

The



IEEE Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

NJ EDS, C&S Chapters:

High Power Microwave Effects on Electronic Devices and Circuits

On November 3rd, 2003, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology will host a talk on "High Power Microwave Effects on Electronic Devices and Circuits." The speaker will be Distinguished Lecturer, Dr. Agis Iliadis.

About the Talk

EMI can couple into electronic modules and systems intentionally from high power microwave (HPM) or ultra-wide band (UWB) sources or unintentionally due to the proximity to sources or general environmental RF signals, and cause significant "soft" reversible errors (bit flipping, delay/response, noise/distortion level, gain disruption and others) and "hard" irreversible errors (gate oxide break-down, junction filamentation, avalanche break-down, metallization/interconnect peel-off and others). It has been reported that portable HPM sources located in a van can cause serious upset in commercially available electronic systems from a maximum distance of 500 m, and hand-held HPM units located in suitcases can cause upsets from a distance of 50 meters, and permanent damage at a distance of 15 meters [1]. Protection in the form of shielding can reduce this hazard but still, connecting wires, micro-slits in sealed (packaged) chips, and the input/output leads of packaged chips, as well as actual antennas for mobile communication units, can become effective inputs to couple the EMI into the integrated circuit. Currently, our understanding of these effects is limited and more systematic work is necessary to clarify the effects first at the device level, and then at the circuit and systems level. This presentation focuses on the effects of such microwave interference on the operation of the fundamental units (MOSFETs) of IC chips, and examines the possible mechanisms responsible for the observed operational disruption of the

devices when microwave power is injected into the terminals of the devices, in order to identify device vulnerabilities and advance the art of EMI-hardened devices and circuit design and architecture.

About the Speaker

Dr. Iliadis is a Professor at the Electrical and Computer Engineering Department of the University of Maryland at College Park, and a senior IEEE member, and a Distinguished Lecturer for the Electron Device Society. His research and contributions are in the areas of elemental and compound semiconductor devices and circuits and he is the author and co-author of over 120 Journal, Book and Proceedings publications. Dr. Iliadis is also a member of LEOS, SPIE, MRS, ECS and the Institute of Physics.

All Welcome!

You do not have to be a member of the IEEE to attend.

Time: 7:00 PM, Monday, November 3, 2003. Free buffet will be starting at 6:15 PM.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at <http://www.njit.edu>.

Information: Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Durga Misra (973) 596-5739 (dmsira@njit.edu) or Dr. Edip Niver (973) 596-3542 (NJIT).

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Conference Rooms Needed!

The North Jersey Section (Education Committee) is looking for conference room facilities to hold their training seminars. The seminars are being held on one weeknight from 6:30 PM to 9:00 PM. In lieu of providing the conference facility for free, the organization can get free registration up to three members in the course/seminar. Please contact Bhanu Chivakula, Co-chair, Education Committee at b.chivakula@computer.org for suggestions or discussions, if interested.

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IEEE NJ SECTION HOME PAGE

<http://web.njit.edu/~ieeenj/>

IEEE NJ SECTION NEWSLETTER HOME PAGE

<http://web.njit.edu/~ieeenj/NEWSLETTER.html>

REPORT ADDRESS CHANGES TO:

IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, (732) 981-0060. It is not necessary to inform the North Jersey Section when you change your mailing address. "The IEEE Newsletter" and other section mailings use a list provided by IEEE's national headquarters.

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The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7:00 PM. Meetings are open to all members. For information on meeting agenda contact Secretary Dr. Sanghoon Shin at (973) 492-1207 Ext. 22, s.shin@ieee.org.

NJ Signal Processing Chapter:

Document Image Watermarking and Data Hiding

On November 4, 2003, the IEEE North Jersey Section Signal Processing Society Chapter will host a presentation on "Document Image Watermarking and Data Hiding." The speaker will be Professor Edward K. Wong.

About the Talk

Over recent years, a variety of watermarking and data hiding techniques have been developed for digital gray scale or color images. These techniques typically change the gray level values or colors of a selected group of pixels by a small amount without causing visually noticeable artifacts. Most of these techniques, however, cannot be directly applied to document images that are binary or having a very small number of pixel values. Arbitrarily changing pixel values causes very noticeable artifacts. Hence, a different class of embedding techniques must be developed. Such techniques would have wide applications as documents remain as the primary form of written communication in our society, and they are exchanged and circulated in large volume in our daily operations. Potential applications include copy control and prevention, ownership assertion, authentication, fingerprinting or traitor tracing, steganography, media bridging, and smart documents, to name a few. The variety of documents include bank checks, financial instruments, legal documents, passports, driver licenses, birth certificates, digital books, engineering maps, architectural drawings, road maps, etc.

In this talk, we will first present an overview of recent developments in document image watermarking and data hiding techniques. The performance measures of image quality, data hiding capacity, and robustness to printing, scanning, and photocopying will be discussed. Secondly, a boundary-based watermarking and data hiding scheme we developed will be presented. The boundary-based method can be shown to have good image quality and high data hiding capacity. An important application of image watermarking is authentication. We will present a technique for document image authentication using our boundary-based method. We will also discuss the use of boundary-based data hiding technique for covert communications in document images, and present steganalytic techniques as a counter measure to catch secret communications among criminals or enemies.

About the Speaker

Edward K. Wong received his BE degree from the State University of New York at Stony Brook, his ScM degree from Brown University, and his PhD degree from Purdue University, all in Electrical Engineering. He is currently Associate Professor in the Department of Computer and Information Science at Polytechnic University, Brooklyn, NY. His current research interests include content-based image retrieval, document image analysis and watermarking, and pattern recognition. He has published extensively in these areas, and his research has been funded by federal and state agencies, as well as private industries.

Time: 4:45 PM (refreshments start at 4:30 PM), Tuesday, November 4, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Yun Shi (973) 596-3501 (shi@njit.edu), Dr. Alfredo Tan (201) 692-2347 (tan@mailbox.fdu.edu), Dr. Hong Man (201) 216-5038 (hman@stevens-tech.edu).

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BSEE, MSEE (system architecture and applications software). Over 10 years of patent prosecution experience with NYC intellectual property and high-tech law firms. Former in-house senior patent counsel with a multinational corporation. Patent applications, opinions, counseling, litigation support. Personal attention, high quality, reasonable fees. References upon request. For more information please visit my website.



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IEEE North Jersey Section Activities

November 2003

Nov. 3 – “High Power Microwave Effects on Electronic Devices and Circuits” - EDS/C&S Chapters, 7:00 PM (buffet at 6:15PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Durga Misra (973) 596-5739 (dmisra@njit.edu) or Dr. Edip Niver (973) 596-3542 (NJIT).

Nov. 4 – “Document Image Watermarking and Data Hiding” - NJ Signal Processing Chapter, 4:45 PM (refreshments at 4:30 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Yun Shi (973) 596-3501 (shi@njit.edu), Dr. Alfredo Tan (201) 692-2347 (tan@mailbox.fdu.edu), Dr. Hong Man (201) 216-5038 (hman@stevens-tech.edu).

Nov. 5 – “NJ Section Executive Committee Meeting” - 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Dr. Sanghoon Shin at (973) 492-1207 Ext. 22 or s.shin@ieee.org.

Nov. 6 – “Cost-Effective Network Architecture with TWIN” - NJ Communications Chapter, 5:15 PM, NJIT, 202 ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj> for the latest updates.

Nov. 10 – “Designing Decision Support Systems Using ACCESS™ (1st Lecture in Series)” - NJ SMC Society, 7:00 PM, Clifton Memorial Library , 292 Piaget Ave, Clifton, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org).

Nov. 17 – “Designing Decision Support Systems Using ACCESS™ (2nd Lecture in Series)” - NJ SMC Society, 7:00 PM, Clifton Memorial Library , 292 Piaget Ave, Clifton, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org).

Nov. 18-Jan. 20 – “C# Design & Programming In .NET” - North Jersey Section, Tuesday Evenings, 8 sessions, 6:30-9:00 PM, Wessley Inns & Suites, 265 Route 3 East, Clifton, NJ. Bhanu Chivakula (b.chivakula@computer.org).

Nov. 20 – “3G Wireless Evolution” - MTT/S/AP-S and VTS Chapters, 7:00 PM (pre-meeting buffet at 6:00 PM), Lucent Technologies, 67 Whippany Road, Whippany. Kirit Dixit (201) 200-2313 (kdixit@rfsales.com), Arthur Greenberg (973) 386-6673 (ahg1@lucent.com), or Stephen Wilkowski (swilkowski@lucent.com).

Nov. 20 – “Bell Labs: Life In the Crown Jewel” - NJ Communications Chapter, 6:00 PM, NJIT, 202 ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj> for the latest updates.

Nov. 25 – “Designing Adaptive J2EE Systems To Support Web Services” - NJ Computer Chapter, 7:00 PM, Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ. Seth Jakel (973) 731 1902 (sgjakel@comcast.net) or Vivek Shaiva (908) 229-6125 (vshaiva@computer.org).

Upcoming Meetings

Dec. 4 – “Consultants’ Network Planning Meeting & Workshop” - NJ Consultants' Network, 7:30 PM, MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-0344 or www.TechnologyOnTap.org.

Dec. 9 – “Designing Decision Support Systems Using ACCESS™ (3rd Lecture in Series)” - NJ SMC Society, 7:00 PM, Clifton Memorial Library , 292 Piaget Ave, Clifton, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org).

Jan. 5-8 – “2004 IEEE Consumer Communications and Networking Conference - Consumer Networking: Closing the Digital Divide” - Caesars Palace, Las Vegas, Nevada. See <http://www.ccnc2004.org/> for more details.

Feb. 16-Apr. 12 – “Introduction to JAVA Programming” - North Jersey Section, Monday Evenings, 8 sessions, 6:30-9:00 PM, Wessley Inns & Suites, 265 Route 3 East, Clifton, NJ. Bhanu Chivakula (b.chivakula@computer.org).

Feb. 18-Apr. 14 – “Project Management” - North Jersey Section, Wednesday Evenings, 8 sessions, 6:30-9:00 PM, Wessley Inns & Suites, 265 Route 3 East, Clifton, NJ. Bhanu Chivakula (b.chivakula@computer.org).

Members and Non-Members Welcome

PLEASE POST

NJ MTT/AP and VTS Chapters: **3G Wireless Evolution**

The IEEE NJ Section MTT/S/AP-S and VTS Chapters will host a talk November 20, 2003 on "3G Wireless Evolution." The speaker will be Joseph A. Tarallo of Lucent Technologies.

About the Talk

The emergence of 3G wireless voice and data networks follows in natural succession to the tremendous success and growth of 2G networks in delivering voice services over the last decade. The high acceptance rate of wireless voice services has helped to redefine the way we conduct business and interpersonal communications.

3G wireless networks are extending this paradigm into the domain of mobile data, where studies show there is tremendous pent-up demand. As 3G systems are deployed, the expectation is that the most important initial applications of these systems will be connected to high-speed data transmission, where the business value and willingness-to-pay for these services by mobile professionals is clear. As usage evolves, we can expect applications to expand rapidly into the consumer space and lead to a rapidly increasing demand for capacity.

With this increasing need for data, coupled to the simultaneous support of voice, it is clear that development of technologies for increasing capacity and performance, reducing subscriber and operating costs, and optimizing the use of spectrum is imperative.

This presentation will discuss some of the technology and network evolution steps that are needed to support wireless systems going forward, including intelligent antennas and MIMO, RF network optimization, and the move to all-IP networks.

About the Speaker

Joseph A. Tarallo is the director of Wireless Base Station and Radio Technology at Lucent Technologies in Whippany, NJ. He has been with Lucent Technologies (formerly AT&T Bell Labs) since 1984 where he has been instrumental in the definition and development of digital wireless systems. He has been involved in the design of both 2G and 3G systems and associated technologies. His current work focuses on the development of key radio technologies for digital wireless systems, with a concentration on the implementation of complex 3G communications subsystems in very large scale ICs.

Mr. Tarallo holds BS and MS degrees in Electrical Engineering from the Cooper Union School of Engineering, New York. His graduate work was in the application of CDMA to cellular systems. He holds

several patents and has authored or co-authored several conference and journal papers. He was named a 2002 Bell Labs Fellow, is a Senior Member of the IEEE, and is a member of Tau Beta Pi and Eta Kappa Nu.

All Welcome!

You do not have to be a member of IEEE to attend.s

Time: 7:00 PM, Thursday, November 20, 2003. Pre-meeting buffet will be served starting at 6:00 PM.

Place: Lucent Technologies, 67 Whippany Road, Whippany, NJ. Meeting room to be announced.

Information: Kirit Dixit, (201) 200-2313 (kdixit@rfsales.com), Arthur Greenberg, (973) 386-6673 (ahg1@lucent.com), or Stephen Wilkowski, (swilkowski@lucent.com). Please register in advance with full name, affiliation, and nationality, so that an admission badge will be available for you.

NJ Communications Society:

Bell Labs: Life In the Crown Jewel

On November 20, 2003, the IEEE North Jersey Section Communications Society Chapter along with NJIT will host a presentation on "Bell Labs: Life In the Crown Jewel." The speaker will be Dr. Narain Gehani.

About the Talk

Bell Labs, the greatest research lab of the twentieth century, has been called America's national treasure and the crown jewel of AT&T and Lucent. To scientists all over the world, pursuing research at Bell Labs has long been a dream because of its brilliant scientists, numerous inventions, academic freedom, and plentiful resources. But now, forced by the marketplace, competition, and economic conditions, the world's most prestigious research lab is in the midst of radical cultural change – moving from university-style (basic) research to industrial (applied).

Moving from basic research to industrial research is much more difficult than going from industrial research to basic research because industrial research puts constraints on scientists while basic research frees them to explore new frontiers. Bell Labs researchers, who once were free to focus on innovation, research excellence, and prizes, now have to worry about business relevance.

I will talk about Bell Labs culture and its glorious history. I will describe the cultural differences between Bell Labs research and the business units, the

different research models and the challenges facing Bell Labs in the twenty first century.

About the Speaker

Narain Gehani is currently the Chairman and Professor of Computer Science at New Jersey Institute of Technology.

Prior to that, Dr. Gehani was with Silicon Press and with Bell Labs, Lucent Technologies, the latter from 1978 to 2001. When he left Bell Labs, Narain was the Vice President of the Communication Software Research Lab. The lab was actively engaged in numerous leading edge technology projects, for example, office computing access for mobile workers, collaborative telephone/Web environment, VoiceXML, and XML query languages. Some past projects included, IP PBX, Web-based contact center, and DEN based network management applications. Narain and his team developed the pioneering Ode object database.

From 6/96 to 5/98, Dr. Gehani was President of the Maps On Us (Lucent commercial web site, www.MapsOnUs.com), a website co-founded by Dr. Gehani. Maps On Us provides maps, routes, and yellow pages. He led and managed the deployment of Maps On Us from conception and commercial deployment until its sale. Maps On Us was sold to SwitchBoard in 5/98.

Dr. Gehani is a world-renowned expert in Web technologies, software, and databases. He got his PhD in computer science from Cornell University in 1975. He taught computer science for 3 years at SUNY/Buffalo and then joined Bell Labs in 1978. He has authored several software systems, including the Ode database and Concurrent C/C++ parallel programming language, holds several patents, and has written many books and numerous papers in computer science.

All Welcome!

You do not have to be a member of the IEEE to attend. Bring your friends.

Time: 6:00 PM (refreshments start at 5:45 PM), Thursday, November 20, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj> for the latest updates.

North Jersey SMC Society:

Designing Decision Support Systems Using ACCESS™

On Monday, November 10th, the NJ Systems, Man and Cybernetics (SMC) Chapter will host the first of three presentations by Michael Liechenstein on Microsoft's ACCESS™.

About the Talk

Following a brief overview of what a decision support system is and the limitations of EXCEL™ in performing extensive database analysis, the speaker will introduce ACCESS™, a software package specifically oriented to database creation and computational issues. The attendee need not have any prior knowledge of ACCESS™ and will be led from the basics to quite sophisticated aspects of the software (specific topics for each presentation are available upon request).

About the Speaker

Dr. Liechenstein is currently a member of the faculty at St. John's University in the Department of Computer Information and Decision Sciences. He has also been affiliated with Columbia University's Department of Mathematical Statistics and CUNY's Department of Computer Information Systems. Following his graduation from M.I.T. and Yale, Dr. Liechenstein was a member of the Bell Laboratories Technical Staff and was also a research director at the RAND Corp. As president of Integrated Technology Services Corp., he has been a consultant to numerous business and governmental organizations. Since 1988, he has chaired the North Jersey's Systems, Man & Cybernetics Society chapter and continues to serve on the section's Executive Committee (as senior past chairman). To date, Dr. Liechenstein has published over 150 technical articles and research monographs.

All Welcome!

You need not be a member of IEEE to attend, and there is no charge for admission. Light refreshments will be served starting at 6:45 PM.

Time: 7:00-8:30 PM, Monday, November 10 & 17, Tuesday, December 9, 2003.

Place: Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ, (973) 772-5500.

Contact/RSVP: Dr. Mike Liechenstein, (973) 471-0721, (m.liechenstein@ieee.org). Please also check electronic newsletter for any possible changes in room, etc.

NJ Computer Chapter:

Designing Adaptive J2EE Systems To Support Web Services

On Tuesday, November 25th, 2003, the IEEE North Jersey Section Computer Chapter will host a presentation on "Designing Adaptive J2EE Systems To Support Web Services" by Vivek Shaiva.

About the Talk

The necessity for effective integration of enterprise applications to support e-commerce initiatives has resulted in the re-emergence of the services oriented architecture (SOA). Leading software vendors have launched initiatives to provide tools and technologies that support this architecture. However, experiential knowledge on the design of adaptable component-based applications that provide services is limited. The talk describes a Services Oriented Adaptive Components (SOAC) architecture that has foundations in complex J2EE based real world project implementations. It presents a design for services oriented components that dynamically support both user interfaces and web services. It also covers the design of adapter components to enable flexible multi-vendor systems integration strategies. The talk is based on a paper that the author presented at the International Conference on "Information Technology – Research and Education" sponsored by IEEE and NJIT in August 2003.

About the Speaker

Vivek Shaiva is currently a Software Architect with NBC in New York. Mr. Shaiva's areas of expertise include CRM systems, Enterprise Application Integration, J2EE technologies and Database Architecture. He has architected technical application frameworks and best practices that have been used as the basis for design and implementation of several enterprise wide applications. He has a diverse range of business experience with a focus on media, finance and telecommunications. Vivek holds an MBA in Information Systems from the Indian Institute of Management. Vivek is also Programs Chairman for the IEEE North Jersey Section Computer Chapter.

All Welcome!

You do not have to be a member of the IEEE to attend. Bring your friends and network during the free pre-meeting buffet starting at 6:00 PM.

Time: 7:00 PM, Tuesday, November 25, 2003. Pre-meeting buffet starting at 6:00 PM.

Place: Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ, (973) 285-6930.

Information: Seth Jakel, (973) 731-1902 (sgjakel@comcast.net) or Vivek Shaiva, (908) 229-6125 (vshaiva@computer.org).

IEEE-USA Applauds Congress for Allowing H-1B Visa Cap to Drop, Calls For Renewal of Workforce Protections

Washington (30 September 2003) - While applauding Congress for allowing the H-1B visa cap to drop to its historical level of 65,000 this Wednesday, IEEE-USA believes the \$1,000 visa application fee, H-1B-dependent attestations and the Department of Labor's limited authority to investigate H-1B fraud and abuse need to be renewed and strengthened.

The more than 900,000 H-1B visas issued in new, renewal and exempt categories since the beginning of FY 2000 has exacerbated high-tech unemployment in the United States, according to IEEE-USA. The unemployment rate for electrical and electronics engineers (EEs) rose to an unheard of 7 percent in the first quarter of 2003, and stood at 6.4 percent in the second quarter.

A staggering 230,000 U.S. workers in 12 engineering and computer job classifications were unemployed in the second quarter, according to the Bureau of Labor Statistics.

"We're pleased that Congress listened to its constituents - the thousands of jobless engineers, computer specialists and IT professionals - and chose to let the cap drop back," IEEE-USA President-Elect John Steadman said. "But we must remain vigilant because we're sure H-1B proponents will seek to increase the cap again next year."

In addition to holding the cap at 65,000, IEEE-USA would like Congress to reinstate the \$1,000 visa application fee and strengthen training for displaced engineers and high-tech professionals. IEEE-USA further believes that all U.S. companies petitioning for H-1B visas, not just H-1B-dependent companies, should attest that they have tried and been unable to hire U.S. workers, and that they have not displaced U.S. employees to hire an H-1B worker.

IEEE-USA's Steadman recently testified before the Senate Judiciary Committee on the H-1B program. His testimony is available at <http://www.ieeeusa.org/forum/issues/H1bvisa/index.html>.

NJ Consultants' Network: **Consultants' Network Planning Meeting & Workshop**

On Thursday, December 4, 2003, the IEEE Consultants' Network of Northern NJ (C>NNNJ) will conduct its annual Planning Meeting and Workshop.

About the Talk

The combined November/December meeting of the IEEE Consultants' Network is designed as a strategic planning event for Network members and for consultants who are considering membership in the Consultants' Network.

The main purpose of the meeting will be to discuss ideas and expectations for the various Network functions in the upcoming year. Results of the annual election of officers will be announced at the time.

This Working Session is traditionally an open, informal forum to determine what the IEEE-C>NNNJ is doing right or wrong. The floor will be open to suggestions for improvements, recommendations of new Network directions and activities and proposals of new feature topics for the general meetings.

The major functions performed by the IEEE Consultants' Network that will be discussed are:

- Monthly General Meetings - Suggested feature topics will be discussed.
- Member Networking - Member presentations and alternate general meeting formats that improve networking.
- Group Marketing & Image Building - C>NNNJ Website, tri-fold and postcard mailing, C>NNNJ's free consultant referral service, and alternate publicity methods.

In the course of the session, Network members Laurence W. Nagel and George Hacken will be honored with 5-year senior C>NNNJ member plaques.

About the Consultants' Network

Founded in 1992, the IEEE Consultants' Network of Northern NJ encourages and promotes the use of independent technical consultants by business and industry.

Time: 7:30 PM, Thursday, December 4, 2003.

Place: MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. (Entrance at rear of building)

Information: For directions and up-to-date meeting status, call Robert Walker (973) 728-0344 or visit our website at www.TechnologyOnTap.org. To download a map to KDI, go to: <http://www.mcekdi-integrated.com/directions.htm>.

IEEE-USA President's Column

Jim V. Leonard, P.E., IEEE-USA President

IEEE-USA, created 30 years ago to promote the career and public-policy interests of the IEEE's US members, is an organizational unit of the IEEE. I'd like to highlight some of our professional activities on behalf of the IEEE's 235,000 US members.

Volunteer leaders serving on the IEEE-USA Board of Directors and committees work closely with IEEE-USA staff to represent what we feel are the best interests of our US members. We know that with such and large and diverse membership, we can't please everyone. But we hope the majority agrees with our positions and the direction we seek to lead the organization.

IEEE-USA's position statements are passed by our Board of Directors and serve as the basis for our lobbying and public-relations efforts. IEEE-USA also acts as an adviser to Congress. For example, we led a technological and legislative briefing on nanotechnology for congressional staffers on Capitol Hill in June. Our volunteers visit Washington, D.C., and home-district congressional offices, and invite you to join us.

Last year we submitted an amicus curiae brief before the Supreme Court that served as the basis of its ruling in a landmark patent rights case. This year we filed another brief before the high court in support of reverse engineering.

IEEE-USA promotes engineering awareness and public understanding by actively participating in National Engineers Week each February. Next year we will spearhead IEEE's role as lead society, and will increase Future City Competition participation by sponsoring three additional teams' trips to Washington for the national finals.

In the career-enhancement area, we'll soon present the findings of our latest salary survey. With our most respondents ever, we believe the data is the best collected and analyzed. It serves as the basis of the new IEEE-USA Salary Database. We're also offer online leadership courses for the first time. For more information, visit our careers page at <http://www.ieeeusa.org/careers/>.

As a sign of support for our nation's military, the IEEE-USA Operating Committee will meet in October in West Point, N.Y., home of the United States Military Academy. Our committees also support our nation's homeland security effort.

The depth of IEEE-USA activities cannot be summarized in this short space, so I recommend you visit our homepage at <http://www.ieeeusa.org/>. I also encourage you to vote in the upcoming IEEE elections. The ballots

include some very capable candidates for IEEE-USA offices of President-Elect and Member-at-Large.

2005 IEEE Fellow Nominations

Deadline: 15 March 2004

Recognizing the achievements of its members is an important part of the mission of the IEEE. The IEEE grade of Fellow is conferred upon a person of "outstanding and extraordinary qualifications and experience in IEEE designated fields, and who has made important individual contributions to one or more of these fields." The total number of Fellows selected each year does not exceed 0.1% of the total IEEE membership.

Any person, including nonmembers, is eligible to serve as a nominator with the following exceptions: members of the IEEE Board of Directors, members of the IEEE Fellow Committee, IEEE Technical Society/Council Fellow Evaluating Committee Chairs, members of IEEE Technical Society/Council Evaluating Committees reviewing the nomination, or IEEE staff. The deadline for nominations is 15 March 2004.

The candidate must be an IEEE Senior Member at the time the nomination is submitted, and he/she must have completed 5 years of service in any grade of IEEE membership.

All the necessary material to assist you in the nomination process is available on the IEEE Web site: <http://www.ieee.org/about/awards/fellows/fellows.htm>. If you prefer a hard copy, please send an e-mail to fellow-kit@ieee.org. Include your name, street address, city, state/province, postal code, country, and telephone/fax numbers.

NJ Communications Society: **Cost-Effective Network Architecture with TWIN**

On November 6, 2003, the IEEE North Jersey Section Communications Society Chapter along with NJIT will host a presentation on "Cost-Effective Network Architecture with TWIN." The speaker will be Dr. Indra Widjaja.

About the Talk

Per-unit bandwidth cost of a fully utilized lightpath is very low, but most end-to-end traffic demands require only a small fraction of a wavelength capacity. Conventional approaches rely on traffic grooming and statistical multiplexing to bridge the gap between wavelength capacity and end-to-end bandwidth requirement. However, these approaches result in network architectures that are complex and expensive. In this talk, we show how communication networks can

be made more cost-effective through a technique called Time-domain Wavelength Interleaved Networking (TWIN), which views a network as a giant switch/router. TWIN emulates fast switching in the network core by scheduling ultrafast tunable lasers at the network edge. We discuss key challenges in practical realization of TWIN.

About the Speaker

Indra Widjaja received the Ph.D. in electrical engineering from the University of Toronto. From 1994 to 1997 he was an assistant professor of ECE at the University of Arizona. From 1997 to 2001 he was with Fujitsu. He has been with Bell Labs since 2001 performing research in communication networks. With Leon-Garcia, he is the co-author of the textbook "Communication Networks: Fundamental Concepts and Key Architectures."

All Welcome!

You do not have to be a member of the IEEE to attend. Bring your friends.

Time: 5:15 PM (refreshments start at 5:00 PM), Thursday, November 6, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj> for the latest updates.

Global Issues Cloud Job Market

By Terry Costlow

(Published in *Today's Engineer*. Full text available at <http://www.todaysengineer.org/Sept03/job-market.asp>)

The employment market may not be on an upturn, though at least layoffs have slowed. But as unemployed and underemployed engineers wait for brighter signs of improvement, there's plenty of concern about the impact changes in the global marketplace will have on what's now being referred to as a jobless recovery.

High-tech industries have finally slowed their cutbacks after having led all industries in handing out pink slips during 2001 and 2002. "Telecom and computers are not even in the top five any more," said John Challenger of Challenger Gray & Christmas, a Chicago outplacement firm. In fact, the electronics, telecommunications and computer industries together accounted for only 16 percent of the job cuts announced during the first half of this year, Challenger said. Telecommunications serves as a bellwether, he added. In that industry, companies trimmed 36,025 workers during the first six months of this year — about the same as the 35,937 laid off in February 2002 alone, he added.

But there's a significant difference between fewer layoffs and more jobs. Most observers don't expect any marked increase in hiring this year. Rather, they are echoing the refrain that's become all too constant during the past couple years: the upturn is about six months out.

Shifting Offshore

As everyone continues to wait for the turnaround, there seems to be a growing sense that the high-tech job market is changing significantly. It's always been something of a boom-and-bust field, but circumspection about globalization is raising concerns that some professional jobs could move offshore, similar to when manufacturing jobs left during the 1980s.

"We are entering a time when we're going to see a lot of employee unrest," said LeEarl Bryant, past president of IEEE-USA. Bryant noted that engineers have staged a few small demonstrations around the country in recent months to help raise public awareness about companies that are moving jobs offshore.

Nevertheless, "offshore outsourcing will grow because companies have to cut costs," predicted Nick Corcodilos, president of AskTheHeadhunter.com. Others aren't so sure that such a move will be the economic remedy companies need, however. The debate about whether or not the comparatively low cost of offshore engineers is a good way for companies to improve their bottom line is fully two-sided.

Talent Over Location

The battle between what's good for individual workers and what's good for the companies that hire them will undoubtedly continue for some time. And while worker nationality is a hot button in that debate, many observers contend that engineers' creativity and originality are more important than their salaries or location.

"A company can't save itself into prosperity. It needs innovation, which requires the right talent," said Ray Almgren, vice president of academic relations at National Instruments of Austin, Texas. He added that the cost of the workforce is not as big a factor as workers' ability to open new markets with unique products. "The breakthrough of a new technology is so great that you put the talent wherever you can get it," Almgren said.

Hone Your Talents Accordingly

Corcodilos noted that there's a difference between jobs that move offshore to save costs and those that help create revenue, with many of the latter staying in the United States. "The EEs who survive and thrive are those who figure out what kind of work can only be done here and then pursue that kind of work," he said.

This notion places the burden on the engineers, who must watch and analyze

the global market while staying up to date technically. This dual priority will be particularly important for young engineers entering the job market. They will need to consider some fairly long-term issues to avoid starting their career specializing in a discipline that might go offshore. "People going into engineering need to consider economics and the world outlook," Bryant said.

Engineer Mentors Sought for Future City Competition

Washington (3 September 2003) - Across America, thousands of engineers volunteer annually to serve as mentors for students in the National Engineers Week Future City Competition. As National Engineers Week 2004 co-chairs, IEEE/IEEE-USA and Fluor Corporation invite engineers from every discipline to become volunteer mentors and help students get a better view of engineering.

Interestingly, the engineers who guide the students from conception to design to construction of their future cities consistently say that one of their finest rewards is how the students give them a better perspective of their own lives.

"It's helped me not be so narrowly focused," said Tony Arikol, P.E., an engineering consultant in Baton Rouge, La. "Sometimes you get tunnel vision. Young people are a lot more creative as thinkers. They help you look outside for novel solutions. And when you look for novel solutions, you find them."

"It makes me feel young again," said Jean Eason, an electrical engineer and regional coordinator for the Dallas/Fort Worth area Future City Competition. "It's invigorating. I'm struck by how concerned the kids are for the environment and for the future of the planet."

In the competition, teams of three seventh- and eighth-graders design and build model cities of tomorrow. The students, with the help of a teacher and engineer-mentor, must design a city that functions, write an essay and abstract, and defend their city before a panel of judges.

Students begin their cities at the start of the school year, working during and after school and through holiday breaks. Regional competitions are held in January. First-place teams (including the engineer mentor) win all-expense-paid trips to Washington, D.C., for the national finals during National Engineers Week, 22-28 February, 2004.

For more information, contact Carol Rieg, Future City Competition national director, at 877-636-9578, or via e-mail at CRieg@futurecity.org.

Visit www.futurecity.org for a list of participating regions and regional coordinators.

IEEE North Jersey Section Newsletter Advertising

The “NEWSLETTER” is the non-profit professional publication of the North Jersey Section of the Institute of Electrical and Electronics Engineers, Inc.

Published monthly except June (electronic only) and July, it is distributed to approximately 5,000 qualified members of the section.

Editorial content is pertinent and timely. It contains current information and details about special meetings, field trips, and seminars scheduled during the month and for future dates.

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IEEE North Jersey Section Course Project Management

Wednesday Evenings, February 18, 2004 through April 14, 2004 (No class on March 3) 8 weekly classes (February 18, 25, March 10, 17, 24, 31, April 7, 14 2004) at Wellesley Inn & Suites, 265 Route 3 East, Clifton, NJ 07014
(Checks should not be mailed to this address)

The North Jersey Section IEEE is offering an evening course entitled "Project Management". Dice.com lists 1500+ Project related jobs in the New York tri-state area daily! This course will help you to break down a master project into manageable tasks, pinpoint possible solutions, and provide information to keep the project under control. Using Microsoft Project 2002 software, you will learn to accomplish various project plans. In addition, it will greatly enhance your business, communications and interpersonal skills.

The IEEE certificate of completion will be given to you when you finished this course. You may wish to take two Certification exams, one in Project Management administered by Project Management Institute and the other in IT Project+ by CompTIA Inc.

Instructor: Donald Hsu, Ph.D., has been a corporate manager for 11 years and is an experienced trainer. Since 1999, he has trained 150+ people in *IT Project+*, *MS Project 2002*, and *Project Management* courses in five organizations.

TOPICS

1. Explain the need for a project manager
2. Define SOW, PERT, GANTT, CPM, and Scope of the project
3. Identify the team members, resources and plan for the strategy
4. Calculate schedule, budget variances, and monitor project progress
5. Manage changes, estimates, and communications
6. Set a baseline, import tasks from MS Excel, export Project files to MS Word
7. Create and modify custom reports, templates and combination views
8. Share resources and create a master plan loaded to Project Server
9. Approve updates and conclude a project plan
10. Analyze Global E-Commerce and present student Projects

Class size will be limited to a maximum of 25 with a minimum of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after February 4, 2004 will require a late fee of \$25. No reservations will be accepted after February 11, 2004.

WHEN: 8 Sessions, Wednesdays, February 18, 25, March 10, 17, 24, 31, April 7, 14, 2004, 6:30-9:00 PM.

COST: With textbook or notes: IEEE (& affiliate) members \$375; Non-IEEE members \$475.

CONTACT: Bhanu Chivakula -email b.chivakula@computer.org

REGISTRATION: Project Management

Please email details to address b.chivakula@computer.org and upon confirmation, the address where to mail the checks with details as described under, would be replied **(Checks payable to "North Jersey Section IEEE" with registration form should be mailed to this address)**

Name: / Mr. / Mrs. / Miss / Ms. / _____

Non-member

 email address 

IEEE Member Member #: _____ Member of _____ technical society

Employer: _____

Employer Address: _____

Home Address: _____

Business (day) telephone #: _____ Home telephone #: _____

Please enclose required fee payable to: **North Jersey Section IEEE**

Registration status will be mailed after February 11, 2004. Phone inquiries concerning registration will NOT be honored. In general, the effective date of the application corresponds to the date when BOTH a fully completed application/registration and payment are received.

Tuition receipt will be mailed only if this box is checked

Signature: _____

IEEE North Jersey Section Course

Introduction to Java Programming

Monday Evenings, February 16, 2004 through April 12, 2004 (No class on March 1- eight weekly classes (February 16, 23, March 8, 15, 22, 29, April 5, 12 2004) at Wellesley Inn & Suites, 265 Route 3 East, Clifton, NJ 07014
(Checks should not be mailed to this address)

The North Jersey Section IEEE is offering an evening course entitled "Introduction to Java Programming." Java Programming has gained enormous popularity in corporate Information System applications as well as in advanced Webpage Design since 1997. About 2.5 million Java Programmers are currently working on all types of commercial projects in the world, ranging from cell phone applets, to UNIX server, to business intelligence and mainframe data-warehouse access.

Java is an easier transition for C++ Programmers. This course, however, will be for anyone who *never* took a programming course. The instructor will provide the necessary software (compiler and editor) for you to get started immediately!

Instructor: Donald Hsu, Ph.D., has been a corporate manager for 11 years and is an experienced trainer. Since 1997, he trained 350+ people in Java Programming and Advanced Java Programming courses in eight organizations.

TOPICS

1. Explain the dynamic growth in Java Programming
2. Contrast the importance of AWT, CGI, JavaScript and HTML
3. Classify the different types of Java applets vs Java applications
4. Identify the control structures, arrays and classes
5. Construct character strings and graphics tools
6. Define multithreading, files and streams
7. Draw multimedia, animation and Swing images
8. Build audio files, JavaBeans and networking applications
9. Distinguish Java utilities, error handling, serialization and reflection
10. Analyze real-world projects using SDK 1.4 development tools

Class size will be limited to a maximum of 25 with a minimum of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after February 2, 2004 will require a late fee of \$25. No reservations will be accepted after February 9, 2004.

WHEN: 8 Sessions, Mondays, February 16, 23, March 8, 15, 22, 29, April 5, 12, 2004, 6:30-9:00 PM.

COST: With textbook or notes: IEEE (& affiliate) members \$375; Non-IEEE members \$475.

CONTACT: Bhanu Chivakula -email b.chivakula@computer.org

REGISTRATION: Introduction to Java Programming

Please email details to address b.chivakula@computer.org and upon confirmation, the address where to mail the checks with details as described under, would be replied (**Checks payable to "North Jersey Section IEEE" with registration form should be mailed to this address**)

Name: / Mr. / Mrs. / Miss / Ms. / _____

Non-member

✉ email address ✉

IEEE Member Member #: _____ Member of _____ technical society

Employer: _____

Employer Address: _____

Home Address: _____

Business (day) telephone #: _____ Home telephone #: _____

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Registration status will be mailed after February 9, 2004. Phone inquiries concerning registration will NOT be honored. In general, the effective date of the application corresponds to the date when BOTH a fully completed application/registration and payment are received.

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Signature: _____

IEEE North Jersey Section Seminar

C# DESIGN & PROGRAMMING IN .NET

Tuesday Evenings, November 18, 2003 through January 20, 2004, Eight weekly classes

(11/18, 11/25, 12/2, 12/9, 12/16, 1/6, 1/13, 1/20) from 6:30 PM to 9:00 PM

Wessley Inns & Suites, 265 Route 3 East, Clifton, NJ 07014

(Checks should not be mailed to this address)

ABSTRACT

Microsoft has created .NET as its path to future software development. .NET is a complete package of capabilities on top of MS Windows. .NET supports Visual basic, C++ and Java, but clearly C# is its language of choice for Windows and Internet usage, and will be its best-supported language. C# is an Object-Oriented language of course. It is more powerful than VB but still allows simple programs to be created in the VB drag-and-drop tradition. It is simpler than C++ but still allows efficient programs with more obvious code. This course covers MS Visual .NET development and uses C# as the O-O programming language to exercise it. The course begins with the environment and motivation for .NET and the mechanics of the C# language. It covers the Common Language Runtime into which all languages compile and use of the Visual .NET development suite. It then describes C#'s ways to declare classes and use objects of those classes. C# is described in detail, including the sizeable libraries that support it, and the ability to create screen images (for console or internet).

Special facilities for creating Windows, or internet, programs are treated. A downloadable command line compiler can be used, however the elegant visual .NET development suite is much more powerful. Finally several C# software engineering capabilities to enhance development efficiency and reliability are covered. Design is covered using UML. The course has a practical, "how-to-do-it" approach.

TARGET AUDIENCE

This is not a course in how to program computers. It is intended to extend the capabilities of those who are already programmers so a familiarity with foundation programming concepts will be very helpful. But O-O programming is still programming so the course will cover concepts, implementation and practical aspects of using C#.

COURSE TOPICS

1. What is the programming environment today: What is C#, why did Microsoft create it and where do they expect it to go.
2. C# classes and object instantiation: Fields and constructor and other methods, visibility, how classes encapsulate the real world and its characteristics.
3. Characteristics of code within methods: names, data types, operators and keywords, expressions and statements, control mechanisms for branching and looping, how everything is a class, value and reference types, boxing.
4. Mechanics of program creation: compilers, emulators, jit, formatting, layout, debugging, and testing, documentation and comments, O-O design, UML, development tools.
5. Anatomy of a console C# program: main, elementary input and output, static members.
6. Inheritance and derived classes: use of library classes, some special classes such as string, namespaces and using, other object interaction.
7. Deeper into classes and objects: delegates, properties, overloading methods, Interfaces, for each, containers and enumerators.
8. The concept of Windows programs: events and handlers, use of the mouse, the large Forms library, commonality between console and internet, examples of windows programs.
9. Engineering issues, garbage collection, unmanaged code, attributes, finalize, threads, ref and out, file I/O, efficiency and real-time.
10. Other actors in the game: XML, COM+, SOAP, ADO, ASP.

Class size will be limited to a maximum of 25. Early registration is recommended.

WHERE:	Wessley Inns & Suites, 265 Route 3 East, Clifton, NJ. (Checks should not be mailed to this address)
WHEN:	8 Sessions, Tuesdays on November 18, 2003 through January 20, 2004; Time: 6:30-9:00 PM
COST:	With textbook or notes: IEEE (& affiliate) members \$325; Non-IEEE members \$425.
CONTACT:	Bhanu Chivakula - email b.chivakula@computer.org.

REGISTRATION: C# DESIGN & PROGRAMMING IN .NET

Please send checks with this form to Bhanu Chivakula, 19 Prestwick Way, Edison, NJ 08820. Include the sender's address and mark the envelope "C# DESIGN & PROGRAMMING IN .NET"

(Checks payable to "North Jersey Section IEEE" with registration form should be mailed to this address)

Direct inquiries via email to B.Chivakula@computer.org.

Name: / Mr. / Mrs. / Miss / Ms. / _____

Non-member

✉ email address ✉

IEEE Member Member #: _____

Member of _____ technical society

Employer: _____

Employer Address: _____

Home Address: _____

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Signature: _____

2004 Officer Ballot

Instructions for Casting Ballots

Completed ballots should be mailed to the North Jersey Section Newsletter Editor as follows:

Keith Saracinello
IEEE North Jersey Section Newsletter Editor
Agilent Technologies Inc.
1 Cragwood Rd
South Plainfield, NJ 07080

The ballot **MUST** be filled out completely with members name, membership number, and signature. The ballots are invalid without this information. Xerox copies of the ballot are acceptable as long as they are filled out completely. Ballots received after November 30, 2003, will not be counted.

Chairperson: (choose one)

- Dr. Durga Misra
(write-in)_____

Vice Chairman-1: (choose one)

- Har Dayal
(write-in)_____

Vice Chairman-2: (choose one)

- Bhanu Chivakula
(write-in)_____

Treasurer: (choose one)

- Dr. Edward Byrne
(write-in)_____

Secretary: (choose one)

- Dr. Sanghoon Shin
(write-in)_____

Members-At-Large: (choose three)

- Dr. Nirwan Ansari
 Naz Simonelli
Dr. Richard Snyder
(write-in)_____

Member Name _____ Member No. _____

Signature _____ Date _____