NORTH JERSEY SECTION CELEBRATES 50 YEARS!

North Jersey SMC Society:

Digital Processing of Kirlian Images

On Tuesday, November 23, 2004, the NJ Systems, Man and Cybernetics (SMC) Chapter will host a talk on "Digital Processing of Kirlian Images." The speaker will be Xanadu Halkias.

About the Talk

In 1890, while experimenting with the mysteries of electricity, the renowned engineer, Nikola Tesla, became the first person to obtain a partial imprint of the electromagnetic field surrounding all objects, referred to as their "auras." Fifty years later, two Russian scientists, Semion and Valentina Kirlian, developed a practical way of capturing auras. The process is known today as Kirlian photography and is recognized both for its artistic appeal as well as for its controversial role as a diagnostic tool.

Unfortunately, most research on Kirlian photography deals with the origin, means of capture, and interpretation of the images without the aid of an automated approach. The idea behind this talk is to use image-processing techniques to provide some insight into whether and how the existing practice might be amenable to a mathematical/ computational process. As discussed, by a careful choice of descriptive features, a "diagnostic" system can be trained based on the presentation of a Kirlian image. The desired characteristics can be subsequently classified into three categories: size, color, and morphology. In the speaker's implementation, these categories are represented by the extraction of so-called "Regions of Interest" using Watershed segmentation and the computation of salient features using texture and curvature analysis. This provides a novel, first approach to the analysis of Kirlian images using the tools provided by the broader field of Computer Vision.

About the Speaker

Xanadu Halkias is currently pursuing advanced studies at Columbia University in signal processing and statistical pattern recognition. She received her MS degree from National Technical University of Athens, Greece. Her thesis, Digital Processing of Kirlian Images, was completed under Professor Petros Maragos in 2002, along with the companion paper which appeared at the 2004 International Conference on Signal Processing in Beijing.

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, November 23, 2004.
Place: Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ, (973) 772-5500. (main floor; left turn from entrance & proceed to conference room).
Information/RSVP: Dr. Mike Liechenstein, (973) 471-0721, (m.liechenstein@ ieee.org). Please also check electronic newsletter for any possible changes in room, etc.

The NJ Section Education Committee Requests Your Feedback

The IEEE North Jersey Section has been helping fellow engineering professionals for the last fifty years. The Education Committee has successfully conducted software and engineering training courses over the last few decades. The Committee is committed to professional development of the members and the instructors for the courses are very qualified and experienced in their respective fields. Classes are arranged on weekday evenings or on Saturdays provided at least fifteen candidates are available. Completion certificates are issued by IEEE Headquarters with CEU credits for the number of training hours.

Due to the slow growth of the economy and several other factors, registration for these courses has diminished over the last few years. I would urge members to send their feedback regarding what courses they would be interested in, the format, location, and day/time, etc., by email to b.chivakula@computer.org.

Regards,
Bhanu Chivakula
Chair, Education Committee
Vice Chair, IEEE North Jersey Section

NOVEMBER 2004

NEWSLETTER STAFF

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

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

NJ Computer & EMS Chapters:
Trustworthy Software for Today and Tomorrow

On Monday, November 22, 2004, the IEEE North Jersey Section Computer and Engineering Management Society Chapters will host a presentation titled "Trustworthy Software for Today and Tomorrow" by Lawrence Bernstein.

About the Talk

Software system development is too often focused solely on schedule and cost. Sometimes performance and functional technical requirements become an issue. Rarely is trustworthiness considered. Not only must software designers consider how the software will perform they must account for consequences of failures. The issue of system trustworthiness, the subject of this talk, is not well known or understood. Trustworthiness is a holistic property, encompassing security, safety and reliability. It is not sufficient to address only one or two of these diverse dimensions, nor is it sufficient to simply assemble components that are themselves trustworthy. Integrating the components and understanding how the trustworthiness dimensions interact is a challenge. Because of the increasing complexity and scope of software, its trustworthiness will become a dominant issue.

Much software engineering focuses only on features and schedule, especially schedule. Mr. Bernstein will present his view that a shift is needed. The software engineer must make judgments and tradeoffs among the functions the software provides, the time it will take to produce the software, the cost of producing the software, how easy it is to use and how reliable it is.

Too often software professionals do not think about the risks to others. And when they do, they are frequently overruled by their bosses or product managers. This talk will argue that it is the software engineer's ethical responsibility to understand and qualify the trustworthiness of their software.

About the Speaker

Lawrence Bernstein is a recognized expert in software engineering, software technology, project management, and technology conversion. He is Industry Research Professor of Computer Networks and Software Engineering at Stevens Institute of Technology in Hoboken, NJ. He directs the Stevens Quantitative Software Engineering program. He is director of the New Jersey Center for Software Engineering.

He consults on software process improvement. For one company he recommended the split between R&D and software assets when it acquired another company. He was an expert witness in two arbitration cases where he assessed the quality and origins of a large operations support software system, and advised another company on the unreasonableness of their claims in a software product dispute. He has worked with the Price Waterhouse Coopers' Technology Center for several clients.

He had a 35-year distinguished career at Bell Laboratories in managing large software projects, and since retirement, heads his own consulting firm. At Bell Labs he became a Chief Technical Officer of the Operations Systems Business Unit and an Executive Director. In parallel with these Bell Labs positions he was the Operations Systems Vice President of AT&T Network Systems from 1992-1996. He is a Fellow of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and a Fellow of the leading software organization, the Association for Computing Machinery (ACM). He is a member of the Russian Information Academy; a visiting Associate of University of Southern California's Center for Software Engineering and an Industrial Fellow of Ball State Center for Information and Communication Sciences. He is a member of the honor societies Tau Beta Pi and Eta Kappa Nu and is listed in Who's Who in America. He was awarded the coveted Bell South "Eagle" for seminal contributions to their automatic service provisioning systems. He was awarded the Patriotic Civilian Service Award, by the US Army, for outstanding performance on the SAFEGUARD software project.

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

Possible Webcast

The possibility of setting up a conference bridge, so that participants may dial in and listen to the presentation remotely, is in the process of being investigated. Please contact Seth Jakel or Vivek Shaiva for further information on the availability of this option.

Time: 7:00 PM, Monday, November 22, 2004. Pre-meeting buffet starts at 6:00 PM.
Place: Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ, (973) 285-6930.
Information: Seth Jakel (973) 731-1902, (sgjakel@comcast.net) or Vivek Shaiva (908) 229-6125 (vshaiva@computer.org).

IEEE North Jersey Section Activities
November 2004

Nov. 3 – "NJ Section Executive Committee Meeting" - 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Dr. Sanghoon Shin at (973) 492-1207 Ext. 22 or s.shin@ieee.org.

Nov. 3 – "Rapid Prototyping of a Line-of-sight Pointing and Stabilization System for Communications On-the-Move" - NJ Control Systems Society, 5:00 PM, NJIT, 202 ECE Center, Newark, NJ. Professor Timothy Chang (973) 596-3519 (changtn@njit.edu).

Nov. 4 – "Nanoscale Computing Circuit and System Design" - NJ Signal Processing Chapter, 4:45 PM (refreshments at 4:30 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Yun Shi (973) 596-3501 (shi@njit.edu), Dr. Alfredo Tan (201) 692-2347 (tan@fdu.edu), Dr. Hong Man (201) 216-5038 (hman@stevens-tech.edu)..

Nov. 8 – "Life Grade Luncheon" – **(RESERVATIONS CLOSED)** 11:30 AM, Hamilton Park Conference Center, 175 Park Ave, Florham Park, NJ 07932. Ken Oexle (973) 386-1156.

Nov. 10 – "Innovative GPS-Based Methods for Extremely Precise Navigation and Time Synchronization" - NJ Control Systems Society, 5:00 PM, NJIT, 202 ECE Center, Newark, NJ. Professor Timothy Chang (973) 596-3519 (changtn@njit.edu).

Nov. 10 – "The Engineers' Career - North Jersey and Career Development Activities" - NJ PACE/GOLD/SAC, 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) 664-6954 (rtax@AEA.org)..

Nov. 13 – "Professional Skills Development Workshop" – Student Activities Committee, 11:30 AM to 5:00 PM (Free lunch to start), Graduate Student Lounge in Busch Campus Center on Bartholomew Road, Rutgers University, Piscataway, NJ. Sameer Kalra (skalra@ieee.org).

Nov. 18 – "RF Power Amplifiers and Transmitters for Wireless Base Stations" - NJ VTS & MTT-S/AP-S Chapters, 7:00 PM, Lucent Technologies, 67 Whippany Rd, Whippany, NJ. Arthur Greenberg (973) 386-6673 (ahg1@lucent.com) or Kirit Dixit (201) 669-7599 (kdixit@microcomsales.com).

Nov. 18 – "Co-Simulation of Microwave Networks" – EDS/C&S, 7:00 PM (buffet at 6:15 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Durga Misra (973) 596-5739 (dmisra@njit.edu) or Dr. Edip Niver (973) 596-3542 (NJIT).

Nov. 18 – "Northern NJ Engineering Networking Event: The IEEE and the New Millennium Engineer in New Jersey" - NJ Membership Development, 6:00 PM, Yesterdays Tavern, Passaic/Main Ave, Clifton, NJ, adjacent to Clifton Commons Shopping Mall. Gary Hojell, ITT SSD, (973) 284-2493 (gary.hojell@itt.com).

Nov. 19 – "Considerations for Design of Critical Telecom and Data Centers Seminar" - NJ IAS/PES Chapters, 9:00 AM – 4:00 PM, PSE&G Training Center, 234 Pierson Ave, Edison, NJ. Ronald Quade, PE, (732) 205-2614 or rwquade@ieee.org.

Nov. 22 – "Trustworthy Software for Today and Tomorrow" - NJ Computer Chapter, 7:00 PM (pre-meeting buffet at 6:00 PM), Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ, (973) 285-6930. Seth Jakel (973) 731-1902, (sgjakel@comcast.net) or Vivek Shaiva (908) 229-6125 (vshaiva@computer.org).

Nov. 23 – "Digital Processing of Kirlian Images" - NJ SMC Society, 7:00 PM (light refreshments at 6:45 PM), Clifton Memorial Library , 292 Piaget Ave, Clifton, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org).

Upcoming Meetings

Dec. 2 – "Annual Planning Meeting & Workshop" - 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.

Dec. 7 – "Reduced-Rank Multi-User Detectors for CDMA Systems" - NJ Communications Chapter, 6:15 PM (refreshments at 6:00 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 for the latest updates.

Dec. 9 – "Distributed Generation Using Gaseous Fueled Reciprocating Engine-Generators" - NJ IAS/PES Chapters, 7:00PM (buffet at 6:30 PM), Eaton Electrical, 690 Rahway Ave, Union, NJ. Ronald W. Quade, P.E., (732) 205-2614 (RWQuade@ IEEE.org).

Feb. 22-Apr. 19 – **"**Marketing Research" – North Jersey Section, Tuesday Evenings, 8 sessions, 6:30-9:00 PM, NJ International Bulk Mail Center, 80 County Rd, Jersey City, NJ. Bhanu Chivakula (b.chivakula@computer.org).

Members and Non-Members Welcome
PLEASE POST

Last Call for Fall 2004 Professional Skills Development Workshop Participation

This is your last chance to sign up for the Fall 2004 PSDW. Please take this opportunity to pre-register for this event at the website below. This event provides individuals with a one-of-a-kind experience to enhance their non-engineering skills critical to successfully being a professional engineer working for a major corporation or for engineers looking to start their own companies.

Don't miss this chance to take part in this unique workshop to learn about managing projects, how they are critical to running a corporation and the ins and outs to consider before striking out to start your own company.

The final agenda is listed below.
Schedule/Topics:
Topic 1: Project Management - Don Hsu
Topic 2: Starting Your Own Company - Larry Bernstein

Have your project management resume reviewed for free, get valuable job hunting tips and ask questions of folks who have started their own company.

Register:
http://ewh.ieee.org/r1/north_jersey/sac/ieee.html
Time: 11:30 AM to 5:00 PM (Free lunch to start), Saturday, November 13, 2004.
Place: Graduate Student Lounge in Busch Campus Center on Bartholomew Road, Rutgers University, Piscataway, NJ, Free Parking Available. Directions: http://maps.rutgers.edu/maps/default.aspx
Information: Sameer Kalra (skalra@ieee.org).

Northern NJ Engineering Networking Event: The IEEE and the New Millennium Engineer in New Jersey

Light buffet and refreshments will be served, all welcome (membership not required, just show up)

Time: 6:00 PM, Thursday, November 18, 2004.
Place: Yesterdays Tavern, Passaic/Main Ave, Clifton, adjacent to Clifton Commons Shopping Mall
Information: Gary Hojell, ITT SSD, (973) 284-2493 (gary.hojell@itt.com).

NJ Signal Processing Chapter:
Nanoscale Computing Circuit and System Design

On November 4, 2004, the IEEE North Jersey Section Signal Processing Society Chapter along with NJIT will host a presentation on "Nanoscale Computing Circuit and System Design." The speaker will be Dr. Jie Chen.

About the Talk

The physical limitations of silicon devices prohibit further miniaturization. To overcome these limits, novel approaches to circuit and device design based on newly discovered physical phenomena, such as single electron devices, carbon nanotube building blocks and spintronic circuits, are being investigated. Nanoscale computing architecture and processor design poses two challenges, structural and signal faults, which must be confronted.

We have developed a probabilistic framework for nanoscale circuit design that is inherently tolerant of structural and signal errors. This framework no longer requires a particular time instance of a logic signal to be correct, but only expects that the probability distribution of values will have the highest likelihood for valid logic states. The appropriate mathematical framework for this type of analysis is the Markov Random Field, which was developed to support optimizing the values of a large set of random variables so that their overall joint probability becomes a global maximum. We have applied the MRF to simple combinatorial logic gates. XOR gate using the MRF can tolerate up to 30% structural faults. This approach also demonstrates significant noise immunity. We have successfully simulated preliminary probabilistic test circuits for basic logic. Results showed that MRF circuits can operate at very low supply voltages (0.1–0.2 V), and still achieve better fault immunity than conventional silicon designs. The proposed research also includes developing techniques to wire and position nanoscale devices using biological means, such as the self-recognizing capabilities of DNA. Our preliminary experimental results show that we can comb DNA strings on the meca substrate. We can also selectively change DNA's conductivity to that of metallic or semiconductor wires.

About the Speaker

Jie Chen received his PhD degree in Electrical and Computer Engineering from the University of Maryland, College Park. He is currently an Assistant Professor at Brown University's Division of Engineering. Dr. Chen's research interests include nanoscale devices and architecture design, genomic signal processing, and multimedia communications. He is a Distinguished Lecturer of IEEE Circuits and Systems Society (2004-2005). He has been invited as speakers in different conferences and workshops, and as the guest editors of two special issues, "Multimedia over IP" for IEEE Transaction on Multimedia, and "Multimedia over wireless networks" for EURASIP Journal on Applied Signal Processing. Dr. Chen has published 46 scientific papers in refereed journals, conference proceedings, and the book, "Design of Digital Video Coding Systems: A Complete Compressed Domain Approach" (New York: Marcel Dekker 2001); and co-edited another book "Genomic Signal Processing and Statistics" (EURASIP Book Series, 2004). He has invented or co-invented several U.S. patents. He is an associate editor for IEEE Signal Processing Magazine, and has been associated editors for IEEE Transactions on Multimedia and EURASIP Journal on Applied Signal Processing. He is a senior member of IEEE Signal Processing Society.

Time: 4:45 PM (refreshments and pizza available at 4:30 PM), Thursday, November 4, 2004.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.
Information: Dr. Yun Shi (973) 596-3501 (shi@njit.edu), Dr. Alfredo Tan (201) 692-2347 (tan@fdu.edu), Dr. Hong Man (201) 216-5038 (hman@stevens-tech.edu).

Conference Rooms Needed!

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

Rapid Prototyping of a Line-of-sight Pointing and Stabilization System for Communications On-the-Move

On November 3, 2004 the NJ Section IEEE Control Systems Society will present a talk on "Rapid Prototyping of a Line-of-sight Pointing and Stabilization System for Communications On-the-Move." The speaker will be Dr. David A. Haessig.

About the Talk

BAE SYSTEMS Communication, Navigation, Identification, and Reconnaissance is designing and integrating the ground platform data links for the Army's Future Combat System (FCS) – a system that will use JTRS radios and directional antennas. A key performance parameter is that of Wideband Communication-on-the-Move while traversing rough, off-road terrain at moderate speed. A wideband link necessitates the use of a high-gain, narrow-beam antenna that must track to within a fraction of the antenna beamwidth. This talk will describe the design, simulation, rapid prototyping, integration, and test of the control system used to point and stabilize the antenna.

About The Speaker

David Haessig is a Senior Member Technical Staff at BAE SYSTEMS, Wayne, NJ. Currently he manages their development of on-the-move antenna controls and is involved in design of next generation embedded systems for wireless communication. Dr. Haessig has recently also worked at Lucent Technologies coordinating a team effort that implemented the physical and MAC layers of the UMTS standard HSDPA (High Speed Downlink Packet Access), a 3G multi-access wireless system implemented over a 4x4 antenna arrangement using the BLAST methodology (Bell Labs Layered Space Time Coding). For this work he and others were awarded the Bell Laboratories President's Gold Award in 2002. He is a Senior Member of IEEE and has worked as an Adjunct Professor at NJIT and Fairleigh Dickinson University. He holds 4 patents in the area of inertial stabilization and has over 15 professional publications.

Time: 5:00 to 6:00 PM, Wednesday, November 3, 2004.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at http://www.njit.edu/University/Directions.html.
Information: Professor Timothy Chang (973) 596-3519 (changtn@njit.edu).

IEEE Organizing Global Pre-College Technology Education Program

Continuing in its tradition of innovation, IEEE is taking the lead in developing a new non-discriminatory global pre-college technology education program. The program titled "emeritbadges.org" will be directed globally towards pre-college boys and girls.

emeritbadges.org has developed hands-on electricity and electronics instructional material based on the Boy Scouts merit badge requirements. Instructional material for computer education is being developed. Any student, boy or girl can use the program to enhance technical literacy and learn more about viable engineering and other technical career options.

emeritbadges.org Project Director Ralph W. Russell, II from the IEEE Richmond, VA Section said that this non-discriminatory program would be promoted globally through IEEE and youth programs such as World Organization of the Scout Movement and The World Association of Girl Guides and Girl Scouts. The next use of the new global pre-college electronics education material and hands-on kit will be at the 2005 National Scout Jamboree in Caroline County, VA, USA. Over 35,000 scouts will attend the Jamboree from the USA and several other countries.

Project leaders have started discussions with national and regional Girl Scout leaders to develop a method of incorporating the emeritbadges.org program into the Girl Scout program. The next step will be to start discussions with the global World Organization of the Scout Movement and The World Association of Girl Guides and Girl Scouts.

The 2005 Jamboree will be held at Fort A. P. Hill in Caroline, Virginia. The Jamboree will start on Monday, 25 July 2005 and end on Wednesday, 3 August 2005. Hundreds of volunteers that can serve as Assistant Instructors at the Jamboree Electronics Merit Badge booth for at least two days are needed. Additional project and volunteer information can be found at http://www.emeritbadges.org.

The Engineers' Career - North Jersey and Career Development Activities

On Wednesday, November 10, 2004 the North Jersey Section PACE/GOLD and Student Activities Committee will meet to discuss Career Development.

About the Talk

What is going on with PACE?

This meeting will serve as an introduction to a new alliance formed between NJIT's Career Development Services and the North Jersey Section. The agenda will include a presentation by Gregory Mass of NJIT on the services and programs offered at the Center. Objectives for the meeting include developing a list of specific initiatives that would supplement North Jersey Section activities for the upcoming year.

About the Speaker

Gregory Mass is the Executive Director for NJIT's Division of Career Development Services. He possesses more than 20 years experience in the design, implementation and management of career programs. Greg has worked on similar alliances with the executive boards of several professional associations including the New Jersey Technology Council, the Metropolitan Electric League, and the Construction Round Table.

All Welcome!

Guests, members and students from other professional societies and engineering disciplines are always welcome. We now include members from IEEE, ASME and AEA. For more information about these groups see:

www.aea.org
www.asme.org/sections/northjersey
www.ieeeusa.org
web.njit.edu/~ieeenj/
www.Congress.org

Time: 6:30 to 9:00 PM, Wednesday, November 10, 2004. Refreshments will be served.
Place: Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ, (973) 772-5500.
Information: Paul Ward, (973) 790-1625 (PWard1130@aol.com) or Richard F. Tax, (201) 664-6954 (rtax@AEA.org).

Innovative GPS-Based Methods for Extremely Precise Navigation and Time Synchronization

On November 10, 2004 the NJ Section IEEE Control Systems Society will present a talk on "Innovative GPS-Based Methods for Extremely Precise Navigation and Time Synchronization." The speaker will be Joel D. Reiss.

About the Talk

The geolocation of a hostile radar emitter by coordinated data sharing within an airborne community requires a common navigation solution accurate to less than one foot, and relative timing to under a nanosecond. BAE SYSTEMS has developed approaches combining standard Link-16 hybrid inertial navigation and differential GPS processing which can provide such performance. Since Link-16 navigation depends on good TOA measurements, estimation of atmospheric delay is vital. A simple algorithm for doing so is described. In order to further refine the navigation and time synchronization accuracy of the community, a DGPS approach using pseudorange measurements from all satellites within view has been developed. Three elements of position, one of time, and one of frequency are jointly estimated. The algorithm can provide the required navigation and time accuracy for emitter location and remote time transfer.

About The Speaker

Mr. Reiss is a System Engineer and Senior Member of the Technical Staff at BAE SYSTEMS CNIR Division in Wayne NJ, and has been employed there since 1970. His primary responsibilities there have dealt with design, integration and testing of spread spectrum communication and navigation systems, including Link-16 and the Multinational Information Distribution System (MIDS). Other interests include the application of integrated multiplatform navigation and time synchronization to situation awareness, emitter location, weapon guidance and control, and other applications of Network Centric Warfare (NCW). He received his BSME from Cooper Union, New York in 1963, and an MSME from New York University in 1965.

Time: 5:00 to 6:00 PM, Wednesday, November 10, 2004.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at http://www.njit.edu/University/Directions.html.

Information: Professor Timothy Chang (973) 596-3519 (changtn@njit.edu).

RF Power Amplifiers and Transmitters for Wireless Base Stations

On Thursday, November 18, 2004 the Vehicular Technology and Microwave Theory and Techniques chapters will jointly host a presentation entitled "RF Power Amplifiers and Transmitters for Wireless Base Stations" by Joseph Lipowski of Andrew Corporation.

About the Talk

RF power amplifiers are one of the key components of a wireless base station, providing the RF interface to the cell phone, determining many of the key properties such as mechanical form and functionality. The unique performance requirements of the amplifier place many demands upon its design. The talk will begin with a brief discussion of the basic building block, the RF power transistor. The talk will include systematic design methods for optimum system performance using linearization. Advanced amplifier architectures will be considered in a tutorial fashion. Finally, a perspective on the unique properties of Power amplifiers that motivate and drive future base stations for 3G and 4G will be offered.

About the Speaker

Joe Lipowski, is the Vice President of Research, RF Power Amplifier Business Unit of Andrew Corporation since June, 2002. He was formerly Chief Technical Officer of Celiant upon its spin-off from Lucent on June 1, 2001 and was Director of RF Hardware Development with Lucent's Wireless Networks Group beginning in April, 1997. Mr. Lipowski leads the development of Advanced Technology for Power Amplifiers and Transceivers. From 1988, Joe held a series of increasingly responsible leadership roles with Pacific Communication Sciences, Inc., in San Diego, California, and Boston, Massachusetts developing RF Chipsets and subscriber terminals. Mr. Lipowski holds a BSEE from the Massachusetts Institute of Technology and an MSEE from the University of Michigan.

All Welcome!

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

Pre-Registration is Requested

Contact Kirit Dixit at (201) 669-7599 (kdixit@microcomsales.com) or Arthur Greenberg at 973-386-6673 (ahg1@lucent.com) for reservations or directions.

Time: 7:00 PM, Thursday, November 18, 2004. Pre-meeting buffet will start at 6:00 PM.
Place: Lucent Technologies, 67 Whippany Rd, Whippany, NJ 07981.
Information: Arthur Greenberg (973) 386-6673 (ahg1@lucent.com) or Kirit Dixit (201) 669-7599 (kdixit@microcomsales.com).

Co-Simulation of Microwave Networks

On November 18, 2004, the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology will host a talk on "Co-Simulation of Microwave Networks." The speaker will be Dr. Sanghoon Shin.

About the Talk

3D full-wave Electromagnetic (EM) simulators are widely used for analysis of RF and microwave filters. But EM simulation speed is very slow compared to the linear circuit simulators and it is very hard to optimize in EM-domain.

In this presentation, by using full-wave analyzed models imported to the circuit domain, EM simulation level accuracy can be obtained with circuit domain optimization speed. Several RF filter design examples will be explored using co-simulation techniques during the presentation.

About the Speaker

Sanghoon Shin received his BS degree from Hanyang University, Seoul, Korea, in 1993, MS degree in electrical engineering from the Polytechnic University of New York, Brooklyn, in 1996, and PhD degree in electrical engineering from the New Jersey Institute of Technology (NJIT), Newark, in 2002.

In 2002, Dr. Shin joined RS Microwave Inc., Butler, NJ, where he is currently a Research Engineer. His research interest has focused on analysis and design of RF and microwave filters.

All Welcome!

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

Time: 7:00 PM, Thursday, November 18, 2004. 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/University/Directions.html.
Information: Dr. Richard Snyder (973) 492-1207 (RS Microwave), Dr. Durga Misra (973) 596-5739 (dmisra@njit.edu) or Dr. Edip Niver (973) 596-3542 (NJIT).

Reduced-Rank Multi-User Detectors for CDMA Systems

On December 7, 2004, the IEEE North Jersey Section Communications Society Chapter along with NJIT will host a presentation on "Reduced-Rank Multi-User Detectors for CDMA Systems." The speaker will be Dr. Hongya Ge.

About the Talk

Due to the high dimensionality of the measurement data sets as well as the changing dynamics of wireless communication systems, computationally efficient reduced-rank solutions are preferred to their full-rank counterparts in applications such as channel estimation, system synchronization, multi-user detection, and adaptive beam-forming.

This talk introduces the framework of designing reduced-rank multi-user detectors for wireless DS/SS CDMA systems. With the notion of expanding subspaces, we construct the reduced-rank multi-user detectors progressively using the simple structure of filter banks (analysis filters and synthesis filters) – the discrete-time filter vectors contained in the expanding Krylov subspaces. We further provide computationally efficient iterative methods for implementing the reduced-rank multi-user detectors along with the geometric interpretations on the filter evolution and error reduction. We prove the existence (sufficient and necessary conditions) of warp convergence in the reduced-rank multi-user detectors for designed CDMA systems, as well as in the adaptive beam-former for multi-sensor array systems. Finally, application examples are presented to demonstrate the enabling capability of the warp convergence in designed communication systems, i.e. the reduced-rank solution delivers the full-rank performance.

About the Speaker

Hongya Ge received her BS degree from the University of Electronic Science and Technology of China (UESTC), Chengdu, China; MS degree from the Nanjing University of Aeronautics and Astronautics, Nanjing, China; and PhD degree from the University of Rhode Island, Kingston, RI, in 1982, 1985, and 1994, respectively, all in electrical engineering. From 1986 to 1990, she was with the Department of Information and Electronics at the Zhejiang University, as a lecturer, teaching and researching in Radar Signal Processing, Communication Theory, and Numerical Analysis. Since 1995, she has been with the Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, where she is currently an associate professor. During the academic year of 2000-2001, she was a visiting scientist in the Applied Research Department of Telcordia Technologies, Inc., NJ, working on broadband wireless access, MIMO transceiver systems, and wireless network security projects. During the academic year of 2003-2004, she spent her sabbatical leave with the Colorado State University and the Nanyang Technological University, Singapore. Her research interests are in the general areas of Statistical Signal and Array Processing, Transceiver Design for Wireless Communications and Reduced Rank Adaptive Subspace Methods for Detection, Estimation, Synchronization, Tracking, Adaptive Beamforming and Interference Suppression.

Dr. Ge has published 70+ technical papers in International Journals and Conference Proceedings. She currently serves as a member of the IEEE Technical Committee on Sensor Array and Multichannel (SAM) Signal Processing, the Editorial Board of the EURASIP Journal on Wireless Communications and Networking, and the Editorial Board of the IEEE Transactions on Signal Processing. From 1998-2001, she was the Vice Chair and Chair for the Chapter of Communications Society of IEEE North Jersey Section. Since 1999, she has been on the Planning Committee for the Annual Wireless and Optical Communications Conference (WOCC). She was the Chair for the Wireless Program of the WOCC-2003.

All Welcome!

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

Time: 6:15 PM (refreshments start at 6:00 PM), Tuesday, December 7, 2004.
Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at http://www.njit.edu/University/Directions.html.
Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check http://web.njit.edu/~ieeenj for the latest updates.

Annual Planning Meeting & Workshop

On December 2, 2004, the IEEE Consultants' Network of Northern NJ (CNNNJ) will host their Annual Planning Meeting & Workshop.

About the Meeting

In a combined November/December meeting, the IEEE Consultants Network of Northern NJ (CNNNJ) will plan the network's direction and activities for the year 2005. We will discuss ideas and set expectations for the various network functions. Network members and any consultants considering joining the network are welcome to attend and participate.

Results of the annual election of officers will be announced at this meeting.

Traditionally, this working session is an open, informal forum to determine what the IEEE-CNNNJ is doing right, or wrong. The floor will be open to suggestions for improvements, recommendations of new network directions and activities, and proposals for new feature topics for the general meetings.

The functions performed by the IEEE Consultants Network throughout the year include:

- Monthly General Meetings – Suggested feature topics will be discussed.
- Member Networking – Member presentations and alternate formats to improve networking.
- Group Marketing & Image Building – CNNNJ website, tri-fold and postcard mailing, CNNNJ's free consultant referral service, and alternate publicity methods.

We will have our end-of-year networking party, with refreshments, at the close of the session.

All Welcome!

Everyone welcome. No registration needed. Free admission.

About the Consultants' Network

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

Time: 7:30 PM, Thursday, December 2, 2004.
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.mcekdi-integrated.com/directions.htm.

NJ PES/IAS Chapters:

Distributed Generation Using Gaseous Fueled Reciprocating Engine-Generators

On December 9, 2004, the Power Engineering and Industrial Applications Chapters will present a discussion on Distributed Generation using Lean-Burn, gas fired, spark ignited "Recips" to burn either:

1. Purchased, Natural Gas or
2. "Free" Biogas from landfills, sewage plants etc.

The leader of the discussion will be Ron Williamson.

About the Talk

The discussion will focus on Lean-Burn, gas-fired power plants up to 15-20 megaWatts using reciprocating engines in the 300kW to 3mW range. Systems burning Biogas usually sell electric power back to the utility company. Systems burning natural gas usually generate Combined Heat & Power (CHP) to make the economics viable. The majority of these systems operate in parallel with the electric utility grid.

Topics to be covered:

➤ NJ SOTA emission requirements
➤ Grant money available
➤ Lean-Burn technology
➤ Heat recovery equipment in a typical CHP plant
➤ Electrical interconnection
➤ Engine efficiency
➤ Characteristics of Gas Turbines compared to Reciprocating Engines
➤ Wellesley College CHP installation

About the Speaker

The leader of the discussion will be Ron Williamson. Ron has a BS degree in Electrical Engineering and over 25 years experience in paralleling engine-generators with each other and with the utility grid. Ron presently works for Northeast Energy Systems, a division of Penn Detroit Diesel Allison in Philadelphia. NES is Authorized Distributor for G.E. Jenbacher Gaseous Fueled Power Systems. Ron is the Sales Engineer for the NY/NJ metropolitan area.

Time: 7:00 PM, Thursday, December 9, 2004. A pre-meeting buffet will be available at 6:30 PM.
Place: Eaton Electrical, 690 Rahway Ave, Union, NJ. Directions: Route 82 Morris Ave from either Springfield or Union to Rahway Ave.
Information: Ronald W. Quade, P.E., (732) 205-2614 (RWQuade@ IEEE.org).

Marketplace of Ideas: Should Technical Colleges Train New Grads?

Increasingly industry is expecting potential employees to come out of engineering schools fully trained, requiring no additional training on the job. Is job training the responsibility of the university or of industry? Weigh in at institute@ieee.org

Getting to Know Your Customers

If you are just beginning your engineering career, you might be wise to concentrate on getting to know your customers -- really know them. You'll realize your long-term development goals sooner and gain experience, as you earn your customers' confidence and respect.

http://www.todaysengineer.org/mar04/customers.asp

Reader Poll: The Virtual Workforce: A Concept Unfulfilled?

Some years ago, industry leaders predicted that computers would help create a paperless office environment. Others forecast that most workers would work in virtual offices as members of virtual teams. The reality has been quite different.

http://www.todaysengineer.org/mar04/poll.asp

Standards Hidden in Plain Sight

They're responsible for the way your computer works, as well as for your television set, wireless router, video games, and many other electronic products. All depend on IEEE technical standards, which establish guidelines for how things are designed and the specifications they should meet. Find out more at

http://www.theinstitute.ieee.org/portal/index.jsp?pageID=institute_level1_article&TheCat=2201&article=tionline/legacy/inst2004/mar04/3w.standards.xml

Blackout 101 Forum Educates Hill Staff

The 2003 "Northeast Blackout" left more than 50 million people in the dark last August. What happened? The IEEE Power Engineering Society and IEEE-USA sponsored a "Blackout 101" forum for members of Congress and their staffs, to educate them on how North America's electric power system works; what can go wrong; and how we can prevent future large-scale power blackouts.

http://www.todaysengineer.org/mar04/blackout101.asp

Business 101 for Engineering Entrepreneurs

Do you think you have what it takes to run your own engineering business? Several IEEE members took time out from their busy schedules to tell us of their adventures in setting up their own businesses. Read more at

http://www.theinstitute.ieee.org/portal/index.jsp?pageID=institute_level1_article&TheCat=2201&article=tionline/legacy/inst2004/mar04/3w.featureentre.xml

2005 Officer Ballot

Instructions for Casting Ballots
Completed ballots should be mailed to the North Jersey Section Newsletter Editor as follows:

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

The ballot MUST be filled out completely with members name, membership number, and signature. The ballots are invalid without this information. Xerox copies of the ballot are acceptable as long as they are filled out completely. Ballots received after November 30, 2004, will <u>not</u> be counted.

Chairperson: (choose one)
  ☐.......................... Har Dayal
  ☐...............................(write-in)_____

Vice Chairman-1: (choose one)
  ☐................ Bhanu Chivakula
  ☐...............................(write-in)_____

Vice Chairman-2: (choose one)
  ☐.......................... Kirit Dixit
  ☐...............................(write-in)_____

Treasurer: (choose one)
  ☐............. Dr. Sanghoon Shin
  ☐...............................(write-in)_____

Secretary: (choose one)
  ☐...................... Russell Pepe
  ☐...............................(write-in)_____

Members-At-Large: (choose three)
  ☐............... Dr. Nirwan Ansari
  ☐........................Gary Hojell
  ☐.............Dr. Richard Snyder
  ☐...............................(write-in)_____

Member Name_____ Member No. _____

Signature _____ Date _____

NJ Power Engineering Society/Industry Applications Society Seminar
Considerations for Design of Critical Telecom and Data Centers

The PES and IAS Chapters will sponsor a free one-day seminar covering considerations for the design of critical telecom and data centers. The session will be held on Friday, November 19, 2004 at the PSE&G Training Center, 234 Pierson Ave, Edison, NJ.

About the Seminar

The seminar will cover the basics of design and hardware required by today's critical facilities, which demand 7 x 24 availability of precision environment and power infrastructure. While environmental and monitoring issues will be discussed, the emphasis will be on design of the power system. Among the topics to be covered are:
- Sizing the systems, including projected load densities and so called "extreme densities"
- Configurations to ensure 7 x 24 availability, and maximum redundancy
- Providing maximum flexibility
- Hardware details, including UPS, power distribution, surge suppression, etc.
- Specific discussion of battery systems, including: types, environmental considerations, maintenance, and battery alternatives
- Point-Counterpoint discussion of DC power systems vs. traditional AC (UPS)

About the Instructor

The primary instructor will be Len Giuliano, PE. Len has a diverse background of technical experience primarily in the electrical power industries, including design, management and technical sales and support. Specific areas include utility substation design, generator design, power plant switchgear, and UPS and related products. More recently, Len has been dedicated to issues involving critical facilities.

Len has a bachelor's degree from Villanova University; is a registered PE; has authored a nationally published article "Solutions to Computer Room Power Problems"; and is a past Vice President and Program Chairman of the Delaware Valley Power Quality Group.

_____

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.

There will be no charge for this seminar but space will be limited. Advanced registration is required by November 5th.

Time: 9:00 AM to 4:00 PM, Friday, November 19, 2004.
Place: PSE&G Training Center, 234 Pierson Ave, Edison, NJ.
Directions: See http://www.pseg.com/customer/business/small/facility/edison_directions.html
Information: Ronald W. Quade, PE, (732) 205-2614 or rwquade@ieee.org.

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Registration: Considerations for Design of Critical Telecom and Data Centers 11/19/2004

Register via US mail to: Ronald W. Quade, PE
                             Eaton Electrical
                             379 Thornall Street
                             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 $15 processing fee made payable to **North Jersey Section IEEE**

IEEE North Jersey Section Course
Marketing Research

Tuesday Evenings, February 22, 2005 through April 19, 2005 (No class on March 22)
Eight weekly classes (February 22, March 1, 8, 15, 29, April 5, 12, 19, 2005)
at NJ International Bulk Mail Center, 80 County Road, Jersey City, NJ
(Checks should not be mailed to this address)

The North Jersey Section IEEE is offering an evening course entitled "Marketing Research". Monster.com lists 450+ Market Research jobs in the New York tri-state area daily! This course deals with the collection, evaluation and analysis of the market-related information. Topics are: market research industry, problem definition, research process, focus group, secondary database, quantitative research, questionnaire design, sampling techniques, statistical testing, bivariate and multivariate correlation, communicating results and management reports. Using the SPSS software, you will learn to perform detailed data analysis.

The IEEE certificate of completion will be given to you when you finished this course. In addition, you will be qualified to work as a market researcher in any organization that needs your quantitative skills.

Instructor: Donald Hsu, PhD, has been a corporate manager for 11 years and is an experienced trainer. Since 2000, he has trained 400+ people in *Management, Marketing, Global Marketing, and Marketing Research* courses in five organizations.

TOPICS

1. Describe the market research industry, problems and research process
2. Understand the importance of primary data collection, secondary database, and survey
3. Define quantitative research, measurement technique and sampling methods
4. Explain the questionnaire design, data processing and statistical testing
5. Build the knowledge of bivariate regression and multivariate data analysis
6. Communicate results, manage ethical issues, and prepare reports
7. Employ SPSS software for frequency analysis, ANOVA, T-test and others
8. Review real-world marketing research using Harvard Business School cases
9. Present final Group Project

Class size will be limited to a maximum of 25 with a minimum of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after February 10, 2005 will require a late fee of $25. No reservations will be accepted after February 15, 2005.

WHERE: NJ International Bulk Mail Center, 80 County Road, Jersey City, NJ. (Checks **should not** be mailed to this address)
WHEN: 8 Sessions, Tuesdays, February 22, March 1, 8, 15, 29, April 5, 12, 19, 2005, 6:30-9:30 PM.
COST: With textbook or notes: IEEE (& affiliate) members $375; Non-IEEE members $475.
CONTACT: Bhanu Chivakula -email b.chivakula@computer.org

REGISTRATION: Marketing Research

Please send the checks in the name of **North Jersey Section IEEE** with filled in registrations to:
Bhanu Chivakula, 19 Prestwick Way, Edison, NJ 08820. Please email inquiries to b.chivakula@computer.org

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

☐ Non-member   ✎email address✎

☐ IEEE Member   Member #:_____   Member of _____ technical society

Employer:_____

Employer Address:_____

_____

Home Address:_____

_____

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

Please enclose required fee payable to: **North Jersey Section IEEE**
Registration status will be mailed after February 15, 2005. Phone inquiries concerning registration will NOT be honored. In general, the effective date of the application corresponds to the date when BOTH a fully completed application/registration and payment are received.

☐ Tuition receipt will be mailed only if this box is checked   Signature:_____

Letters to the Editor

New Jersey Works to Protect America jobs for Americans (Maybe!)

By: Mark Carangi
          Senior Member IEEE

From an article by Allison Linn, AP Business Writer, date Sept 14:

"The U.S. information tech sector lost 403,300 jobs between March 2001 and this past April, and the market for tech workers remains bleak, according to a new report. Perhaps more surprising, just over half of those jobs -- 206,300 -- were lost after experts declared the recession over in November 2001, say the researchers from the University of Illinois-Chicago. In all, the researchers said, the job market for high-tech workers shrank by 18.8 percent, to 1,743,500 over the period studied".

Meanwhile, the NJ sate legislator has proposed several bills to allegedly protect American jobs when government contracts are involved. In fact Gov McGreevey recently signed an executive order supported by organized labor "that strongly discourages state agencies from hiring contractors that rely on overseas workers" (the Star Ledger Friday Sept 10 pg 30). At least six other states (Alaska, Arizona, Michigan, Minnesota, Missouri and North Carolina) have signed executive orders either restricting or outright banning "outsourcing". Many other states have similar proposed bills in progress. Is this good for engineers or does it just protect jobs for union members? Will it just cost tax payers more for the same service? And will it eventually result in less employment? My opinion? This is smoke and mirrors and will do nothing to reverse the decline in hi tech in the US.

It should be noted that legislation to impose similar restrictions passed the NJ senate twice but was held up in the state assembly each time. NJ State Senator Shirley Turner (D-Mercer) has proposed a bill (Senate, No 370, introduced Jan 13, 2004) to regulate call center activity. A few other state senators, including Bucco, B Smith, Allen and Baer, have signed on but it appears that there is no equivalent assembly bill. Sen. Turner believes legislation is needed since an executive order can be rescinded by a future governor. So, it looks like we have a case of feel good legislation that makes it look like the state is doing something to protect jobs when in fact it's only a short term solution.

Does this legislation protect careers for engineers? I doubt it. In fact, in my opinion, it seems to be totally aimed at protecting union jobs backed by big labor unions such as the AFL-CIO. My guess is this order will increase costs to tax payers, will provide no increased opportunities for engineers, and may well result in less employment.

Some other bills on the subject of job protection proposed by the NJ state legislator include:

NJ Assembly Bill AR184 (introduced June 3, 2004): Creates a commission to study the loss of New Jersey jobs through outsourcing and off-shoring.

NJ Senate Bill S1452 (introduced April 29, 2004): Re-designates the state Department of Labor as the Department of Labor and Workforce Development.

NJ Senate Bill S494 as Amended (Feb 24, 2004): This bill as amended requires that every state contract primarily for the performance of services must include provisions that specify all services must be performed in the US.

NJ Assembly Bill A840 (introduced Jan 13, 2004): Provides for the regulation of certain call center communications by the Division of Consumer Affairs.

To identify your state legislators and for additional information on the legislative bills listed above go to: http://www.njleg.state.nj.us and click the appropriate links.

Want a position in hi tech? Want an engineering career? It's time for engineers to get involved. If we continue to sit on the sidelines and watch the parade go by engineering careers in this country will continue to decline.