IEEE THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC

Chairman's Message

Dear Fellow Members,

'Change' is something about which we can all be sure. We experience it everyday – in workplace, home and society. Nothing remains static forever and the frequency with which new patterns emerge is getting faster day by day. Naturally, we, professionals have to be alert and must make regular adjustments to the revolutionary changes in technology, global economic approach to business and workforce make up, and the dramatic shifts in priorities that happen on a regular way. This makes it abundantly clear that success in the engineering profession demands that professionals make a life-long commitment to learning. IEEE, of course, is geared to meet this need of its members. But much more needs to be done within IEEE in the new circumstances, as otherwise the much talked about 'value for membership' may loose its sheen, in reality.

Some suggestions for consideration by IEEE volunteers at Section level:

❖ Form small *'well informed groups'* in Sections to act as reference sources in various techno-managerial areas for members to approach, when they need in-depth information. Even though Internet offers some help – mostly of a generic nature in various areas – much more is often needed in specific cases. Through appropriate networking at Region and HQ levels, the efficacy of such groups could be enhanced to provide world-class support. After all, IEEE, as a society can make this happen, with its well stretched out knowledge base.

❖ In addition to serving the needs of members, there could be *'societal interest groups'* formed for providing support to the society to address its common problems. This will help in creating the much needed visibility for IEEE among the common man. Our members do have the expertise which only needs to be spared for the benefit of society. In fact, one main mission of IEEE is to promote the engineering process of creating, developing, integrating, sharing and applying knowledge about electro and information technologies and sciences for the benefit of humanity.

Thus, IEEE should be known for playing its two roles efficiently – empowering its members and being of service to the society that made us what we are.

N.T. Nair

01 Mar. '07 — Chairman, IEEE India Council
Trivandrum — ntnair@gmail.com

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icon ADELCO 2007

Report on International Conference held in Kovilpatti : Branch Counselor's Congress

IEEE Madras Section joined the Department of Electronics & Communication Engineering of National Engineering College, Kovilpatti, Tamilnadu and conducted an international conference on *Advances in Electronics and Communication* (*icon* ADELCO 2007) from 1 to 3 Feb. 2007. The main objective of this conference was to provide a forum for interactions and sharing of expertise between academic institutes, R&D organizations and industry in the area of Electronics and Communication. It attracted 210 submissions with representation from various countries including USA, Germany, Malaysia, Canada and UK, in addition to the overwhelming response from all over India. Reviewed by the Advisory Board and the domain experts, 130 papers were selected for presentation at the three day techno-feast, organized into 9 sessions.

The conference was inaugurated by Mr. T. K. Sarkar, Senior Director and Head, Industrial & Electronics Application Development Division, Ministry of Communication and Information Technology, Govt. of India, New Delhi. The guest of honour Shri. R. Dhamodaran, Director, Software group, IBM India Pvt. Ltd., Chennai, delivered the special address. The conference proceedings was released by Mr. K. Ramaswamy, Chairman of the college and received by the Chief Guest. The Conference Souvenir was released by Mr. K. R. Arunachalam, Managing Committee member of the Institution and received by the Guest of Honour. Dr. Kn. K.S.K. Chockalingam, Principal and Prof. S. Sankaralingam (Co-convener) also spoke.

Prof. (Dr.) George Boeck of Berlin University of Technology, Berlin, delivered the keynote address on *Design of RF-CMOS Integrated Circuits for Wireless Communication*. Dr. Hanumantha Rao, Senior Scientist, SAMEER, Chennai, delivered a plenary lecture as K. Ramaswamy Endowment lecture, entitled *Emerging Trends in Antennas*. The other two important lectures were by Prof. (Dr.) M. Mukunda Rao of Dhanalakshmi Engineering College, Chennai on *Optical Communication for Satellites* and by Prof. (Dr.) S. S. Jamuar, University of Putra, Malaysia on *Current Trends in Low Voltage Analog Design for Wireless Application*.

Two tutorials were conducted in parallel, one on *Computer Networking* by Dr. S. Jayaprakash of IIT, Madras and the other on *Custom IC* by Mr. Srinivas Choudary of Cadence Design Systems India Pvt. Ltd., Bangalore. Mr. K. Sridhara, Member (Technology) of Dept. of Telecommunication, Govt. of India, New Delhi, delivered the valedictory address. A special address was given by Mr. V. Veerappan, Vice President & Co-Founder of Tessolve Services, Bangalore. Certificates were awarded to the delegates.

[From report by Prof. S. Sankaralingam, Co-convener, and Prof. V. Vijayarangan, Convener of this highly successful Conference]

By asking for the impossible, we obtain the possible – *Italian Proverb*

From India Council Secretary

Dear IEEE Member,

In the Feb edition of the newsletter, I have tried to introduce to you the *IEEE Xplore* service. In this edition, we will take a look at another member-oriented service called *myIEEE*. The myIEEE is a personalized gateway for the IEEE member. It presents a comprehensive view of the IEEE membership and the latest IEEE has to offer.

These include:

a.	Access individual Society memberships and subscriptions

b.	Connect with local IEEE Sections and volunteer leadership

c.	Find upcoming conferences

d.	Learn more about individual benefits

e.	Read the latest news from *IEEE Spectrum, IEEE Standards News* and *The Institute.* And so on.

For logging on to myIEEE, you may use your IEEE web account username and password. Only members are permitted to log in. Once you are logged in, you will be recognised by name, membership grade, membership number and section.

If you click on the rolodex icon adjacent to the Section, a pop-up window will tell you the current office bearers.

Among the services you will find in the myIEEE page, IEEE.tv is the newest, introduced in 2006. This is an internet broadcasting network which produces and delivers special-interest programmes about technology and engineering.

New programmes debut monthly.

Under the heading "Tools and Utilities", you will find links to Volunteer Desktop, Knowledge Desktop, Community Desktop and Profession Desktop

The Volunteer Desktop provides useful resources to volunteers. The Knowledge. Desktop is a consolidated area for research and subscription-related benefits. It contains modules for personalized subscription information, searching the IEEE online collection database, an RSS feed citing the 10 most downloaded articles from the IEEE Xplore online delivery system, and a file-cabinet link for subscribers of the IEEE Member Digital Library. The Community Desktop provides access to information on local and worldwide networking opportunities, as well as IEEE member grade elevation. This desktop also contains the "mySection" module, which connects members to information on their local section, its officers and its technical chapters.

In addition, the "IEEE Worldwide" module sorts and presents global IEEE activities and contacts by country or IEEE region. A listing of upcoming IEEE conferences is updated daily, with reference links to conference sponsors and contacts. The Profession Desktop enables direct searches of the IEEE Job Site as well as timely announcements on IEEE awards and scholarship opportunities.

The Membership Manager, which appears below Tools and Utilities, contains the most commonly used, online membership utilities. Links point to existing applications, where Members can update their profiles, add services, learn more about elevating their grade, and renew their membership.

"My Memberships" lists active Society or Standards memberships personalized to the Member. When an additional Society or Standards membership is added, the listing will dynamically appear. Conference listings are concatenated to each membership, and dynamically updated, when the Member revisits myIEEE.

Just below "My Memberships", you will find "Service Advisor". This feature is activated once a Member has completed his or her technical interest

Emerging Energy Option: Treethanol

Trees are a source of fuel from time immemorial. But now a new concept of using trees for energy is catching on with a high-tech edge. The idea is to make what is called "treethanol", a biofuel that in the form of ethanol came in the past from maize (corn) or sugar cane.

Why should we use trees as a feedstock for ethanol? Because, this promises to be much more energy efficient. The ratio of the energy yielded by a given source to the energy needed to produce it is called the "energy balance". The energy balance for ethanol made from maize is 1.3; in other words, the ethanol yields only 30% more energy than is needed to produce it. For ethanol made from sugar cane in Brazil, IEA says, the energy balance is 8.3. But for ethanol made from trees, grasses and other types of biomass which contain a lot of cellulose, the energy balance can be as high as 16 - at least in theory. In practice, the process of making "cellulosic" ethanol is more difficult and expensive than producing it from other crops. But, researchers have gone even now a long way in developing ways to ferment, distill and refine wood quickly and cheaply.

The interest in cellulosic ethanol is arising from the drawbacks of making ethanol from maize and sugar, which are important food crops. As ethanol production is stepped up around the world, this increased demand is hiking the prices of everything from animal feed to soft drinks and biscuits. The price of corn rose by 70% between September 2006 and January 2007 to reach its highest level in a decade in such countries, according to "The Economist".

So, if cellulosic ethanol is to stand up to its promise, researchers will have to find cheaper and more efficient enzymes. Grass, trees and other biomass – feedstocks - consist of a mixture of tough materials like cellulose, hemicellulose and lignin, that help plants keep their shape. Two large producers of industrial enzymes—Genencor, an American firm, and Novozymes, of Denmark—are working to reduce the cost of cellulase enzymes, which can break down cellulose, to bring the price of ethanol to below $0.10 per gallon. For its part, Diversa is developing enzymes capable of breaking down hemicellulose. One approach is to tweak the structure of existing enzymes to try to make them work better. Another approach is to do "bio-prospecting", i.e., looking for natural enzymes in unusual places, such as in the stomachs of wood-eating termites.

The idea of Treethanol has special appeal for countries that have a lot of trees, export lumber and import a lot of fossil fuel, like New Zealand. In 2005 NZ exported lumber worth US$ 290m and imported fossil fuel costing US$ 3.2 billion). India and China could do well to turn to trees for fuel, as they need less care and inputs like water and manure when compared to the edible plants hitherto have been depended upon.

[Adapted from "The Economist"]

profile (TIP). The Service Advisor matches the Members' TIP codes with memberships and publications available from the IEEE. Recommended memberships are linked to summaries describing the features and benefits of each membership offering. Recommended publication products are linked to their respective home pages on the IEEE Xplore platform.

The most exciting part of myIEEE is found in the rightmost column where links to various publications of IEEE are available. These include IEEE Spectrum, Institute, and news related to IEEE standards.

I hope I have created sufficient interest in you to start using your myIEEE right away, if you haven't already.

Cheers!

K G Satheesh Kumar
Secretary, India Council, IEEE

Bite off more than you can chew, then chew it! — Ella Williams

AES-COM-LEO-SOCIETY CHAPTER

Report on 2006 Activities

IEEE Aerospace & Electronic & Systems, Communications & Laser & Electro-Optics, Society Chapter of India Council has been extremely active during the year 2006. Here are some of the highlights:

1. AWARDS AND RECOGNITIONS

a. The Chapter has been awarded the Asia/Pacific Region Chapter Achievement Award for 2006, for achieving excellence in chapter activities and for contribution made in furthering the objective of the IEEE Communication Society.

b. The IEEE Aerospace and Electronic System Society honored the India Council AESS Chapter as the Outstanding Chapter of Region 10 for its 2005 activities.

2. TECHNICAL ACTIVITIES

1. The Chapter organized IEEE Seminar on "Aeronautical Navigation & Communications: Present & Future" at New Delhi from 17-18 August 2006. Seminar was a great success with 165 participants from 48 different organizations and with Dr. V. P. Kodali as General Chair. Prof. Zafar, in his address on *IEEE AESS and its leadership in facilitating technology growth and exchange of technical information* outlined the close linkage of IEEE with academia and the industry. Dr. K. Ramalingam, Chairman, Airports Authority of India, inaugurated the event and made a presentation on *Emerging Technologies to meet the upcoming challenges in the field of CNS-ATM in India*.

The seminar participation was complimentary for IEEE Members including Students. The industry whole-heartedly supported the seminar in terms of sending their participants and sponsorship. Airports Authority of India, Ministry of Civil Aviation, Indian Space Research Organization, Council of Scientific and Industrial Research and Department of Information Technology technically supported the seminar. The Seminar was financially supported by IEEE-AESS.

2. The Chapter in association with IEEE Hyderabad Section organized AES All-India Student Project Contest 2006 and was supported by IEEE Aerospace and Electronic Systems Society (AESS) under a special grant to IEEE-India AES/Com/LEO Societies Chapter and was open to all IEEE Student Members residing in India. Technical areas of the projects were however restricted to be within the AESS fields of interest.

The following prizes were awarded:

First Prize of Rs. 20,000 cash award: 'Autopilot Development for Mini UAV: Hardware-Software Co-Design', by Mohit Mangal, Mohit Mundhra, Gaurav Gupta & Shobhit Niranjan, Indian Institute of Technology, Kanpur.

Certificate of Merit for 'Design and Fabrication of Automatic Tyre Inflating System' by J Guru Prasad, D Harikrishna, S Rajesh & D Saravana Sunder, Sona College of Technology, Salem, Tamilnadu. & 'Advanced Step in Mars Exploration', by TV Abdul Anas Monsha, CS Anoob & CA Ameersiraj, Sri Natayana Gurukulam College of Engineering, Kolenchery, Kerala.

Further, Professor Rajat Moona of IIT-Kanpur, who guided the First Prize winning entry was presented with Certificate of Recognition and membership of IEEE and AESS for 2007.

3. The Chapter in association with IEEE Hyderabad Section organized seminar on 'Trends in Aeronautical Navigation and Air Traffic Management' on 19 August '06.

4. The Chapter in association with Department of Information Technology organized six Distinguished Lectures during the year.

5. The Chapter in association with Eagle Photonics organized 5 technical programmes on the various facets of the technical area.

6. The Chapter also supported 35 Lectures/Seminars /Conferences/ Workshops/ DLT's both in terms of technical and financial.

7. In addition, 24 promotional activities were planned and executed.

[Abridged from the Report by Society Chairman **Dr. R. G. Gupta**]

Crescent Engineering, Madras

No. 1 out of 1519!

From H. Kalyanasundaram, based on Laura Durret's report from HQ

It gives me great pleasure to forward you the missive from Laura Durrett.

It is indeed great that Crescent Engineering, Madras, with 693 student members tops the list of 1519+ student branches of IEEE around the world, as of 31 Dec 2006. Crescents have made it their habit to be among the top 5 Branches. In 1998 they were #3 with 392 students (Texas - Austin #1 with 748); In 1999 they were #4 with 578 (Thadomal of Bombay were #1); In 2000 they were #1 with 789; in 2001 #4 with 519 (Georgia as #1 with 791); In 2004 they were #4 with 433 (Pune Inst of Comp Tech #1 with 861); and now in 2006 they are #1 at 693 with veteran Georgia at #2 with 610. Incidentally, from 1984 for which I hold data,

Georgia Inst of Tech Atlanta (R3) have been consistently in the Top 5 and in Top #1 position 9 times. Let me hear you cheering Crescent Engineering! The third place in 2006 is taken by Alexandria Univ., Egypt, with 472 (They were #5 with 399 last year).

The 2003 established Maharashtra Academy of Engg., Pune (Bombay Section), has come 4th with 455 students and are the #2 Branch of Region 10.

Please give a big hand to this newcomer! Velammal Engg Madras with 430 holds the #5 position - the 2nd Branch of Madras to be in the top 5 and they have come to this stage for the first time.

In the Top 30s, giving honor to Bangalore Section, we also have for the first time Shri Jayachamarajendra college of Engg, Mysore, with 267students at #26 position and Manipal Inst of Tech with 258 keeping company at #29 slot.

The 30th position is held by Univ. of California, Berkeley Branch.

It is gratifying to find 8 Branches - 2 in Madras, 4 in Bombay and 2 in Bangalore find place in the top 30 of the World. Meantime, let us rejoice at the achievements of the Top 8, who made us, the IEEE Community in India, proud. I sincerely hope and pray that IC and Sections concerned will recognize, honor and encourage the Top Branches. Best Wishes to all our student members.

FORM IV

Statement about ownership and other particulars about newspaper IEEE India Info to be published in the first issue every year after the last day of February

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I, N.T. Nair, hereby declare that the particulars given above are true to the best of my knowledge and belief.

sd/=

Date: 1 March '07   Signature of Publisher

Men take only their needs into consideration – never their abilities –Napolean Bonaparte

Technology News

Inexpensive Water Filter To remove Arsenic

In developing countries like Bangladesh (border areas of West Bengal also) and in many African countries, arsenic pollution of drinking water is a serious problem. Arsenic is colourless and tasteless, so no one can know that they are drinking arsenic laden water. Arsenic causes cancer and skin ailments and millions of people are suffering in developing countries, where there is no proper water purification.

Prof. Abul Hussam of George Mason University, who hails from Bangladesh, has developed a low cost, maintenance free, water filtering system and has won $1 Million Grainger Challenge Prize for Sustainability.

After years of research, he developed a simple system that uses sand, charcoal, bits of brick and shards of cast iron as a filter. This filter forms a chemical bond with arsenic and let only clean water to pass through. Hussam says it can be made at a cost of $40 each and can serve the public for getting regularly, water free of arsenic.

Fast and Sensitive Virus Detector

Researchers at the University of Twente, in the Netherlands, have developed an ultra-sensitive sensor that could potentially be used in a handheld device to, within minutes, detect various viruses and measure their concentration. The sensor consisting of a silicon substrate containing channels that guide laser light, could be used to quickly screen people at hospitals and emergency clinics to control outbreaks of diseases such as SARS and the bird flu. All it would take is a tiny sample of saliva, blood, or other body fluid.

Currently available methods to detect viruses are also sensitive. But they require laborious preparation of the fluid sample and only give results after several days. Since viral diseases can spread rapidly, researchers are looking for easier and faster ways to directly detect viruses.

A matter of Consideration

"The first time I was in Sweden, one of my colleagues picked me up at the hotel every morning. It was September, bit cold and snowy. We would arrive early at the company and he would park far away from the entrance (2000 employees drive their car to work). The first day, I didn't say anything - either the second or the third day. One morning I asked, "Do you have a fixed parking space? I've noticed we park far from the entrance even when there are no other cars in the lot." To which he replied, "Since we're here early, we'll have time to walk to the door, and whoever gets in late will be late and need a place closer to the door. Don't you think?"

The writer (anonymous) has been working for 18 years in Volvo, a well known Swedish firm. Any comment? – Ed.

Editorial

India poised; Are we ready?

Last two years and a little over, we have been hearing the whole world speaking to Indians that this great Nation has taken off. Sixty years into independence, our economy and infrastructure have been waiting and waiting to hear that gunshot for the race to begin. We have been overtaken by our still larger neighbour China, by strides. While India became independent in 1947 and P. R. China was founded in 1949, and we both started 5 year plans in 1952, we were equal in power production. But, by now China has crossed 4,50,000 MW with India at 1,15,000 MW. China had a lead in telephones – both land and mobile – till recently, but now the status has almost been reversed. In software capability, India is crowned and China has to come a long way. In hardware and industrialization, as well as in road, rail and air transportation infrastructure, China is currently far ahead. But, India is poised to grow. In the next 5 years, it is expected that an equivalent of US$ 100 billion will be invested in the power sector. By 2032, we want to reach 8,00,000 MW. Our railways, highways, airports and transport services are growing by leaps and bounds.

All these require much beyond money and political courage; inputs from professionals and especially from the kind of expertise IEEE members in India possess. Are our engineers – majority of them are outside the IEEE circle – ready for this national exercise for emergence? It looks as though IEEEians should lead the way, train the rest and take them along. Then, India is set to Shine!

Trivandrum   **Prof. V. K. Damodaran**
2007 Mar. 01   vkd@ieee.org

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