

The



IEEE Newsletter

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

North Jersey SMC Society:

Self-Adaptive Learning for Machine Intelligence

On Tuesday, October 23, 2007, the NJ Systems, Man & Cybernetics (SMC) Chapter will be hosting a seminar at NJIT on the topic noted above. Dr. Haibo He, a Stevens Institute of Technology faculty member, will be the presenter.

About the Talk

With the recent development of brain research and modern technologies, scientists and engineers will hopefully find efficient ways to build brain-like intelligent systems that are highly robust, adaptive, and fault tolerant to uncertain environments. Yet, building such complex intelligent systems requires serious research on both the fundamental understanding of intelligent behavior and biologically-inspired intelligent mechanisms. This seminar covers different aspects of algorithms, models and architectures for self-adaptive learning, with a focus on memory and anticipation mechanisms. This research provides new understandings about how to design intelligent systems that are able to learn information with ambiguity, make associations, accumulate knowledge, and interact with the environment in real time to accomplish desired goals. Various applications including classification, image recovery, and sequence learning will be presented. Future research directions and challenges in this field will also be discussed.

About the Speaker

Dr. Haibo He is an Assistant Professor at the Department of Electrical and Computer Engineering at Stevens Institute of Technology. His primary research interest is self-adaptive intelligent systems, including bio-inspired learning mechanisms, hardware systems (VLSI/FPGA) prototyping, design, and testing, as well as computational intelligence and applications. He has developed a number of innovative approaches to algorithms and models for machine intelligence and has authored and co-authored over 20 journal and conference papers. He has served on the

International Technical Program Committee for several major conferences, as well as being a regular reviewer for several international journals. He is a member of the IEEE Systems, Man, and Cybernetics Technical Committee on Computational Intelligence and is also a member of IEEE and AAAI.

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, October 23, 2007.

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@ieee.org).

Please RSVP and check the electronic newsletter for any changes.

North Jersey Section Seeks Committee Chairs and Volunteers

The NNJ IEEE Section ExCom is seeking new volunteers to help conduct business at the section level for the benefit of its membership in the North Jersey section and surrounding areas. There are a variety of volunteer positions open and available. They range from long-term to short-term, technical to non-technical, leadership or just participatory. All activities have varying levels of time commitment. For Chapter Chairs, you **MUST** be a member of the corresponding IEEE Society.

If you would like to become involved with volunteering in some of these efforts or positions or just become more informed about what is happening at the NNJ IEEE Section, please contact Dr. Chandra Gupta at c.gupta@ieee.org. You can even attend the section business meeting held the first Wednesday of every month to find out more and other volunteer activities that require some help.

Additionally, if interested volunteers would like to get more general information about other activities in our section, visit the North Jersey Section website for newsletter information <http://web.njit.edu/~ieeenj/> or contact Dr. Chandra Gupta, c.gupta@ieee.org.

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IEEE NJ SECTION HOME PAGE

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

IEEE NJ SECTION NEWSLETTER HOME PAGE

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

REPORT ADDRESS CHANGES TO:

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

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The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7:00 PM. Meetings are open to all members. For information on meeting agenda contact Secretary Russell Pepe at (201) 960-6796, rpepe@att.net.

NJ MTT-S/AP-S Ch:

Non-Foster Matching of Electrically-Small Antennas: Theory and Experimental Results

On October 17, 2007, the IEEE NJ Section MTT/S/AP-S along with NJIT will host a talk on "Non-Foster Matching of Electrically-Small Antennas: Theory and Experimental Results." The speaker will be Dr. Stephen E. Sussman-Fort.

About the Talk

Electrically-small antennas cannot be efficiently impedance-matched over any significant frequency band because of the gain-bandwidth restrictions which arise from the difficult impedances that such antennas present. Non-Foster matching bypasses this fundamental restriction by employing negative reactive elements, realized by means of negative impedance converters (NICs). For receive applications, which is the focus of this talk, non-Foster matching results in great improvement in signal-to-noise ratio as compared to optimal passive matching applied to the same electrically-small antenna. For transmit applications, non-Foster matching yields great improvement in power efficiency as compared to optimal passive matching applied to the same electrically-small antenna.

After a discussion of the basic ideas of non-Foster matching, NICs, circuit stability and some early work only now available in the public domain, we present our experimental results and antennas-range measurements. In our first experiment, we use a floating negative capacitor to cancel a substantial portion of the reactance of a 6" monopole antenna. Over 20-110 MHz, the signal-to-noise ratio improved by up to 9dB as compared to the same antenna with no matching. Because of the high-Q of the antennas, no matching is actually a viable choice among the best possible passive wideband matching networks that can be designed. A 12" dipole version of the antenna yielded up to 20dB S/N improvement over 20 – 120 MHz.

In our second experiment, we extended the frequency range over which non-Foster matching may be applied. In particular, we use non-Foster techniques to impedance match a lossy electrically-small dipole antenna. On the antenna range, we measured up to 30 dB gain improvement over 60 – 200 MHz with several dB of improvement as high as 400 MHz. Again, the comparison was to the same antenna with no matching at all. Although no S/N measurements were made, the circuits we used were based upon the same low-noise designs developed earlier for our lower-frequency

circuits. Because of the lossiness of the antenna, passive matching can do a little better than no matching at all, and these results are illustrated in simulation.

About the Speaker

Professor Stephen E. Sussman-Fort received the PhD degree in electrical engineering from UCLA, the MSEE from Princeton, and the BSEE from the City College of New York. For the past 26 years, he has been a professor in the Electrical and Computer Engineering Department of the State University of NY at Stony Brook where he teaches radio frequency electronics and analog laboratories. In 1992 and 1997, he was a visiting professor at the Research Institute for Microwave and Optical Communications (IRCOM) at the University of Limoges, France, where he performed research on microwave active filters. He is the author of MATCHNET (Artech House, 1991), a program for the automated design of microwave matching networks, and of CIAO, a program for the analysis and optimization of microwave circuits. He also has worked at or consulted for such companies as Bell Laboratories, Hughes Aircraft, TRW, the Aerospace Corporation, IBM, Dayton T. Brown, and Hazeltine. He is now employed by the EDO Corporation where is the principal investigator for research on practical applications of negative impedances. In addition, he is a Senior Member of the IEEE, and an Associate Editor of the International Journal on RF and Microwave Computer-Aided Design. He has published extensively in his research areas.

All Welcome!

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

Time: 7:00PM, Wednesday, October 17, 2007. Free buffet dinner will be available at 6:30 PM.

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

IEEE North Jersey Section Activities

October 2007

Oct. 3 – “NJ Section Meeting”, 6:30 PM, “Executive Committee Meeting” - 7:00 PM, ITT, 77 River Rd, Clifton, NJ. Russell Pepe at rpepe@att.net.

Oct. 4 – “Design of RF-CMOS Integrated Circuits for Wireless Communications (part of the MTT 22nd Annual Symposium and Mini-Show)” by Dr. Ing. Georg Boeck, EDS/C&S & MTT-S/AP-S Chapters, 10:30 to 11:30 AM, Hanover Manor, 16 Eagle Rock Avenue, E. Hanover, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Edip Niver (973) 596-3542 (NJIT), or Dr. Durga Misra (973) 596-5739 (dmisra@njit.edu).

Oct. 4 – “2007 MTT/AP Symposium and Mini-Show” – MTT-S/AP-S Chapter, 9:00 AM - 4:30 PM, Hanover Manor, 16 Eagle Rock Avenue, E. Hanover, NJ. Kirit Dixit (201) 669-7599 (kdixit@ieee.org), Art Greenberg (973) 386-6673 (ahg1@alcatel-lucent.com), Har Dayal (973) 633-4618 (har.dayal@baesystems.com), or George Kannell (973) 386-4170 (gkk@gsinnovations.com).

Oct. 10 – “Maximizing Your Marketability - Improve the Odds Of Staying Employed Throughout Your Career” by Dru Reynolds, NJ GOLD, PACE, WIE, 6:30 – 9:00 PM, Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ. Paul Ward, (973) 790-1625 (PWard1130@aol.com) or Richard F. Tax, (201) 664-0803 (rftax@verizon.net).

Oct. 16-Dec. 11 – “Manage Global E-Commerce Projects” by Dr. Donald Hsu, North Jersey Section, Saturday Mornings, 8 sessions, 9:00 AM-12:00 PM, NJ International Bulk Mail Center, Jersey City, NJ. Donald Hsu (yanyou@hotmail.com).

Oct. 16 – “Next Generation Converged Network Architecture and Applications” by Dr. Amit Mukhopadhyay and Carlos Urrutia-Valdés, NJ Communications Society, 6:15 PM, New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj/comm.html> for the latest updates.

Oct. 17 – “Non-Foster Matching of Electrically-Small Antennas: Theory and Experimental Results” by Dr. Stephen E. Sussman-Fort, NJ MTT-S/AP-S Chapters, 7:00 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@ieee.org, or Har Dayal (973) 633-4618, har.dayal@baesystems.com.

Oct. 18 – “Introduction to Smart Antennas” – by Dr. Robert Soni, NJ VTS Chapter, 7:00 PM (free buffet at 6:30 PM), Alcatel-Lucent, 67 Whippany Rd, Whippany, NJ. Stephen Wilkowski, Lucent Technologies, (973) 386-6487, swilkowski@alcatel-lucent.com, Arthur Greenberg, (973) 386-6673, ahg1@alcatel-lucent.com.

Oct. 19 – “Utility Distribution Systems Technical Series - Transformers Seminar”, NJ PES/IAS, PSE&G Training Center, 234 Pierson Avenue, Edison NJ. Ronald W. Quade, PE, (732) 205-2614 or rwquade@ieee.org.

Oct. 23 – “Self-Adaptive Learning for Machine Intelligence” by Dr. Haibo He, North Jersey SMC Society Chapter, 7:00 PM (light refreshments at 6:45 PM), New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Mike Liechenstein, (973) 471-0721, (m.liechenstein@ieee.org).

Oct. 25 – “Life Grade Lunch”, Hamilton Park Conference Center, Florham Park, NJ. Ken Oexle (973) 386-1156.

Oct. 30 – “Mobile TV and 3G Multicast” by Dr. Katherine Guo, NJ Communications Society, 6:15 PM, New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj/comm.html> for the latest updates.

Oct. 30 – “Open Source Software for EE’s and Project Managers” by Frank Middleton, NJ Computer and EMS Chapters, 7:00 PM, Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ. Seth Jakel - (973) 731 1902 – home, (973) 820-1865 – cell, or Howard Leach (973) 540-1283, (h.leach@ieee.org).

Upcoming Meetings

Nov. 7 – “NJ Section Meeting”, 6:30 PM, “Executive Committee Meeting” - 7:00 PM, ITT, 77 River Rd, Clifton, NJ. Russell Pepe at rpepe@att.net.

Nov. 10 – “Field Trip to Edison Menlo Park Museum” by Dru Reynolds, NJ GOLD, WIE, 1:00 – 4:00 PM, Edison Menlo Park Museum, 37 Christie Street, Menlo Park Section of Edison, NJ. Contact northjerseygold@ieee.org.

Nov. 14 – “A New Low Frequency Noise Model for Multi-Stack Gate MOSFETs” by Dr. Zeynep Çelik-Butler, NJ 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@njit.edu).

Nov. 16 – “Utility Distribution Systems Technical Series – Part 2”, NJ PES/IAS, see <http://web.njit.edu/~ieeenj/> and November Newsletter for further details. Ronald W. Quade, PE, (732) 205-2614 or rwquade@ieee.org.

Dec. 14 – “Utility Distribution Systems Technical Series – Part 3”, NJ PES/IAS, see <http://web.njit.edu/~ieeenj/> and November Newsletter for further details. Ronald W. Quade, PE, (732) 205-2614 or rwquade@ieee.org.

Members and Non-Members Welcome
PLEASE POST

NJ GOLD, PACE, WIE:
**Maximizing Your
Marketability - Improve
the Odds Of Staying
Employed Throughout
Your Career**

On October 10, 2007, the North Jersey section GOLD, PACE, and WIE committees are jointly sponsoring a talk on maximizing your marketability techniques for new job searches. The speaker will be Dru Reynolds.

About the Talk

Thought a resume is all you need? While a resume is a critical portion of marketing yourself for a new job, it is not alone. Other issues to consider include: having a career roadmap, evaluating the corporate fit, and what to do for an interview.

Come participate and learn how to combine these and other aspects of self marketing to build a better resume and whole presentable self-portfolio to land a new job and career.

About the Speaker

Dru Reynolds has more than 20 Years experience in recruiting & professional placement, currently an independent recruiter specializing in placing in the RF and MW wireless arena and licensed by the state of NJ. She is an IEEE Coordinator Region 1 & 2, in the MTT Society and active in the NJ Coast Section as Secretary and Newsletter Editor.

All Welcome

This talk is FREE to attend, you do not have to be an IEEE member, invite your friends. Free refreshments of pizza and sodas will be served.

Registration Required

All attendees must register for the talk to hold their seat by filling out the registration form at the following website:

http://ewh.ieee.org/r1/north_jersey/gold

Register NOW for a chance to win some door prizes!

Time: 6:15 PM to 8:45 PM, Wednesday, October 10, 2007. Refreshments will be served.

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

Information: Richard F. Tax, (201) 664-0803 (rftax@verizon.net), or northjerseygold@ieee.org.

**2007-2008 Student
Activities Kickoff**

Welcome back to the beginning of a new year of student activities for the North Jersey Section. This year promises to be filled with new activities and events. We hope you and your student branches will be participating in all of these events throughout the 2007-2008 academic year. Also, since the year is just getting started, it is a good time for a refresher on what your branch must be doing to be recognized by the IEEE. Information about IEEE, student branch bylaws and forms to fill out is available on the website given below.

My name is Russell Pepe, and I plan to Chair the Student Activities Committee (SAC) again this year. You can reach me at the following e-mail address: northjerseysac@ieee.org. I met several of you last year at and look forward to working with all of you during the upcoming school year.

To start off with, if you have not had elections yet, it would be a good idea to hold them and report to IEEE with the officer election form. Also, coming up is a leadership workshop that new (or potentially new) officers can attend to get essential training on running a branch. Your branch should fill out an annual plan of events in the fall and an annual report in the spring. Part of the reporting is on membership, which qualifies the branch for per member rebates. It's free money for turning in the right forms by the right time. Speaking of money, your branch should also plan fundraisers for basic expenses. If you really want to get started right, host one of these leadership workshops to learn the basics. Contact the organizer below. So what's happening this year? Lots of things!! Details of the event's exact location, date, time, directions, and registration will become available on the SAC website below. Free Student Leadership Training Workshops in and Professional Skills Development Workshop will start up in the fall. Instead of just holding single workshops, multiple individual workshops will be held at each university who wishes to receive formal training at their local branch for this and upcoming year's students. This holds true for both the leadership and professional skills training. If you would like to host these events then contact the organizer below. The annual Paper Presentation Contest is also planned for mid February/early March. This is a chance for students to showcase their hard work on different projects worked on during the year. It is open to both graduate and undergraduate students.

Last, but not least, the SAC and GOLD

committees are looking for volunteers who might be graduating soon and would like to help out in the North Jersey Section. To find out how you can help, contact northjerseysac@ieee.org, and visit the new website at http://ewh.ieee.org/r1/north_jersey/sac. You will find the latest information updated there or you can also join the mailing list to get regular reminders of different events.

NJ GOLD & WIE:

**Field Trip to Edison
Menlo Park Museum**

The North Jersey section GOLD and WIE Affinity Groups in conjunction with Central Jersey section GOLD are jointly sponsoring a field trip to the Thomas Edison Menlo Park Laboratory Historical Site and Museum on Saturday, November 10, 2007. The group will assemble between 1-1:30 PM at the museum entrance located at 37 Christie Street, Menlo Park Section of Edison, NJ 08820, immediately off Route 27 South (Lincoln Highway). The group will be treated to a special guided tour exclusively for the IEEE group.

The tour will conclude at 4 PM and, for those interested, the group will go to the Starbucks located 1/2 mile south on Route 27 at 1-11 Lincoln Highway for a coffee hour to network, mingle, and discuss future IEEE events.

Come join the group and check out this historical site and source of so many great innovations. The museum and tour are free (suggested donation \$2), but registration is **required** to get an accurate count for the tour. Bring a friend and enjoy the afternoon learning and interacting with your fellow members and a chance to win some exciting door prizes.

The museum website and directions are at: www.menloparkmuseum.com (732-549-3299) Register by visiting the North Jersey Section GOLD website at http://ewh.ieee.org/r1/north_jersey/gold.

For any questions, contact northjerseygold@ieee.org.

Time: Assemble between 1-1:30 PM at the museum entrance, Saturday, November 10, 2007. Tour concludes at 4 PM.

Place: Edison Menlo Park Museum, 37 Christie Street, Menlo Park Section of Edison, NJ 08820.

Information: Contact northjerseygold@ieee.org.

NJ Communications Chapter:
**Next Generation
Converged Network
Architecture and
Applications**

On Tuesday, October 16, 2007, the North Jersey Chapter of the IEEE Communications Society along with the NJIT Department of Electrical and Computer Engineering will host a presentation titled "Next Generation Converged Network Architecture and Applications" by Dr. Amit Mukhopadhyay and Carlos Urrutia-Valdés.

About the Talk

Service providers around the world are either already deploying or planning to deploy the IP Multimedia Sub-system (IMS) in their networks. IMS will allow the delivery of new multimedia applications aimed at enhancing the user's experience. So now that IMS is becoming a reality, what is next for "Next Generation Networks"?

In this talk, we will provide an overview of what lies beyond IMS and introduce a new set of services referred to as "blended services" which are created by providing seamless service control across multiple network domains. The role of IMS within the evolving area of Service Delivery Platforms and for the enablement of wireless and wireline convergence will also be examined. Sample services, architectures and call flows will be presented.

About the Speakers

Amit Mukhopadhyay is a distinguished member of technical staff at Bell Labs in Murray Hill, New Jersey. He holds a PhD degree in Operations Research from the University of Texas at Dallas. His current work focuses on 3G and beyond wireless technologies, Cable and Broadband Access. He works closely with global service providers to help define the course of Next Generation Networks. He is a senior member of the IEEE and has numerous publications.

Carlos Urrutia-Valdés is a member of technical staff in the Advanced Wireless and Optical Network Modeling and Optimization Group of Bell Labs in Murray Hill, New Jersey. He holds a BS in electrical engineering from Florida International University in Miami and an MS in computer engineering from the University of Southern California in Los Angeles. His current work focuses on network modeling of 3G wireless networks and enabling core technologies. His previous work involved the design of TDM, packet, and SS7 networks, and SS7 standards development, in connection with which he was the

technical editor of ANSI T1.116 SS7 OMAP. His current research interests are in the areas of protocol analysis, traffic modeling, and the end-to-end design of wireless and wireline networks.

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, Tuesday, October 16, 2007. Refreshments will be offered 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.

NJ Communications Chapter:
**Mobile TV and 3G
Multicast**

On Tuesday, October 30, 2007, the North Jersey Chapter of the IEEE Communications Society along with the NJIT Department of Electrical and Computer Engineering will host a presentation titled "Mobile TV and 3G Multicast" by Dr. Katherine Guo.

About the Talk

With the deployment of wide area wireless networks such as CDMA2000 1xEv-DO and UMTS HSPDA providing data rates close to wireline broadband connections, and with the unprecedented increase in mobile device capability, the mobile Internet is beginning to enable on-demand multimedia services anywhere anytime. Services like live TV, news summary, sports highlight, local traffic and weather reports are currently being delivered efficiently to mobile users using unicast channels. However, as subscribers increase with time, unicast is highly inefficient. Broadcast multicast services are the scalable solution to providing video services over 3G wireless networks. In the first half of the talk, an overview of the 3G broadcast multicast architecture will be presented.

Multicast scheduling in this context is challenging: there is no endpoint feedback mechanism, and the default schemes transmit data at a fixed rate assuming there is always a user at the edge of the cell. This conservative approach significantly limits throughput for users close to the base station. In the second half of the talk, a set of new multicast scheduling algorithms that offer

proportional fairness property among groups and among users will be discussed.

About the Speaker

Katherine Guo is a Member of Technical Staff at Networking and Network Management Center of Bell Laboratories. She has extensive research and product experience in multimedia streaming, content distribution, multicasting, 3G wireless systems, IP Multimedia Subsystems (IMS), quality of service support for real time applications such as VoIP, video streaming and distributed gaming. Formerly, she was the architect for Lucent's Imminet streaming cache and content distribution product line. She has published more than twenty five research papers in renowned technical journals and conference proceedings, has served on the technical committees of a number of international conferences, has served as technical program co-chair for ACM MobiArch'2006 and 2007, program vice-chair for IEEE ICDCS'2006, program co-chair for IEEE ICCCN'2006. She holds four U.S. and international patents and has 19 other patents pending. She has received the Lucent Inventor of the Month Award for July 2006. She has been part of the teams that have received the Bell Labs Teamwork Award (2005) and the Lucent Chairman's Award (2006). She is a Senior Member of the IEEE and an editor for Wireless Network Journal. She received her PhD in computer science from Cornell University.

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, Tuesday, October 30, 2007. Refreshments will be offered 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.

NJ EDS/C&S & MTT-S/AP-S Ch:
**Design of RF-CMOS
Integrated Circuits for
Wireless
Communications**

On October 4, 2007, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with MTT/S/AP-S will host a talk on "Design of RF-CMOS Integrated Circuits for Wireless Communications." This talk will be part of the MTT 22nd Annual Symposium and Mini-Show. The speaker will be Dr. Ing. Georg Boeck.

About the Talk

The continuous progress of silicon technology has enabled the emergence of digital mobile broadband communication systems for voice, data, multimedia and position with good quality of service. Data-rate and mobility trade-offs, different standards like 2G, 3G, Bluetooth, WLAN, GPS and digital multimedia broadcasting are leading to multimode requirements. Issues concerning coexistence and interworking of these different technologies have to be solved. Single chip integration with digital part, high integration density and excellent RF-performance, low power consumption and low cost under mass production aspects are further requirements. First system-on-chip (SoC) demonstrations show that today CMOS technologies seem to be able to fulfill all these requirements.

This lecture will review RF-CMOS technologies, RF-architectures and re-configurability principles as well as circuit and system design aspects for mobile multi-mode communication applications. It will consider special requirements on wafer processes like leakage and analogue and RF capabilities and will look to the world of system-level design. In this context, power-levels, form factors and cost are key requirements for system-in-package and system-on-chip solutions. Of course, new challenges for the future will be considered and explored, too.

About the Speaker

Professor Boeck received the doctoral degree from Berlin University of Technology, Berlin, Germany, in 1984. In the same year he joined Siemens Research Labs in Munich, Germany, where his research areas were on fiber optics and GaAs electronics.

From 1988 to 1991, he was a Full Professor for electronic devices and circuits at the University of Applied Sciences Regensburg, Regensburg, Germany.

Since 1991, he has been the head of the Microwave Engineering Lab at Berlin

University of Technology. His main areas of research are characterization, modeling and design of microwave semiconductor devices, MICs, and MMICs up to the 100 GHz regime.

Professor Boeck has authored or co-authored more than 160 technical papers and one book and holds several patents.

He serves at several Technical Program Committees and is a member of the editorial board of the Journal of RF-Engineering and Telecommunications.

He is a Guest Professor of the Southeast University Nanjing, Nanjing, China and an international IEEE Distinguished Microwave Lecturer for the years 2006-2008 in the field of "Design of RF CMOS Integrated Circuits".

All Welcome!

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

Time: 10:30 to 11:30 AM, Thursday, October 4, 2007.

Place: Hanover Manor, 16 Eagle Rock Avenue, E. Hanover, NJ.

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

NJ Computer and EMS Chapters:

**Open Source Software
for EE's and Project
Managers**

On Tuesday, October 30th, 2007, the IEEE North Jersey Section Computer Society and Engineering Management Chapters will host a presentation titled "Open Source Software for EE's and Project Managers" by Frank Middleton.

About the Talk

As many EEs and project managers consider Open Source Software (OSS) solutions as an alternative to proprietary products, the inevitable question arises as to whether or not OSS can meet their needs.

In the relatively short duration of a meeting such as this, it is impossible to give a comprehensive answer to this question, but it is possible to introduce EEs and project managers to the process of investigating these solutions and determining their own answers. Prospective attendees who have specific questions are welcome to submit them ahead of time to the speaker (by email, please, to f.middleton@apogeelect.com).

Very small low cost platforms like the Gumstix (Open Source Hardware) run on OSS such as Gnu/Linux. Is there any benefit to using OSS for the entire development chain, from gathering and

managing requirements, through architecture, hardware/software design, and implementation, as well as project planning? OSS tools that address all of these areas and more, will be discussed and briefly demonstrated as time allows, including an OSS EDA tool and a newly debuted OSS project planning application. We will also give some reasons you may not have thought of for using OSS. The ease of deploying and maintaining current versions of these tools will also be covered, and as a result attendees will have a basis for understanding what would be involved in using OSS for electronics engineering and project management.

About the Speaker

Frank Middleton is the President and Founder of Apogee Communications Technologies, an established IT consulting services provider based in New Jersey that specializes in reducing costs and improving productivity and security by leveraging the best of breed technologies on platforms ranging in scale from embedded processors to server farms. Find out more at <http://www.apogeelect.com> (developed and running entirely on OSS) or by email at f.middleton@apogeelect.com, or VoIP at (973) 796-2754.

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 PM.

Time: 7:00 PM, Tuesday, October 30, 2007. A free pre-meeting buffet will be available at 6:00 PM.

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

Information: Seth Jakel, (973) 731-1902 [home], (973) 820-1865 [cell], or Howard Leach (973) 540-1283, (h.leach@ieee.org).

Employment: Mechanical Engineer

Vision Research, a local design and manufacturer of very high speed digital cameras, is looking for qualified engineers to join its design team. Expertise in small product enclosure design, sourcing and finishing is essential. Skills in thermal analysis, modeling and Solidworks design tools are necessary. This person must have relevant industry experience of greater than 5 years to qualify. The ideal candidate would be someone that has worked as a mechanical engineer in an electronic products company. Apply confidentially to Dick Toftness; rtoftness@visionresearch.com. Vision research is an EOE employer.

NJ EDS/C&S Chapters:

A New Low Frequency Noise Model for Multi-Stack Gate MOSFETs

On November 14, 2007, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology will host a talk on "A New Low Frequency Noise Model for Multi-Stack Gate MOSFETs." The speaker will be an EDS Distinguished Lecturer, Dr. Zeynep Çelik-Butler.

About the Talk

In MOSFETs, high dielectric constant (high-k) materials are developed as possible replacements for SiO₂ as the gate dielectric. Although these materials do overcome the issue of gate leakage current due to increased dielectric thickness for a given equivalent dielectric capacitance, several other problems arise. The talk will cover noise and mobility degradation issues in high-k gate stacks.

A new unified noise model will be presented that accurately predicts the low-frequency noise spectrum exhibited by MOSFETs with high-k, multi-stack gate dielectrics. The proposed multi-stack unified noise (MSUN) model is based on number and correlated mobility fluctuations theory developed for native oxide MOSFETs, and offers scalability with respect to the high-k/interfacial layer thicknesses. In addition, it incorporates the various electronic properties of high-k/interfacial layer materials such as energy barrier heights between different gate layers, and dielectric trap density distribution with respect to band energy and position in the dielectric. For verification of the new model, the low frequency noise, DC and conventional split C-V measurements were performed in the 78-350 K temperature range on HfO₂ n-channel MOSFETs. Using the experimental noise data, the channel carrier number fluctuations mechanism was at first established to be the underlying mechanism responsible for the noise observed at all temperatures considered. Secondly, the normalized noise exhibited a weak dependence on temperature implying that the soft optical phonons, although known to result in mobility degradation, have no effect on the noise characteristics in these high-k gate stack MOSFETs. Finally, the new model was shown to be in excellent agreement with the measured noise in 1-100 Hz frequency range at temperatures of 78-350 K for the gate stacks studied.

About the Speaker

Dr. Zeynep Çelik-Butler is Professor of Electrical Engineering and Director of

Nanotechnology Research and Teaching Facility at the University of Texas at Arlington. She received dual BS degrees in electrical engineering and physics from Bogaziçi University, Istanbul, Turkey, in 1982. She received the MS and PhD degrees in electrical engineering in 1984 and 1987, respectively, from the University of Rochester. She was an IBM Pre-doctoral Fellow from 1983 to 1984, and an Eastman Kodak Pre-doctoral Fellow from 1985 to 1987. She joined the Department of Electrical Engineering at Southern Methodist University in 1987 as an Assistant Professor; was tenured and promoted to Associate Professor in 1993. Dr. Çelik-Butler was the holder of J. Lindsay Embrey Trustee Assistant Professorship from 1990 to 1993. She served as the Assistant Dean of Graduate Studies and Research from 1996 to 1999. She moved to University of Texas at Arlington in 2002.

She served in various technical committees including 1988, 1989 IEEE-IEDM's and Annual Symposia on Electronic Materials, Processing and Characterization (1989 - 1992) and International Conference on Noise in Physical Systems and 1/f Fluctuations (1993, 1999, 2001). She was the General Chair of TEXMEMS II Workshop. She was the co-Chairman for the SPIE Conf. on Noise in Devices and Circuits in the Symp. on Fluctuation and Noise (FaN'2003) and the symposium co-chair for the same symposium in 2005 (FaN'2005). Currently, she is an editor for Fluctuation and Noise Letters.

Prof. Çelik-Butler has received several awards including the University of Texas at Arlington Outstanding Research Achievement Award (2006), IEEE-Dallas Section Electron Devices Society Outstanding Service Awards (1995, 1997), IEEE-Electron Devices Society, Service Recognition Award (1995), IEEE-Electron Devices Society, Distinguished Lecturer Appreciation Award (2006), Outstanding Electrical Engineering Graduate Faculty Awards (1996, 1997, 2001), and SMU-Sigma Xi Research Award (1997). Her research interests include microelectromechanical systems, multi-functional reconfigurable sensors, noise and reliability in nanoelectronic devices. She has four patents, six book chapters, and over 150 journal and conference publications in these fields. Dr. Çelik-Butler's research has been supported by the NSF, SRC, NASA, AFOSR, THECB, Freescale, Legerity, ST-Microelectronics, Texas Instruments, Raytheon Lockheed Martin Aeronautics and ARO.

Dr. Çelik-Butler is a senior member of IEEE, member of Eta Kappa Nu, and the American Physical Society. She is a

Distinguished Lecturer for the IEEE-Electron Devices Society.

All Welcome!

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

Time: 7:00 PM, Wednesday, November 14, 2007. 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 (dmsira@njit.edu).

Call for Fellow Nominations

Nominations are being accepted for the IEEE Fellows class of 2009. The rank of IEEE Fellow is the institute's highest member grade, bestowed on IEEE senior members who have contributed "to the advancement or application of engineering, science and technology." The deadline for nominations is 1 March 2008.

Senior members can be nominated in one of four categories: application engineer/practitioner, research engineer/scientist, educator or technical leader. The Fellows Web site contains additional information on the nomination process including access to the Fellows Nomination Kit, lists of Fellows who may be available as references as well as the history of the IEEE Fellows program. Please visit the Fellows website at <http://www.ieee.org/fellows>.

Want to Host a Leadership Workshop at Your Branch?

This year, we want to bring the leadership workshop to your branch and hold it individually at your school! The leadership workshop is a great way to educate your branch members on some of the details of IEEE, their roles as students in IEEE, what is happening in the section and region, how they can get involved, and most importantly, training for new officers that were just elected or will be elected in the future.

If you would like to hold one at your branch, just contact the organizer at northjerseysac@ieee.org. We can make arrangements to hold a free workshop at an appropriate date and time.

NJ VTS Chapter:

Introduction to Smart Antennas

On October 18, 2007, the IEEE North Jersey Section Vehicular Technology Society Chapter will host a talk on smart antenna applications to wireless communication. The speaker will be Dr. Robert Soni of Alcatel-Lucent.

About the Talk

The use of cellular voice and data communication has exploded in the past 15 years. As the minutes of use have grown, cellular operators have searched and investigated many different techniques to improve capacity, quality, and coverage without requiring new spectrum. Smart antennas have been proposed for many years as a method to maximize the utilization of this scarce resource. Now, almost 15 years after they were first proposed for this application, they are being deployed for commercial cellular 3G systems.

While viewed as an add-on for 3G systems, they are assumed to be available in the first deployments for 4G systems. In this talk, there will be a tutorial discussion of the use of smart antennas in 3G and 4G systems. The relationship of smart antenna systems to MIMO (multiple-input/multiple-output) antenna systems will be explained and the relative benefits of each system will be discussed. The talk will also cover some recent results from Alcatel-Lucent's efforts to commercialize smart antennas for CDMA2000 with its two largest customers in North America. Practical deployment issues and performance benefit will be discussed.

About the Speaker

Robert Soni graduated from the University of Cincinnati with a BSEE (Summa cum Laude) in 1992. He received his MSEE in 1995 and PhD in 1998, both from the University of Illinois at Urbana-Champaign. Dr. Soni joined Lucent Technologies - Bell Laboratories in 1998 and is currently a Technical Manager in the Wireless Business Group of Alcatel-Lucent. He and his team are responsible

for providing advanced technology at the physical layer and medium access (MAC) layer for CDMA and OFDMA cellular systems. His group has been responsible for the commercialization of "smart" or Intelligent and MIMO antenna subsystems for cellular base-stations for CDMA2000, UMTS R99, HSDPA, HSUPA, and now LTE technologies. In his spare time, he teaches digital communication and wireless communications at NJIT and Columbia University. Dr. Soni has published more than 50 journal and conference articles and holds 15 patents in wireless communication related areas.

All Welcome!

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

Time: 7:00 PM, Thursday, October 18, 2007. Free buffet will start at 6:30 PM.

Place: Alcatel-Lucent, 67 Whippany Rd, Whippany, NJ.

Information: Stephen Wilkowski, Lucent Technologies, (973) 386-6487, swilkowski@alcatel-lucent.com, Arthur Greenberg, (973) 386-6673, ahg1@alcatel-lucent.com. **Advance registration is requested.**

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2nd ANNUAL COMMUNICATIONS INDUSTRY FORUM & EXPO
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PLAN TO ATTEND THE PREMIER TELECOMMUNICATIONS EVENT
Where industry meets to network, exchange ideas, and learn the latest developments

KEYNOTE & PLENARY SPEAKERS INCLUDE (Partial List)

 <p>Malt Bross Chief Technology Officer BT Group</p>	 <p>Dr. Jeong Kim President Bell Labs at Alcatel-Lucent</p>	 <p>Scott McGregor CEO Broadcom</p>
 <p>Mark A. Wegleitner Senior Vice President, Technology & Chief Technology Officer Verizon Communications</p>	 <p>Prof. Wu Hequan Vice President Chinese Academy of Engineering</p>	

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• Cambridge University Press	• NIKSUN	• OPNET Technologies	• University of Maryland - Engineering
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IEEE NORTH JERSEY SECTION
MTT-Society and AP-Society Joint Chapter



PRESENT

22nd ANNUAL SYMPOSIUM AND MINI-SHOW



THURSDAY OCTOBER 4, 2007

Hanover Manor, 16 Eagle Rock Avenue, E. Hanover, NJ 973-992-7425

The conference presents a series of 9 lectures describing the state of the art in Microwave, RF, Optical and Wireless, technologies by leaders in their respective fields.

MINI SHOW FEATURING LATEST PRODUCTS - (9:30 AM TO 4:30 PM)

&

PRESENTATION SCHEDULE (8:50AM TO 4:30PM)

Time	Topic	Speakers	Title	Affiliation
8:50	Opening Remarks	George Kannell	Tech. Chair IEEE MTT/AP NJ	Lucent Technologies
9:00-9:30	Wireless LAN Transceiver Design	Murthy Upmaka	Sr. Applications Engineer	Agilent Technologies
9:30-10:00	TBA	TBA	TBA	Lucent
10:00				
10:30-11:30	Design of RF-CMOS Integrated Circuits for Wireless Communications Sponsored Jointly with EDS/CAS Chapter	Prof. Dr.-Ing. Georg Boeck	Professor	Berlin University of Technology
11:30-12:00	Dynamic Mode-Coupling Silences Oscillator Phase Noise	Dr. Ajay K. Poddar	Chief Scientist	Synergy Microwave Research
12:00	Lunch			
1:00-1:30	RF Trends for Ubiquitous Wireless	Alex Pidwerbetsky	CMTS	LGS Innovations
1:30-2:00	High data rate Receiver (modem)	Dr. Naresh Chand	Fellow	BAE
2:00-2:30	GaN-on-Silicon RF Power Devices – Current State & Future Directions	Kevin J. Linthicum, PhD	Founder and Chief Technology Officer	Nitronex
2:30				
2:50-3:50	Who Was James Clerk Maxwell and What Is/Was His Electromagnetic Theory	Tapan K. Sarkar	Professor	Syracuse University
3:50	IEEE remarks	Kirit Dixit	Chair IEEE MTT/AP NJ	Microcom Sales
4:00-4:30	MINISHOW EXHIBITORS			

Registration is on-site. Details will be published in the October issue of the NORTH JERSEY IEEE NEWSLETTER and at <http://web.njit.edu/~ieeenj/NEWSLETTER.html>

FOR FURTHER INFORMATION CONTACT: Kirit Dixit (201-669-7599), Har Dayal (973-633-4618), Willie Schmidt (973-492-0371) or George Kannell (973-386-4170)

ALL ARE WELCOME (IEEE Membership not required). REGISTRATION IS On-Site
THERE IS NO CHARGE TO ATTEND THE SYMPOSIUM OR SHOW.
FREE BREAKFAST / LUNCH INCLUDED FOR ALL.

MTT/AP Chapter:	Co-Chair Co-Chair Vice Chair 2 Publicity Membership	Kirit Dixit Har Dayal Willie Schmidt Art Greenberg Peter Donegan	Mini-Show:	General Chair: General Vice Chair: Tech. Program Facilities Chair:	Kirit Dixit Har Dayal George Kannell Ken Oexle Russell Pepe
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Life Grade Luncheon

The PES Chapter and the Section will sponsor a luncheon for North Jersey IEEE Life Grades (Members, Senior Members and Fellows) on Thursday October 25 at the Hamilton Park Conference Center, 175 Park Avenue, Florham Park, NJ 07932. The luncheon will begin at 11:30 AM in the Terrace area. Cost is \$5.00 per person.

Advance registration is required prior to October 15. We can accommodate only 30 people. Registrations will be processed in the order of receipt and will be confirmed by return mail. Please complete the following registration form and include a check Payable to the North Jersey Section IEEE in the amount of \$ 5.00 per person.

Reservations cannot be accepted at the door. For additional information contact Ken Oexle (973) 386-1156.

IEEE Life Grade Luncheon Registration NJ - Oct 25, 2007

Name _____

Address _____

Phone _____

IEEE # _____ Life Grade ____ Yes

Return to: Ken Oexle
11 Deerfield Rd
Whippany, NJ 07981

Prior to October 15 and enclose \$5.00 Check payable to **NJ Section IEEE**

NJ Power Engineering Society/Industry Applications Society

Utility Distribution Systems Technical Series

Transformers Seminar

The PES and IAS Chapters will sponsor a 3-month series of technical seminars on utility distribution systems. This first seminar will be on the topic of transformers. The session will be held on Friday, October 19, 2007, at the PSE&G Training Center, 234 Pierson Avenue, Edison, NJ.

Topics

- ✓ Transformer Design and Construction
- ✓ Voltage Designation/Transformer Operation
- ✓ Transformer Life and Loading
- ✓ Transformer Economics – Total Owning Cost
- ✓ Transformer Protection – Over voltage and Over current
- ✓ ANSI Standards
- ✓ Specification Writing

About the Instructor

Paul Pearce is a licensed Professional Engineer in the State of New Jersey. Paul has worked as a Regional Power Systems Engineer (Applications Engineer) for Cooper Power Systems for seven years. Prior to that Paul spent 9 years as a Distribution Field Engineer/Supervisor at Atlantic Electric and 1 year and 3 years as a Standards Engineer at Atlantic Electric and GPU Energy respectively.

The registration fee for this seminar prior to October 5th 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 October 5th 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 \$25 will be required for processing. A total of 0.4 CEUs will be offered. Please indicate if desired below.

Time: 9:00 AM to 2:00 PM (lunch is included), Friday, October 19, 2007.
Place: PSE&G Training Center, 234 Pierson Avenue, Edison NJ, 08837
Directions: Route 287 to Exit 1A for Route 1 North and make immediate right onto Pierson Avenue
From NJ Turnpike, take exit 10 to Route 287 North (follow directions above)
Information: Ronald W. Quade, PE, (732) 205-2614 or rwquade@ieee.org

Registration: Transformers - Cooper Power Systems 10/19/2007

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 \$25 _____ No

If CEUs are chosen, please include a \$25 processing fee

Payment Enclosed \$ _____ Add \$25 late registration after October 5, 2007

Make checks payable to North Jersey Section IEEE (Credit Cards cannot be processed at this time).

IEEE North Jersey Section Course Manage Global E-Commerce Projects

Tuesday Evenings, October 16, 2007 through December 11, 2007
Eight weekly classes (October 16, 23, 30, November 6, 13, 20, 27, December 11, 2007)
USPS, NJ International Bulk Mail Center, 80 County Rd, Jersey City, NJ 07097
(Checks should not be mailed to this address)

IEEE North Jersey Section appreciates USPS, BMC for sponsoring this course at its site

This course covers the management and entrepreneurial aspect of "Global E-Commerce". Dice.com lists 5700+ Project related jobs in the New York area daily! Using Microsoft Project, you completed projects in construction, engineering, information technology, marketing or finance. When you see a niche in the market place, you write a business plan. Then you get finance for your startup. Setting up a website, you are now selling to 6 billion world customers. You will be the next Ebay, MySpace or YouTube billionaire\$\$\$.

How do you do this? Do you have to learn HTML, JavaScript, Flash, or PHP? Do you worry about the accounting and legal issues? How do you get all the eyeballs? What is the catch? This course will provide detailed case studies of 8+ countries on their success stories using e-commerce. It covers the complexity of dealing with business partners, competitors, customer retention, and payment issues. In the continental Europe, there are 50 e-discount airlines since 1996! Yes anyone can start a web e-business, but there is no guarantee of success.

By taking this course, you can manage projects more effectively or you can start your own e-business. You will receive the IEEE certificate of completion when you finish the course. (This is *not an exclusive PMI examination prep course*).

Instructor: **Donald Hsu, PhD**, has been a corporate manager for 11 years and is an experienced trainer. Since 1999, he has trained 950+ people in *Accounting, International Business, Java, Global Finance, Marketing Research and Project Management* courses in eight organizations. He started and sold three businesses. Since 2004, he has been running a non-profit global e-business.

TOPICS

1. Explain the need for a project manager
2. Define SOW, PERT, GANTT, CPM, and scope of the project
3. Complete milestones, condition of satisfaction and final project reports
4. Contrast globalization and national diversity
5. Choose the Silicon Valley model
6. Compare France, Germany and Japan E-Commerce
7. Identify China and Taiwan E-Commerce
8. Distinguish Brazil and Mexico E-Commerce
9. Select other European countries
10. Analyze global convergence issues and present student Projects

WHERE: NJ International Bulk Mail Center, Jersey City, NJ. (Checks should not be mailed to this address)

WHEN: 8 Tuesdays, October 16, 23, 30, November 6, 13, 20, 27, December 11, 2007, 6:30-9:00 PM.

COST: IEEE (& affiliate) members \$420; Non-IEEE members \$470

CONTACT: Donald Hsu, yanyou@hotmail.com

REGISTRATION: Manage Global E-Commerce Projects

Please mail the completed registration form with the check (**payable to "North Jersey Section IEEE"**) to:

Donald Hsu, Chair - Education Committee, IEEE North Jersey Section, P.O. Box 2093, Fort Lee, New Jersey 07024

Name: _____ Email address _____

Non-member

IEEE Member Member #: _____ Member of _____ technical society

Employer: _____

Employer Address: _____

Home Address: _____

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

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

As soon as a fully completed registration form and the payment are received, you are officially registered for this course. Registration status will be notified in an email format.

I wish to receive IEEE Completion Certificate

Signature: _____