The IEEE Newsletter

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

NJ Consultants' Network:

Getting Started in Consulting

On Thursday, April 26, 2001, the IEEE Consultants' Network of Northern NJ (CNNNJ) will present a talk "Getting Started in Consulting", by Laurence Nagel and Peter Schutz.

About the Talk

The following members of the IEEE Consultants' Network of Northern NJ will be presenting a brief overview of their consulting practices during the second half of the meeting:

Dan Kamdar is the President of Affordable Engineering Services, a one-stop multi-disciplined engineering company. He has received MBA, MSEE, BSEE and BSME degrees. His company provides consulting services in Reliability, Test, Circuit Design/Analysis, Quality Assurance, Logistics and Component Engineering. He has an extensive background in Aerospace and Defense systems, such as fighter and transport aircrafts, rockets, missiles, space station and helicopters.

Robert James is the founder of Embedded Works, which provides embedded microcontroller hardware development and C/Assembly real-time programming. He has a BSEE and over 15 years experience in such areas as automation, navigation, secure communications, and laboratory equipment.

About the Speakers

Laurence Nagel has 23 years of experience in the integrated circuits industry. He participated in development of SPICE at the University of California. While at Bell Labs, he was involved in development of ADVICE simulation program, designed analog circuits for submicron NMOS and negotiated patent licenses. Recently, at Anadigics, Inc., he worked on simulation of RF and GaAs circuits.

Peter Schutz specializes in office, medical and laboratory equipment. Areas of expertise include: mechanical components and systems, plastics, pneumatic and fluid systems, thermal design and analysis, packaging of electronics, enclosures, process control systems, CAD and prototypes.

About the Consultants' Network

The IEEE Consultants' Network of Northern NJ was founded in 1992 to encourage and promote the use of independent technical consultants by business and industry.

All Welcome!

You do not have to be a member of the IEEE or of the Consultants' Network to attend. Networking after the meeting is encouraged. There is no charge for admission.

Time: 7:30 PM, Thursday, April 26, 2001.
Place: KDI Triangle, 60 S. Jefferson Road, Whippany, NJ.
Information: For directions and up-to-date meeting status, call Robert Walker (973) 728-4500 or visit our website at www.TechnologyOnTap.org.

Research Experience for Undergraduates at NJIT

There will be an Undergraduate Research Poster presentation in the area of Information Technology on Monday, 30th April 2001 from 11:30 AM to 1:00 PM in room ECEC 202, at NJIT.

Everyone is welcome to attend. This event is supported by the New Jersey Department of Higher Education via NJIT's NJI-TOWER project.

For information, please contact Durga Misra at (973) 596-5739 or by e-mail: dmisra@njit.edu.

NJ Computer Chapter:

XML Lessons Learned

On April 19th, 2001, the IEEE North Jersey Section Computer Chapter will host a presentation on "XML Lessons Learned" by Eli Rohn.

About the Talk

It will cover, as a minimum, the following subjects:

- A brief review of what is XML
- A brief review of existing XML standards
- XML – lessons learned from a B2B and B2C Internet project

About the Speaker

Eli Rohn is the Managing Member of Rohn Consulting LLC. He renders consulting services to the Fortune 1000 companies on top of teaching Computer Science and pursuing his PhD at NJIT. Eli has published two technical books and over 30 professional articles. Eli, who started as a programmer, has over 15 years of experience with Mainframes, PCs, Networks, and has been involved with Internet technology since 1994.

All Welcome!

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

Time: 7:00 PM, Thursday, April 19, 2001.
Place: Dialogic, Inc. 1515 Route 10 (East bound from Route 202), Parsippany, NJ. Please park and enter from the front.
Information: Howard Leach (908) 255-1634 or h.leach@ieee.org.

APRIL 2001

NJ Signal Processing Chapter:

Searching, Filtering, and Adaptation of Audio-Visual Information

On Wednesday, April 4, 2001, the IEEE North Jersey Section Signal Processing Society Chapter will host a presentation on "Searching, Filtering, and Adaptation of Audio-Visual Information." The speaker will be Shih-Fu Chang.

About the Talk

Motivated by the popularity of multimedia content and applications, researchers have been very active in developing new techniques and standards for audio-visual content description. Such descriptions can be used to facilitate innovative ways of accessing, filtering, and delivering multimedia information, potentially from distributed on-line sources.

We will present our research and prototype results in this broad area.

First, we will present our research in searching images/videos from large archives. We will describe our works in using multimedia features in content categorization, knowledge representation networks for integrating perceptual-level and conceptual-level knowledge, and iconic templates for searching visual-oriented concepts.

Second, we will present our works in digital video structuring and summarization. We will discuss approaches to scene segmentation and skimming for generic domains using a unique computational scene model and joint audio-visual features. We will present techniques for exploring syntactic structures and production rules in videos in specific domains, such as sports and medical.

Lastly, we will briefly discuss how the content description and structuring results from above can be used to enhance streaming and transmission of digital video. One application called "content-aware resource allocation" uses content analysis techniques in classifying and predicting the rate-distortion utility functions of video streams, which in turn facilitate optimization of resource allocation among multiple streams.

About the Speaker

Shih-Fu Chang is an Associate Professor of Electrical Engineering at Columbia University. He currently directs Columbia's ADVENT university-industry consortium and the Image and Advanced TV Lab. The ADVENT group conducts active research on representation, searching, transmission, and security of multimedia content. Several innovative systems have been developed and prototyped by his group, including VideoQ, WebSEEk, MetaSEEk for image/video searching, WebClip for networked video editing, and Sari for online image authentication.

His group enjoys close interaction with other disciplines and industry partners to stimulate new ideas. The group has participated in several large-scale cross-disciplinary projects, including Columbia's Health Care Digital Library Project supported by the multi-agency DLI-2 initiative, the Digital News System, and a K-12 Art Image Education Project.

Professor Chang actively participates in professional technical activities and standardization efforts, such as MPEG-7. He has been a general co-chair of ACM Multimedia Conference 2000, an associate editor for several journals, and a consultant in several new media companies.

Professor Chang has been awarded a Navy ONR Young Investigator Award, a Faculty Development Award from IBM, a CAREER Award from National Science Foundation, and three best paper awards in the areas of multimedia manipulation and accessing. He is currently a Distinguished Lecturer for IEEE Society of Circuits and Systems.

All Welcome!

You do not have to be an IEEE member to attend. Light refreshments will be served at 4:45 PM.

Time: 5:00 - 6:00 PM, Wednesday, April 4, 2001.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.
Information: Dr. Yun-Qing Shi, (973) 596-3501, shi@njit.edu (NJIT) or Dr. Alfredo Tan, (201) 692-2324, tan@mailbox.fdu.edu (Fairleigh Dickinson University).

IEEE Vehicular Technology Conference

The IEEE Vehicular Technology Society will hold its Fall 2001 Conference on October 6-11, 2001 in Atlantic City. It is one of the major international mobile communications conferences in the world and will be hosted by the North Jersey chapter. Information about the conference is available at www.fallvtc2001.org.

Companies that are interested in sponsorship should contact Steve Wilkowski at swilkowski@lucent.com.

The VT Conference Committee Wants You!! Looking for Volunteers, Sponsors, Exhibitors

The IEEE North Jersey Section is hosting the Fall 2001 Vehicular Technology Conference in Atlantic City, NJ from October 6-11, 2001. And now's your chance to get involved.

Have you ever wondered how a conference comes together? How speakers, tutorials, meals, and many other activities are smoothly integrated? How to produce a powerful technical program of international caliber? How to advertise your company's name on the coffee cups during the lunches and breaks? Then this is the deal for you. The conference committee is issuing an open call for volunteers to help man its sub-committees. Currently the following have some openings: local arrangements, banquet, publicity, publications, registration, special/social events, transportation, and many others.

But it doesn't stop there. There are special discounts for student volunteers and sponsoring companies. What better way for your organization to get its name out to hundreds of people from worldwide in the mobile communications arena than by becoming Platinum, Gold, or Silver sponsors? You can even tailor your sponsorship to meet your advertising needs. This includes getting tables or floor space to exhibit YOUR products and services to those people with the purchasing power or an all electronic advertisement on the website.

Even students can get involved. There is a significant student admissions discount and does not require any society affiliations. We are also looking for students to man the registration desk and take on other activities. Universities are also welcome to become sponsors.

How can you find out more and get involved? Contact conference chair Art Greenberg at a.h.greenberg@ieee.org or (973) 386-6673, and Industry Liaison/Exhibits chair Stephen Wilkowski at swilkowski@lucent.com or (973) 386-6487. Check out the website at http://www.fallvtc2001.org.

North Jersey Section Activities April 2001

Apr. 4–"NJ Section Executive Committee Meeting" – 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Wayne Owens at (201) 767-3400 ext. 226 or wowens@crestron.com.

Apr. 4–"Searching, Filtering, and Adaptation of Audio-Visual Information" - NJ Signal Processing Chapter, 5:00-6:00 PM (refreshments at 4:45 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Yun-Qing Shi (973) 596-3501 or Dr. Alfredo Tan (201) 692-2324 tan@mailbox.fdu.edu.

Apr. 5–"Software Verification & Validation: An Overview for Practitioners" – LI Computer Chapter, 8:30-5:00 PM, Melville, NY. Babak Beheshti (516) 686-7437 or b.beheshti@ieee.org.

Apr. 6–"Management's Role in Achieving Predictable Software Development" – LI Computer Chapter, 8:30-5:00 PM, Melville, NY. Babak Beheshti (516) 686-7437 or b.beheshti@ieee.org.

Apr. 19–"3G Wireless Technologies: Fundamentals and Overview" - MTT/S/AP-S Chapter, 7:00 PM, NJIT, 202 ECE Center, Newark, NJ. Kirit Dixit (201) 400-2313, Willie Schimdt (973) 492-0371 or Dr. Edip Niver (973) 596-3542 (NJIT).

Apr. 19–"XML Lessons Learned" - NJ Computer Chapter, 7:00 PM, Dialogic Inc, 1515 Route 10 East, Parsippany, NJ. Howard Leach, (908) 255-1634, or h.leach@ieee.org.

Apr. 20 & 21-"The 10th Annual Wireless and Optical Communications Conference", 8:00 AM, Marriott Hotel, Newark Airport, Newark, NJ. Details can be found on http://wocc.twnet.com.

Apr. 22–"NJ Section Awards Reception" – 3:00 to 6:00 PM at the Birchwood Manor, 111 North Jefferson Rd, Whippany, NJ. Anne Giedlinski (973) 377-3175.

Apr. 24–"Rail Rapid Transit Vehicle Innovations Forum" – NYC VTS Chapter, 6:00 to 8:00 PM, 320 Park Ave, (50th St), NY, NY. David Horn (212) 947-7110 or david.horn@fluor.com.

Apr. 25–"Novel Materials for System on a Chip" – EDS/C&S Chapters, 5:00-6:00 PM (refreshments at 4:45 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207, Dr. Durga Misra (973) 596-5739 or Dr Edip Niver (973) 596-3542.

Apr. 26–"Overview of MEMS Technology with Applications to RF Communication" – EDS/C&S Chapters, 7:00 PM, NJIT, 202 ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207, Dr. Durga Misra or Dr Edip Niver (973) 596-3542.

Apr. 26–"Advances in Fuel Cell Technology" – NJ IAS/PES Chapters, 7:00 PM, PSE&G Training Center, Edison, NJ. Ken Oexle (973) 386-1156.

Apr. 26–"Getting Started in Consulting" – NJ Consultants' Network, 7:30 PM, KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-4500 or www.TechnologyOnTap.org.

Apr. 30–"Undergraduate Research Poster Presentation on IT" – 11:30 AM to 1:00 PM, NJIT, 202 ECE Center, Newark, NJ. Dr. Durga Misra (973) 596-5739 or dmisra@njit.edu.

Upcoming Meetings

May 2–"NJ Section Executive Committee Meeting" – 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Wayne Owens at (201) 767-3400 ext. 226 or wowens@crestron.com.

May 17–"Electric Vehicle Technology" – NJ IAS/PES Chapters, 7:00 PM, GPU Energy, 300 Madison Ave, Morristown, NJ. Ken Oexle (973) 386-1156.

May 18–"Induction Motor Drives & Applications Seminar" – NJ IAS/PES Chapters, 9:30 AM to 3:30 PM, GPU Energy, 300 Madison Ave, Morristown, NJ. R. Vittal Rebbapragada (609) 720-3209 or r.rebbapragada@ieee.org.

Members and Non-Members Welcome
PLEASE POST

Life and Retired Members

I have been having a lot of fun teaching and tutoring K-12 students about math and science using engineering concepts. The students are "turned on" by having the opportunity to interact with an experienced engineer and learning how these academic subjects are applied to solving practical problems. There are many opportunities for engineers to stimulate students in this all important area of education. If you are interested, please contact me at a.macrae@ieee.org.

-Al Mac Rae

2001 IEEE NORTH JERSEY FELLOWS

Huifang Sun

"For contributions to digital video tech-nologies including coding optimization, down-conversion, and error resilience."

Huifang Sun received a BS degree in Electrical Engineering from Harbin Engineering Institute, Harbin, China, and PhD degree in Electrical Engineering from University of Ottawa, Ottawa, Canada. In 1986 he jointed Fairleigh Dickinson University, Teaneck, New Jersey, as an Assistant Professor and consequently promoted to an Associate Professor in electrical engineering. From 1990 to 1995 he was with the David Sarnoff Research Center (Sarnoff Corp), Princeton, New Jersey, as a member of technical staff and later promoted to Technology Leader of Digital Video Technology where his activities were MPEG video coding, AD-HDTV and Grand Alliance HDTV development. He joined Murray Hill Laboratory, Mitsubishi Electric Research Laboratories (MERL), New Jersey in 1995 as a Senior Principal Technical Staff and was promoted to Deputy Director in 1997 where his activity is advanced television development and digital video processing. He has been active in MPEG video standards for many years. He holds 12 US patents and has several pending, and has authored or co-authored more than 100 journal and conference papers. He received the 1993 best paper award of IEEE Transactions on Consumer Electronics, and 1997 best paper award of International Conference on Consumer Electronics. For his contributions on HDTV development he received the 1994 Sarnoff technical achievement award. Dr. Sun is the Associate Editor of IEEE Transaction on Circuits and Systems for Video Technology.

Charles M. Lawrence

"For contributions to engineering and technology management education."

Charles W. Lawrence has acquired experience working in industry, academia, and government at the local, state and national levels. His engineering career began with the American Electric Power Co. in power plant and substation design, and later with the Advance Engineering Department of the Large Steam Turbine-Generator Division of General Electric Co., Schenectady, New York.

For twenty years, Dr. Lawrence taught undergraduate and graduate courses at the Polytechnic University, New Jersey Institute of Technology, and the City College of the City University of New York. In addition, he held several administrative positions at the City College, one of which was being the Chief Operating Officer of its summer sessions.

In the administrations of Mayors John V. Lindsay and Abraham Beame of New York City, Dr. Lawrence was appointed as the Executive Director of the Mayor's Interdepartmental Committee on Public Utilities (ICPU), a group of the top seven of the Mayor's Cabinet, to deal with the deteriorating utilities services in the City, and which was undermining business activity and public safety. Under Dr. Lawrence's direction, the ICPU promoted Con Edison to make massive and unique measures by supplying 2,400-megawatts from barge-mounted gas turbine generators moored on the Gowanus Canal - all accomplished in six months. He devised several programs to alleviate energy consumption with labeling and rating systems for building operators and consumers to make energy-wise choices. The familiar yellow and black energy use guide labels appearing on appliances by law, is a literal adoption of these efforts. The consumer telephone rating system in use by the NY State Public Service Commission was an ICPU development.

Upon leaving the City administration, Dr. Lawrence worked as Program Manager in the Office of Building and Community Systems of the US Energy Research Administration (now US DOE) in Washington, DC, further promoting much of the work he initiated with the ICPU. When a consortium was formed in the State of New Jersey called the New Jersey Energy Research Institute (NJERI) by the Governor with leaders from business, utilities and universities to address energy problems and to promote energy research for their solution, Dr. Lawrence was called to head this activity as Executive Director. Under his direction, among other things, a co-generation system for downtown urban renewal in Trenton was researched and built, and is operating to simultaneously supply electricity and high temperature high pressure water for heating and cooling. NJERI initiated the Energy Integrating Master Plan for the City of Atlantic city with the advent of the Casino-hotel industry. Another NJERI research effort that bore fruit was the design of the corporate headquarters of PSE&G in Newark to include facilities that enabled the building to be used as a training tool for practicing engineers and architects, and graduate students from NJIT and SIT, to improve their skills in optimizing energy use and designing systems.

Since 1985, Dr. Lawrence has been in private practice assisting clients with problems in energy optimizing programs, and more recently with matters of electric and gas utility restructuring and deregulation. Among his clients are Merrill Lynch, Inc., Ernst and Young, LLP and Sony Corporation of America.

Lawrence received AB and BS degrees from Columbia University, and Masters and PhD degrees from the Polytechnic University. He is a registered professional engineer in the States of New York and New Jersey.

George I. Zysman

"For leadership in the development of mobile communications technology, systems and standards."

Dr. George I. Zysman is a telecommunications consultant specializing in the areas of wireless and mobile internet solutions.

Previously he was the Chief Technical Officer and Chief Architect at Lucent Technologies Wireless Networks Group. His responsibilities there included the direction of technology planning and development, wireless architecture and standards with a focus towards third generation wireless networks.

Dr. Zysman started his AT&T/Lucent Technologies career at Bell Laboratories as a Member of Technical Staff responsible for exploratory work in microwave networks and phased array antennas, for national defense applications. He joined the newly formed Mobile Telephone Laboratory at Bell Labs in 1971, where his work included experimental studies of cellular systems and design of prototype equipment. His and his coworkers' activities led to establishment of AMPS cellular standards and the allocation of spectrum for cellular service in the United States. He later led the development of digital cellular technologies and was responsible for the first digital trial system, which included dual-mode operation, within an operating commercial system. Dr. Zysman subsequently led cell site architecture and design activities at Lucent Technologies which resulted in the first plug-in channel unit, first cellular linear amplifier and a Digital-ready base station capable of supporting multiple standards. He championed the introduction of CDMA technology and was responsible for its

field trials. He managed the design of the first Lucent Technologies CDMA LSI devices, intelligent antenna design as well as many other innovations for third generation wireless.

Dr. Zysman holds a PhD in Electrophysics and an MSEE from the Polytechnic Institute of Brooklyn and a BSEE from Cooper Union in New York, NY. While at Polytechnic, he was a Research Fellow and Instructor in the Polytechnic Institute Graduate School, focusing in the area of microwave networks.

He has several issued patents and has authored papers on various aspects of wireless telecommunications and technology. He is a member of the editorial board of the Bell Labs Technical Journal and was a guest editor of a special issue of the IEEE Transactions on Vehicular Technology.

NJ PES/IAS:
Advances in Fuel Cell Technology

The IEEE North Jersey Chapters of IAS/PES will host a technical presentation on "Advances in Fuel Cell Technology" on April 26th. Arthur Quade will give this presentation.

About the Talk

Fuel cells are projected to play an increasing role in our lives. The IAS & PES Chapters will sponsor a technical meeting on the history, recent advances and applications of fuel cell technology. The presentation will also discuss pricing trends for different types of fuel cells and the commercial availability of fuel cells from developers.

About the Speaker

The speaker is Arthur Quade of Somerset Energy Services. He has an extensive background in cogeneration, dispersed generation and fuel cell projects, including experience with EPRI and major fuel cell developers.

Date: 7:00 PM, Thursday, April 26, 2001.
Place: PSE&G Training Center, Edison, NJ (Intersection Routes 1 & 287) at Pierson Rd.
Information: Ken Oexle (973) 386-1156 (k.oexle@worldnet.att.net).

NJ EDS, C&S Chapters:
Overview of MEMS Technology with Applications to RF Communication

On April 26th, 2001, the IEEE NJ Section Electron Devices, and Circuits and Systems Chapters will host a talk on "Overview of MEMS Technology with Applications to RF Communication." The speaker will be Professor Mona Elwakkad Zaghloul.

About the Talk

MicroElectroMechanical Systems (MEMS) have been used in the development of sensors and actuators Microsystems. Micromachining techniques such as surface and bulk micromachining are used to realize MEMS devices. The integration of MEMS devices with interface circuits to realize Microsystems provide the use of such systems in many commercial applications. This talk will give an overview of MEMS commercial applications. CMOS technology has been used in realizing MEMS devices such as gas sensors, RF – power sensors, and RF – microwave passive components. We discuss the challenges in micromachining CMOS technology to realize MEMS devices. A new monolithic CMOS micromachining approach is proposed suitable for realizing RF components for RF communications.

About the Speaker

Mona Elwakkad Zaghloul has been Professor in the Department of Electrical Engineering Computer Science at the George Washington University since 1989. Since 1997 Professor Zaghloul has been director of the Institute of MEMS and VLSI technology also at GWU. Professor Zaghloul is an IEEE Fellow.

All Welcome!

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

Time: 7:00 PM, Thursday, April 26, 2001. Free buffet will be starting at 6:00 PM.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.
Information: Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Durga Misra or Dr Edip Niver (973) 596-3542 (NJIT).

IEEE Richard W. Hamming Medal

Alexander G. Fraser

"For pioneering contributions to the architecture of communication networks through the development of virtual circuit switching technology."

Alexander G. Fraser, commonly known as Sandy, is Chief Scientist and a member of AT&T Labs Research. Prior to October 1998, he was Vice President of Research for AT&T. He founded AT&T Labs Research when, in 1996, AT&T split off its equipment manufacturing business (Lucent). AT&T Labs Research employs about 400 research staff and annually employs about 80 student and faculty visitors. The research program has a strong emphasis on communication systems and the information sciences.

Dr. Fraser joined AT&T Bell Laboratories in 1969. He invented the Datakit® Virtual Circuit Switch and the Spider ring network, both of which are cell-based networks that anticipated the development of ATM networking. He created the UNIX® Circuit Design Aids System, which automatically produced wire-wrap circuits boards from schematic circuit diagrams. With S.C. Johnson, he developed a technique for computer instruction set optimization using a portable compiler and this led to the design of a reduced instruction set machine. With W.T. Marshall and G.G. Riddle, he invented the Universal Receiver Protocol. With C.R. Kalmanek and R.C. Restrick, he created INCON, a cell-based network designed for use in the home. In 1982 he became Director of the computing Science Research Center and five years later was Executive Director responsible for the information sciences including mathematics, signal processing, computing and software production. In 1994, Dr. Fraser became Associate Vice President for Information Sciences Research where he focused on research initiatives that promise new business directions for AT&T including electronic commerce for digital audio, billing, broadband access and home networks.

Before joining Bell Labs, Dr. Fraser was Assistant Director of Research at Cambridge University where he wrote the file system for the Atlas 2 computer, England's first time-sharing system, and developed file back-up and privacy mechanisms for that system. Earlier work includes a language and compiler for commercial data processing on the Ferranti Orion computer.

Dr. Fraser has a BSc degree in Aeronautical Engineering from Bristol University, and a PhD degree in Computing Science from Cambridge University. He is an IEEE Fellow, a member of ACM, and was a Fellow and council member of the British Computer Society. He has served on various committees for these societies and for the National Research Council.

Dr. Fraser was named an AT&T Fellow for 2000 and cited "for pioneering work and sustained leadership in the design and creation of large scale packet networks and their applications." Dr. Fraser received the 1989 Koji Kobayashi Computers and Communications Award, "for contributions to computer communications and the invention of virtual-circuit switching", and the 1992 Sigcomm Award for outstanding technical achievements in the fields of data- and computer- communications. He has served on advisory boards for Columbia University, Rutgers University, and the University of Texas. He has fifteen patents and 30 publications.

IEEE Frederik Philips Award and IEEE Jack S. Kilby Signal Processing Medal (co-recipient)

Arun N. Netravali

"For leadership in research and development leading to rapid deployment of advanced technologies into new communications systems and high-definition television." – Philips Award

"For pioneering and sustained contributions to image sequence processing and its applications to digital TV, to pattern recognition, and to computer animation." – SP Medal

Arun Netravali is President of Bell Laboratories and is Lucent Technologies' Chief Technology Officer and Chief Network Architect. He is responsible for research and development across all of Lucent. He previously was Executive Vice President of Research, responsible for Bell Labs' basic research efforts in all areas involving communication, computing and physical sciences. Earlier, Dr. Netravali was Vice President of Quality, Engineering, Software and Technologies in Bell Labs' internal consulting and technology realization group. He held a variety of leadership positions in visual communications, computer systems and communications sciences research. Prior to joining Bell Labs in 1972, Dr. Netravali worked on problems relating to filtering, guidance

and control of the space shuttle for NASA.

Dr. Netravali is regarded as a pioneer in the field of digital technology and led the research and development of Bell Labs' high definition television (HDTV) effort. He has authored more than 170 technical papers and co-authored three books: Digital Picture Representation and Compression, (Plenum, 1987), Visual Communications Systems, (IEEE Press, 1989) and Digital Video: An Introduction to MPEG-2, (Chapman and Hall, 1996). He holds more than 70 patents in the areas of computer networks, human interfaces to machines, picture processing and digital television.

Dr. Netravali is a member of Tau Beta Phi and Sigma Xi, a fellow of the Institute of Electrical and Electronic Engineers (IEEE), and AAAS and a member of the United States National Academy of Engineering. For his scientific achievements, Dr. Netravali has received numerous awards, including the Alexander Graham Bell Medal (1991) an EMMY for the HDTV Grand Alliance (1994), the Computers & Communications Prize, (1997) (NEC, Japan), the Frederik Philips Award from the IEEE (2000), the NASSCOM (National Association of Software and Services Companies in India) Medal (2000), the Kilby Medal from the IEEE (2001) and the Padma Bhushan Award from the Indian Government which is the nation's third highest civilian honor (2001).

Dr. Netravali was an adjunct professor at the Massachusetts Institute of Technology and has taught graduate courses at City College (NY), Columbia University and Rutgers University. He has served on the editorial board of the IEEE, and is currently an editor of several journals. He serves on the board of a number of organizations.

Dr. Netravali received his undergraduate degree from the Indian Institute of Technology, Mumbai, India, and master's and doctorate degrees from Rice University in Houston, Texas, all in electrical engineering. He holds an honorary doctorate from the Ecole Polytechnique Federale in Lausanne, Switzerland.

NJ EDS, C&S Chapters:

Novel Materials for System on a Chip

On April 25th, 2001, the IEEE NJ Section Electron Devices, and Circuits and Systems Chapters along with the ECE Department of NJIT will host a talk on "Novel Materials for System on a Chip." The speaker will be Dr. Lalita Manchanda.

About the Talk

The latest "buzz word" in the semiconductor industry is "System on a Chip (SOC)". SOC is a vehicle for integrating various applications specific designs on a single chip with high performance, low power and low cost. The new focus of the PC and communication industry requires mixed technology designs with diverse combinations as Logic (ASIC), microprocessors, digital signal processors, embedded memory (DRAM, Flash, FRAM and MRAM etc) and passives (inductors and TFR etc). Integration of various functions on a single chip increases bandwidth of the system and reduces RC delays and power-consumption and thus increases overall system performance. Of-course SOC is a very complex design issue. High performance SOC also requires introduction of novel materials and novel process integration schemes.

For this presentation, I will focus on novel material requirements for logic, ASIC and SOC. The basic block of a SOC is logic. With silicon technology we have been able to achieve integration levels > billion transistors on a chip with computing power reaching BIPS. "The very basis of this trillion dollar industry is that silicon has a native oxide that is silicon dioxide". However, for technologies with dimensions < 100nm, SiO_2 (< 1.5nm) may not work as a gate insulator with low power. To sustain this industry we need to invent a high K gate dielectric or we will have to invent another switch! I will also address high K dielectric issues for embedded memory (DRAM, FLASH and FRAM). High performance ULSI/SOC also impose enormous challenge on interconnects within the functional blocks and between the blocks. Implementation of copper and low K materials reduces the RC delay and permits 9-12 interconnect metal levels. In the long term new design or technology solutions such as free space RF or optical interconnects may be required to overcome the performance limitations from copper/barriers/low K.

About the Speaker

Dr. Lalita Manchanda (lmanchanda@lucent.com) is a Distinguished-Member of Technical Staff with Electronics Device Research of Agere Systems (formerly of Bell-Laboratories Lucent Technologies) at Murray Hill, NJ. She has done pioneering/fundamental research work on semiconductor devices, dielectrics, device/dielectric interfaces and has made major impact on the technology of CMOS scaling. Her present focus for R/D is novel materials and devices for SOC. She was the primary inventor/team leader of the surface sensing technology for finger print sensors. She has published more than 100 papers and has been granted several key patents.

Dr. Manchanda is a very active Senior Member of the IEEE. She was the Editor of the Electron Device Letters (1989-94); General Chair/Technical Chair of the IEEE-SISC (1992/93); and she served on the executive committee of the IEDM (1994-98). At present she is serving on the VLSI-circuits and Device committee and the Distinguished-Lecture series of the IEEE-ADCOM-EDS. She is also very interactive with the international Academic/Research community. She is on the Technical Advisory Board of the SRC. She is also an invited member of the Academy of Sciences (NY chapter), AAS and SWE.

All Welcome!

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

Time: 5:00-6:00 PM, Wednesday, April 25, 2001. Refreshments will be served at 4:45 PM.

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

Information: Dr. Richard Snyder (973) 492-1207, Dr. Durga Misra (973) 596-5739 or Dr. Edip Niver (973) 596-3542.

3G Wireless Technologies: Fundamentals and Overview

The IEEE NJ Section MTT/S/AP-S Chapter along with NJIT will host a talk April 19, 2001 on "3G Wireless Technologies: Fundamentals and Overview." The speaker will be George Kannell.

About the Talk

This presentation covers the main 3rd Generation wireless technologies from a general overview to details on the technical implementation. It starts with a review of wireless standards and their evolution. Some basic fundamentals that make these wireless systems possible are reviewed. The air interfaces and specifications of these systems will also be compared.

About the Speaker

George Kannell is a Member of Technical Staff in the Wireless Technology Laboratory of Lucent Technologies. In working at Bell Laboratories he is responsible for the design of wireless digital communication RF systems. He is currently working on 3rd Generation CDMA prototype equipment. He also teaches courses in Digital Communications as an Adjunct Professor at the New Jersey Institute of Technology. He received his BSEE degree from Fairleigh Dickinson University in 1984 and MSEE degree from the New Jersey Institute of Technology in 1988. Prior to Bell Laboratories, he worked as a Senior Engineer at Ansoft Corporation where he simulated wireless communication and radar systems as well as RF components and software development. Before this, he worked for KDI/Triangle Electronics where he designed wireless components as well as 10 kHz to 20 GHz communications, radar and telemetry subsystems.

All Welcome!

You do not have to be an IEEE member to attend.

Time: 7:00 PM, Thursday, April 19, 2001. Free dinner will be available at 6:00 PM.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.
Reservations & Information: Kirit Dixit, (201) 400-2313 (RF Electronics), Willie Schmidt (973) 492-0371 or Edip Niver (973) 596-3542 (NJIT).

Electric Vehicle Technology

The IEEE North Jersey Chapters of IAS/PES will sponsor a technical meeting on "Electric Vehicle Technology" on May 17th. Randy Evans will be the speaker.

About the Talk

The discussion will include series and parallel hybrid electric vehicles as well as, internal combustion engine/battery electric vehicles, the forerunner of fuel cell hybrid electric vehicles. Demonstration vehicle models currently available in the market place incorporating these new technologies and other alternate fuel electric vehicles will also be reviewed.

About the Speaker

The speaker is Randy Evans of GPU Energy. He has an extensive background in the development, testing, evaluation and application of electric vehicle technology.

Date: 7:00 PM, Thursday, May 17, 2001.
Place: GPU Energy, 300 Madison Ave, Morristown, NJ.
Information: Ken Oexle (973) 386-1156 (k.oexle@worldnet.att.net).

PACE NEWS

By Richard F. Tax
North Jersey PACE Chair

I shall be attending the PACE conference in Tampa on the 27-29 of April. This will give me the opportunity to present your concerns and views to the leadership of PACE and IEEE-USA. Therefore, you are invited to email me your thoughts and concerns of a Professional nature.

I will try to get answers from the PACE and IEEE-USA conference leaders and bring your concerns to the attention of those attending the conference.

Please reply to me at rtax@bellatlantic.net.

My original thoughts are as follows, but I would like to add your concerns to this list.

ISSUES:
▪ IEEE-USA support of Section PACE activities.
▪ IEEE-USA budget for Section PACE activities.
▪ Our Section PACE activities?
▪ Legislative Alerts/funding LAs.

I would also like to know if you are interested in having monthly Section PACE meetings.

IEEE Volunteers Needed for 2001 National Scout Jamboree

Volunteers are needed for the Electricity and Electronics Merit Badge Booths at the 15th National Scout Jamboree. IEEE is the title sponsor of the Electronics Merit Badge Booths and co-sponsor of the Electricity Merit Badge Booths. Volunteers are primarily needed for the position of merit badge instructor. While volunteers can volunteer for just one day, it is preferred that they volunteer for at least two days.

The National Scout Jamboree will be held from Monday, 23 July 2001 through Wednesday, 1 August 2001 at Fort A.P. Hill, Virginia. The Jamboree site is near Bowling Green, Virginia which is between Richmond and Fredericksburg.

To volunteer, contact John P. Castelvecchi at john_castelvecchi@dom.com. Provide John with your name, address, phone number, email address, requested volunteer position and available dates.

An Appeal for Earthquake Victims in India

The recent devastating earthquake that hit north-western India has had a terrible effect on the population, housing, and infrastructure. Such a drastic event has left countless injured, and myriads dead. The region and people of India have lost much of their progress in recent years due to this earthquake.

We appeal to the general membership to make a contribution to the charity below. Any funds would greatly help bring badly needed food, water, medical supplies, and support services to the affected areas.

Please make your tax-deductible checks payable to: American Red Cross International Response Fund and mail them to:

American Red Cross International Response Fund
P.O. Box 37243
Washington, D.C. 20013

County College of Morris Students Tour AT&T Global Network Operation Center

   On February 12, 2001, a tour of the AT&T Global Network Operation Center was a made in an effort to recognize National Engineers Week (http://www.eweek.org/). The group participants ranged from County College of Morris (CCM) alumni, IEEE students, and engineering students of various genres. Arrangements of the tour were made as a result of several letters written to AT&T representatives by Eric Ballance, on behalf of the engineering departments at CCM. The group was able to see the inner-workings of the largest and most sophisticated technological networking facility in the world. AT&T's Global Network Operations Center monitors well over 300 million voice calls, wireless and landline, approximately 675 terabytes ("tera" equals trillion) of data transfers on its networks in a typical day. And on a high-volume day the network carries data equivalent to 34 times the contents of the Library of Congress.

   The GNOC became operational on December 15, 1999 and was estimated at a construction cost of over 21 million dollars. Its facility hosts an interactive museum, internet cafe', and a stadium theatre that overlooks 144 wallboards (TV monitors), that display information ranging from statistical data to CNN and the Weather Channel. The center is non-specific as to what sectors it monitors, meaning it handles private, public and international (Italy, Britain etc...) communication services. The center also uses technology developed by AT&T Labs that is solely unique to AT&T and is unavailable to any other telecommunications competitor. This enables AT&T to handle ATM, frame relay, IP/TCP, wireless, SONET, optical and several other mediums of communications.

County College of Morris
February 12, 2001

GLOBAL NETWORK
OPERATION CENTER AT&T

Front row, starting at 4th from left, moving to right: *Professors Dominick D'Stefan* and *Joe Vallely* (IEEE advisors), *Eric Ballance* (IEEE CCM Student Chapter President).
Robert Ballance, last row farthest to the right, is an employee of AT&T's Business Services Department and was the sponsor of the tour.

WOCC 2001 PROGRAM

The 10th Wireless and Optical Communications Conference (WOCC) will be held this year on April 20th and 21st at Newark Airport Marriott Hotel. The theme for WOCC 2001 is: *Enabling Technologies for Broadband Access Networks*.

	04/20/2001 (Friday)	04/21/2001 (Saturday)
8:00 AM	Registration	Registration
9:00 AM	F1 – Opening Remarks Russell Hsing, Telcordia	S1 – Opening Remarks
9:10 AM	F2 – Plenary Session I. Cynthia Kay Christy-Langenfeld, VP/COO, Lucent Steve Weinsten, Area Manager./Fellow, NEC USA Nin-Nan Lee, VP, Hughes Network Systems	S2 – Plenary Session III. Prof. Shen, Dean of Engineering, NCTU, Taiwan Bao-Shuh Paul Lin, General Manager., Philips Asia Soo Ngee Koh, Nanyang Technological Univ., Singapore
10:40 AM	Break	Break
10:50 AM	F3 - Plenary Session II. Bertram Hui, Intel Capital Da Hsuan Feng, Provost, Univ. of Texas at Dallas Ray Camisa, Managing Director, Sarnoff	S3 - Plenary Session IV. Teddy Huang, ITRI-CC Herman Rao, Far EastTone
12:30 PM	F4 – Luncheon Keynote Bob Lucky, Corporate VP, Telcordia	S4 – Luncheon Keynote Jung-Chiou Hwang, Director General, MOEA
(Parallel) 02:00PM	F5 – Technical Session I. Broadband Wireless Access Justin C-I Chuang, AT&T Hongya Ge, NJIT Stefano Galli, Telcordia Hui-Ling Lou Marvell Semiconductor Minnie Ho, Fantasma Networks	S5 – Technical Session V. Wireless Networks and Applications Robin Chen, AT&T Yuqi Yao, Packet Video Ming-Jye Sheng, Tellium Ravi Jain, Telcordia Ren Da, Lucent
	F6 – Technical Session II. Optical Integrated Circuits (ICs) Y.K. Chen, Lucent Mee-Koy Chin, Anadigics Jay Wiesenfeld, Celion Networks Garry Gu, Agere Nandakumar Ramanujam, Sowilo Networks	S6 – Panel Discussion I. Optical Business Opportunities Milton Chang, New Focus Kai Eng, Village Networks Janpu Hou, Luminent Bertram Hui, Intel Shao-Kai Liu Worldcom Jin-Yi Pan, Sorrento Networks Winston Way, Opvista
3:40 PM	Break	Break
(Parallel) 4:10 PM	F7 – Technical Session III. Optical Broadband Access Chia-Chang Li, Lucent Nick Frigo, AT&T Ron Skoog, Telcordia Fran Effenberger, Quantum Bridge Communications Kong-Li Deng/Calvin Chan Jedai Broadband Networks	S7 – Technical Session VI. Optical Networks and Applications Shao-Kai Liu, Worldcom Angela Chiu, Celion Networks John Strand, AT&T John Johnson, Agere William Wong, Onetta
	F8 – Technical Session IV. Wireless Integrated Circuits (ICs) Frederick R. Giordiano, Agere Systems Raafat Kamel, Wiscom Technologies Mike Coady/Mark Lang/Alastair Upton, RF Micro Devices Y.Y. Tu, Global Communications Technology Chan-Shin Wu, WIN Semiconductors	S8 – Panel Discussion II. Wireless Business Opportunities Irwin Chen, ACER Paul Chou, Teleion Wireless Teddy Huang, ITRI Wen-Yi Kuo, Wiscom Technologies Patrick Li, Lucent Maw-Lin Yeh, Loop Telecom
6:00 PM	F9 – Conference Reception	

Registration Fee

Pre-Registration (deadline 04/13/2001): $120
On-Site Registration: $150
Student: $40

For registration and more information, please contact:
Hsuan-Jung Su (hjsu@lucent.com)
or visit our website at http://wocc.twnet.com

INDUCTION MOTOR DRIVES & APPLICATION SEMINAR

The IEEE North Jersey Section Chapters of IAS/PES will host a one day Seminar on "Induction Motor Drives & Applications" on May 18, 2001. The seminar will cover the following topics:

- Fundamentals of Energy Conversion-Induction Motors, Standards Governing the Selection & Application of Motors
- Basic motor types and windings covering Squirrel Cage Rotors, Low Voltage Windings, High Voltage Windings
- Insulation Testing
- Cleaning and Drying, Winding Repair
- Design Considerations, and Vibration and Balancing
- DC Machines
- Digital Relays for AC Induction Motor Protection

Coverage of the above topics will examine both electrical and mechanical aspects, as relevant, and focus discussions will include information on what to look for in troubleshooting failures, replacement winding designs and practical aspects of testing.

Seminar Presenters:
- **Beant Nindra, PE**: Mr. Nindra provides engineering oversight for National Electric Coil's Columbus and Brownsville engineering units. He has nearly 40 years experience as a designer of windings for generators and all types of large motors. He has written extensively on coil and insulation design, electrical testing and machine maintenance and has made presentations at numerous power generation conferences and professional meetings by Doble, IEEE and EPRI. He is an active participant in IEEE Dielectric Insulation Society. Mr. Nindra graduated with honors from the University of Jabalpur, India in electrical engineering (1962). He is a licensed Professional Engineer.
- **William Moore, PE**: Mr. Moore is responsible for the day-to-day management of the National Electric Coil's Columbus-based engineering unit, which provides technical oversight of repair, refurbishment, as well as engineering design for the manufacture of new coils. He brings hands-on operational experience with Florida Power & Light at the Sanford and the award-winning Martin power plant. He has been the recipient of EPRI's prestigious "Innovator" awards and holds three generator-related patents. He also has published over 30 technical papers in this area. Mr. Moore graduated from Notre Dame in mechanical engineering (1979), and is a licensed professional engineer in two states. He holds masters degrees in mechanical engineering, from the University of Pittsburgh (1983, Pi Tau Sigma) and in engineering management, from the Florida Institute of Technology (1986).
- **Subhash Patel, PE**: Mr.Patel holds a BS degree (EE & ME) from MS University, Baroda, India, and MSEE degree from University of Missouri-Rolla. Over the last 30+ years Subhash has worked for Brown Boveri, Illinois Power Co, and General Electric (Malvern, PA). Presently he is employed as Principle Power Engineer with Schweitzer Engineering Laboratories in King of Prussia, PA. Subhash is a Senior Member of IEEE and a licensed Professional Engineer.
- **R. Vittal Rebbapragada, PE (SM)**: Senior Consulting Engineer with Washington Group, International will cover motor fundamentals, and standards governing selection and application of motors.

The registration fee for this seminar prior to April 15th will be $200 (non-IEEE members), $150 (IEEE Members), and $25 (Students with valid ID). Registrations after April 15th must include an additional late fee of $25. The Seminar fee includes lunch, refreshments and handouts. Non-members joining IEEE within 30 days of the seminar will be rebated $100 of the $200 registration charge. Organizations sponsoring 3 or more attendees will get a 50% discount.

Date:	May 18, 2001 (9:30 AM – 3:30 PM)
Location:	GPU Energy, Inc., 300 Madison Ave, Morristown, NJ.
Information:	R. Vittal Rebbapragada, PE at (609) 720-3209 or via e-mail at r.rebbapragada@ieee.org
Registration:	US mail to: K. Oexle, 11 Deerfield Rd, Whippany, NJ 07981

Registration: Induction Motor Drives & Application Seminar, 5/18/2001

Name _____

Address _____

_____

Phone_____ Email_____

IEEE #_____ Student @_____ Non IEEE _____

Payment Enclosed $_____ (make check payable to **North Jersey Section IEEE**)
Add $25 for late registration after April 15th

IEEE AWARDS RECEPTION

North Jersey Section
April 22, 2001
Birchwood Manor, Whippany NJ

A time to relax, unwind and enjoy --
A time to pay tribute to our new Fellows --
A time to honor our Award Winners --
YES it's time for the Annual Section Reception

The Annual Section IEEE Awards Reception will be held at the Birchwood Manor, 111 North Jefferson Road, Whippany again this year. The affair is scheduled for **Sunday, April 22, 2001** from 3 to 6 PM. Tickets are $35.00 each and include a complete prepaid, two-hour open bar, hors d'oevres, buffet, and dessert. Spouses and guests are welcome. We are limited to 90 attendees, so please make your reservations early.

Reservations are required by April 16, 2001. Complete the reservation form and return it with your payment. If you would like tickets mailed back to you, please enclose a self-addressed **stamped** envelope. Otherwise, your tickets will be held at the door for you. If any additional information is required concerning the reception, contact Anne Giedlinski at (973) 377-3175.

Use this form for Reception reservations. **ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE to receive tickets in advance.   Reservations are required by April 16, 2001.** Mail reservation request to:

> Anne Giedlinski
> 299 Brooklake Road
> Florham Park, NJ 07932

Enclosed is _____ for _____ ticket(s) at $35.00 each (make check payable to **North Jersey Section IEEE**) for:

NAME: _____

ADDRESS: _____

_____