

### *Message from Chairman*



Dear Members,

At the outset I wish all of you, in advance, for a very happy, healthy, prosperous and productive New year 2015! At the close the year 2014 we witnessed an excellent, well planned and well executed event of India Council, the INDICON 2014, hosted by the Pune Section under the able and efficient leadership of Dr Rajesh Ingle, Prof. Mandar Khurjekar and their team of volunteers. I congratulate all those responsible for the successful conduct of INDICON 2014. Further, the India Council meetings, EC meeting and the AGM were very well facilitated with utmost satisfaction of the EC members and all others who participated in the AGM. I profusely thank the Pune section executives and other volunteers for their untiring assistance and help for making excellent arrangements for stay/travel/food etc. for the members of IC during their visit to Pune for participating in the INDICON 2014 and in the IC Execom meeting and AGM.

By this month I am completing two years of my volunteer service as the Chairman of IEEE India Council. I am happy that I could serve the IEEE India Council for two terms during 2013 and 2014 successfully with the strong support and cooperation of all of you. It gives me fullest satisfaction that I could solve certain serious problems that India Council had been facing and could raise India Council to a healthy state.

During these two years we could conduct 8 *Face to Face* meetings (4 meetings in 2013 and 4 meetings in 2014) and 7 Telecon meetings (3 meetings in 2013 and 4 meetings in 2014) of EC regularly, solving many issues and problems. As you all know, the *Face to Face* meetings really brought fruitful results. I wish that this practice should be continued in future years also.

This year IEEE Metro area workshop was successfully conducted by the Bangalore Section. This workshop resulted in inducting around 100 members from the industries into IEEE. I am happy that Mr. Ramakrishna, the IEEE R10 Director Elect 2015, has encouraged to have a similar event in India next year. Next year he will be the IEEE R10 Director and the IC should make use of his services to bring many such IEEE events to India.

During this year I could introduce a Pre-University Education Program in the name of IT-SUITS for the 5<sup>th</sup> to 9<sup>th</sup> standard School students under the IEEE Pre-University Education Scheme with the approval of Mr. Douglas Gorham, Managing Director of IEEE Educational Activities. IEEE Madras Section has

agreed to explore the initiative for implementation as a pilot project through the SRM Student Branches of Madras Section. I would like to appeal to the other sections also to implement this program as a service to the young generation which will help to generate IEEE young professionals, making them aware of IEEE professional activities.

During these two years we could successfully bring out IEEE India Council online News letter regularly every month with rich content and information. Mr. H.R. Mohan during 2013 and Mr. N.T. Nair during 2014 rendered a yeoman service towards this endeavor. I would like to place on record the excellent services rendered by them towards this activity and I profusely thank them for the same.

Without the support of the Secretary, as the Chairman, IC, I could not have carried out my services effectively. In this connection I cannot forget Major Chandrasekaran V V who served as the Secretary-cum -Treasurer of EC IC during 2013. I would like to thank him with gratitude for the excellent support he extended as Secretary and Treasurer to solve a number of problems. Similarly Mr. T.S. Rangarajan as the Secretary- cum -Treasurer of EC IC during 2014 was of great help in carrying out the IC activities. I would like to thank him profusely for the excellent support he extended to me to serve the India Council effectively.

Not the least, the IEEE Sections, Society Chapters and IEEE Members at large in India have been very cooperative with the India Council in achieving the goals of IEEE and I thank all of them for the same.

I would like to appreciate the members for their volunteer contributions so far for the growth of IEEE in India. I wish that all of you should continue to support the India Council and provide inputs for the growth of IEEE in India in future.

**M. Ponnavaikko**  
Chair, IEEE India Council



### *Words of Wisdom*

*When you arise in the morning, think of what  
a precious privilege it is to be alive -  
to breathe, to think, to enjoy, to love.*

*- Marcus Aurelius*

*The goal of life is to make your heartbeat match the  
beat of the universe, to match your nature with Nature.*

*- Joseph Campbell*

*No man should judge unless he asks himself in absolute  
honesty whether in a similar situation he might not  
have done the same.*

*- Viktor Frankl*

## NT Nair, Editor, writes...



At this fag end of the year, we, the members of the largest assemblage of engineering community under the IEEE banner, better take a look at some of the technologies that are likely to make sea changes in a positive way in our lives and societies in the coming years.

### Some samples:

- **Electronic Printing with `Chips as Ink`:** As in the case of 3D printing, electronic devices could be printed in small numbers in future.
- **Nanomedicine:** Injecting trillions of man-made smart devices, some as small as 10 nanometres into human body and programming them to work as a pack to hunt down and kill tumour cells.
- **On demand Science:** Laboratories available on rent to conduct experiments.
- **DNA-editing Technique:** The new technology called CRISPR (Clustered, Regularly Interspaced, Short Palindromic, Repeats) is capable of converting infected cells in diseases like HIV to uninfected cells. Besides eliminating the virus from an infected cell, CRISPR can also protect an uninfected cell.

The list is very long, thanks to the S&T community whose relentless search leads to such path-breaking innovations. And the future looks very bright and promising, in addition to be safe in their hands, as most of them are deeply concerned that their wares or processes should not pollute the Mother Earth.

*Before concluding, on behalf of IEEE India Council, wish you all a memorable 2015 with commendable accomplishments at work front and joyful life at home. Let you also be remembered for your selfless services to society.*

**NT Nair**  


### *Words of Wisdom*

*Sometimes it's hard to pick right from wrong.  
The best thing we can do is go with our heart and hope it all goes well.*

*- Mac Miller*

## **T.S. Rangarajan**

Secretary & Treasurer, IEEE India Council 2014



Dear Members,

As we near the end of 2014, I wish to take this opportunity to first wish all of you a Merry Christmas 2014 and a Happy New Year 2015. I want to place on record my deep appreciation for each one of you for having voted and elected me to the office of Secretary and Treasurer of India Council for 2014. In this year, unlike the previous one, we were able to recover the funds due to India Council and also receive surpluses generated by Indicon 2013 which enabled us to carry out activities of the council smoothly. We were able to support 2 conferences - Indicon 2014 and R10HTC2014 financially. We were able to organise several face to face and telephone meetings for better coordination among Sections and members. We have initiated the process of registration of India Council as a society with help from GIEEE, Bengaluru. Our website is updated with all details of society chapters and the AGM conducted on Dec 13, 2014 at Pune during Indicon 2014. I want to thank Madras Section for allowing us to use the services of their staff for accounting and secretarial assistance for India Council.

Having interacted with the executive council members of India Council closely during 2014, I believe there is a great potential for cooperation among Sections, Sub Sections, Society Chapters, Affinity Groups, Special Interest Groups and Student Branches across India. Such unity will give us tremendous strength to undertake larger conferences and programs. For example, R10HTC2013 was organised by Japan Council at Sendai whereas R10HTC2014 was organized by Madras Section at Chennai. Collaboration among all of us can provide increased financial strength and also enrich the technical support for such events. Imagine a conference organizer in any Section in India getting financial sponsorship from other sections or chapters.

For 2015, we have a brand new Executive Committee of committed volunteers eager to take India Council to greater heights. Please join me in welcoming them with all our hearts and support them in their responsibilities.

With best regards  
**T.S. Rangarajan**  


# IT in November 2014

Prof. S. Sadagopan Director, IIIT-Bangalore s.sadagopan@gmail.com



## General

- **Mangalyaan** (India's Mars mission) on 2014 list of Top 25 inventions of 2014 as per **Time** Magazine
- Wholesale **inflation** drops to 1.77% (5-year low) on November 14, 2014; stock markets see a boom in November 2014
- **Prime Minister Modi** completes 5-Nation visit; attends SAARC meet in Nepal during November 25-27, 2014; convinces **President Obama** to accept his invitation to be the Chief a Guest during Republic Day (January 26, 2015); expands Union Cabinet with 21 new Ministers on November 9, 2014 including IIT-Bombay educated Goa Chief Minister Manohar Parrikar
- Kerala & Goa reach 100% coverage of **bank accounts for all** by November 19, 2014
- Bangalore **IT.Biz** (India's premier event that was started in 1998) was held in Bangalore during November 12-14, 2014; for the first time the global event **CeBit** partnered with IT.biz
- Bangalore becomes **Bengaluru** on November 1, 2014
- Haryana Maharashtra get **new BJP Governments** in November 2014; Fadnavis is the new Maharashtra CM; Goa gets a new CM
- **Elections** in Jammu & Kashmir and Jharkhand start on November 25, 2014
- **World Trade Center in New York City**, that was destroyed on September 11, 2001 rebuilt at a cost of \$ 3.9 billion was inaugurated on November 3, 2014; it is 541 meters tall today
- World celebrates the 25th year of the fall of Berlin Wall on November 9, 2014
- Japan slides into recession in November 2014; new Elections announced
- Jindal steel puts off \$ 10 billion investment in Orissa (due to coal block license cancellation)
- Wagah border blast on November 2, 2014 kills 55; man-made disaster leads to nine sterilization deaths in Chhattisgarh on November 11, 2014; suicide bomber in Afghanistan kills 45 people on November 23, 2014

## Technology

- **Mangalyaan** (India's Mars mission) on 2014 list of Top 25 inventions of 2014 as per **Time** Magazine
- India-born Rajesh Rao of University of Washington demonstrates brain-to-brain interface over Internet (according to November 5, 2014 PLOSOne article)

## Markets

- **Sensex** (Indian stock market index) crosses **28,000** on November 5, 2014 for the first time; Bombay Stock Exchange (BSE) market capitalization touched □ 1 Lakh Crores on November 28, 2014



- November 2014 saw **Apple** market capitalization going past **\$ 700 billion** and **Microsoft** moving to **No 2** position in market value (next only to Apple and ahead of Coca Cola and Exxon)
- **Yahoo** buys **Brightroll** for \$ 640 million on November 12, 2014
- Bangalore-based **Quest** Global acquires Trivandrum-based **NeSt Software** on November 4, 2014
- Mysore-based **Raman Fibre Science** (founded by Aroon Raman) gets acquired by US-based Hollingsworth & Vose on November 6, 2014
- **Kotak Mahindrabank** buys **ING VysyaBank** on November 20, 2014
- **Tech Mahindra** buys US-based networking company **Lightbridge Communications** for \$ 240 million on November 20, 2014
- **Future** group buys 300-year old retailer **Nilgiris** for ₹ 300 crores on November 21, 2014

## Products

- **Google** launches **Inbox** (invitation only at this time) in November 2014
- **Microsoft** offers **free** mobile versions of **MS Word**, **Excel** and **PowerPoint** for **iPhone** and **iPad** on November 6, 2014; also launches **Microsoft Lumia 535** (first non-Nokia branded Lumia) globally for € 110 on November 11, 2014; its India launch was on November 26, 2014 at a price of Rs 9,199
- **Amazon** announces voice controlled speaker Amazon **Echo** on November 8, 2014
- **Alcatel** launches **OneTouch** Flash phone for ₹ 9,999 in India on November 20, 2014
- **IBM** launches business email **IBM Verse** on November 18, 2014
- **Nokia** launches Android Tablet **Lollipop** on November 18, 2014
- **Micromax** unveils Yu on November 18, 2014
- **Apple iPad Air 2** and **iPad Mini 3** go on sale in India on November 29, 2014

## Indian IT companies

- **TCS** sponsors New York City marathon (world's largest marathon with TCS sponsoring for the next 8 years); it had 50,000+ participation on November 2, 2014; starts dedicated offshore centers in Japan
- **Infosys** signs \$ 200 million contract with Visa in November 2014; set to hire 2,100 in USA in year 2014
- **Tech Mahindra** buys US-based networking company **Lightbridge Communications** for \$ 240 million on November 20, 2014
- **Cognizant** buys **Odecee** (Australia & New Zealand based digital solutions company) on November 12, 2014
- **Mindtree** to open one more European Centre in 2014-15
- **Bharti Airtel** to sell 4,800 mobile towers in Nigeria for ₹ 6,463 crores
- Data center major **CtrlS** plans 2 data Centers with ₹ 626 crores investment

## MNC companies in India

- **Cisco** to invest \$ 1.7 billion in India in the year 2014-15
- **Microsoft** starts high end cloud offering in India

- **Ricoh India** gets ₹ 1,370 Crores order from Department of Posts on November 27, 2014 to connect up 1.29 Lakhs rural Post offices in the country
- Chinese e-commerce major **Alibaba** talks of more investments in India
- **Dell** to expand manufacturing in India
- **Visa** to open Tech Center in Bangalore
- **Amazon** to open fulfillment center in Gujarat
- **E-bay** plans major expansion in India next year
- China's **Xiaomi** set to make phones in India
- **China Union Pay** starts India office; plans partnerships with NPCI's **RuPay** on November 8, 2014
- Alibaba-backed **Quixey** set to buy Bangalore based mobile application start-up **Dextra**
- **Uber** starts service that is even cheaper than auto on November 19, 2014
- Brazil's **Tripda** (ride sharing App) starts India operations on November 23, 2014

### Education & Research

- **Mangalyaan** (India's Mars mission) on 2014 list of Top 25 inventions Time Magazine
- **Infosys Science Prizes** announced on Nov 13, 2014
- **ACM Fellows** list announced in November 2014
- **GRE Applications** from India increase by 60% in 2014

### People

- 13-year old whiz-kid Shubham Banerjee develops **Braille printer** and gets venture funding on November 6, 2014
- Infosys co-founders Kris Gopalakrishnan and Shibulal launch business incubator **AxilorVentures** on November 18, 2014
- Guinness land speed record holder **Andy Green** visits India and gives IET Talk at Infosys on November 13, 2014
- South Carolina Governor **Nikki Haley** and marketing Guru **Philip Kotler** visit India in November 2014

### Infrastructure

- **Schindler Electric** commissions state of the art **manufacturing plant to make elevators** at Chakan, Pune on November 4, 2014
- **Reliance Power** commissions **world's largest solar project** (100 MW built at a cost of ₹ 2100 Crores) in Jaisalmer, Rajasthan on November 11, 2014

### Interesting Applications

- India to offer online services for 200 permits and target 50<sup>th</sup> position for doing business globally (from current 142<sup>nd</sup> position)
- Government initiates e-Life certificate - JeevanPraman - so that millions of pensioners need not have to give a physical life certificate every November; this innovative application using

AADHAR goes live on November 15, 2014

- Airtel launches "One Touch Internet" for first time users in multiple languages on November 6, 2014
- Visa on Arrival through Electronic Travel Authorization for citizens of 43 countries launched on November 27, 2014
- 50 districts chosen for digitizing land records
- Taxi Apps making taxi fares affordable forces auto rickshaws to reduce fare in November 2014! Technology helping common man!
- Housing.com launches "online only" Tata ValueHousing property thru interactive app

### Interesting numbers

- **Telecom subscriber** base on October 31, 2014 stood at 962.63 million with 935.35 million mobile subscribers and 27.28 million wire-line subscribers (with net addition of 5.14 million mobile subscribers and net reduction of 0.12 million wire-line subscribers in October 2014) (TRAI Press Release No. 80/2014 dated December 5, 2014)
- **India's Foreign Exchange** on November 30, 2014 was at \$ 315.9 billion (RBI)
- **Indian Rupee** stood at 62.03 against USD on November 31, 2014 (RBI)
- On November 30, 2014 **BSE Sensex** and **NSE NIFTY 50** (Indian stock market indices) were at 28,694 and 8,588 respectively (Reuters)
- Oil price hits four year low of \$ 82 on November 5, 2014 and below \$ 75 per barrel on November 27, 2014, a new record
- Wholesale inflation drops to 1.77% (5-year low) on November 14, 2014
- 20 years of mobile in India sees tariff drop from ₹ 16.80 to ₹ 0.60; customer base near zero to 962 million; handset price starting from ₹ 45,000 to ₹ 850; revenue from near zero to ₹ 2.3 Lakh Crores!
- Bombay Stock Exchange (BSE) market capitalization touched ₹ 1 Lakh Crores on November 28, 2014
- Buoyed by early success India upgrades new bank account target (Jan Dhan Yojana) to 100 million from 70 million
- Prime Minister Modi has 25 million fans in Facebook and 8 million followers on Twitter
- Flipkart to hire 12,000 Amazon to hire 13,500 this year!
- Facebook messenger user base touches 500 million in November 2014
- Indian user count of WhatsApp crosses 70 million in November 2014
- Hero sells 1 million two wheelers in 37 days on November 3, 2014
- Apple iPhone shipments cross 1 million in India during October 2013 - September 2014
- Alibaba sales on 11/11/2014 cross \$ 8 billion!
- Rohit Sharma gets double century highest ODI cricket match score in November 2014
- Indian Net population to cross 300 million by December 2014
- Badrinath temple that closed Darsan on November 21, 2014; the number of pilgrims dropped from 12 Lakhs last year to 1.8 Lakhs this year due to land slides in year 2013
- **Indigo Airlines** inducts its 100th plane on November 3, 2014 (8th year of operation)





## Information Resources

Compiled by

**H.R. Mohan**

Chairman, IEEE CS & PCS, Madras

ICT Consultant & Former AVP-Systems, The Hindu, Chennai

hrmohan.ieee@gmail.com



**Internet of Things: Top 10 predictions for 2015:** International Data Corporation (IDC) has hosted the IDC FutureScape: Worldwide Internet of Things 2015 Predictions Web conference. The presentation provided organisations with insight and perspective on long-term industry trends along with new themes that may be on the horizon. For the predictions from the IDC FutureScape for Internet of Things visit <http://goo.gl/SG5zAU>

**'Digital India' campaign could prop Indian govt spending on IT to \$7.2 bn by 2015:** Emphasis on 'Digital India' initiative is expected to help IT spending in the government sector in India to grow five per cent to touch \$ 7.2 billion in 2015, research firm Gartner said. Government IT spending is on pace to total \$6.6 billion in 2014, the analyst firm stated. This forecast includes spending by the government sector (government is composed of state and regional government and central government agencies) on internal IT (including personnel), hardware, software, external IT services and telecommunications. <http://goo.gl/9OmfCm>

**The state of women in technology: 15 data points you should know:** There's a massive gender gap in the technology industry, and it's important to be aware of the facts. By 2020, there will be 1.4 million computer science jobs available in the US according to the Bureau of Labor Statistics, and we need to play catch-up to fill them all. According to the Bureau of Labor Statistics, 68% of women enroll in college (compared to 63% of men), and women increasingly outnumber men in college graduation rates. Yet women still make up only a quarter of the tech industry workforce. Here are 15 important data points you should know, including a few rays of sunlight. Full story at <http://goo.gl/rQomIv>

**10 game changing technology trends revolutionizing retail:** Retail is a dynamic industry with its own set of multifaceted and diverse business processes and requirements. Retailers today are challenged with addressing multiple disruptive technologies and the demanding “Digital customer” who like to order products and services using more than one touch points at their convenience of location and device. In such a rapidly changing environment, retail CIO/CXOs are expected to drop their ‘Run the business’ strategy hat and wear the ‘Change the business’ one. Today the strong focus is on innovation. There are new store formats being launched along with multiple selling channels such as online, kiosks, mail catalogues and call center etc. here is a need for Retail organizations to become truly omni-channel by providing seamless shopping experience to the customer no matter what channel, format they use for their shopping. Keeping innovation in mind, the following key emerging trends in retail are expected to continue to dominate retail industry and technology in general. <http://goo.gl/iDqPDc>

**Smart cities, Big data, hybrid clouds, mobility: Top 2015 trends that will shape IT landscape in APAC:** Hitachi Data Systems has released its Business and Technology Predictions for Asia Pacific in

2015. "A key impetrative will be the increasingly critical intersection between business and information technology," according to Adrian De Luca, chief technology officer of Hitachi Data Systems Asia Pacific. "The era of Business-Defined IT is here, and the time for IT to embrace the third platform that is built on mobile devices, cloud services, social networks and big data analytics is now. The CIO must respond to these requirements and become an architect and broker of business services rather than a technology-builder focused on data centre infrastructure," said De Luca. <http://goo.gl/djGBUI>

**How non-profit kidOYO's innovative approach is turning kids into tech entrepreneurs:** For kidOYO, teaching kids tech also means teaching them to take ownership of their interests. Founder Devon Loffretto tells TechRepublic how kidOYO introduces kids to tech and entrepreneurship. <http://goo.gl/ZKBbTy>

**How to Test the Security Savvy of Your Staff:** How do you know your employees retain what you teach them in company-required security awareness training? You don't -- unless you regularly test their security savvy and effectively address their mistakes during post-test follow-up sessions. <http://goo.gl/hFO9IE>

**Most Leadership Advice Is Useless. Here's What I Really Learned Running 20 Companies:** They fired me. They fired me as CEO. Then they fired me as a board member. Then they took away my shares. And now none of them ever talk to me. I started the company, I had the initial idea, I raised \$30 million for it from A+ investors (i.e. "rich people"), I bought two companies for it, I hired the first 50 employees, and then I was shown the door. The reason? I was a bad leader. Here are some things I didn't know about my own company: I didn't know what our product did. I didn't know any of the clients. I didn't know how much money we made. I didn't know how much we lost. And I had crushes on the secretaries and maybe two or ten other employees. Read the post at <http://goo.gl/1WvbJG>

**18 of The Best Cloud Platforms For Your Business:** In recent years, traditional business models in terms of infrastructure and management have been disrupted greatly by the rapid development of the Software-as-a-Service (SaaS) industry. But with literally hundreds of choices available for nearly every function from HR to Accounting, all offering the ability to streamline processes several fold through cost savings, flexibility and the benefits of scalability as your company grows – choosing the right cloud platforms for your company can often be a daunting task. While no means exhaustive, in no particular order we've put together some of the best and most popular cloud platforms across six crucial business functions. With no one single platform being a one-size-fits-all solution, start from our recommendations as you explore options for your company – and find the cloud platform with the features and functionalities most ideal for your business! Read at <http://goo.gl/kl63nk>

**Can The Human Brain Project Succeed?:** An ambitious effort to build human brain simulation capability is meeting with some very human resistance. On Monday, a group of researchers sent an open letter to the European Commission protesting the management of the Human Brain Project, one of two Flagship initiatives selected last year to receive as much as €1 billion over the course of 10 years (the other award went to a far less controversy-courting project devoted to graphene). <http://goo.gl/gl86Bp>

**11 Innovators Receive HPC Excellence Awards:** International Data Corporation announced the winners of the eighth round of its HPC Innovation Excellence Award, which recognized achievements

in high-performance computing (HPC) and raising awareness of the importance of the field among business and policymakers. The latest winners include Argonne National Laboratory and the University of Illinois Urbana-Champaign for their collaboration with U.S. and European researchers on new, high-fidelity simulations of nuclear reactors. The Centers for Pediatric Genomic Medicine at Children's Mercy Hospitals Kansas City was honored for its efforts to develop new clinical tests for pediatric patients. GIS Federal's development of new data filtration, analytics, and visualization technology earned an award, as did North Carolina State University for its work on improving predictions of the thermal hydraulic behavior of nuclear reactors, and the U.S. National Aeronautics and Space Administration's Environmentally Responsible Aviation project for its work researching methods to reduce aircraft noise, fuel consumption, and engine emissions. Central Michigan University's use of HPC resources to simulate the behavior of tornadoes in supercell thunderstorms secured an award, while PayPal was honored for its development of real-time analytics using digital signal processing. The University of Texas MD Anderson Cancer Center, the Texas Advanced Computing Center, and Elekta AB won for simulations crucial to the development of the next generation of cancer radiotherapies. <http://goo.gl/Drnbxt>

**Top 32 Best Small Business Websites, Tools And Apps:** Many small business owners, especially those who own small businesses, often have no idea where to get the best business products they need. We have compiled a list of top 32 amazing products every small business owner should know and have presented at <http://goo.gl/s7BDZP>

**10 toxic character types you'll meet on the job:** No doubt you've run across the kid who doesn't play well with others: There's the kid who cheats in sports. There's the neighbor who came up with bizarre ways to play Monopoly and claims "house rules" so he can win. Those kids eventually grow up and, unfortunately, may haul their interpersonal baggage with them. It is a pleasure working with professionals. It is a pain having to work with adults who behave like children and who are disguised as professionals. Think of the 10 toxic character types listed below as the antithesis of the true professional. <http://goo.gl/XA49Ei>

**How to help a non-profit organization benefit from Google Apps:** Imagine the impact that a move to Google Apps might have for a non-profit organization. People can access email anywhere, from almost any device. Shared calendars simplify scheduling. Committee members can privately create, share, and edit meeting agendas, minutes, plans, and budgets. Although staff at non-profit organizations "feel relatively confident that they have the tools to do their every-day work," they "are less confident about having enough skilled staff or training to effectively use their technology for their work," according to The 8th Annual Nonprofit Technology Staffing & Investments report. (NTEN, a non-profit technology membership association, released the survey in July 2014.) That's where you, a tech professional familiar with Google Apps, come in. You can help. Google makes Google Apps available for free to social benefit organizations in eight countries: Australia, Canada, England, France, Japan, New Zealand, the United States, and Wales. The non-profit organization must apply and receive approval. (See my earlier article, "Use your tech savvy for a good cause: Help a non-profit migrate to Google Apps" for details on the application process.) But a successful move to Google Apps takes more than a sign-up and switch. With that in mind, here are a few tips to help you connect your organization -- and knowledge of Google Apps -- to work for a non-profit whose cause you support. <http://goo.gl/hQktq2>

**How conflict minerals funded a war that killed millions, and why tech giants are finally cleaning up their act:** "The conditions were inhuman. The armed groups saw themselves as outside the law -- no one could control them." Axel Mutia Mburano is describing life in a mine in the Walikale region of the Democratic Republic of Congo (DRC), a central African country gripped by conflicts that have killed more than 5.4 million people since 1998. The money that helped prolong the suffering of Mburano and his countrymen flowed from the likes of you, me, and just about anyone else who bought a PC, phone, or electronic gadget in recent memory. Inside many of these electronic devices are components that began life as minerals dug at gunpoint from mines in the DRC. <http://goo.gl/Hi86LR>

**The 48 Laws of Power:** The 48 Laws of Power is a 1998 book by Robert Greene and Joost Elffers. The book shares thematic elements with Niccolò Machiavelli's The Prince and has been compared to Sun-Tzu's classic treatise The Art of War. Watch at <http://goo.gl/Ofzl6L>

**The Benefits of Meditation:** A movie about the benefits of meditation, and especially brainwave entrainment – using the Zen12 meditation program. Watch at <http://goo.gl/ZkXjfi>

**Charlie Chaplin: The Greatest Speech Ever Made:** One of the most important speeches in recorded history was given by a comedian by the name of Charlie Chaplin. Listen to this profound and visionary monologue about world peace and global cooperation, the triumph of the spirit of humanity! Intended of course as a parody (his character was based on Hitler) – these words and insights reach way beyond the comedic effect they were composed for. His message is as powerful now as the time of this release, 1940, in the film "The Great Dictator," and was this Chaplin's first true talking picture as well as his most commercially successful. Watch at <http://goo.gl/BaMWIY>

**Basic Job Skills to Include in a Cover Letter:** Use skills language in your cover letter — including basic skills, people skills, thinking skills, and personal qualities — to communicate your expertise in fundamental job skills. These basic skills (also called foundation skills) are appropriate for everyone's skill DNA. Based on government and academic classification systems, here's a no-frills framework that will guide you through the thicket of workplace skills and help you to identify your best foundation skills when developing your cover letters. <http://goo.gl/BWhpTh>


**How to Assess Your Leadership Style:** The following assessment gives you a good idea of your strengths as a leader. Knowing your leadership style may help you understand why you lead the way you do, whether changing your style will be easy, and what kind of people you need to hire to compensate for some areas of weakness. On a scale of 1 to 5, with 1 being never and 5 being always, rate yourself on the following statements: <http://goo.gl/AVhjYy>

**Complimentary e-book to IEEE members from. IEEE-USA:** The "Starting Your Start-Up" e-book series is designed for the engineer or entrepreneur who has a promising product or service idea, but no real marketing expertise. "Book 2: Market Size and Strategy" helps flesh out the initial plan and find the real market size, even when dealing with a disruptive technology in which market size data is hard to find. The book also helps the entrepreneur better understand the target buyer and how to communicate the value of their product or service, thus increasing the probability of early and ongoing sales. The author

Candia shares that “choosing a market cannot be done lightly, yet many startups ignore this step and rush to market with a product that they feel is suited to anyone.” Choosing the first market segment involves the following steps, among others: selecting the candidate industries/markets; segmenting the markets; defining characteristics of each segment; determining the optimal category; short-listing and sizing the segments; and selecting your target market and segment. “Starting Your Start-Up -- Book 2: Market Size and Strategy” can be downloaded at <http://goo.gl/BJdxeg> for free to IEEE members.

**Complimentary e-book to IEEE members from. IEEE-USA:** “Writing for Success -- An Engineer’s Guide -- Volume 2: The Road to Excellence.” Is the free e-book for members of IEEE in which the author Tom Moran shares that while it would be great to “let our fingers fly across the keyboard to rough out a report, run spell check, and send the results off to be printed or distributed, the finished product would mostly likely be filled with inaccuracies, be unclear to the readers, and ultimately -- ineffective.” He points out that the road to writing excellence is filled with revisions. He emphasizes that writers must thoroughly examine what they write; ask questions to ensure their information is accurate, complete, logical and clear; and most importantly, that the information is necessary. Checking for spelling, punctuation and proper grammar is a must. Moran writes that attention to detail takes a critical eye and that good writers test, write, rewrite and test again. Moran assures readers that following the process will gradually improve their writing and instill confidence “on the road to writing excellence.” “Writing for Success -- An Engineer’s Guide -- Volume 2: The Road to Excellence” can be downloaded at <http://goo.gl/5FxazD> for free to IEEE members.

**TryEngineering.org goes mobile:** <http://tryengineering.org> IEEE’s online engineering education resource for pre-university educators, parents, and students, is now available in a new mobile-friendly format. Visitors can now access the TryEngineering content they love, anywhere, any time, on virtually any device including desktops, tablets, and smart phones. Visitors to TryEngineering can explore engineering disciplines, learn how to prepare for a career in engineering, and read profiles of engineers and engineering students. They can also find information about student engineering camps, competitions, scholarships, and research programs. TryEngineering’s university search tool enables visitors to find accredited engineering programs at thousands of institutions in dozens of countries around the world. The site offers over 100 free hands-on lesson plans aligned to national education standards. TryEngineering also features a number of free game apps to engage and excite students about engineering. The TryEngineering mobile site features adaptability to various screen sizes, a more streamlined navigation, and a touchscreen-friendly interface. The mobile site was made possible through generous support from the IEEE Foundation.

**IEEE dues change for e-Membership:** The e-Membership program started as a pilot in 2011. The intent of the pilot was to test the impact of substantially reduced dues on membership recruitment and retention in countries where the per capita gross domestic product is US\$15,000 or less. Data has shown that there was no significant increase on recruitment or retention during this period. Thus, a dues increase is necessary to make the program economically sustainable. The MGA Board approved an increase in dues for the e-Membership option this past June. Dues for e-Membership, beginning with the 2015 membership year, will be US\$75, an increase of US\$23. 



# Autonomous Meshworm Robot

## Mimicking Earthworm

Earthworms are nature's best friends. They tunnel deeply in the soil and bring subsoil closer to the surface mixing it with the topsoil. Slime, their secretion, contains nitrogen, an important nutrient for plants. Their bodies are made up of ring-like segments called annuli. These segments are covered in setae, or small bristles, which the worm uses to move and burrow. There are approximately 2,700 different kinds of earthworms.

Researchers, fascinated by the unique capabilities of these wonderful creatures of nature, are working on creating robots with soft, pliable exteriors that would be suited to exploring hard to reach places and go through bumpy terrain. A team of researchers from MIT, Harvard University and Seoul

National University has developed a robotic, autonomous earthworm called Meshworm, mimicking an earthworm. It crawls across the floor and can survive hammer blows or stamping with foot.

A conventional robot is solid and metallic, with arms, legs or wheels or tracks. The researchers have worked on a robot capable of covering rough terrain and squeezing safely into very small spaces, like

the earthworm. Its form of locomotion is based on *peristalsis* – the rhythmic expansion and contraction of muscles used also by snails, sea cucumbers and for moving food down the human esophagus and through the intestines. Meshworm doesn't have muscles. Instead, it's made out of a flexible mesh tube comprised of a very springy heatsealed polymer. The muscle like capabilities are given using a number of shape-memory wires made of a nickel/titanium alloy. Shape memory

materials can be bent, or twisted out of shape, but once released, they snap back to their original shape. This particular type of alloy wire has the peculiar quality of contracting when heated and then returning to its original shape when cooled. Some of these wires are wrapped around Meshworm's polymer tube body in a coil.

A circuit board with a small battery inside the meshworm run a computer programme, sending an electric current through the wires, heating them and causing them to contract. By alternating heated and cooling areas, Meshworm can undulate like a worm and crawl.

[For details: <http://animals.nationalgeographic.com>, <http://www.babyzone.com>]



### Words of Wisdom

*Never forget where you've been. Never lose sight of  
where you're going. And never take for granted the  
people who travel the journey with you.*

*– Susan Gale*



# IEEE NEWS

## From Around India

### 25<sup>th</sup> IEEE Delhi Section Quarterly Meet

IEEE Student Branch of PDM College of Engineering, Bahadurgarh, Haryana hosted the 25<sup>th</sup> IEEE Quarterly Meet on September 6, 2014 with great amounts of zeal and enthusiasm. Student delegates from



more than 25 colleges attended the quarterly meet. Dr. S.D. Sharma, Chair, Computer Society of India was the chief guest. Dr. Prerna Gaur, Secretary, IEEE Delhi Section, Dr. Rachna Garg, Treasurer, IEEE Delhi Section, Mrs. Vanita Aggarwal, Scientist, DRDO blessed the event by their presence.

The prime motive of the meet was to bring out an improvement in networking amongst various established student branches and work towards the development of a more effective communication channel. Also, discussion on the common issues that the student branches throughout the northern section of India come across was the part of the agenda for the meet. This huge event commenced with the lightening of lamp by Prof.(Dr.) V.R. Singh, Branch Counselor, IEEE SB, PDMCE and other prominent dignitaries. Prof.(Dr.) V.R. Singh gave the inaugural speech and enlightened the members about the benefits of IEEE. This moderated

discussion was followed by a cake cutting ceremony on the occasion of Silver Jubilee of IEEE Quarterly Meets.



After the lunch break, Mr. Geetansh Anand overwhelmingly shared his experience working with IEEE Delhi SAC. The students, later, were divided into teams for the ice-breaker event of the day, treasure hunt, which was entertaining and refreshing experience for everyone.

The closing ceremony was completed with the vote of thanks by Vice-Chairperson, IEEE SB PDMCE. It was the first attempt by PDM College of Engineering hosting a quarterly meet and the agenda of the meet was seemingly near fulfillment.

**Report by: Vaibhav Kohli**



# IEEE Mumbai Section

## IEEE PRESIDENT MEETS BOMBAY SECTION AND INDUSTRY LEADERS FROM THE CITY

IEEE Bombay Section had the privilege of hosting IEEE President Dr J Roberto de Marca and his gracious lady, Ms Thelma on 28 October 2014. This was the fourth visit of a CEO & President after Charles Alexander in 1997 and then Dr Michael Lightner and W Cleon Anderson a decade later.

The day began with a visit to Tata Institute of Fundamental Research arranged by Dr B Satyanarayana, Tech Activities Chair [separate report]



Roberto greeting members at the gathering  
[right = Mr John Menezes, Life Member]

At mid day a gathering comprising invitees from Industry, Life and Senior members and veterans from Bombay Section and the Execom assembled at the Anchorage Hall of Royal Bombay Yacht Club near Gateway of India, the venue of scores of IEEE Bombay events. Among the guests was Dr F C Kohli, who shared his experience of the early days of IEEE in India.

Roberto made it a point to individually meet and greet every single person at the function as soon as he entered. After a welcome address from the Section Chair, a detailed presentation on the IEEE and on Bombay Section activities was made

by Mr Aiyappan Pillai, Secretary.

In his brief address, Roberto dwelt on current issues faced by the Institute, including the challenge of relevance and member value add and retention of student members.

Special mementos were presented to the IEEE couple by Bombay Section Chair, Mr Atindra Banerjee and Mrs Banerjee.

IEEE India Office and IEEE HQ were instrumental in facilitating the visit of Dr Roberto and the Bombay Section Execom team did the rest.



Dr F C Kohli with Dr MV Pitke (Past Chair of Bombay Section)



IEEE President addresses the gathering on 28 October in Mumbai

In the evening Dr Roberto visited C-DAC, Centre for Development of Advanced Computing to witness the signing of a MOU with IEEE. His host was Director C-DAC, Dr Zia Qureshi, Bombay Section Industry Relations Coordinator.

**Anthony Lobo**

Vice Chair IEEE Bombay Section



### *Words of Wisdom*

*If life is no fun, it is because you are no fun.*

*Your life is always a reflection of who you are...*

*Try this: Stop taking things, including yourself, so seriously.*

*Life is not as complicated as you have made it out to be.*

*- Larry Winget*

\*\*\*\*\*

*Man is a creation of desire, not a creation of need.*

*- Gaston Bachelard*



## Brief report on Professor José Roberto Boisson de Marca, IEEE, President's visit to the Tata Institute of Fundamental Research (TIFR), Mumbai, INDIA on October 28, 2014

Prof. José Roberto Boisson de Marca along with Mr. Harish Mysore, Director, IEEE India Operations visited TIFR from 9:45am to 11:45am. He was accompanied by Mr. Aiyappan Pillai, Secretary and Mr. Anand Gharpure, Web Master of the IEEE Bombay Section. Dr. Satyanarayana Bheesette, Senior Scientific Officer (TIFR) and TPAC (IEEE Bombay Section) welcomed the delegation at TIFR.

Prof. De Marca was taken around the permanent exhibition<sup>1</sup> of the Homi J. Bhabha, the founder of TIFR and father of the Indian Atomic Energy Programme. He then visited the detector and instrumentation laboratory of India-based Neutrino Observatory (INO) project<sup>2</sup>, Semiconductor Optoelectronics and Nanostructures laboratory<sup>3</sup> and BARC-TIFR Pelletron LINAC Facility<sup>4</sup> and keenly interacted with the scientists and engineers there.

An informal interactive meeting of some of the scientists and engineers<sup>5</sup> was then organised with Prof. De Marca. On behalf of the Director, TIFR and all its members Dr. Dr. Satyanarayana Bheesette has presented Prof. De Marca with a bouquet of flowers, after which the TIFR members had introduced themselves by briefing about their respective areas of research. A short video on TIFR's history and scientific programmes was screened. This was followed by a brief address by Prof. De Marca and active discussions on areas of mutual interest. The following main issues were touched upon and it was agreed to take them forward for consideration and execution.

1. Cooperation between TIFR and IEEE for the outreach programmes
2. Organisation of a workshop at TIFR on the IEEE standards and follow up
3. Open access journals of IEEE
4. Pay and publish
5. Dutch government programme

The meeting ended with Dr. Satyanarayana Bheesette thanking Prof. De Marca and other IEEE members for their visit to TIFR and for their active interaction. He also gifted a coffee table book on Homi Bhabha along with reports on TIFR scientific activities to Prof. De Marca.



<sup>1</sup> Ms. Oindrila Raychaudhuri

<sup>2</sup> Dr. Satyanarayana Bheesette

<sup>3</sup> Prof. Arnab Bhattacharya

<sup>4</sup> Prof. Vandana Nanal

<sup>5</sup> Prof. Paritosh Pandya, Prof. Jaikumar Radhakrishnan, Dr. R. Vijayaraghavan, Dr. K. Samudravijaya, Prof. Arnab Bhattacharya, Mr. Parag Shah, Prof. Vandana Nanal, Dr. Satyanarayana Bheesette and Mr. Jaydeep Gore



**Vision 2020 with The Internet of Things**  
**February 14, 2015 – Visakhapatnam, India**  
**Venue: TBD**  
**A Super Computing Consortium of India Initiative**  
<http://www.sccpcc.org>

Today we live in a world where globally the name of the game for all successful companies is innovation; Innovation in the context of computing and communication is increasingly leading to a convergence of the world of computers with the natural world. This trend is increasingly leading to the Internet of Things or the Society of Things.

The Industrial Internet, the Smart Grid, The Intelligent Transportation System, The Smart Lighting System and the Smart Utility can all be seen as manifestations of the IoT. With over USD 14 Trillion in projected market size by the year 2020, the Internet of Things is an opportunity that is comparable to the US GDP at about USD 17 Trillion in 2014.

The 1 day event titled Vision 2020 with The Internet of Things focuses on 3 basic themes – The Industrial Internet, The Smart City and The Smart Country. After expert talks and panel discussions, the event concludes with a round table session where every delegate gets a chance to contribute.

#### **Speaker List**

The programme will feature renowned speakers from the Object Management Group, The Industrial Internet Consortium and Super Computing Consortium of India.

#### **Program Schedule**

<b>SNO</b>	<b>Start Time</b>	<b>End Time</b>	<b>Description</b>
1	09:30:00	10:15:00	Inaugural Session. Will include The Panini Award, and KeyNote speech by Recipient of The Panini Award Dr. Richard Mark Soley, President, The OMG
2	10:15:00	11:30:00	Building The Industrial Internet ; Presentations and Panel Discussions
3	11:30:00	11:45:00	Tea Break
4	11:45:00	13:00:00	Making The Smart City ; Presentations and Panel Discussion
5	13:00:00	14:00:00	Lunch
6	14:00:00	15:30:00	Building The Smart Country ; Presentations and Panel Discussion
7	15:30:00	15:45:00	Tea Break
8	15:45:00	17:00:00	Vision 2020 with The Internet of Things; A Round Table

**Please send participation and sponsorship inquiries to**

General Chair, Gopi Bulusu – [gopi@sankhya.com](mailto:gopi@sankhya.com)

**Stay Tuned** - Event details will appear at <http://www.sccpcc.org>

Knowledge Partner – Super Computing Consortium of India ([www.sccpcc.org](http://www.sccpcc.org)) SCCI-IoT-Vision2020-02



# IEEE Madras Section

## CSI Research Symposium

31<sup>st</sup> January – 1<sup>st</sup> February, 2015 :: 9.30 AM to 6.30 PM

**Supported by**

**IEEE Computer Society**

**IEEE Professional Communication Society**

Computer Society of India (CSI) announces the CSI Research Symposium (supported by IEEE CS & IEEE PCS) to encourage the scholars to showcase the core details and highlights of their research initiatives to the academic and industrial communities. This event will reveal the emerging trends in technology, and point towards the future requirements and possibilities. The interactions will yield direct relations of the researchers with the industry and with prospective users of the technology.

**Dates:** 31<sup>st</sup> January and 1<sup>st</sup> February 2015

**Timings:** 9.30 a.m. to 6.30 p.m. on both days, with Breaks for Lunch, Tea

**Venue:** CSI Education Directorate, Taramani, Chennai

The Researchers are encouraged to submit the Technical Concept and the Presentations. These will be analysed by a Technical Group, and the best ones will be selected for presentation.

The presentations will be made to an audience of subject experts and professionals. Possible applications will be identified and future courses of action for development and deployment will be considered.

**The Research Presentations:** The CSI Research Symposium will have 30 selected Research Presentations over two days, each Presentation with a maximum duration of 20 minutes and 5 minutes for discussion.

**Subjects:** Information & Communication Technology (ICT), IT Enabled Services (ITES), Electronics, related topics and sub-areas in the above major subjects

**Inviting the Research Scholars:** PhD Scholars, full time and part time, are invited to register and send the Technical Concept and the Presentations to be considered for inclusion. M.Tech students are also invited to register and send Technical Concepts and Presentations for consideration. Please conform to the prescribed format and guidelines for the Technical Concepts and the Presentations.

**Inviting Academic and Industry Professionals:** The event will be an occasion to learn the advances and trends in technology, and to identify topics of further research and industrial applications. Academic and Industry Professionals are encouraged and invited to attend the symposium, and create direct links with the researchers to enable continued development and deployment of the project concepts.

**Format and Guidelines for Technical Concepts and Presentations:** The Technical Concepts, about 4 to 6 pages, shall candidly enumerate the objectives, technical highlights, innovation, application potential, linkages to other domains, etc. to convey the essence of the work and its relevance. The Presentation shall have 15 to 20 slides that manifest the gist of the research work, emphasizing the technology innovations, prospects of further research, impact, industrial applications, etc., creating a vivid image of all aspects of the work.

### Timeline

15 December 2014 -- Interest to participate

25 December 2014 -- Last Date of Receipt of Technical Concepts and Presentations

15 January 2015 -- Confirmation of Selected Presentations

31 January and 1 February 2015 -- Symposium

*For the Brochure and Registration, Please see the link*

<http://www.csi-india.org/web/guest/csi-research-symposium>







**Computer Society of India, Chennai Chapter**  
**IEEE Computer Society, Madras**  
**IEEE Professional Communication Society, Madras**

## **Student Essay Contest** **Harnessing the Power of ICT for our New Initiatives**

Computer Society of India, Chennai Chapter, in association with the IEEE Computer Society, Madras and IEEE Professional Communication Society, is pleased to announce an Essay Contest on the role of Information & Communication Technology (ICT) in India for school and college students. The contest will be in two streams:

- Stream 1: Open to School Students (from 8<sup>th</sup> Standard to Plus 2)
- Stream 2: Open to College Students (UG students of all disciplines)

Now ICT has ubiquitous presence in India and other parts of the world, and it is being applied in various fields such as Manufacturing, Banking & Finance, Telecom, Healthcare, Hospitality, Transportation, Education, Agriculture, Environment, eGovernance, eCommerce, and Defence for quality and productivity improvements. India is a major force in the global IT landscape. ICT is a key driver of our economic development and accounts for about 6.5% of our GDP and provides employments to over 3 million people. The Government of India has recently launched three major initiatives – Digital India, Make in India, and Clean India, in which ICT can – and should - play significant roles. Through this contest, we seek your thoughts, innovative ideas and solutions on how ICT could support and help these initiatives.

An eligible participant is required to submit the essay on any one of the following topics by

**31<sup>st</sup> Jan 2015:**

- 1. ICT for Digital India**
- 2. ICT for Make in India**
- 3. ICT for Clean India**

Submissions will be assessed by a panel of experts on criteria such as originality, novelty, applicability, potential value of the proposed idea(s) and clarity and style of presentation.

The contest winners in each stream will be awarded the following prizes & certificates:

One 1st Prize: Rs. 10000

- Two 2<sup>nd</sup> Prizes: Rs. 5000 of each
- Four 3<sup>rd</sup> Prizes: Rs 2500 of each
- Ten Consolation Prizes: Amazon gift voucher of Rs. 1000 each
- Certificate of Merit: For 25 shortlisted essays over and the above prize winning essays

**For more details & complete brochure, please visit the website: <http://goo.gl/FziCmK>**





IEEE SB AMACE

**IEEE INDIA COUNCIL – PROFESSIONAL ACTIVITIES**  
**IEEE CONTROL SYSTEM SOCIETY – MADRAS SECTION**  
**&**  
**IEEE SB OF**  
**ARULMIGUMEENAKSHI AMMAN COLLEGE OF ENGINEERING,**  
**VADAMAVANDAL**



IEEE India  
Council



## Report

Technical Lecture on **“Inverse Kinematics and Control of Serial Robots”**

**By**

**Dr.SandipanBandyopadhyay,**  
**Department of Engineering Design, IIT Madras.**

=====

The IEEE India Council – Professional Activities, IEEE Control System Society- Madras Section and the IEEE SB/ SAE of Dept of Mechanical Engineering/ISTE students chapter/branch of ArulmiguMeenakshi Amman College of Engineering, Vadamavandal Jointly organized a Technical Lecture on “Inverse Kinematics and Control of Serial Robots” by Dr.SandipanBandyopadhyay, Department of Engineering Design, IIT Madras on 5/12/2014 from 10.30 onwards @ seminar hall of AMACE.

**Dr.R.Hariprakash, Vice Chair (Professional Activities) IEEE India Council, Secretary IEEE Control System Society- Madras Section** welcomed the speaker and participants for the technical lecture. He briefed that (IEEE - the world’s largest professional association for the advancement of technology)IEEE India Council and CSS Madras Section regularly organizes such technical lectures by experts for the faculties and students benefit in various parts of the states/country. This program is organized at AMACE Institution, Vadamavandal especially to cater to faculties and students of the rural districts namely Kanchipuram and Tiruvanamalai of Tamilnadu.

Dr.R.Hariprakash in his address explained the importance of the robot applications and the research developments of robotic innovations. He briefed on the application of serial manipulators for the pick and assembly operations in industry and added that the technological advancement has helped in creation of human resemblance robots and in future the robots will replace almost all functions of a human. He requested all the participants to utilize the knowledge resource of the speaker Dr.SandipanBandyopadhyay and thanked the speaker for accepting the invitation.

Dr.M.R.Mohan, Principal AMACE, thanked and honored the speaker Dr.SandipanBandyopadhyay, IIT Madras. Mr.S.Manojkumar, Dept of Mechanical AMACE introduced the speaker.

**Dr.SandipanBandyopadhyay, Department of Engineering Design, IIT Madras** gave an interesting presentation starting with details on the concepts on inverse kinematics. He emphasized on the Degree of freedom (DoF) i.e the freedom of movement of rigid bodies and concept of degrees of

freedom in the kinematics of machines.

Dr.SandipanBandyopadhyay described his work on kinematics and serial robots. He added that the Serial manipulators are the most common industrial robots and detailed its applications. His practical demonstration by inviting one of the participants and explaining the basic concepts citing the shoulder/arm/wrist of the human as an example was quite interesting.

Dr.SandipanBandyopadhyay outlined on kinematic joints; design of mechanisms – problems in reverse kinematics and the solutions for solving systems of polynomial equations. He also briefed on the tools available and parallel manipulators applications. He concluded his presentation with thanks for the organizers.

Prof. S.RameshBabu, Dept of Mechanical Engg, AMACE thanked the speaker, IEEE India Council, IEEE CSS, and other professional society chapters for their cooperation in organizing this technical lecturer. A total of 45plus faculties' from various institutions participated in this technical lecture.

**Report by: Dr.R.Hariprakash, Vice Chair (Professional Activities) IEEE India Council.**



**Standing from left to right: Prof.S.RameshBabu, AMACE, Dr.SandipanBandyopadhyay, IIT Madras, Dr.M.R.Mohan,Principal AMACE and Dr.R.Hariprakash, Vice Chair (Professional Activities) IEEE India Council and Secretary IEEE Control System Society – Madras Section are seen during the technical lecture.**



### *Words of Wisdom*

*If you have a goal, write it down. If you do not write it down, you do not have a goal -- you have a wish.*

*- Steve Maraboli*

*To give and then not feel that one has given is the very best of all ways of giving.*

*- Max Beerbohm*

## Tutorial on Mobile Security



IEEE Computer Society, Madras chapter and Computer Society of India, Education Directorate, Chennai jointly Organised a program on Mobile Security on 2<sup>nd</sup> December, 2014. About 50 participants across all the sections such as Academic, Industry and Students attended the programme.

There is hardly any privacy when we use a mobile phone. This is true whether we use Android, Apple, or a Windows phone. By design? Why are we silent about it? Even legitimately elected governments are spying on their own citizens using prevention of terrorism as a justification. This talk explored what privacy data mobile phones leak and how we can see evidence of it. With this objective in mind, the the following topics were covered.

- **Everybody Should Know Enough About OS:** There will always be efforts to make digital computing sensually appealing. But we won't be able to make the OS that controls the digital computing go away. We will examine what is in Apple iOS and Android.
- **Every Thing You Should Know About Android:** Android phones now (2014) account for 88% of all smart phones in the world. Even if you use some other smart phone, you should learn a great deal about Android, to be knowledgeable about a platform where many practical innovations are likely to happen.
- **Linux Within Android:** The prerequisite to understanding Android internals is Linux. This talk describes the Linux embedded within Android, and how it differs from desktop Linux.
- **Mobile Phone Security Exploits:** Smart phones are lot less secure than the old flip- feature phones were as smart phones are computer systems, with many more hardware devices than a typical PC
- **Root Your Android Device:** Rooting an Android devices enhances its functionality. There are some  $250 \times 10^6$  units in use in 2014. It is safe to say that at least 1% of these are rooted. The first goal of this talk is to explain what rooting is and how it is done. Our second goal is to present a judgment rubric whether you should do it or not.
- **Flash A Custom ROM to Your Android Device:** Savvy users are no longer satisfied with the vendor supplied Android ROM. They want greater control of their device. This talk explores the technical internals of what is involved.

The resource person was Prof. Prabhaker Mateti, Associate Professor, Dept of Computer Science and Engineering, Wright State University, Dayton, Ohio , USA. He has completed his Masters Degree in Computer Science, Indian Institute of Technology at Kanpur and Ph.D. in Computer Science, University of Illinois at Urbana-Champaign, USA

Mr. H.R. Mohan, Chair IEEE CS & President CSI, inaugurated the program and introduced the resource person. The participants expressed their satisfaction in attending a worthwhile program to update their knowledge during their feedback





## Professional Development Program on Internet of Things (IoT)



IEEE Computer Society, Madras Chapter and Computer Society of India, Chennai Chapter jointly organised a one day Professional Development Program on “Internet of Things (IoT): Technology, Applications, and Impact - How you can capitalize on the next big thing in IT” on Friday, 21st November 2014.

Internet’s evolution is an ongoing process. Besides connecting billions of computers, mobile devices and people, it’s now poised to connect various things such as cars, sensors, controllers, TVs, machinery, and electrical appliances, creating Internet of Things (IoT). IoT is the next big thing in IT; it’s bound to reengineer and transform everything again -- including business, industry, healthcare, and personal and social life, as it facilitates deployment many new applications and services that were unimaginable till recently. Many tech giants, start-ups and professionals have begun to capitalize on IoT’s promise with launch of new hardware, software and applications. The IoT market will grow enormously creating new business and job opportunities as businesses and consumers adopt IoT and other supportive technologies for various purposes. It’s time to understand what IoT is and what are its potential, and look at how you can leverage and benefit from it.

This PDP on a hot topic of interest and relevance was organised to help the participants to get a holistic overview on IOT – concepts, technologies, applications, potential impact, and outlook. It was expected to equip participants in their journey into a new era where everything is connected and interact and collaborate with other things creating a smarter world.

The programme coverage included:

- ☐ Introduction to IoT

- Architecture of IoT
- Supporting Technologies
  - Hardware, software, communications, standards
- Applications in several important domains, and use cases
- IoT, Cloud Computing, Big Data and Smart Systems
  - Internet-connected ecosystem,
- Issues and concerns, and how they can be addressed
  - Security, privacy, dependability and more
- Development and deployment considerations
- Platform-as-a-Service (PaaS) for IoT
- Networking and Computing Challenges for IoT
  - Scalability, security, interoperability
- IoT Applications and Deployment Scenarios with focus on mobile phone based sensing
- Lightweight yet reliable and secure protocols for uploading mobile phone sensed data to cloud
  - Candidate Lightweight Protocols – CoAP and MQTT as compared to HTTP
  - Enhanced CoAP
  - Adding reliability and security to CoAP
- Distributed Computing for mobile phone based sensing
  - Mobile Cloud Computing and Fog Computing
  - Framework for Distributed Execution
  - Workflow assignment between cloud and edge
- Implications and opportunities
  - Monetizing the IoT
- IoT Outlook

The resource persons at the PDP were:

Dr. San Murugesan, Editor in Chief of IEEE IT Professional; Director of BRIT Professional Services; and adjunct professor at University of Western Sydney, Australia; A corporate trainer, a consultant and an author. More at [www.bitly.com/sanprofile](http://www.bitly.com/sanprofile)

Dr Arpan Pal, Head of Innovation Lab at TCS, Kolkata. More at <http://www.tcs.com/about/research/researchers/Pages/Pal-Arpan.aspx>




The PDP was inaugurated by Mr. H.R. Mohan, President, CSI who in his address highlighted that IoT is the next wave in the era of Internet and its growth is largely fuelled due to the advances in Internet, mobile, embedded devices and sensor technologies. He added that IoT will have a major impact in the areas of manufacturing, transportation, utilities, healthcare, smart grids, smart cities, agriculture to name a few. Industry analysts estimate that anywhere between 30 to 50 billion devices will be connected by 2020 and the business impact of IoT will be in the order of about USD 19 trillion – a mind boggling amount. IoT will provide opportunities for all.

There was display of books by the publishers Pearson India and CRC Press with a range of books on IoT and related subjects. They also offered a discount of 20% on the books.

The participants were provided access to the special issue of CSI Communications on Internet of Things which was published in Apr 2014 apart from the slides of the presentations by the resource persons.

The PDP was attended by over 60 participants comprising of mostly industry professionals and academic faculty. The sessions were highly interactive. The participants provided an excellent feedback on the PDP. 🇮🇳



 <b>AMACE</b> <b>IEEE SB</b>	<b>IEEE India Council – Professional Activities</b> <b>IEEE Control System Society – Madras Section</b> <b>&amp;</b> <b>IEEE SB of</b> <b>Arulmigu Meenakshi Amman College of</b> <b>Engineering, Vadamavandal</b>	 IEEE India Council 
---	---	---

**Two days Workshop and Hands on Training on Control Systems – Real Time Applications**  
 21<sup>st</sup> and 22<sup>nd</sup> November 2014.

### **Report**

The Two days workshop (WTCSRTA'2014) was inaugurated by Dr.R.Hariprakash, Vice Chair (Professional Activities) IEEE India Council and Secretary IEEE Control systems Society – Madras Section, in the presence of Dr.M.R.Mohan Principal, AMACE and Prof.S.Rajappa, Director AMACE at the Seminar Hall of EEE Dept. of AMACE on 21/11/2014.

Dr.R.Hariprakash formally welcomed the participants from various institutions, universities and Industries. He outlined the objective for organizing this workshop and the importance of having such Workshop and Hands on Training and added that these workshops will expose the participants to the developments in the specific research areas; also to learn practical knowledge with training from Industry experts. He presented the schedule of technical expert lectures from academic /industry experts that shall be delivered during this workshop.

On the first day (21/11/2014) of the program it had four sessions:

Dr.M.R.Mohan former professor Anna University and Principal AMACE delivered the technical lecture on “Introduction to Control Drives and Systems”. In his presentations he elaborated on the control parameters for better load distribution. He also briefed on the Economic Dispatch Control importance and its impact on the industry.

The next session was presented by Dr.K.Udhaykumar, Department of EEE, CEG Campus, Anna University. He presented his lecture on “Time Domain and Frequency Domain Analysis”. He interacted with the participants effectively during his presentation. He detailed on the Stability of Linear Feedback System; Routh Hurwitz Stability criterion; frequency response methods using MATLAB etc., Design of Feedback Control systems and concluded with taking Q&A from the participants.

Dr.S.Jeevananthan, Dept of EEE of Pondicherry Engineering College, Pondicherry conducted two sessions post Lunch. During his first session he presented on “AC Drives Case Study – MATLAB SIMULATION of V/F controlled induction motor”. The industrial application and speed control of induction motor was also discussed in detail. He also presented the comparison of IEEE standards for induction circuits and explained its applications; lastly in his second session he trained the participants

with practical demonstrations referring to case studies using the MATLAB simulation – PWM Invertors/ SIMULINK Model along with its output waveforms.

The second day (22/11/2014) of the workshop started with the a presentation from Dr.S.Ganeshkumar, CEG Campus of Anna University on the topic “Control system for DC drives” He presented to the participants an e-text book namely “Control Device Techniques in Power Electronics Devices”. He started his presentation on research areas in DC drives and continued his presentation on selection of DC motor drives; Passivity based control scheme and its applications; Comparative study of ESDI and ETEDPOF schemes etc.,

The team from AUTOCADD Mr. U. Swaminathan Business Manager, CADD CENTER Kanchipuram and Mr. P.Manojkumar Head CADD CENTER Kanchipuram and the Business Support Engineer Mr.RajKumar presented to the participants the software application of AUTOCADD Electrical; this is built specifically to create and modify electrical control designs. The usage of tools was practically demonstrated by the experts to the participants. He also demonstrated the methods available for correctness in the error that can be done using this software.

Mr.Jai Murugan, Product Manager from Edutech India Pvt Ltd the leading providers of education solutions and the distributors for QUANSER presented the control system concepts to the participants. QUANSER are the world leader for end- to- end solutions for control systems. All the engineering educators and researcher are more effectively engaged to the challenging concepts and innovative designs through QUANSER.

Mr.Jai Murugan explained to the participants with Hands on Training with the QUBE SERVO – a low cost teaching platform with fully integrated components, ideal for introducing students to basic control concepts relevant to real world applications. He explained to the participants the use of encoders to measure speed; develop PD compensator to control the position of the rotary servo load shaft. The practical demo of the QUBE SERVO was received well by all the participants. This session ended with interactive questions and answers with the participants.

The feedback and concluding session was the last session of the second day of the workshop and training.

Dr.R.Hariprakash, Vice Chair (Professional Activities) IEEE India Council and Secretary IEEE Control systems Society – Madras Section and Dr.M.R.Mohan Principal, AMACE distributed certificates, workshop technical material and thanked all the 52 participants.

The workshop had participants and resource persons from leading educational institutions / universities namely Anna University, VIT University, SRM University, INDIAN ARMY, Dr.MGR Educational and Research Institute University, Pondicherry Engineering College, MAHER University, Aksheyaa college of engineering, Arulmigu Meenakshi Amman College of Engineering (AMACE) , MCE, SMIT, St. Joseph’s College of Engineering, Kings College of Engineering, Thanjavur, S.V. University , Tirupathi and other institutions

**Report by: Dr.R.Hariprakash, Student Branch Counselor, IEEE SB AMACE**



In photo: Dr. R. Hariprakash, Vice Chair (Professional Activities) IEEE India Council inaugurating the workshop along with Dr. M. R. Mohan Principal, AMACE and Prof. K. Udhaykumar Anna University, Chennai



In Photo: The team from AUTOCADD Mr. P. Manojkumar Head CADD CENTER Kanchipuram Mr. Raj Kumar, Mr. U. Swaminathan Business Manager, CADD CENTER during their presentation.



In photo: Dr. K. Udhaykumar, Department of EEE, CEG Campus, Anna University. Presented his lecture on "Time Domain and Frequency Domain Analysis".



In Photo: Mr. Jai Murugan, Product Manager from Edutech India Pvt Ltd explaining the participants with Hands on Training with the QUBE SERVO.



In photo Dr. S. Jeevananthan, Dept of EEE of Pondicherry Engineering College gave hands on training on MATLAB SIMULATION of V/F controlled induction motor to the participants.



Dr. R. Hariprakash and Dr. S. Ganeshkumar, Anna University distributing certificate to one of the participant Lt. Col Mr. Chiranjeev Das from Indian Army.





## IEEE IAS Madras Chapter Faculty members programme under Pan IIT Alumni Leadership Series

A Program focusing on building industry academia relationship, was inaugurated by Mr. S. Rajavel, Chairman IEEE IAS Madras Chapter and Executive Vice President & Head - Water & Renewable Energy IC, L&T Construction in presence of Mr. H.R. Mohan Chairman, IEEE Computer Society Madras Chapter



and other IEEE delegates and senior executives from Renewable Energy BU. Program was attended by 24 faculty members hailing from 7 different engineering colleges.

Program involved presentations from Mr. Abdul Hanif Khan (Head – CSP Initiatives, L&T) and Ms. Harshitha S. Kumar (Head – Microgrid Initiatives, L&T) providing insights about solar technologies namely CSP (Concentrated Solar Power) and Micro grids & Energy storage options respectively. Sessions were designed to provide comprehensive review of technology development. Areas of research, development and innovation in Renewable Energy was high-lighted by Dignitaries.

Program was also tailored to showcase the challenges to overcome for scaling up and commercialization of newly developed CSP technologies and Micro Grid applications. IEEE as a forum for catalyzing innovation with Industry-Academia partnership was appreciated by the gathering.

The program concluded with the participants visit to L&T's museum and L&T's solar roof top installation.



### Words of Wisdom

*The reason people find it so hard to be happy is that they always see  
the past better than it was, the present worse than it is,  
and the future less resolved than it will be.*

*- Marcel Pagnol*



## Information for Chapter chairs about the Transition

On 1 January 2015, TMC transitions from an IEEE Council to an IEEE Society. This transition will impact all of the existing TMC Chapters, and will bring new opportunity to Sections without current Chapters. The specifics of the situation are as follows:

- Technical Councils in IEEE do not have individuals as members: their members are Societies. As a Council, TMC has 14 Member Societies. The current Chapters have large membership, because the membership of the Chapter is the sum of all of the local members of all 14 of these Societies.
- Societies do have individuals as members, so when TMC transitions to TEMS, the new Society, and hence the Chapters, will need to have members in order to maintain their status.

Building this membership base will be difficult, as today many of our current members are not aware of the transition, as such they do not know of the new Society, and hence will not know to join. In order to keep the Society and the Chapters alive, we need to work at both the Society and the Section level to ensure that those members who are interested in management and leadership understand that there is now a Society which they can join for networking at the local level, and for publications, conferences, and educational products from the Society. This offers a new opportunity for Sections without a current Chapter, as there is now something that can be offered, addressing management areas specifically.

Please help to ensure that people understand that they need to click the box for TEMS on their renewal form in order to remain or become connected to Technology and Engineering Management. The option will be available as of September 2, 2014.



### *Words of Wisdom*

*There is no such thing as gratitude  
unexpressed. If it is unexpressed, it is  
plain, old-fashioned ingratitude.*

*- Robert Brault*

# IEEE Kerala Section

## Congratulations!!!

Congratulations on the formation of

- IEEE Kerala Life Members Affinity Group
- IEEE Kerala Circuits and Systems Society Chapter

## All Kerala WIE Summit

An all Kerala WIE Summit was organized during 31<sup>st</sup> October – 2<sup>nd</sup> November 2014 on the themes Women In Computing, Women In Technology and Women In Leadership to commemorate 20 years of WIE in IEEE Kerala. The event was organized at different geographic locations of the state.

- *Women In Computing*

The session was inaugurated by Mr.SatishBabu, Vice Chair MGAB (Awards & Recognition) touching upon the latest innovations in the Technical domain encompassing societal changes. Technical Sessions included a talk on

- o IPV6 by Ms. Sunitha C, Dy. Director, Depart of Telecommunications
- o Data Visualization by Ms.Malini Ramachandran , TCS
- o Engineering to Management and Employment to Entrepreneurship by Ruby Peethambaran, COO, Fourth Ambit.



- *Women In Technology*
  - o **Dr. Tessy Thomas**, Missile Woman of India delivered a talk on “*Women In Technology*”, stressing on the importance on having education among girls and being a leader oneself.. She shared some of her experiences as the Project Director of AGNI IV Missile Missions



in India. She said, “*Making others do is tougher than doing something yourself*”. She advised everyone to work when you are at work, and be at home when you are at home.

- o Dr. RamalathaMarimuthu, Past Global WIE Chair spoke about “***After The Break: Returning Mothers***” giving importance to not giving up in life. She mentioned “*outside world needs our help and it can be achieved through women like us*”. She added that career is a part of our life, and we have to become role model for others. She touched on every single factor pertaining to the comeback of women. She stressed on the factors that take you up in the ladder – confidence, networking and keeping yourself updated. She concluded with the note “*You don’t have to apologize for taking a break; you will learn something on the way*”.
- o The technical session on ***Internet of Things (IoT)*** started after having a short tea break. The talk was given by **Dr. SatishBabu**. He mentioned the 20 important technologies focused by IEEE, explaining about each and every basic aspect of it. Some of which include Big Data and Analytics, 3D Printing, Cloud Computing, Cognitive Computing, Networking, IoT, Bio Informatics, and most importantly Security Cross Cutting. He gave an introduction to IoT, features and its applications. The technical talk was followed by a presentation (recorded video) of **Nita Patel**, Chair WIE and **Takako Hashimoto**, R10 WIE Co ordinator. The presentations helped participants understand more on the mission and vision of IEEE WIE. Nita Patel also mentioned the 2014 WIE highlights and the upcoming WIE International Leadership Conference to be held at California.



- ***Women In Leadership***

A panel discussion on the topic “When Women In Kerala Lead: Insights to Budding Lady

Professionals” was conducted to develop the managerial and leadership quality among girls. The speakers included

- o Ms. Mary Matilda, (Retd.) Principal Maharaja’s College, Ernakulam
- o Ms. Minu Mathew, FCA, CISA, Senior Partner of Minu& Thomas Chartered Accountants
- o Ms. Latha Raman Jaigopal, Director & Principal Co ordinator, Inspiration
- o Ms. Sujatha M. T., AGM, Kerala State Financial Enterprises Ltd.
- o Dr. Bijuna K. T., Chair, PES Chapter, IEEE Kerala Section.



## Branch Councilors Congress

IEEE Kerala Student Activities Committee organized the Branch Councilors Congress at Travancore region and Malabar region to network and share best practices among Student Branch Councilors in Kerala. The congress serves to streamline the activities of various student branches spread across the state. The SAC and SR briefed all councilors on effective measures to be taken in SB administration and student member benefits.

## Forthcoming events

- International Conference on Computational Systems and Communication organized by LBS Institute of Technology for women in technical sponsorship from IEEE Kerala Section during 17<sup>th</sup> & 18<sup>th</sup> December, 2014.
  - o Keynote 1: Sri B Remani, Executive Director, CDAC Trivandrum
  - o Keynote 2: Prof V U Reddy, Honorary Professor position with IIT, Hyderabad
  - o Keynote 3: Dr. Manoj Franklin, University of Maryland, USA.

- o Keynote 4: Dr.V.S. Sukumaran Nair, University at Dallas
- IEEE Kerala LINK CAMP scheduled to be held during December 20 – 22 at KMCT College of Engineering, Calicut.
- Inauguration of SPS Chapter scheduled to be held on 17<sup>th</sup> December by Dr K S Dasgupta, Director IIST Trivandrum.
- Branch Councilors Congress in Cochin region on 13<sup>th</sup> December, 2014.
- Inauguration of Consultants Networks Affinity Group.
- Inauguration of Life Member Affinity Group
- Inauguration of Circuits and Systems Society Chapter

## Call for Papers: International Conference on Emerging Trends in Technology and Applied Sciences – ICETTAS 2015.

IEEE SAINTGITS Student Branch in association with IEEE SAINTGITS SSCS Society Chapter, IEEE – IAS SB Chapter and SAINTGITS College of Engineering is organizing, **International Conference on Emerging Trends in Technology & Applied Sciences (ICETTAS 2015)** on **30<sup>th</sup> April, 1<sup>st</sup> & 2<sup>nd</sup> May 2015** at SAINTGITS Campus, Kottayam, Kerala, India. ICETTAS 2015 will be a confluence of Researchers, Scientists, Engineers and Scholars in all arenas of Engineering, Technology and Applied Sciences and an International forum for the dissemination of original research results, creative and innovative ideas, practical developments which concentrate on both theory and practices.

ICETTAS 2015 is organized in technical collaboration Institution of Engineers India (IEI), Indian Institute of Metals (IIM Trivandrum Chapter), Computer Society of India (CSI), Solar Energy Society of India (SESI), Indian Society of Technical Education (ISTE), Society of Automotive Engineers (SAE), Autodesk and National Instruments.

**Last date for manuscript submission: 26<sup>th</sup> January 2015**

Log on to [www.icettas2015.org](http://www.icettas2015.org) for online paper submission & further details.



## Elevation as Senior Members

453 elevations across IEEE, globally  
 113 elevations from Region 10  
 17 from India

Data provided by: Anthony Lobo



## IEEE EAB Award 2014 in Continuing Education

IEEE Educational Activities Board Awards recognize and honour individuals and institutions for major contributions to engineering and technical education – for meritorious activities in accreditation, continuing education, educational innovation, pre-university education, service to the IEEE EAB, standards education, employee professional development and informal education systems. The Meritorious Achievement Award for Continuing Education, the 30<sup>th</sup> year this year, was awarded to a team of two professionals under the India Council – from Kerala Section.

“For contribution to the design and delivery of faculty training modules that improve the quality of educational instruction and student learning” the Award was received by Prof. V. K. Damodaran, (Life Senior Member, Section Chair (1991) and Executive Vice Chair of India Council (2001), and Editor of India Council Newsletter and IEEE India Info for 10 years) and Ranjit R. Nair, (MDC Chair, Kerala Section and Chair Kerala GOLD in 2012 & 2013) at EAB Award function in New Jersey on 22 November 2014. The Award in the same category of 2013 was bagged by Prof. S. N. Singh, Chair Professor of EE at IIT Kanpur.



*Prof. V K Damodaran & Ranjit R Nair with the IEEE Vice President Educational Activities and Chair EAB Dr. Saurabh Sinha and Awards and Recognition Committee Chair Dr. Karen A. Panetta*

India Council salutes these volunteers for maintaining the visibility of IC to the global IEEE and to the world of technical education and requests them to continue their volunteering in furthering the mission of IEEE – Advancing Technology for Humanity.



### *Words of Wisdom*

*Ask yourself: How significant is my life?*

*Do I make a difference? When I move...*

*when I act... when I do something...*

*does the universe notice?*

*Do I really matter?*

*-Andy Andrews*



## Wireless Power Transfer To Run Large Transportation Systems

The Korea Advanced Institute of Science and Technology (KAIST) and the Korea Railroad Research Institute (KRRRI) have developed a wireless power transfer technology that can be applied to high capacity public transportation systems such as railways, buses etc. This may put an end to the present fossil fuel or overhead electric line based transportation systems. The new, wireless technology supplies 180 kW of power at 60 kHz remotely to transport vehicles.

The researchers of KAIST and KRRRI have recently demonstrated the wireless power transfer technology by testing it on the railroad tracks at Osong Station in Korea. Originally, this technology was developed as part of an electric vehicle system introduced by KAIST in 2011 known as the *On-line Electric Vehicle (OLEV)*.

OLEV does not need to be parked at a charging station to charge the battery. It gets charged while running, idling, and parking, enabling a reduction in size of the reserve battery down to one-fifth of the battery in a regular electric car. OLEV complies with the national and international standards of 62.5 mG, a safety net for electromagnetic fields. In July 2013, for the first time since its development, OLEV will run on a regular road, an inner city route in the city of Gumi, requiring 40 minutes of driving each way.

If trains receive power wirelessly, the costs of railway wear and tear will be dramatically reduced. There will be no power rails, including electrical poles, normally seen in a railway system, and accordingly, lesser space will be needed. Tunnels will be built on a smaller scale, lowering construction costs. In addition, it will be helpful to overcome major obstacles that discourage the construction of high speed railway systems such as noise levels and problems in connecting pantograph and power rails.

KAIST and KRRRI plan to apply the wireless power transfer technology to trams in May and high speed trains in September 2013.

[For details: <http://www.sciencedaily.com>, <http://www.kaist.edu>, <http://www.katech.re.kr> ]



Vol. 9 No. 9

December 2014

*For Private Circulation*

Editor : **N.T. Nair**

Publisher : **Dr. M. Ponnaivaikko**  
for IEEE India Council

email: [ieeeindiainfo@gmail.com](mailto:ieeeindiainfo@gmail.com)

Website: [http://www.ewh.ieee.org/r10/india\\_council/](http://www.ewh.ieee.org/r10/india_council/)