shared Accommodation and a fixed allowance of AUD 100.

Key Dates

Monday, 22 May 2017 Applications open

Friday, 07 July 2017 Applications close at 23:59 (UTC +10)

Monday, 24 July 2017 First round offers announced

For more details pl. visit the conf. website at <https://conference.apnic.net/44/>

IEEE India Council Awards -- Call for nominations

IEEE India Council has constituted Awards to recognize the individual or collective efforts of the members in promoting the interests of IEEE as reflected in the operation of India Council and its entities.

- a. IEEE India Council Outstanding Student Branch Award
- b. IEEE India Council Outstanding Volunteer Award

Announcement: Nominations are invited for “2017 Awards for the work done in the year 2016”. The details and link for nominations are available in the downloadable files (click links above). Last date for submitting your nominations is 15th July 2017. Please visit IEEE India Council website for more details. <http://sites.ieee.org/indiacouncil/>

R10 Golden Jubilee Celebration Committee -- Video Contest

As announced at R10 Meet in March, R10 Golden Jubilee Celebration Committee is holding a Video Contest. The number of submitted videos is limited to one per section/council or ExCom member. Your video can be sent to the undersigned by using the huge file attachment scheme. The submission deadline is June 30 2017.

Format: 5 min, mp4 (file size < 1GB) -- Exhibition: Sections Congress 2017

Prizes: Gold (1) - \$500; Silver (2) - \$300; Bronze (6) - \$150

Call for IEEE Day 2017 Ambassadors

IEEE Day 2017 will be held on Tuesday, 3 October. This will be the eighth anniversary of our members celebrating the anniversary of the first time IEEE members gathered to share their technical ideas in 1884. The call for Section Ambassadors of IEEE Day (to promote IEEE Day within respective section) has been announced. Student members and YPs interested please fill the Ambassadors Form at <http://www.ieeeday.org/ambassadors-application/> by Friday June 30th 2017. Pl. follow IEEE Day on [Facebook](#) and [Twitter](#).

IEEE Section Congress 2017

The IEEE Member and Geographic Activities (MGA) Board will partner with Region 10 in hosting IEEE Sections Congress 2017 (SC2017) in Sydney, Australia, at the International Convention Centre, from 11 to 13 August 2017. The theme of SC2017 will be “Brilliant Minds. Bright Futures” The programme will include sessions related to: Engaging Volunteers, Engaging Members, Building Technical Communities, Collaboratec Learning Hub, vTools Learning Hub, and MGA/TA Learning Hub. The Section Congress is aimed to provide opportunities to network and build relationships with other volunteers within IEEE, to provide an opportunity for delegates to gain information and training skills, and to collectively shape the future and goals of IEEE. More at <http://sections-congress.ieee.org/>

ERCIM “Alain Bensoussan” fellowship Programme

ERCIM offers fellowships for PhD holders from all over the world. Topics cover most disciplines in Computer Science, Information Technology, and Applied Mathematics. Fellowships are of 12 months duration, spent in one ERCIM member institute. Fellowships are proposed according to the needs of the member institutes and the available funding. Application deadlines for the next round: 30 September 2017. More information: <http://fellowship.ercim.eu/>

New Technology Connections is the member’s resource to emerging technologies within the IEEE. The IEEE Future Directions team has identified the technologies such as 5G, Big Data, Brain, Cloud Computing, Cyber Security, Digital Senses, Green ICT, IOT, Life Sciences, Rebooting Computing, Smart Cities, Smart Grid, Software Defined Networks, and Transportation Electrification as primary focus areas and has established them as formal initiatives to engage IEEE and the general public. For each initiative, you will find a wealth of knowledge, resources, and opportunities to participate. Visit each featured portal for access to upcoming conferences, news articles, technical papers, related standards, professional organizations, and academic programs. To get involved in the initiatives and to stay informed, please join our free technical communities available on each of the portals. More at <http://www.ieee.org/about/technologies/index.html>

ICNL Readers Quiz-17q2

To increase and encourage readership, this quiz is being conducted. Participate in the “ICNL Readers Quiz-17q2” and win Two Amazon Gift Cards of worth Rs. 500/- each.

The “ICNL Readers Quiz – 17q2” has 12 questions for which answers can be found in the India Council Newsletter issue of Apr-Jun 2017 at <http://ieeecs-madras.managedbiz.com/icnl/17q1.pdf> and also available in the gDrive folder named “icnl-newsletters” shared at <https://goo.gl/2cnw8A>

TWO lucky readers from those who provide correct answers to a minimum of 10 questions will get Amazon Gift Cards of value Rs. 500/= each. The prizes for the “ICNL Readers Quiz – 17q2” are sponsored by [IEEE Computer Society Madras Chapter](#).

QUESTIONS

Q1. The IEEE Day in 2017 will be held on -----

Q2. Globally ----- (quantity) of e-wastes are produced.

Q3. Which is the world’s biggest solar farm and what is its capacity?

Q4. The peak demand for power in India is more than the installed capacity. State True or False

Q5. Which out of Google / Apple / Amazon expected to be the world’s 1st USD one trillion company according to a New York University?

Q6. What kind of malware is WannaCry?

Q7. The price of Nokia 3310 launched in India is -----

Q8. The international guests of the conference -- CONFLUENCE-2017 were taken for a visit to -----

Q9. As per Ericsson Mobility Report 2017, every user in India would consume ----- data per month by 2022

Q10. ----- is the highest amount of funding given to the student project in IEEE Madras Section is

Q11. Name the IEEE CS Distinguished Speaker who had delivered distinguished lectures in India in Mar 2017

Q12. Which section YP affinity group is considered to have won almost all the awards that a YP AG can receive?

HOW TO PARTICIPATE

Please send your answers to these 12 questions by email to ieee.icnl@gmail.com on or before **31st Jul 2017** with subject as “ICNL Readers Quiz – 17q2”

Provide the answers to all questions by writing question no and the related answer (No need to write the question. Just the no. such as Q1, Q2, Q3 is sufficient). If you do not know the answer, pl. enter "DO NOT KNOW"

After answering all the questions, pl. provide the following information relating to the quiz participant.

Name

IEEE Member No

Type of Member

Designation (If student pl. write as Student)

Institution / Organisation Name

Town/City

Email

Contact Phone No.

TERMS & CONDITIONS: Incomplete & late entries will not be considered. Decision of the IEEE INDIA INFO Editor is final.

LAST DATE TO RECEIVE THE ANSWERS IS 31st Jul 2017

Two lucky winners of the “ICNL Readers Quiz – 17q2” will get Amazon Gift Coupon of value Rs. 500/= from **IEEE Computer Society Madras Chapter**

Become a member of the world’s leading organization of computing and information technology professionals when you join IEEE Computer Society, the largest society within IEEE. Membership to the Computer Society includes FREE access to 3,500 self-paced online technical and business courses, FREE access to 1,100 online technical and business books (600 titles from Safari® Books Online and 500 titles from Element K® Press), six e-newsletters, 12 monthly issues of *Computer* magazine, discounts on 170+ Society-sponsored conferences and two software development certifications, up to 50 percent off subscriptions to 26 peer-reviewed journals and magazines, and more. Network and learn from fellow professionals through automatic membership to one of 350+ worldwide chapters, and participate in more than 40 technical committees. Field of Interest: All major areas of computing and information technology: computer hardware, software, multimedia, IT, security, networking, mobile computing, and more.

This IEEE CS is a sponsoring society of the **IEEE Council on RFID**, **IEEE Biometrics Council**, **IEEE Council on Electronic Design Automation**, **IEEE Nanotechnology Council**, and **IEEE Sensors Council**.

As the 50% membership fee is applicable from 15th March, for the period Apr-Dec 2017 (9 moths), the applicable fee is USD 4 for the student members and USD 30 for the professional members. The student members will get full access to the IEEE CS Digital Library as an add-on benefit.. [Join the IEEE Computer Society](#)

The winners of the ICNL Readers Quiz-17q1 are:

Mr. Ramchandra Yadav from Jhansi
Mr. N.Senthilnathan from Perundurai

The ICNL congratulates the winners. Both the above winners will receive the cash prize of Rs. 500/- .in the form of Amazon Gift Card /Cheque, depending on their option. The winners are requested to email us their option. If cheque is preferred, pl. provide your postal address to send the cheque. If Amazon Gift Card is opted, they will receive the details of the gift card by email.

Some useful IEEE Links

- 2017 IEEE Membership and Society Membership Dues
http://www.ieee.org/membership_services/membership/join/join_dues.html
- IEEE Society Memberships: http://www.ieee.org/membership_services/membership/societies/index.html
- Global Benefits Finder: http://www.ieee.org/membership_services/membership/benefits/index.html
- IEEE Student Activities: http://www.ieee.org/membership_services/membership/students/index.html
- IEEE Geographic Unit Formation Policies and Petitions
http://www.ieee.org/societies_communities/geo_activities/forms_petitions/forms_petitions_index.html
- Student Branch Officer Responsibilities and Administration
http://www.ieee.org/membership_services/membership/students/officers.html
- IEEE Region 10: <http://www.ieeer10.org>
- Referral and Payment Options:
http://www.ieee.org/membership_services/membership/join/referral_payment.html
- Member Grade Elevation: http://www.ieee.org/membership_services/membership/grade_elevation.html
- Education & Careers: http://www.ieee.org/education_careers/index.html
- IEEE Xplore Digital Library: <http://ieeexplore.ieee.org/Xplore/home.jsp>
- GoogleApps@IEEE: http://www.ieee.org/membership_services/membership/products/googleapps.html
- IEEEExtreme 24-Hour Programming Competition :
http://www.ieee.org/membership_services/membership/students/competitions/xtreme/index.html
- IEEE Support Center: <https://supportcenter.ieee.org>
- IEEE Websites / Sitemap: <http://www.ieee.org/sitemap.html>

Acknowledgements

ICNL wishes to acknowledge various internet sources for the information presented in this issue of the newsletter. Our exclusive thanks to inshorts – a content discovery and distribution application which aggregates the news across the world and presents them in a concise manner for easy consumption. We have picked up the titbits appaeraing in this issue from inshorts (<https://www.inshorts.com>)

Guidelines for submitting reports and articles to get published in the IEEE INDIA INFO, the India Council Newsletter (ICNL)

- Please submit the event reports within TWO months of its happening. Older events reported may be ignored.
- The matter may be in doc / rtf / txt format. Please avoid other formats such as pdf, jpg as they will not be considered.
- Please use SINGLE column format (while the report is prepared).
- Please avoid embedding the photos in the document relating to event reports. However, images referred in articles alone may be embedded at appropriate places in the article document in addition to sending them separately.
- Please send the event photos (typically one/two best) separately (even in they are included in the report).
- Preferred format for photos is “jpg”. Please avoid sending the photos in “bmp”, “png” formats.
- Photographs in digital form should not to exceed 1024 pixels in width. You may use any photo editing software (MS Office Picture Manager is quite useful) to re-size the image. This will reduce the file size of the images considerably. Pl. avoid sending large size photos (Sometimes we get files even up to 6 MB size). We generally recommend file sizes less than 500K.
- Provide your name, full affiliation, membership no. and email id at the end of the document.
- Send the matter by email with the subject: From <Section / College Name in short form> -- Report on <Event Name (short name is OK) & Date> eg: “From Madras Section / SSNCE -- Report on Conf on Wireless Networking dt. 10-11, Feb 2017”
- Please send the matter by email to ieee.icnl@gmail.com
- Please note that the matter sent to other email ids may get ignored and may not be considered.
- Please submit the matter for publication latest by 8th of the publication month (currently Mar, Jun, Sep, Dec as ICNL is a quarterly) to facilitate inclusion in that quarter's issue of IC Newsletter.
- Please note that while all efforts will be made for publishing, due to certain practical constraints, the actual publishing may be delayed.
- We will be constrained to ignore the submitted materials, if they do not follow the above guidelines.
- Please co-operate with us by adhering to the guidelines specified.

IEEE India Council Website

The website of the IEEE India Council (IC) has been redesigned using the Wordpress content management system and is hosted on the IEEE webserver at <http://sites.ieee.org/indiacouncil/> with the efforts of the web master Dr. Suryanarayana Doolla of IIT Bombay. The readers may find the following links of the IC useful.

Home: <http://sites.ieee.org/indiacouncil/>

Executive Committee: <http://sites.ieee.org/indiacouncil/about-ieee/executive-committee/>

Sections: <http://sites.ieee.org/indiacouncil/about-ieee/sections/>

Chapters: <http://sites.ieee.org/indiacouncil/about-ieee/chapters/>

Announcements: <http://sites.ieee.org/indiacouncil/category/announcements/>

Events: <http://sites.ieee.org/indiacouncil/events/>

Newsletter Archives: <http://sites.ieee.org/indiacouncil/newsletter/newsletter-archives/>

Conference Norms: <http://sites.ieee.org/indiacouncil/conference-norms/>

INDICON: <http://sites.ieee.org/indiacouncil/indicon/>

Student Activities – Awards: <http://sites.ieee.org/indiacouncil/student-activities/awards/>

M V Chauhan Student Paper Contest: <http://sites.ieee.org/indiacouncil/student-activities/mvc/>

For Private Circulation

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