



The IEEE

Newsletter

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

The June Newsletter Will Be All Electronic!

For the 5th year in a row, there will be an "electronic only" edition of The IEEE Newsletter which will not be mailed. In addition, July remains a non-publication month whereby neither a printed version nor an electronic version of the Newsletter will be produced. All members can find the latest meeting and activity announcements by clicking "Newsletters" on the IEEE North Jersey Section Home Page at:

<http://www-ec.njit.edu/~ieeenj/>

NJ PES/IAS: Electric Vehicle Technology

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

About the Talk

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

About the Speaker

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

Date: 7:00 PM, Thursday, May 17, 2001.

Place: GPU Energy, 300 Madison Ave, Morristown, NJ.

Information: Ken Oexle (973) 386-1156 (k.oexle@worldnet.att.net).

NJ Consultants' Network:

SBA Business Development Programs

On Thursday, May 24, 2001, the IEEE Consultants' Network of Northern NJ (CNNNJ) will present a talk on "SBA Business Development Programs", by Sanford Gerber of Small Business Administration (SBA), New Jersey District.

About the Talk

There are various government programs designed to assist small businesses. Once certified for the program, SBA assists in identifying Government procurement agencies, provides referrals to enter in contracts with major corporations and provides the needed training. Mr. Gerber will discuss the requirements and the benefits of various programs, such as Small Business, Small Disadvantaged Business, 8(a) program, Woman Owned Business, Hub Zone, SBIR and STTR.

About the Speaker

Mr. Sanford Gerber is a Business Opportunity Specialist (BOS) for the U.S. SBA Newark District Office. He has been with the SBA since 1984. Prior to joining SBA, Mr. Gerber worked for the U.S. Customs Service. He has attended Manhattan Community College and the College of Staten Island.

Consultants' Network Member Presentations

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

Ed McCauley is president of Bottom Line Technologies (BLT), a highly specialized design firm focusing on the tools and technology of Xilinx. Founded in 1985 by one of Xilinx's original field application engineers, BLT is a rapidly growing Xilinx solution provider bringing premier OEM design services to its clients.

Jim Boyd specializes in custom hardware and software design of PIC-microcontroller-based control systems for consumer and industrial applications. He has been a full-time consultant since 1978.

About the Consultants' Network

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

All Welcome!

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

Time: 7:30 PM, Thursday, May 24, 2001.

Place: KDI Triangle, 60 S. Jefferson Road, Whippany, NJ.

Information: For directions and up-to-date meeting status, call Robert Walker (973) 728-4500 or visit our website at www.TechnologyOnTap.org.

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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, (732) 465-4067.

IEEE NJ SECTION HOME PAGE

<http://www-ec.njit.edu/~ieeenj/>

IEEE NJ SECTION NEWSLETTER HOME PAGE

<http://www-ec.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 Wayne Owens at (201) 767-3400, ext. 226, wowens@crestron.com.

North Jersey Section Activities

May 2001

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

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

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

May 24—"SBA Business Development Programs" – NJ Consultants' Network, 7:30 PM, KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-4500 or www.TechnologyOnTap.org.

Upcoming Meetings

June 6—"NJ Section Executive Committee Meeting" – 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Wayne Owens at (201) 767-3400 ext. 226 or wowens@crestron.com.

Oct. 12—"International Conference on Computing and Information Technologies (ICCIT'2001)", Montclair State University, Upper Montclair, NJ. For details see <http://www.csam.montclair.edu/~ICCIT2001/> or contact ICCIT'2001 Secretariat at iccit2001@pegasus.montclair.edu or (973) 655 - 4250.

Members and Non-Members Welcome

PLEASE POST

FOR SUBLEASE - SHARED OFFICE SPACE:

Available for immediate occupancy, up to 2,000 sf, five offices with secretarial space including furniture, is available for sublease. Included would be shared use of copy/mail room, conference room and lunchroom. Office was renovated 2 1/2 years ago. Our office is located in the Woodbridge Corporate Center on Route 1 and Gill Lane, near Metropark.

If interested, please call Bob DiBlasi, Eckland Consultants Inc. at (732) 283-7600.

Join the Ranks of Our Senior Members

To become a Senior Member, you need ten years experience. A Bachelors degree counts for three of those years and a Masters and Doctorates each count for one year. You don't have to be an IEEE member for ten years. The dues for Senior Members, Members and Associates are the same.

To get information and an application, contact Don Weinstein, Kulite Semiconductor, One Willow Tree Road, Leonia, NJ 07605-2239, (201) 461-0900 ext 234 mornings, FAX (201) 461-0990, email don@kulite.com. Please include your mailing address.

A Delayed But Successful Student Presentation Contest

The student presentation contest originally planned for Tuesday, March 6 was delayed by one week due to the storm that wasn't. Despite the change of date, the contest was well attended and had a good number of participants. There were close to 40 attendees and six registered presenters. Five judges volunteered their time to grade each of the speakers. The purpose of the contest is to help students improve their communication and presentation skills. Each presenter received the judge's comment sheets to help touch up their weaker areas.

The contest started with dinner and then moved right into the graduate and undergraduate categories. Many different topics were covered using highly creative slide programs. Students from Fairleigh Dickinson University and New Jersey Institute of Technology covered topics from bio-medical engineering to Petri Nets to the SETI project. The winners, titles, and short abstracts can be found at the end. Winners in both categories were awarded 1st/2nd/3rd place prizes in the amounts of \$100/\$75/\$50 respectively. All participants also received official certificates.

The next round of competition will be the regional contest to be held at Syracuse University in Syracuse, NY on Friday, April 27, 2001. All the details of their program can be found at <http://iee.syr.edu>. The North Jersey Section Presentation contest will be again held next spring. Greater participation is hoped and the call for presentations will start early in November. ALL North Jersey GRAD/UGRADS are welcome to participate for prizes. Special thanks goes to our judges, A. Galarowicz, S. Karla, M. Zhou, and M. Lewis for taking time to support local students and hosts G. Reinish, A. Tan, and the FDU IEEE student branch.

New Jersey Institute of Technology
*"A Systematic Approach to
Disassembly Line Balancing"*
Ying Tang (1st place - graduate)

The increasing importance of a product's relationship and effects on the environment has prompted active research in demanufacturing systems. A disassembly process, in which the old, discarded, and/or faulty products are taken apart, is a critical element of a demanufacturing system. Its optimal design and efficient operation can generate positive financial and environmental impact on parts/subassemblies to be reused, materials to be recycled, and amount of waste

to be disposed. Motivated by the success of a virtual production line design algorithm in a back-end semiconductor manufacturing system, this work proposes a systematic approach to optimal design and efficient operation of demanufacturing systems. An innovative algorithm is then developed to facilitate the disassembly line design and optimization. The key point is to keep speeds of all workstations in a disassembly line as close as possible to satisfy the corresponding demanufacturing demands. Both the baseline configuration, which reflects the present practice, and the proposed configuration with our algorithm implemented are compared.

Fairleigh Dickinson University
"Non-Invasive Blood Glucose Monitoring"
Anthony J. Gaeta (2nd place - graduate)

Diabetes affects over 16 million people in the United States. For these patients, constant monitoring of blood glucose levels is essential. Blood glucose testing is done by applying a small drop of blood to a chemical reagent strip. This method is inconvenient and painful. A better method of blood glucose monitoring would be the ability to make this measurement non-invasively. Currently, there is at least one company working on such a device. This paper will discuss the technology required to accomplish this as well as the application of this technology to the development of an implantable insulin pump.

New Jersey Institute of Technology
*"Fuzzy Reasoning Petri Nets for
Production Rule Reasoning"*
Meimei Gao (3rd place - graduate)

Efficient reasoning for a complex fuzzy production rule-based system is a very important research issue and has many applications in unstructured environments with incomplete/imprecise information only. This paper presents a fuzzy reasoning Petri net (FRPN) model to represent a fuzzy production rule-based system. Based on the model, a formal reasoning algorithm using the operators in max-algebra is proposed to perform fuzzy reasoning automatically. The algorithm is consistent with the matrix equation expression method in the traditional Petri nets and allows one to exploit maximum parallel reasoning potential embedded in the model. Its legitimacy and feasibility are proved and validated through an example.

Fairleigh Dickinson University
"Digital Holography"
Ricardo Martins (1st place - undergraduate)

An introduction to holography will be presented to illustrate a technique on capturing a digital representation of a hologram. This modern procedure being researched will develop holograms in order to avoid hazardous chemicals and save time, money and patience. We need to setup a transmission hologram system in the optics lab with a reference and object beam so that an interference wave front is established. Then capturing a digital hologram will consist of recording the

interference wave front pattern onto a CCD camera. Once, the CCD camera has stored the wave front image a computer, high-resolution printer, and translucent paper will be required to replace holographic film. The goal of the project will be to avoid chemical developers and a dark room.

Fairleigh Dickinson University
"ECG SIMULATOR"
Arthur Skupinsky (2nd place - undergraduate)

The fundamental principle of this project and study is the identification of what ECG feature, if any, is affected by the Autonomic Nervous System (ANS), using subjects with normal ECG's and subjects with Mitral Valve Prolapse (MVP). The possibility that the ANS is involved in ECG changes occurring in patients with MVP is currently the subject of much investigation. We have achieved a working instrument that measures the RR interval, QT interval and the QRS complex as well as the interval standard deviation and Power Spectrum HF/LF ratios. Furthermore, we have filtered out much of the noise that was present due to 60Hz interference and due to muscle tension. Therefore I designed an ECG Simulator which can be controlled to imitate the ECG of a human heart, with the pulse rate varied in specific ways.

Fairleigh Dickinson University
*"The SETI "Problem" - SETI Project -
The Application Development."*
David Vanunu (3rd place - undergraduate)

A new object model that will satisfy the requirements of a SETI station application/object is proposed. Model Creation: A) There is a need to determine the area/industry where the problem takes place. B) Determine if its an open/closed system (is/isn't affected by other systems). C) Understand the nature of the problem and the nature of its objects. D) Determine how the objects will behave as whole. E) Determine how objects will interact with each other. F) Determine interfaces. There are few more steps that should be applied but these steps are sufficient enough to handle the SETI problem (at the moment). I derived the SETI objects by observing the diagram of the SETI station. SETI OBJECT MODEL (SOM) deals with the complexity of messaging between SETI Stations in real time (with a delay factor as a result of transporting information over the internet). The SOM will enable people from all over the world to view SETI stations data in real time (again with a delay factor because of the internet). Other areas discussed include sharing information between objects/applications using XML, using the Publish/Subscribe approach to share information over the internet, and development of a platform independent object/application to view SETI stations information.

INDUCTION MOTOR DRIVES & APPLICATIONS SEMINAR

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

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

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

Seminar Presenters:

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

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

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

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

Name _____

Address _____

Phone _____ Email _____

IEEE # _____ Student @ _____ Non IEEE _____

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