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CHAIRMAN'S MESSAGE

Dear fellow members,

Please allow me to reiterate about the IEEE Job Site. This site viz. <http://www.ieee.org/jobs> available exclusively to IEEE members can help you locate career opportunities easily and confidentially. Since many Companies are recruiting talented engineers and multinationals are also setting up operations in India, members in India can really benefit from this. Most of the Companies are in the process of tying up with IEEE Job sites for their recruitment needs in India since top employers know that IEEE members are the most qualified electrotechnology and IT professionals in the World. Take a few minutes to register with the IEEE Job Site and check out your career options.

IEEE Spectrum in its **◆Pundits ponder what 2004 portends◆** column in the Jan 2004 issue states that according to Goldman Sachs India **◆s** economy will be a trillion US dollars by 2010 and by then India will be turning out half a million engineering graduates annually. A related news item appeared in The Economic Times recently and it seems India would be looking for a large number of qualified Engineers by the year 2007 or so. All this points to the fact that our profession is growing larger day by day and we in IEEE have to be alert to provide the right image to ensure the growth of our strength and in turn the service to the Society at large. May I request the esteemed members to share the following with fellow professionals.

IEEE indeed is Real VALUE. We all depend on IEEE publications to bring to our organizations the latest technology research and Standards. IEEE publications provide us with over 1 million online documents - including top-cited journals, cutting-edge conferences and vital Standards, all at reasonable prices. Research shows that IEEE journals are just 58% of the average journal price in the field on a page-for-page basis. That **◆s** why 81% of IEEE customers are satisfied or highly satisfied with the value of IEEE content. IEEE publishes information for the advancement of Science - not for profit. We can trust the information published by IEEE thanks to the IEEE editors and peer reviewers.

With 120 journals and magazines, 350 annual conferences and more than 900 active Standards, IEEE publishes the science that helps make the world a better place.

Congrats to the Student Branch at Chengannoor in Kerala Section for getting the IEEE Center of Excellence award.

The IEEE annual elections are fast approaching and this time we can cast our vote electronically. The lone candidate from India is our Hyderabad Section Chair Mr J A Chowdhary for the post of Region 10 Director elect. My apologies for only mentioning one name in the last issue of the Bulletin, from the team of Delhi section that did a wonderful job of elevating many a members to SMs.

With best wishes and regards,

Mumbai

1August **◆04**

R. MURALIDHARAN

Chairman - IEEE India Council

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EDITOR'S DESK

◆Date stamp ◆ A good retrieval tool◆

When I handed over my visiting card, the first thing he did was to scribble something on it. After our discussions, I took liberty to ask what he was doing on my card. During the school days, his father used to insist on his noting down the date on the margin when ever class notes are written, he said. This habit is continued today also. Date stamping every document, visiting card etc had been a boon on several occasions whenever back-references to the visits or discussions became necessary. In fact, the date on the visiting card may unfold the entire sequence of events that took place, several months or years back.

Keeping postal envelopes as proof of delivery date is a practice in some offices and even with individuals. In many legal matters, this can come handy to prove one **◆s** point. e-mail messages are already with date and time data on them, making life easy.

Documentation is a major part of activities in technical and managerial fields and final documents are cleared after several iterations, running through a number of draft copies. Date and time stamps in each draft copy will come handy when trying to sift through several copies of documents lying around. As a corporate directive, this practice may be insisted upon on all those preparing documents.

In IT field, the date stamp on software documentation is used to estimate the expertise in the organization as well as the productivity of software personnel. Similar analysis could be done to evaluate the productivity of personnel in other jobs as well, especially in the services sector. Such estimates are very useful for planning future projects, assess HR requirements and related matters. It also tells us how many revisions of a document were made and how often it was reviewed and revised etc.

Date stamping is simple to practice and the benefit it might bring about at some crucial time, could be enormous. Let us make it a way of life, if not already done.

Trivandrum

1 August '04

N.T.Nair

Editor

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Technology in Brief

THE PENDANT PROJECTOR

The small screen of a cellphone is not the best way to show off the photos and video clips. A pendant-like image projector hung around the neck is the solution, as per Hewlett-Packard. The dangling battery-powered device, about the size of a walnut, will beam an enlarged view of the phone's screen onto any nearby surface, enabling several people to view it.

The projector gets data via a Bluetooth radio link and a bright LED produces a light beam. Reflected from a small moving mirror, this rapidly traces out a series of horizontal lines to make up the image, like the lines on a TV screen.

TOUCH-SCREEN TECHNOLOGY ♦ A NEW APPROACH

A touch-screen sensor that works like a flat-panel loudspeaker in reverse has been developed by British audio company NXT and Us-based 3M.

Today's touch sensitive screens on PDAs or PCs work by sensing changes in an electric field caused by the pressure of the stylus or finger. But the NXT/3M panel ♦listens♦ for the vibrations caused by touch - using much simpler and potentially cheaper technology.

NXT's flat-panel speakers use piezoelectric transducers at the sides of a flat panel to flex it, creating sound waves that radiate into the air. The touch panel reverses this principle, using transducers at each corner to convert touch vibrations into electricity. When you press a virtual button on the screen, a microchip triangulates the time of arrival of the vibrations at the transducers to work out where on the screen - and therefore which button - you pressed.

The transparent panel would be mounted on top of an LCD display, and could be a few centimeters wide for PDA or up to a metre wide in a whiteboard application. Usefully, the microchip can easily spot and filter out vibrations such as accidental palm pressure or some one placing a coffee cup on the surface.

NEW DESALINATION TECHNOLOGY

Thermal gradient technology to produce potable water at a cost of 25 paise per litre through desalination is now ready for deployment under an initiative of Dept. of Ocean Development, Govt of India. This technology essentially exploits the temperature difference existing at various depths of the ocean, ranging from 26-27 degree Celsius on the surface to 13-14 degrees down 200 metres. This thermal gradient would be used to produce fresh water through flash evaporation. Currently, reverse osmosis method of desalination is in practice.

DOGS TO HELP DIAGNOSE DISEASES

Dogs have long been used to sniff out explosives and drugs, track criminals and find missing children. Now, researchers are attempting to harness the olfactory powers of canines for use in the field of medicine.

Scientists are training dogs in the hopes that they may one day be able to reliably diagnose certain forms of cancer by smell, and help doctors catch these diseases earlier than conventional diagnostic tools currently allow.

Already dogs are used to warn of epileptic seizures, low blood sugar and heart attacks, although whether they are detecting changes in smell or physical behavior is still unknown. And, while they may not be able to perform

CPR or operate a cardiac defibrillator (at least not yet), some canines do know how to call 911.

Much of the research in this area is based on the theory that disease causes subtle chemical changes in the body or alterations in metabolism, which in turn releases a different smell, or chemical marker.

This isn't anything magic, says Dr. Larry Myers, associate professor at the Auburn University College of Veterinary Medicine in Auburn, Ala., who has personally tested the olfactory capabilities of more than 4,000 dogs over the last two decades. Physicians have always used their own senses to determine the presence or absence of disease.

For instance, diabetes was once diagnosed by the smell or taste of a patient's urine. Certain infections in burn victims can be detected by the smell of a patient's skin, and bad breath is often a sign of gum disease.

Recent small-scale studies of dogs' ability to detect the chemical markers of cancer, specifically melanoma, have shown promising results. The phenomenon was first briefly reported in 1989 in the British journal *The Lancet* and, since then, preliminary evidence has slowly been accumulating that suggests dogs may indeed be able to differentiate between healthy skin cells and cancerous ones.

Part of what makes a dog's sense of smell so sophisticated is its ability to smell multiple layers of chemicals, says Myers. Dogs don't detect a single chemical but a combination of them. If (they were identifying) just a single chemical, medicine might have picked up on it. The dog may be doing something a little better, says Myers.

The biggest challenge for scientists lies in designing experiments that can accurately determine dogs' success rate in detecting disease and whether or not they perform better than existing diagnostic methods. Implementing rigorous controls has been a major obstacle, as has been finding adequate numbers of willing patients and doctors.

Correctly training the dogs themselves has also posed a difficulty for researchers. You're asking the dog to discriminate something by smell without knowing what the smell is, says Dr. Jim Walker, director of the Sensory Research Institute at Florida State University.

While it's unlikely a canine will be joining the cast of *ER* anytime soon, researchers say if dogs do turn out to possess an ability to accurately detect disease, they could make a significant contribution to public health.

It's going to be very useful for large-scale screening of populations, says Myers. And it's certainly going to be effective in third-world countries that don't have the resources to do sophisticated (laboratory) tests.

Dogs that diagnose cancer may be a ways away, but some medical pooches are already on the job, warning their owners of epileptic seizures, high blood pressure, heart attacks, migraines and low blood sugar.

Little research has been done to unravel the mystery behind dogs' ability to warn of a seizure or other medical crisis, but most observers believe it is based on canines' keen observational skills, sense of smell, or a combination of both.

There would have to be some type of chemical change or physiological change in the body, says Sharon Hermansen, executive director of Canine Seizure Assist Society of North Carolina. People can't tell when (a seizure) is coming on, so there's something the dogs are doing that we can't figure out.

Whether a dog has been trained to predict seizures, heart attacks or low blood sugar in diabetics, each animal develops its own set of signals to warn its owner. Some will walk in front of a person and refuse to move, others will knock their owner into a chair, while some will simply freeze and stare.

And yes, dogs have even been trained to call 911 on their own in the event of a medical emergency. Given that most telephones aren't made for use by large furry paws, trainers have had to use more dog-friendly devices, such as step lights and pull cords, says Joan Bussard, founder of Amazing Tails Inc., a service and alert dog training program based in Oxford, Pa.

The most difficult part of training alert dogs is not teaching them to warn of a medical crisis they can either do this on their own or they can't but training owners to recognize their pet's signals, says Bussard.

Sometimes it's very clear and other times it's very subtle. You have to play a guessing game, says Bussard. When they learn to talk, we'll be in good shape.

Library Scan

"Ad Hoc Wireless Networks: Architectures and Protocols"

Book by: C. Siva Ram Murthy and B.S. Manoj (IIT Madras)

Published by: Prentice Hall, New Jersey, USA

Ad Hoc Wireless Networks comprise mobile devices that use wireless transmission for communication. They can be set up anywhere and any time because they eliminate the complexities of infrastructure setup and central administration-and they have enormous commercial and military potential. This book addresses every major issue related to their design and performance. It presents state-of-the-art techniques and solutions, and supports them with easy-to-understand examples. The book starts off with the fundamentals of wireless

networking (wireless PANs, LANs, MANs, WANs, and wireless Internet) and goes on to address such current topics as Wi-Fi networks, optical wireless networks, and hybrid wireless architectures.

◆ There are only two forces that unite men - fear and interest◆

◆ Napoleon Bonaparte

◆ It is not what life takes away from you that counts.
It◆s what you make of what is left with you◆

◆ Hubert Humphrey

◆ Half of our mistakes in life arise from thinking when we ought to feel and feeling when we ought to think◆
Robert Frost

IEEE NEWS & EVENTS

WORLD CONGRESS ON LATERAL-COMPUTING (WCLC)

The First **World Congress on Lateral-Computing** will be held in Bangalore, ◆the Silicon Valley◆ of India during December 17◆19, 2004. The World Federation on Lateral-Computing (WFLC) in association with Bangalore Chapter of ACM is organizing this 3 day event.

The WCLC is also co-sponsored by Infineon Technologies and IEEE local Chapters. It is technically co-sponsored by IEEE Systems, Man, Cybernetics Society, L& T Infotech and WFSC. IBM USA is organizing a workshop during the congress. Some of the special sessions on topics such as Multimedia informatics, fractal computing, fuzzy logic in e-business are already announced as a part of the congress. International conference on High Performance computing (HiPC 2004) will be held during the same time as WCLC 2004.

Visit the website of WCLC 2004 for more information.

<http://www.lateral-computing.org/wclc/>

FROM WITHIN IEEE

v__TERAHERTZ SECURITY REVEALS WHAT LIES BENEATH

Two UK companies, TeraView of Cambridge and Smiths Detection of Hertfordshire, are designing security scanning systems using terahertz technology that could reveal images of hidden explosives. The tricky part of designing this apparatus for practical use has been to create scanners that reveal what is sought after and nothing else. You see, terahertz imaging can reveal what lies beneath as if the subject were unclothed. To find out how the technicians dealt with this delicate issue, visit:

<<http://www.newscientist.com/news/news.jsp?id=ns99996118>>

v WIRELESS GRIDS: A NEW TYPE OF RESOURCE SHARING NETWORK

The latest in wireless technology, called wireless grids, will connect mobile or fixed location devices to form a new resource-sharing network, according to an article in this month◆s issue of IEEE Internet Computing magazine. The common use of wireless devices allows the possibility for one device to take advantage of another device◆s resource. According to the authors, the wireless grid has the potential to network remote locations around the world by extending grid computing applications. For an more information:

<<http://dsonline.computer.org/0407/f/w4gei.htm>>

v__SENSORS & PRIVACY: IEEE SPECTRUM REPORTS

Can technology and privacy exist hand-in-hand? Costs, convenience, and security all converge on a world with more sensors, bigger databases, and much less privacy. In a special cover feature, this month◆s issue of IEEE

Spectrum takes a close look at today◆s sensor technologies, their potential impact, and what is likely to come next. Read the articles, including a short story by award-winning science-fiction author Vernor Vinge, at:

<<http://www.spectrum.ieee.org/WEBONLY/publicfeature/jul04/0704sens.html>>

v IEEE ANNOUNCES NEW WAY TO ACCESS ONLINE TECHNICAL INFORMATION

The IEEE has announced the release of IEEE Enterprise, a new product developed to deliver online technical information to businesses with a need for instant access to IEEE content. Subscribers to IEEE Enterprise will be

able to choose from three levels of access to IEEE information. Each level will allow a specific number of full-text article downloads from the online collection of IEEE magazines, journals, transactions and conference proceedings. Access continues until all downloads are exhausted, at which point a subscription may be renewed. For more information on IEEE Enterprise:

<http://www.ieee.org/enterprise>

v SURVIVAL SKILLS FOR YOUNG PROFESSIONALS

Today's engineering graduates are expected by their employers to step right off campus armed with the skills for organizing projects, leading teams, and dealing with difficult managers. But project management and interpersonal communications aren't typically taught in engineering schools. How do you acquire such skills? Read on at

<http://www.theinstitute.ieee.org/portal/index.jsp?pageID=institute_level1_article&TheCat=2201&article=tionline/legacy/inst2004/jul04/7w.featuregold.doc.xml>

v MIXED NUMBERS ON U.S. HIGH-TECH EMPLOYMENT

The number of employed computer software engineers in the United States fell from 856,000 in the first quarter of this year to 725,000 in the second quarter, according to the Department of Labor. Employed computer scientists and systems analysts also saw a decline, from 672,000 to 621,000, while computer hardware engineers dropped by 3000, to 83,000. While the job market for computer professionals may be weakening, the number of employed EEs rose by 24,000 to 351,000 over the same period. The latest unemployment figures are summarized in a statement from IEEE-USA, accessible at:

<<http://www.ieeeusa.org/releases/2004/072604pr.html>>

NEWS SCAN

BANGALORE ♦ WORLD'S LARGEST IT EMPLOYER

The Silicon Valley of India, Bangalore, has beaten the Silicon Valley of US, California with 1,60,000 technology professionals working in the IT and ITES-BPO sectors. The number is the largest in one place on the planet.

While about 1,00,000 professionals work in IT companies, the remaining 60,000 are working in the ITES-BPO sector. The number of working professionals is expected to cross 2,00,000 during the year 2004-05 with many IT and ITES-BPO companies rapidly expanding their manpower.

(As claimed by IT Dept, Govt of Karnataka)

FACT FILE-2004

Exports (2003-04)	Rs. 18,100-CR (\$4.2 b)	
	No. of Employees	1,60,000
	No. of IT Companies	Over 1,000
No. of ITES-BPO	Over 120	