

The



IEEE Newsletter

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

NJ PES/IAS Chapters:

Energy Conservation Series - Introduction to the US Green Building Council and the Leed Family of Rating Programs

On April 19, 2006, as part of an ongoing series of free seminars on the topic of energy conservation, the PES and IAS Chapters will sponsor an evening discussion on the Introduction to the US Green Building Council and the LEED family of rating programs by Nick Stecky.

About the Meeting

This seminar will be an introduction to the US Green Building Council and the LEED family of rating programs including for new construction, core and shell, commercial interiors and existing buildings. This will be an overview of what is a green building, how buildings can qualify for "green points" within the LEED Programs and what the benefits of going green are for all stakeholders including the owner, the occupants, the design team and the construction team. The program will be tailored for the IEEE profession, highlighting where IEEE skills can aid a Green Building in achieving LEED points.

About the Speaker

The presenter will be Nick Stecky, President of NJS Assoc, LLC.

Nick Stecky is President of his own firm, NJS Assoc, LLC providing consulting services for energy efficient and high performance Green Buildings. He has a BS in engineering from NJIT and a MS in Systems from FDU. He is a Certified Energy Manager, a LEED Accredited professional and a Six Sigma Green Belt. He has been president of the NJ Chapters of ASHRAE and the AEE and a Board Member of the NJ Chapter of the USGBC. He is a frequent lecturer, seminar provider and author on high performance facilities. He is the author of the Green Building and Indoor Air Quality sections of the CEM Training Manual and

one of the instructors for the CEM Program. Professional experience includes General Electric, Unilever, Kraft Foods, and Princeton Plasma Physics Lab.

Time: 6:30 PM, Wednesday, April 19, 2006. A pre-meeting buffet will be available starting at 6:00PM.

Place: Eaton Electrical, 690 Rahway Ave, Union, NJ. Directions: Route 82 Morris Avenue from either Springfield or Union to Rahway Ave.

Information: Ronald W. Quade, PE, (732) 205-2614 or rwquade "AT" ieee.org.

IEEE Virtual Museum

At the beginning of this year, a new exhibit on nanotechnology opened at IEEE's award-winning pre-university educational site (<http://www.ieee.org/museum>). In addition, the IEEE History Center is pleased to note that excerpts from exhibits in the IEEE Virtual Museum will be used by the Migrant department of the San Antonio Independent School District as part of a program that serves the educational needs of 760 children of migrant workers. Teachers, bringing laptops, visit the homes of student enrolled in the program. These teachers will be provided with CDs containing excerpts from the IEEE Virtual Museum exhibits.

APRIL 2006

April 2006 Volume 52, Number 10

Publication No: USPS 580-500

"The IEEE Newsletter" (North Jersey Section), is published monthly except June and July by The Institute of Electrical and Electronics Engineers, Inc. Headquarters: 3 Park Avenue, 17th Floor, New York, NY 10016-5997. \$1.00 per member per year (included in annual dues) for each member of the North Jersey Section. Periodicals-class postage paid at New York, NY and at additional mailing offices. Postmaster send address changes to: "The IEEE Newsletter", 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. USPS 580-500 (ISSN 1076-3732).

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Deadline for receipt of material is the 1st of the month preceding the month of publication. All communications concerning editorial and business matters, including advertising, should be sent to the Business Manager via e-mail at k.saracinello@ieee.org or to *The IEEE Newsletter*, c/o Keith Saracinello, 25 Messenger Ln, Ringoes, NJ 08551, (908) 791-4067.

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:

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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 Seth Jakel at (973) 731 1902, [sgjakel "AT" comcast.net](mailto:sgjakel@comcast.net).

2006 IEEE North Jersey Fellow

Tin Kam Ho

"for contributions to pattern recognition methodology and tools."



Tin Kam Ho is a Distinguished Member of Technical Staff in the Mathematical and Algorithmic Sciences Research Center of Bell Labs, Lucent Technologies. She pursues basic and applied research in pattern recognition, data mining, and complex system modeling and simulation.

Dr. Ho has pioneered technologies on multiple classifier systems, random decision forests, and the analysis of classification data complexity. These have become essential parts of the core methodology in pattern recognition. Her Mirage tool for interactive pattern discovery has been widely welcomed by scientists and engineers, especially those working with the Virtual Observatory. Dr. Ho's innovations on multi-lingual symbol recognition and context-driven document analysis were recognized with an ICDAR Young Scientist Award in 1999. Recently she has led major efforts on simulation and monitoring of complex optical transmission systems, for which she shared a Central Bell Labs' Teamwork Award and a Bell Labs President's Gold Award.

Dr. Ho is Editor-in-chief of Pattern Recognition Letters, the official journal of the International Association for Pattern Recognition. She has edited several other journals including IEEE Transactions on PAMI, and is a Program Co-Chair of the upcoming 18th International Conference on Pattern Recognition. Dr. Ho is an elected Fellow of the IAPR, and has received 7 US patents on classification, image analysis, and wireless services.

Notice to NJ Section Engineers

Paul Ward, a member of the NJ Section IEEE USA and Co-chair of its PACE committee, is looking for (a donation of) electronic test equipment that can be used for teaching electronics and electricity to students with learning disabilities (LD) at the Craig Upper School in Lincoln Park, NJ. This school is a private institution that receives its operating funds from either the parents of the students or some governmental subsidy.

The Craig Upper School is a school dedicated to teaching LD students at the high school level, preparing them to continue on to college or to enter the work force. It teaches a full curriculum, i.e., English, History, Mathematics, Science, and special courses directed at LD students. The staff is limited to approximately fifteen (15) including office, nurse, and guidance with the student population that ranges in the upper fifties (50) which is expected to grow. This ratio of student-to-staff helps to keep class size small and manageable, a class rarely exceeds seven (7).

Paul is trying to accumulate a couple of oscilloscopes, multimeters (analog or digital), oscillators, and function generators, so that a Basic EE course could be put together for a technical course and added to the present academic curriculum. The course would help the student to connect what he or she learned in Mathematics and Science into a practical experience.

The equipment does not have to be in perfect condition, just safe and usable.

If you can donate such equipment, please send it to the following address:

Craig Upper School
Attn: Paul Ward
200 Comely Road
Lincoln Park, NJ 07035

Alternatively, contact Paul Ward at (973) 790-1625 or [PWard1130 "AT" aol.com](mailto:PWard1130@att.net). He will pick it up if needed.

IEEE North Jersey Section Activities

April 2006

Apr. 3 – “Adaptive Pre-Distorters for Linearization of High Power Amplifiers in OFDM Wireless Communications” by Professor Rui J. P. de Figueiredo, EDS/C&S Chapters, 7:00 PM (buffet at 6:15 PM), New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra “AT” njit.edu).

Apr. 5 – “NJ Section Meeting”, 6:30 PM, “Executive Committee Meeting” - 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Seth Jakel at [sgjakel “AT” comcast.net](mailto:sgjakel@comcast.net).

Apr. 11 – “Motion Planning and Formation Control of Autonomous Mobile Robots” by Dr. Yi Guo, NJ SMC Society, 7:00 PM (light refreshments at 6:45 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein “AT” ieee.org).

Apr. 19 – “Electromagnetics and Semiconductor Device Simulations” by Dr. Ramesh K. Agarwal, EDS/C&S Chapters, 7:00 PM (buffet at 6:15 PM), New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra “AT” njit.edu).

Apr. 19 – “Energy Conservation Series - Introduction to the US Green Building Council and the Leed Family of Rating Programs” by Nick Stecky, NJ IAS/PES Chapters, 6:30 PM, Eaton Electrical, 690 Rahway Ave, Union, NJ. Ronald W. Quade, PE, (732) 205-2614 or [rwquade “AT” ieee.org](mailto:rwquade@ieee.org).

Apr. 21 – “Lighting Seminar” by John Hyfantis, PE, NJ IAS/PES Chapters, 8:30 AM – 3:00 PM, PSE&G Training Center, 234 Pierson Avenue, Edison, NJ. Ronald W. Quade, PE, (732) 205-2614 or [RWQuade “AT” ieee.org](mailto:RWQuade@ieee.org).

Apr. 24 – “XML Schema” by Frank Middleton, NJ Computer Chapter, 7:00 PM, Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ, (973) 285-6930. Seth Jakel – home (973) 731-1902, cell (973) 820-1865, or office (908) 740-4683 ([sgjakel “AT” comcast.net](mailto:sgjakel@comcast.net)), Howard Leach (973) 540-1283 ([hhleach “AT” aol.com](mailto:hhleach@aol.com)).

Apr. 27 – “Embedded Linux” by Frank Middleton, NJ Consultants' Network, 7:30 PM, Aeroflex/KDI-Integrated Products, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-0344 or www.TechnologyOnTap.org.

Apr. 27 – “Microwave Applications of Metamaterial Structures” by Dr. Tatsuo Itoh, NJ MTT-S/AP-S Chapter, 7:00 PM (buffet at 6:30 PM), New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Edip Niver (973) 596-3542 (NJIT), Kirit Dixit (201) 669-7599, [kdixit “AT” ieee.org](mailto:kdixit@ieee.org), or Har Dayal (973) 633-4618, [har.dayal “AT” baesystems.com](mailto:har.dayal@baesystems.com).

Apr. 27 – “The Digital StudyHall: An E-Learning System for Improving Basic Education in Third World Countries” by Randy Wang, NJ Communications Chapter, 6:15 PM, New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 ([nirwan.ansari “AT” njit.edu](mailto:nirwan.ansari@njit.edu)) or check <http://web.njit.edu/~ieeenj/comm.html> for the latest updates.

Upcoming Meetings

May 3 – “NJ Section Meeting”, 6:30 PM, “Executive Committee Meeting” - 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Seth Jakel at [sgjakel “AT” comcast.net](mailto:sgjakel@comcast.net).

May 4 – “Fort Monmouth Annual Information Technology Forum & Expo 2006 - IPv6 - Enabling Net-Centric Warfare” - AFCEA Fort Monmouth Chapter Professional Development Seminar and the North American IPv6 Task Force, 8:00AM through 4:30 PM, Fort Monmouth Officers Club/Gibbs Hall. Industry - Mike Dazio, [mdazio “AT” datatekcorp.com](mailto:mdazio@datatekcorp.com), (732) 667-1080 ext.116, Government - Kwai-Fung Chan, Kwai.Chan@us.army.mil, (732) 532-3592.

May 7 – “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.

Nov. 8 – “Theory and Applications of SEM/FIB DualBeam Instrumentation” by Dr. Lucille A. Giannuzzi, EDS/C&S Chapters, 7:00 PM (buffet at 6:15 PM), New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra “AT” njit.edu).

Dec. 18-21 – “9th International Conference on Information Technology (CIT 2006)”, see <http://www.citconference.org> and <http://www.cs.unt.edu/~smohanty/CIT2006>.

Members and Non-Members Welcome

PLEASE POST

NJ Computer Chapter:

XML Schema

On Monday, April 24th, 2006, the IEEE North Jersey Section Computer Chapter will host a presentation entitled "XML Schema" by Frank Middleton.

About the Talk

XML is the lingua franca of today's computing milieu. However, XML isn't a language of itself, but merely a syntax. The semantics of the message need to be described, and one way to do this is to use a meta-language such as W3C's XML Schema, a highly complex artifact designed by committee. This talk will unravel the mysteries of XML Schema, explain why it should be used, and how a useful subset can actually make it easy to publish your XML semantics and create/manage XML, with real-world examples.

About the Speaker

Frank Middleton is the President and Founder of Apogee Communications Technologies, Inc., an established IT consulting services provider based in New Jersey that specializes in reducing costs and improving productivity and security in small to midsize companies by leveraging best of breed technologies, such as LAMP, and process management through Model Driven Architecture. Current focus is on XML and XML Schema technology and creation of a tool to generate XML Schemas from XML documents and manage the results. OASIS has ratified the OpenDoc XML based document format – now you need a way to access that XML! For more information, visit <http://www.apogeeect.com> and also subscribe to his newsletter by sending an email with subject "subscribe" to news-request@apogeeect.com. Frank has many years of experience in IT at various companies including Deloitte, Citibank and others, and holds a Masters in Computer Science from the Courant Institute of Mathematics, NYU, and has been a member of IEEE, IEEE/CS and the ACM for longer than he wants to remember. He can be reached at (973) 796-2754 or by email at f.middleton@apogeeect.com.

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, Monday, April 24, 2006. 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 – home (973) 731-1902, cell (973) 820-1865, or office (908) 740-4683 (sgjakel "AT" comcast.net), Howard Leach (973) 540-1283 (hhleach "AT" aol.com).

comcast.net), Howard Leach (973) 540-1283 (hhleach "AT" aol.com).

NJ EDS/C&S Chapters:

Adaptive Pre-Distorters for Linearization of High Power Amplifiers in OFDM Wireless Communications

On April 3, 2006, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology will host a talk on "Adaptive Pre-Distorters for Linearization of High Power Amplifiers in OFDM Wireless Communications." The speaker will be Professor Rui J. P. de Figueiredo.

About the Talk

Orthogonal Frequency Division Multiplexing (OFDM) has several desirable attributes which makes it a prime candidate for a number of emerging wireless communication standards. However, one of the major problems posed by OFDM is its high Peak-to-Average-Power Ratio (PAPR), which seriously limits the power efficiency of the High Power Amplifier (HPA) because of the nonlinear distortion resulting from high PAPR. The present paper provides a new mixed computational/analytical approach for adaptive compensation of this nonlinear distortion for cases in which the HPA is a Traveling Wave Tube Amplifier (TWT) and Solid State Power Amplifier (SSPA). TWTAs are used in wireless communication systems when high transmission power is required as in the case of the digital satellite channel, and SSPAs are generally used in mobile communication systems. Compared to previous pre-distorter techniques based on LUT (Look-Up Table) or adaptive schemes, our approach relies on the analytical inversion of the Saleh's TWT model and Rapp's SSPA model in combination with a nonlinear parameter estimation algorithm. This leads to a sparse and yet accurate representation of the pre-distorter, with the capability of tracking efficiently any rapidly time-varying behavior of the HPA. Computer simulations results illustrate and validate the approach presented.

About the Speaker

Professor Rui J. P. de Figueiredo, BS and MS (Electrical Engineering), MIT, and PhD (Applied Mathematics), Harvard University, is Research Professor (Above Scale) of Electrical Engineering and Computer Science at the University of California, Irvine (UCI). Prior to joining

UCI in 1990, Dr. de Figueiredo served as Professor of Electrical Engineering and Mathematical Sciences at Rice University, Houston, Texas (1965-90). Professor de Figueiredo has won numerous honors for his fundamental contributions to the theory and applications of nonlinear signal/image processing and communications, and for his role as an educator and as a leader in his field and in his profession. These honors include: election to the UN-sponsored International Informatization Academy (2003), the 1999 IEEE Circuits and Systems (CAS) Society Golden Jubilee Medal, the 2000 IEEE Tri-Millennium Medal, the 2003 Gh. Asachi Medal from the Technical University of Iasi (TUI), Romania, from which he also received the title of Honorary Professor (2003), the IEEE Fellow Award (1976), the 1994 IEEE CAS Technical Achievement Award, the 2000 IEEE Neural Networks Transactions Best Paper Award, the 2003 IEEE Circuits and Systems Transactions Guillemain-Cauer Best Paper Award, the 2002 IEEE CAS Society M. E. Van Valkenburg Society Award, the 1988 NCR Educator-of-the-Year Award, his election to President of IEEE CAS Society in 1998, and, last but not least, his selection by IEEE to be one of its fifty leaders, among its nearly 350,000 members, to present the IEEE vision of the new century in the book ENGINEERING TOMORROW: Today's Technology Experts Envision the Next Century, Janie Fouke, Editor, IEEE Press, 2000.

All Welcome!

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

Time: 7:00 PM, Monday, April 3, 2006. 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. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra "AT" njit.edu).

NJ EDS/C&S Chapters:

Electromagnetics and Semiconductor Device Simulations

On April 19, 2006, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology will host a talk on "Electromagnetics and Semiconductor Device Simulations." The speaker will be Dr. Ramesh K. Agarwal.

About the Talk

In recent years, there has been considerable thrust toward the development of finite-difference time-domain (FDTD) and finite-volume time-domain (FVTD) methods for the numerical solution of Maxwell equations for electromagnetic scattering from complex three-dimensional objects. Maxwell equations are written in conservation form and solved on a three-dimensional grid both inside and outside the scattering body. Higher-order spatial and temporal discretization are generally employed to obtain accurate solutions efficiently especially for large scattering bodies. An important aspect of the calculations is the formulation and implementation of the boundary conditions – both the radiation boundary condition (RBC) and the material interface boundary conditions in discretized form. Recent developments in boundary conditions formulations and implementations will be reviewed and critically examined. Three-dimensional examples including complete aircraft configurations will be presented to demonstrate the power of the FVTD approach.

About the Speaker

Professor Ramesh K. Agarwal is the William Palm Professor of Engineering and the director of Aerospace Research and Education Center at Washington University in St. Louis. From 1994 to 2001, he was the Sam Bloomfield Distinguished Professor and Executive Director of the National Institute for Aviation Research at Wichita State University in Kansas. From 1978 to 1994, he was the Program Director and McDonnell Douglas Science and Engineering Fellow at McDonnell Douglas Research Laboratory (MDRL) in St. Louis. Dr. Agarwal obtained his PhD from Stanford University in 1975. Since then, he has worked in Computational Fluid Dynamics (CFD), Computational Magneto-hydrodynamics and Electromagnetics, and Semiconductor Device Simulation.

Dr. Agarwal is a Fellow of eight societies - American Association for Advancement of Science (AAAS),

American Institute of Aeronautics and Astronautics (AIAA), American Physical Society (APS), American Society of Mechanical Engineers (ASME), Royal Aeronautical Society (RAeS), Society of Manufacturing Engineers (SME), Society of Automotive Engineers (SAE), and the Institute of Electrical and Electronics Engineers (IEEE). He has served as a distinguished lecturer of AIAA (1996-1999), ASME (1994-1997), and IEEE (1994-2006). He has received many honors and awards for his research contributions including the ASME 2001 Fluids Engineering Award and AIAA 2002 Sustained Achievement Award.

All Welcome!

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

Time: 7:00 PM, Wednesday, April 19, 2006. 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. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra "AT" njit.edu).

NJ Consultants' Network:

Embedded Linux

On Thursday, April 27th, 2006, the IEEE Consultants' Network of Northern NJ is pleased to present "Embedded Linux", by Frank Middleton of Apogee Communications Technologies, Inc.

About the Talk

Linux has become a popular and robust platform for hosting embedded applications on a variety of hardware. Such hardware has become very inexpensive and makes it practical to use a general purpose O/S for many uses. One such hardware/software platform is the Gumstix, a \$200 box with serial and USB ports, using the Strong ARM processor. The talk will cover experiences with this device, and the GNU tool chain used to develop applications for it using a cross-platform development kit that itself runs on Linux, in this case an AMD based laptop running Fedora that will also be used to give the presentation.

About the Speaker

Frank Middleton is the President and Founder of Apogee Communications Technologies, Inc., an established IT consulting services provider based in New Jersey that specializes in reducing costs and improving productivity and security in small to midsize companies by

leveraging best of breed technologies, such as Linux/Apache/MYSQL/Perl (LAMP). For more information, visit <http://www.apogeeect.com> and also subscribe to his newsletter by sending an email with subject "subscribe" to news-request@apogeeect.com. Frank has many years of experience in IT at various companies including J&J, Deloitte, Citibank and others, and holds a Masters in Computer Science from the Courant Institute of Mathematics, NYU, and has been a member of IEEE, IEEE/CS and the ACM for longer than he wants to remember. He can be reached at (973) 796-2754 or by email at [f.middleton "AT" apogeeect.com](mailto:f.middleton@apogeeect.com).

After the Talk

Members are invited to share their experiences with the group. Come prepared to share, in 30 seconds and, if you dare, for 3-5 minutes, what your business is all about. Why companies hire you. This month - Pat Banker.

Pat Banker spent 23 years designing firmware and managing engineering projects for various companies in NJ and NY before founding Banker Coté in 1995 with her "partner in all things", Art Coté. Since then they have had the good fortune to assist many clients in meeting their technical and business goals. Specializing in embedded firmware development for 8/16 bit DSPs and microcontrollers, the company's technical portfolio includes signal processing, real time control, user interfaces, and data communications in many forms. Pat is passionate about producing high quality code - well organized, cleanly structured, thoroughly tested, and fully documented. She holds BSEE and MSEE Degrees from Rutgers and Stevens Tech. Pat is a Senior Member of CNNNJ and has served as both Secretary and Chair in prior years. Contact at (201) 307-9212 or [pbanker "AT" bankercote.com](mailto:pbanker).

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.

All Welcome!

Everyone welcome. No registration needed. Free admission.

Time: 7:30 PM, Thursday, April 27, 2006.

Place: Aeroflex/KDI-Integrated Products, 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.mckedi-integrated.com/directions.htm>.

North Jersey SMC Society:
**Motion Planning and
Formation Control of
Autonomous Mobile
Robots**

On Tuesday, April 11, 2006, the NJ Systems, Man and Cybernetics (SMC) Chapter will host a talk on "Motion Planning and Formation Control of Autonomous Mobile Robots." The speaker will be Dr. Yi Guo.

About the Talk

Broad applications of autonomous mobile robots in areas such as surface mining, space exploration, cleanup tasks, and national security call for efficient motion planning strategies. Challenging problems include path planning and trajectory generation, collision avoidance, motion constraints, multi-robot coordination, and performance evaluation. The first part of the talk presents a global motion planning algorithm combining D* search with analytic trajectory generation for non-holonomic robots. The global trajectory is composed of regional feasible trajectories which satisfy the dynamics of the robot's non-holonomic motion. Dynamic collision avoidance criteria are derived that enable the robot to maneuver among moving obstacles and generate physically feasible trajectories in real time. The discussion also examines a multi-robot motion coordination scheme, as well as the formation control of a group of robots following a time-varying reference trajectory. The presentation concludes with the demonstration of a leader-following experiment of a group of All Terrain Vehicles (ATRV) Mini mobile robots.

About the Speaker

Dr. Yi Guo is an Assistant Professor in the Department of Electrical and Computer Engineering at Stevens Institute of Technology. Previously, Dr. Guo was a visiting Assistant Professor in the Department of Electrical and Computer Engineering at University of Central Florida and was also appointed as a Research Fellow in the Computer Science and Mathematics Division of the Oak Ridge National Laboratory. Following her PhD Degree, Dr. Guo worked in the area of robotics and automation for seven years. She is the author of over thirty journal and conference articles. Her work has been supported by the Oak Ridge National Laboratory and the National Science Foundation. She currently serves as the Meeting Finance Chair of the IEEE Society of Robotics and Automation. Dr. Guo, a Senior Member of the IEEE, is

also a member of the Program Committee and the Local Arrangement Co-Chair of the 2006 IEEE International Conference on Robotics and Automation.

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 PM (light refreshments at 6:45 PM), Tuesday, April 11, 2006.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center (Intersection between Warren & Summit Streets), Newark, NJ. Directions are available at <http://www.njit.edu/University/Directions.html>.

Information/RSVP: Dr. Mike Liechenstein, (973) 471-0721, (m.liechenstein@at.ieee.org).

Please RSVP prior to the presentation since space is limited, as well as for getting instructions for accessing the secured parking deck at NJIT. Also check electronic newsletter for any possible changes in room, etc.

NJ MTT-S/AP-S Chapter:

**Microwave Applications
of Metamaterial
Structures**

On April 27, 2006, the IEEE NJ Section MTT/S/AP-S will host a talk on "Microwave Applications of Metamaterial Structures." The speaker will be Dr. Tatsuo Itoh.

About the Talk

Metamaterials are artificial or man-made structures that have properties not found in naturally existing materials. The most unusual metamaterials are the Left-Handed ones, also called Double Negative or Negative Refractive Index materials, which are characterized by simultaneously negative permittivity and permeability. Many interesting EM propagation phenomena result from the negativeness of the constitutive parameters. For instance, the phase and the group velocities are anti-parallel in a Left-Handed substance. Fundamental theoretical research as well as research on possible revolutionary applications for microwave and RF circuits is underway at various organizations. Although the technology is still in its infancy, novel practical developments have already been proposed. The talk will contain a brief historical account, fundamental concepts, adaptation to microwave environment and emerging applications for antennas, passive components and

active circuits with unique features at microwave frequencies.

About the Speaker

Tatsuo Itoh received a PhD Degree in Electrical Engineering from the University of Illinois, Urbana in 1969. He worked at University of Illinois, SRI, University of Kentucky, AEG Telefunken in Germany and The University of Texas at Austin. In January 1991, he joined the UCLA as Professor of Electrical Engineering and holder of the TRW Endowed Chair in Microwave and Millimeter Wave Electronics. He has visiting appointment with University of Leeds, UK. Dr. Itoh is a Fellow of the IEEE, served as the Editor of IEEE Transactions on Microwave Theory and Techniques for 1983-1985, was President of the MTT Society in 1990 and was a founding Editor-in-Chief of IEEE Microwave and Guided Wave Letters from 1991 through 1994. He was elected as an Honorary Life Member of MTT Society in 1994. He was the Chairman of Commission D of the URSI for 1993-1996. He received a number of awards including Shida Award from Ministry of Post and Telecommunications, Japan and Japan Microwave Prize, IEEE Third Millennium Medal and IEEE MTT Distinguished Educator Award. He is a member of National Academy of Engineering. He is currently Distinguished Microwave Lecturer for IEEE MTT Society on Microwave Applications of Metamaterial Structures. He has over 1000 publications and generated 65 PhD's in the area of microwave and millimeter-waves, computational electromagnetics, antennas, microwave photonics, EBG and Negative Index Materials.

All Welcome!

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

Time: 7:00 PM, Thursday, April 27, 2006. Free buffet will be starting at 6:30 PM.

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

Information: Dr. Edip Niver (973) 596-3542 (NJIT), Kirit Dixit (201) 669-7599, kdixit@at.ieee.org, or Har Dayal (973) 633-4618, har.dayal@at.baesystems.com.

NJ Communications Chapter:
**The Digital StudyHall:
An E-Learning System
for Improving Basic
Education in Third
World Countries**

On Thursday, April 27, 2006, the North Jersey Chapter of the IEEE Communications Society will host a presentation titled "The Digital StudyHall: An E-Learning System for Improving Basic Education in Third World Countries" by Randy Wang.

About the Talk

Good primary education is one of the most crucial factors in combating extreme poverty. In this project, computer scientists and education experts collaborate to build a distance learning system that seeks to offer resource-starved schools in villages and urban slums of India human and content resources comparable to that received by middle-class students in cities. To avoid retracing the missteps of earlier "wire-the-schools" projects, we follow two important principles: (1) cost realism, essential if we are to scale the system up to a significant number of schools and students; and (2) building systems that solve end-to-end education problems, beyond just providing connectivity, so the twin pillars of technology and pedagogy must develop side by side.

Our Digital StudyHall system is based on a unique approach leveraging the postal system, DVDs, robotically operated DVD publishers, long-distance ham radio transceivers, and short-range TV transmitters with radio controllers. We combine these components into a general-purpose and transparent communication system, providing pervasive, high-bandwidth, and low-cost connectivity. On top of this, we layer a web repository, called the "learning eBay" to enable a wide variety of digital education "workflows," such as lecture capture and replay, remote monitoring, student project collection and feedback, connecting learners and teaching staff across time and space, including volunteers from overseas. The system consists of a network of hubs and spokes, where the "hubs" are typically distributed in urban centers of excellence, which "radiate" contextually meaningful and coherent content and methodology into village and slum schools in their vicinity, which form the "spokes." An important goal of the system is to enable customized any-to-any communication and effective group learning, which may provide an ultimate solution to the

scalability problem of the education system.

The pedagogy practiced in the system is based on the theory of "Tutored Video Instruction," where remote expertise is projected into a classroom, mediated by a local less well trained teacher. This approach goes way beyond passive TV watching; it requires the local teachers to perform a variety of activities to proactively engage their students while alternately playing and pausing the pre-recorded videos. In a sense, the video and the local teacher form a "team;" the video provides a framework, an agenda, and a content and methodology model; while the local teacher supplies the crucial interactive components. In addition to helping the students, the process provides excellent training to the less skilled local teachers. Unlike conventional training workshops that last only for a short period of time and can be too abstract, the kind of training a local teacher receives from the supplied videos is ongoing, continuous, and highly specific.

A live deployment of a prototype has been in use by students starting in July of 2005. In the space of about five months, a database in the Lucknow headquarters has accumulated about 60GB of content. This includes more than 150 high-quality MPEG4 recordings of lessons staged by the best teachers at the headquarters school in front of an audience of girls from neighboring slums and based on the U.P. state board textbooks. The remainder includes Hindi science courseware, digital stories, and recordings of drama performances, all of which are produced by students and staff at the headquarters school. As the high-quality content is quickly and cheaply generated, it is being continuously pushed out to two test village schools and an "in-house" slum school. At the time of this writing, we are beginning to set up a second hub in Calcutta and a third in Pune. Preliminary results appear promising, and the system seems to be playing an effective but subtle role of blurring class differences in a highly stratified society. We hope to eventually scale up the system to cover a far greater number of villages and children, contributing toward the Millennium Development Goal of universal primary education.

About the Speaker

Randy Wang is joining Microsoft Research India, where he plans to devote full time to continue work on the Digital StudyHall project. Randy started this project when he was an assistant professor in computer science at Princeton University; before he and Princeton mutually decided they had had enough of each other.

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: 6:15 PM, Thursday, April 27, 2006. Pre-meeting buffet starting at 6:00 PM.

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

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check

<http://web.njit.edu/~ieeenj/comm.html> for the latest updates.

New Public Announcements - Mailing for North Jersey Section!

A new North Jersey Section non-IEEE members mailing list for public announcements has been created. The purpose of this mailing list is to disseminate to the North New Jersey section information pertinent to their professional and technical enhancement. It also provides information about IEEE membership services, benefits, social events, networking opportunities, technical and professional meetings, and contests. All events are open for the benefit of the membership and potential new membership. Basic mailing list commands for subscribing and unsubscribing to the mailing list are initiated by email:

TO: listserv@listserv.ieee.org
JOIN BODY: subscribe northjerseypublic
firstname lastname
LEAVE BODY: signoff northjerseypublic

IEEE-USA in Action:

Talent, Techniques, Advanced Tools Key to Future Engineering Success, Says IEEE Fellow and Former NSF Official

Washington (9 March 2006) - "In anticipating the future, we must recognize that civilization is on the brink of a new industrial world order," IEEE Fellow Dr. Joseph Bordogna said during his keynote address at the IEEE-USA Leadership Workshop in St. Louis on 4 March.

"Success will not be garnered by those who simply make commodities faster and cheaper than the competition. They will be those who develop talent, techniques and tools so advanced that competitive capability can be continually robust."

Bordogna is a former deputy director (1999-2005) and chief operating officer of the National Science Foundation, and served as IEEE president in 1998. His address, "Round, Flat or Spiky, the World Turns on an Axis," provided his vision on how engineers can contribute to future innovation in a world undergoing swift and constant technological transformation.

"Engineers will have to be effective collaborators, innovators, risk takers, and communicators, working across shifting boundaries, and embracing diversity," Bordogna said. "They will need to know the human and social dimensions of technology. Our social and economic progress depends upon it. All of you carry the excitement and the responsibility to make it happen."

Bordogna, now the Alfred Fitler Moore Professor of Engineering at the University of Pennsylvania, added that "creative transformation" -- the process of converting energy to momentum -- is the flip side of "creative destruction":

"That process -- energy to momentum - which engineers certainly embrace, speaks directly to the excitement and inspiration of integrative 21st century science and engineering innovation at the frontier. Propelled by advances in genomics, materials, computer-communications, and advances in cognition, mathematics and social science, our profession is on the verge of new, exhilarating frontiers."

To read the entire Bordogna address, go to

<http://www.ieeeusa.org/calendar/conferences/2006workshop/Presentations/Bordogna-keynote.pdf>.

Contact: Chris McManes
IEEE-USA Senior Public Relations
Coordinator
Phone: (202) 530-8356
E-Mail: c.mcmanes@ieee.org

NEWS from IEEE-USA

IEEE-USA President Encourages Bipartisan Efforts to Pass Innovation Legislation

Washington (14 February 2006) - IEEE-USA President Ralph W. Wyndrum Jr. encourages bipartisan cooperation on legislation promoting U.S. competitiveness and innovation in a letter sent to House and Senate leaders today.

Recent efforts to enhance U.S. innovation include President Bush's "American Competitiveness Initiative"; the Senate's bipartisan "Protecting America's Competitive Edge" package; Sens. John Ensign's (R-Nev.) and Joseph Lieberman's (D-Conn.) "National Innovation Act"; and House Democrats' "Innovation Agenda." House Republicans are also expected to introduce comprehensive innovation and competitiveness legislation this week.

Each of these initiatives are designed to spur America's global economic competitiveness by enhancing science, engineering and technology research and development, boosting math and science education, and providing incentives for technological innovation.

"We strongly encourage Congress to capitalize on the momentum and exceptional bipartisan consensus on this important issue," Wyndrum wrote. "For the good of country, we urge leaders in both parties of the House and Senate to work together, and with the administration, to pass legislation during this session of Congress to preserve America's competitive edge in the global arena."

The letter is available at <http://www.ieeeusa.org/policy/policy/2006/021406.pdf>.

Contact: Chris McManes
IEEE-USA Senior Public Relations
Coordinator
Phone: (202) 530-8356
E-Mail: c.mcmanes@ieee.org

IEEE-USA President Outlines Training Needed to Succeed in Our Careers

"Long gone are the days when it was enough just to work hard and become the go-to person for your technical specialty," says IEEE-USA President Ralph W. Wyndrum, Jr. In his March President's column, Dr. Wyndrum posits: "Now, it is crucial for professionals who want to advance their careers to pair their technical skills with 'soft skills' -- intelligence on how to communicate with and lead other coworkers." For examples of IEEE/IEEE-USA continuing education offerings that will help engineers succeed in today's global economy, read the entire column on "Making Ourselves More Marketable" at: <http://boldfish.ieee.org:80/u/2296/82910>

IEEE-USA President Stresses Ways to Enhance U.S. Competitiveness on NPR Talk Show

As a featured guest on National Public Radio's "Science Friday" on 24 Feb., IEEE-USA President Ralph W. Wyndrum, Jr. emphasized the need to support more qualified math and science teachers as one way to ensure U.S. competitiveness in high technology. Dr. Wyndrum cited the IEEE Teacher in Service Program as an example of how engineers are teaming with teachers to give them a "firsthand look at engineering" in the classroom. To hear the complete NPR interview with the IEEE-USA President and two other guests, go to <http://boldfish.ieee.org:80/u/2298/82910>



AFCEA Newsletter

FORT MONMOUTH CHAPTER



Fort Monmouth Annual Information Technology Forum & Expo 2006

IPv6 - Enabling Net-Centric Warfare

Sponsored By AFCEA Fort Monmouth Chapter Professional Development Seminar and the North American IPv6 Task Force (www.nav6tf.org)

Keynote Speaker: Mr. Terry Edwards, SES, Director,
Army Enterprise Architecture, Army CIO/G-6

Thursday, May 4, 2006

Fort Monmouth Officers Club/Gibbs Hall

Seminar, Conference and Exhibits: 0800-1630

Conference Registration Fee: \$50*

*Registration Fee includes seminar and keynote luncheon. The expo is free to attend.
Conference times and speakers are subject to change.

Theme: IPv6

The U.S. Department of Defense (DoD) issued a policy mandate on 9 June 2003, for all DoD components to migrate to Internet Protocol version 6 (IPv6) by FY08. The purpose for this mandate is to take advantage of additional features and capabilities of the next-generation IPv6 to support the DoD transformation to the Net-Centric Operations and Warfare (NCOW) concept.

In addition to providing the same services as the current-generation IPv4 in Warfighter networks, IPv6 provides a flexible framework to support the integration of new Net-Centric Operations functionality that will be required in the near future. IPv6 will provide for easier management and better mobility, as well as a very large pool of addresses eliminating Network Address Translators (NATs) that break the end-to-end nature of the original IP network.

Seminar Objectives:

Transitioning to IPv6 is a pervasive challenge for all Federal Agencies that will result in significant benefits. The DoD has issued an IPv6 transition mandate that all GIG assets be IPv6 capable by fiscal 2008. The General Accounting Office (GAO) recommends that the U.S. begin to address key planning considerations for the IPv6 transition. The Office of Management and Budget (OMB) has issued an IPv6 transition mandate that all Federal Agencies transition their network infrastructure backbones by fiscal 2008. What do these mandates mean to your organization and programs? Where can you find more information about the IPv6 transition? What are the issues and risks associated with the IPv6 transition? What are the available transition mechanisms? What are the lessons learned from pilot program implementations and other experiments?

The goal of this **AFCEA Technology Forum** is to address these issues, share lessons learned, and present exhibits from vendors that are developing IPv6 products and solutions. You will meet experts who will share their experiences and lessons learned on the following:

- IPv6 transition impacts on the DoD Acquisition Life-Cycle (Mr. Terry Edwards, Army CIO /G-6)
- IPv6 tutorial and operational benefits (Yurie Rich, Native6)
- Presentations from various programs such as LandWarNet (WIN-T), FCS, PdM CHS, PEO-EIS
- IPv6 Transition Technologies and On-Going R&D and testing efforts (Dave Green, CERDEC S&TCD and Ed Jankiewicz, Datatek Applications)
- Legacy software migration challenges and lessons learned (Ed Kierman, SED)



For Government attendees, attendance at this event can earn Continuous Learning (CL) Points.

For Registration, Agenda and Exhibitor information go to:

www.FortMonmouthITC.com

For further information contact:

Industry – Mike Dazio 732 667 1080 ext116
mdazio@datatekcorp.com

Government -- Kwai-Fung Chan 732 532-3592
Kwai.Chan@us.army.mil



IEEE AWARDS RECEPTION

*North Jersey Section
May 7, 2006
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, May 7, 2006** from 3 to 6 PM. Tickets are \$35.00 each. Spouses and guests are welcome. We are limited to 90 attendees, so please make your reservations early.

Reservations are required by April 27, 2006. 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 27, 2006.**
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: _____

Yes, please send me directions to the Birchwood Manor

Call For Papers

9th International Conference on Information Technology (CIT 2006) Bhubaneswar, India, December 18-21, 2006

<http://www.citconference.org>
<http://www.cs.unt.edu/~smohanty/CIT2006/>



CIT (Conference on Information Technology) is a premier international forum for high quality research in the areas of Information Technology. CIT2006 is being jointly organized by the Orissa Information Technology Society (<http://www.oits.org>) and the Institute of Technical Education and Research, Bhubaneswar, India (<http://www.iterindia.com>). Researchers, developers, and practitioners from academia and industry are invited to present their research findings on various topics of IT and its Applications. Four types of submissions are solicited: regular papers, short papers, poster papers and tutorials.

Conference Tracks: CIT encourages submissions in all the areas of information technology. However, the papers in the following 6 tracks will be primary focus of this year conference (CIT2006). The submissions in each track could be on any of the topics listed, but are not limited to them.

- **Bioinformatics and Computational Biology:** Novel applications in Bioinformatics, Data Mining and Statistical Modeling of biological data, Visualization of Biological Processes and Data, Management, Migration and Integration of Biological Databases, Biological Database search/indexing.
- **Communication Networks and Protocols:** Broadband Multimedia Communications, Wireless Ad hoc/Sensor Networks, Network Security, Wireless and Mobile Communications, Emerging IT Networks.
- **Language Processing:** Character recognition, text to speech conversion, speech synthesis, Signal and Image Processing.
- **Security, Content Protection, and Digital Rights Management:** Watermarking, Steganography, Cryptography, Biometrics, Digital Libraries.
- **Databases, Information Warehousing and Data Mining:** Intelligent Databases, Query and Constraint-based Data Mining, Mining Spatial and Temporal Data, Mining of Data Streams, Feature Extraction, Collaborative filtering/personalization, Cost-based Decision making, Visual Data Mining, Privacy Sensitive Data Mining.
- **Application Specific Software and Hardware Systems:** Embedded Information Systems, Hardware/Software/Firmware issues, Nano-technology and Applications, Quantum Information Processing.

Paper Submission: Online submissions of original and unpublished papers are encouraged. Three types of papers of papers will be considered: regular papers (6-pages), short papers (4-pages), poster papers (2-pages). Regular papers will be published in Lecture Notes in Computer Science (by Springer-Verlag). Short/poster papers and 1-page tutorial-abstracts will be printed by Tata-McGraw-Hill (TMH). All submitted papers will undergo DOUBLE-BLIND-REVIEW by a strong team of reviewers and program committee members consisting of leading researchers around the globe. Authors of papers need to prevent identity disclosure in many ways: (1) not list names and affiliations of authors, (2) not say "my work" or "our work" in the text while citing self references, and (3) not write acknowledgments such a way that identity of authors are implied. Author information should ONLY be included in the submission form.

Best Paper Awards: Three awards will be conferred with due recommendations from the program committee from the papers presented in the conference. Each award will carry cash prize and citations. Amiya K. Pujari Award is provided for the Best Paper of the conference. Narayan Misra Award is given to the best paper from Orissa. One student best paper award will be awarded from the papers with students as the leading authors.

Fellowships: The Steering Committee will award limited number of fellowships to students based on need and merit, to partially cover expenses of attendees from India. Applications must be submitted before the fellowship application deadline using the conference website.

Important Deadlines

- Papers/tutorials submission: June 15, 2006
- Notifications of review status: August 15, 2006
- Camera ready papers or tutorial-abstracts: September 15, 2006

NJ Power Engineering Society/Industry Applications Society

Lighting Seminar

The PES and IAS Chapters will sponsor a technical seminar covering lighting sources, systems, and performance. The session will be held on Friday, April 21, 2006, at the PSE&G Training Center, 234 Pierson Avenue, Edison, NJ.

Topics

- Efficient Lighting Practices
- The Nature of Light
- Determining Lighting Levels
- Comparison of Lamps (incandescent, fluorescent, metal halide, sodium and LED)
- Ballast Performance and Rating
- Commercial office fixtures, Low Bay and High Bay Luminaires
- Lighting Controls (occupancy, daylighting, dimming)
- Lighting Maintenance
- Lighting Surveys

About the Instructor

The instructor will be John Hyfantis, PE.

Mr. Hyfantis' first career path was in the electronic engineering field, 1961 to 1975. Employed by the Southern New England Telephone Co, US Army Electronics Command, Electronic Associates, RCA-Astro Electronics, Dow Jones and Co and Intec, Inc. With Johnson and Johnson ESDP, power distribution engineering was added to the career path.

Mr. Hyfantis is President of Energistics, LLC, since 1978. Energistics provides engineering consulting services to commercial, industrial and institutional clients in the Mid-Atlantic region. Engineering services include HVAC equipment replacement and upgrade analysis; process and space conditioning VF drive design and installation; building management system design; building commissioning; compressed air system analysis; lighting system analysis; and power allocation surveys. Energistics also provides workshops, covering the topics of motors, motor controls, lighting, energy reduction and power quality.

The registration fee for this seminar prior to April 7th will be \$150 for non-IEEE members, \$100 for IEEE Members, \$75 for GOLD Graduates (last 1-10 years) and \$25 for students with valid ID. The fee will be waived for IEEE Life Member Grades with verification at the seminar. Registrations after April 7th 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 50% of the IEEE registration charge.

If desired, IEEE Continuing Education Units will be offered for this course - a small fee of \$15 will be required for processing. A total of .6 CEUs will be offered. Please indicate if desired below

Time: 8:30 AM to 3:00 PM, Friday, April 21, 2006.
Place: PSE&G Training Center, 234 Pierson Avenue, Edison, NJ
Directions: See www.pseg.com/customer/business/small/facility/edison_directions.jsp
Information: Ronald W. Quade, PE, (732) 205-2614 or RWQuade "AT" ieee.org

Registration: Lighting Seminar 4/21/2006

Register via US mail to: Ronald W. Quade, PE
Eaton Electrical
379 Thornall St, 8th Floor
Edison, NJ 08837

Name _____

Address _____

Phone _____ Email _____

IEEE # _____ Student @ _____ Non IEEE _____ Life Member _____

Continuing Education Units: _____ Yes \$15 _____ No

If CEUs are chosen, please include a \$15 processing fee

Payment Enclosed \$ _____ Add \$25 late registration after April 7, 2006

Make checks payable to North Jersey Section IEEE