



The IEEE

Newsletter

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

NJ Control Systems Society: **SDRE Observer for an Induction Machine**

At the May 8, 1997 meeting of the NJ Section IEEE Control Systems Society, the talk will be on "SDRE Observer for an Induction Machine". The speaker will be Dr. Vincenzo Pappano.

About The Talk

A new nonlinear filter, referred to as the state-dependent Riccati equation (SDRE) filter, is applied to the 5th order model of an induction machine. The filter is derived by constructing the dual of a little known nonlinear regulator control design technique which involves the solution of a state-dependent Riccati equation (SDRE) and which has been appropriately called the SDRE method. The model of the induction machine includes both electrical and mechanical dynamics (under the assumption of magnetic linear circuits), and the motor parameters are assumed to be known and constants. The nonlinear observer provides good asymptotic estimates of the state of the system.

About The Speaker

Vincenzo Pappano was born in Salerno, Italy in 1965. From 1983 to 1992 he served in the Italian Military Navy as a Cadet and an Officer. In 1992 he received a BS degree in Electrical Engineering from Università degli Studi di Pisa, in Pisa (Italy). Since 1993 he is studying towards a PhD degree with the University of Pisa. His PhD research topic is titled "State and Parameter Estimation in an Induction Machine". In 1996 he joined NJIT, as a Research Scholar, where he is currently an Adjunct Professor. His areas of interest include applied controls, real-time systems and electric drives.

Time: 5:00-6:00 PM, Thursday, May 8, 1997.

Place: NJIT, 202 ECE Center, Newark, NJ.

Information: Professor Timothy Chang (201) 596-3519.

Signal Processing Society:

The Current Status of MPEG-4 Video Standards

On May 7, 1997, the IEEE North Jersey Signal Processing Chapter and the NJIT Center for Communications and Signal Processing Research will present a talk on "The Current Status of MPEG-4 Video Standards". The speaker will be Dr. Huifang Sun.

About The Talk

In this talk, an overview of video coding techniques for very low bit rate applications will be introduced. The video coding methods can be classified to waveform-based coding and model-based coding. A brief comparison will be given between two coding categories. After successfully completing MPEG-2 video coding standard, the international MPEG community is now working on new coding standard - MPEG-4, which is focusing on very low bit rate applications. This talk will introduce the concept of MPEG-4 and its verification model.

About The Speaker

Huifang Sun received a BS degree in Electrical Engineering from Harbin Military Engineering Institute, Harbin, China in 1967, and PhD degree in Electrical Engineering from University of Ottawa, Ottawa, Canada in 1986. Since 1970, he was an engineer at the Shanghai Aeronautical Radio and Electronic Research Institute, Shanghai, China. In 1981, he was a visiting scholar at Laval

University, Quebec, Canada. From 1982 to 1986, he was with the Electrical Engineering Department at University of Ottawa, Ottawa, Canada. In 1986 Dr. Sun joined Fairleigh Dickinson University, Teaneck, New Jersey, as an assistant professor and later on was promoted to an associate professor both in electrical engineering. From 1990 to 1995 he was with the David Sarnoff Research Center (formerly RCA Lab), Princeton, New Jersey, as a Member of Technical Staff and later on promoted to Technology Leader of Digital Video Technology where his activities were in the areas of MPEG video coding and Grand Alliance HDTV development. Dr. Sun joined Advanced Television Laboratory, Mitsubishi Electric Information Technology Center America (ITA), Somerset, New Jersey in 1995 as a Senior Principal Technical Staff Member where his activity is focused on advanced television development. Dr. Sun holds four U.S. patents and has several pending. He has authored or co-authored more than 50 journal and conference papers.

All Welcome

All are welcome to attend. Free pre-meeting soda and pizza will be provided at 5:30 PM and the meeting will start 5:45 PM.

Time: 5:45-6:45PM, Wednesday, May 7, 1997.

Place: NJIT, 202 ECE Center, Newark, NJ.

Information/Reservations: Yun Shi (201) 596-3501 or shi@tesla.njit.edu.

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Deadline for receipt of material is the 1st of the month preceding the month of publication. All communications concerning business matters, including advertising, should be addressed to: The IEEE Newsletter, c/o Girard Associates, Inc, 6 Robert Terrace, P.O. Box 455, Mt. Arlington, NJ 07856, (201) 398-5524. Editorial material should be sent to the Business Manager via e-mail at ksara@ix.netcom.com or to 96 Everett Rd, Parsippany, NJ 07054, (201) 515-8829.

IEEE NJ SECTION HOME PAGE

WWW at <http://hertz.njit.edu/~ieeenj>

REPORT ADDRESS CHANGES TO:

IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, (908) 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 call Secretary Alan Stolpen (201) 822-1300, ext. 2416.

IEEE New York Communications Society

Strategies, Network Infrastructure, Groupware, Platforms
and Applications

Time: 9:00 AM to about 4:30 PM, Thursday, May 22, 1997.

Place: United Engineering Center, 345 47th Street, New York, NY.

Information: Jim Barbera at j.p.barbera@ieee.org or by fax at
(212) 465-8877.

IEEE AWARDS RECEPTION

North Jersey Section

May 4, 1997

Birchwood Manor, Whippany NJ

A time to relax, unwind and enjoy --

A time to pay tribute to our new Fellows --

A time to honor our Award Winners --

YES it's time for the Annual Section Reception

The Annual Section IEEE Awards Reception will be held at the Birchwood Manor, 111 North Jefferson Road, Whippany again this year. The affair is scheduled for **Sunday, May 4, 1997** from 3 to 5 PM. Tickets are \$35.00 each and include a complete prepaid, two-hour open bar, hors d'oeuvres, buffet, and dessert. Spouses and guests are welcome. We are limited to 90 attendees, so please make your reservations early.

Reservations are required by April 30, 1997. Complete the reservation form and return it with your payment. If you would like tickets mailed back to you, please enclose a self-addressed stamped envelope. Otherwise, your tickets will be held at the door for you. If any additional information is required concerning the reception, contact Anne Giedlinski at (201) 377-3175.

Use this form for Reception reservations. **ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE to receive tickets in advance.** Reservations are required by April 30, 1997. Mail reservation request to:

Anne Giedlinski
299 Brooklake Road
Florham Park, NJ 07932

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

NAME: _____

ADDRESS: _____

Chairman's Column

We all know that we are entering the age of electronic communication, and as engineers we should be the leaders in this change. The sheer magnitude of data transfer and the cost of publishing and mailing are making it necessary for the section to switch to electronic communications, so the North Jersey section will initiate an all electronic newsletter with a special issue this fall. It will not be mailed but rather will be put up on our homepage - <http://www.megahertz.njit.edu/~ieeenj> - and our newsletter page - <http://www.ece.stevens-tech.edu/~nar/inews/>. We will then return to the regular printed newsletter for some time.

This experiment will have the added benefit of our being able to update the newsletter as often as desired, daily if needed. Sufficient time has been allowed for members to prepare for the new format. Those with internet access will be able to read the newsletter at their own terminals, while those without personal computers will still be able to access it via computer terminals that do have web access such as local libraries. To help those members who do not currently have their own terminals the section is currently negotiating with computer dealers to arrange special prices for members. We will also hold free "hands-on internet classes" for the members. I urge all members to try this experiment with an open mind.

It May Be Time to Apply for Senior Member Grade

To become a Senior Member, you need ten years experience. A Bachelors Degree counts for three of those years and a Masters and Doctors Degree each count for one year. 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 or Amy Galarowicz, Glatt Air Techniques Inc., 20 Spear Road, Ramsey, NJ 07446-1288, (201) 818-3740, FAX (201) 825-0389, email: a.e.galarowicz@ieee.org.

North Jersey Section Activities

May 1997

April 30—"How May I Help You" – NJ Communications Society together with NJIT's Center for Communications and Signal Processing and New Jersey Center for Multimedia Research, 6:30 PM, NJIT, 202 ECE Center, Newark, NJ. Nirwan Ansari (201) 596-3670 or Zoran Siveski (201) 596-5710.

May 1—"Precision Machining with Active Structural Control" – NJ Control Systems Society, 5:00 PM, NJIT, 202 ECE Center, Newark, NJ. Professor Timothy Chang (201) 596-3519 or changtn@admin1.njit.edu.

May 4—"NJ Section Awards Reception"—3:00 to 5:00 PM at the Birchwood Manor, 111 North Jefferson Road, Whippany, NJ. Anne Giedlinski (201) 377-3175.

May 7—"NJ Section Executive Committee Meeting" – 7:00 PM, Plant 11, GEC-Marconi, 164 Totowa, NJ. Alan Stolpen (201) 822-1300, ext. 2416.

May 7—"The Current Status of MPEG-4 Video Standards" – NJ Signal Processing Chapter and the NJIT Center for Communications and Signal Processing Research, 5:45 PM, NJIT, 202 ECE Center, Newark, NJ. Yun Shi (201) 596-3501 or shi@tesla.njit.edu.

May 8—"A License to Practice Engineering Is Not for Everyone!" – NJ Section PACE, 6:15 PM, Clifton Public Library, 292 Piaget Ave., Clifton, NJ. Dr. Robert Sinusas (201) 228-3941.

May 8—"SDRE Observer for an Induction Machine" – NJ Control Systems Society, 5:00 PM, NJIT, 202 ECE Center, Newark, NJ. Professor Timothy Chang (201) 596-3519.

May 15—"Utility Customer Communication Using the Information Super Highway" – NJ IAS/PES Chapters, 7:00 PM, GPU Energy, 300 Madison Ave., Morristown, NJ. Ken Oexle (201) 386-1156 or Tom Piascik (201) 430-6692.

May 17—"JAVA Workshop" – IEEE NJ Section, 9:00AM-4:00PM, Ramada Inn, Fairfield, NJ. Dr. Fred Chichester (201)-744-3065 (leave message).

May 23—"Harmonics and Power Quality in Electrical Distribution Systems"—IAS and PES Chapters Technical Seminar, 8:30 AM to 3:30 PM, Auditorium, GPU Energy, 300 Madison Ave., Morristown, NJ. Dick McFadden (212) 239-8510.

Upcoming Meetings

June 4—"NJ Section Executive Committee Meeting" – 7:00 PM, Plant 11, GEC-Marconi, 164 Totowa, NJ. Alan Stolpen (201) 822-1300, ext. 2416.

June 12—"Talk on Asset Diversification" – NJ Section PACE, 6:15 PM, Clifton Public Library, 292 Piaget Ave., Clifton, NJ. Dr. Robert Sinusas (201) 228-3941.

June 20—"How to Get the Most Out of Your Electric Power System"—IAS and PES Chapters Technical Seminar, 8:30 AM to 3:30 PM, Auditorium, GPU Energy, 300 Madison Ave., Morristown, NJ. Dick McFadden (212) 239-8510.

Nov. 20—"92nd Semi-Annual Seminar - INTRANETS"—NY Communications Society, 9:00 AM to 4:30 PM, United Engineering Center, 345 47th Street, New York, NY. Jim Barbera at j.p.barbera@ieee.org or by fax at (212) 465-8877.

Members and Non-Members Welcome

PLEASE POST

NJ Section PACE:

A License to Practice Engineering Is Not for Everyone!

On Thursday, May 8, 1997 the North Jersey Professional Activities Committee for Engineers (PACE) will present a talk by Mr. Robert McClure. The topic of discussion will be "A License to Practice Engineering Is Not for Everyone!".

About The Talk

Topics to be discussed include:

- Reasons why a graduate of an EE program should become a Professional Engineer
- The Licensing Process for Electrical Engineers
 - Engineering Education
 - Engineering Experience
 - Engineering Examinations
- Maintaining a License to Practice Specialty New Jersey Licensure Requirements, both to become licensed and to maintain a license to practice. Where are we headed?

About The Speaker

Robert W. McClure received his BS Degree from the University of Buffalo in Electrical Engineering in 1954 and his MS Degree in Control Systems from the University of Pennsylvania in 1961. He is a Registered Professional Engineer in Delaware and in New York (inactive status). He retired from the Engineering Research Division of E.I. du Pont de Nemours in 1985 with 31 years of service to form an independent consulting company - CONDUX Inc. where he is Vice President of Engineering. Over two hundred senior industrial scientific, engineering and business consultants are associated with CONDUX.

Mr. McClure is active in professional registration, having been a member of the registration board in Delaware for fourteen years and was its president for two years. At the national level he has been an NCEES member for over fifteen years, serving on the examination preparation committee and as its chairman for three years and on other standing and special committees. He has also served as the NCEES Vice President responsible for the Northeast Zone. He chaired a special joint society task force that developed the New Discipline Specific Fundamentals of Engineering examination. He was selected as Delaware Engineer of the Year in 1995.

Time: 6:15 PM, Thursday, May 8, 1997. Free refreshments will be provided.**Place:** Clifton Public Library,

292 Piaget Ave., Clifton, NJ, (201) 772-5500 or see Newsletter web page.**Information:** Dr. Robert Sinusas (201) 228-3941.

NJ Communications Society:

How May I Help You?

On April 30, 1997, the IEEE Communications Society North Jersey Chapter together with NJIT's Center for Communications and Signal Processing and New Jersey Center for Multimedia Research will present a talk on "How May I Help You?". The speaker will be Allen L. Gorin.

About The Talk

We are interested in providing automated services via natural spoken dialog systems. By natural, we mean that the machine understands and acts upon what people actually say, in contrast to what one would like them to say. There are many issues that arise when such systems are targeted for large populations of non-expert users. In this research, we focus on the task of automatically routing telephone calls based on a user's fluently spoken response to the open-ended prompt of "How may I help you?". We first describe a database generated from 10,000 spoken transactions between customers and human agents. We then describe methods for automatically acquiring language models for both recognition and understanding from such data. Experimental results evaluating call-classification from speech are reported for that database. These methods have been embedded within a spoken dialog system, with subsequent processing for information retrieval and form-filling.

About The Speaker

Allen Gorin received BS and MA degrees in Mathematics from the State University of New York at Stony Brook in 1975 and 1976 respectively, and a PhD in Mathematics from the Graduate Center of the City University of New York in 1980. From 1980-83 he worked at Lockheed Electronics in New Jersey, investigating algorithms for target recognition from time-varying imagery. In 1983 he joined the technical staff at AT&T Bell Laboratories Federal Systems Division in Whippany. While there, he was the Principle Investigator for AT&T's ASPEN project within the DARPA Strategic Computing Program, investigating parallel architectures and algorithms for pattern recognition. In 1987, he was appointed a Distinguished Member of the Technical Staff. In 1988, he joined the Speech

Research Department at Bell Labs in Murray Hill. His current position is as a Principal Member of the Technical Staff in AT&T Research.

His current research focuses on machine learning methods for spoken language understanding. He has served as a guest editor for the IEEE Transactions on Speech and Audio, and was a visiting researcher at the ATR Interpreting Telecommunications Research Laboratory in Japan during 1994. He is a member of the Acoustical Society of America and a Senior Member of the IEEE.

Time: Refreshments at 6:15 PM, talk begins at 6:30 PM, Wednesday, April 30, 1997.

Place: NJIT, 202 ECE Center, Newark, NJ.

Information: Nirwan Ansari (201) 596-3670 or Zoran Siveski (201) 596-5710. Please check <http://megahertz.njit.edu/~ieeenj/comm.html> for latest update.

ENTREPRENEURS!

Entrepreneurs are that small minority of electrical engineers that wish to start or have started their own business. They differ from the consultants in that their entrepreneur business does involve more than one (or maybe at most a few) persons. It really is how many different tasks one can competently handle simultaneously or delegate to a competent helper. You may have gone through the organization a few times, but that went on in your head. Still you can join the rank of entrepreneurs and find out if works for you or it does not work for you. Entrepreneur is the future owner of an electrical/electronics factory or present factory owner.

We had organized an IEEE North Jersey of Entrepreneurs a few years ago. When the Chair of the Entrepreneurs died recently, the organization seemed to die. We hope that the "death" of the entrepreneurs was an "apparent death" and we are willing to start the reorganization plan. The question is are there are enough of you to make is worthwhile? Please give me a phone call on this matter. Contact Dr. Robert Sinusas at (201) 228-3941 Mondays, Wednesdays and Fridays after noon. Other days any time.

NJ Control Systems Society **Precision Machining with Active Structural Control**

At the May 1, 1997 meeting of the NJ Section IEEE Control Systems Society, the talk will be on "Precision Machining with Active Structural Control". The speaker will be Dr. Erdal Unver.

About The Talk

With today's requirement for higher speeds, lighter weights, smaller tolerances, greater process flexibility, and efficiency, traditional approaches for vibration reduction no longer suffice. Active Structural Control (ASC) uses advanced algorithms embodied in advanced signal processors to drive actuators in opposition to structural vibration, providing suppression an order of magnitude greater than passive systems, without the attendant weight penalty.

In this talk, the speaker will present his findings and summary on a DARPA sponsored program (ASC-PM) for the development of precision machine tools which deploy ASC technology. The ASC-PM program consists of three projects aimed at developing and applying active structural control technology to the basic machining operations of vertical turning, boring, and milling. The R&D team consists of Lucent technologies as the technology provider, Pratt & Whitney, manufacturer of gas turbine engines and user of machine tools, Kennametal (KMT) as the cutting tool developer, and supplier, and Giddings & Lewis as the machine tool builder.

About The Speaker

Erdal Unver received his PhD in Applied Mechanics from Lehigh University, PA and his MBA from George Washington University, DC. Since 1989, he has been with Lucent Technologies where he is currently a Technical Manager. Prior to joining Lucent, Dr. Unver was with US Steel, where he was engaged in analysis of the dynamics of steel rolling mills and the chatter exhibited during cold rolling; and David Taylor Research Center, where he worked on underwater acoustics and quieting. Dr. Unver's research interests include active control and machine tool design.

Time: 5:00 PM, Thursday, May 1, 1997.

Place: NJIT, 202 ECE Center, Newark, NJ.

Information: Professor Timothy Chang (201) 596-3519 or changtn@admin1.njit.edu.

NJ PES/IAS: **Utility Customer Communication Using the Information Super Highway**

The May 15, 1997 meeting of the NJ Section Power Engineering and Industrial Applications Society will present a talk on "Utility Customer Communication Using the Information Super Highway". The speaker will be William J. Labos.

About The Talk

New technologies will use the Information Super Highway to improve utility customer services and to change how utilities control, manage and market utility systems and services. The speaker is a member of a team developing the technology to make this happen.

Mr. Labos will discuss the future of automated reading, power quality monitoring, electric and gas system load control, distribution system automation, energy theft detection, appliance monitoring and control, future utility billing, options and utility services management. As utilities continue down the road of deregulation to a competitive marketplace, the technology is now being developed to help utilities and customers manage the technical and business opportunities. Come to hear Mr. Labos discuss the technology that will make this possible.

About The Speaker

William J. Labos received his BSEE from Newark College of Engineering (now NJIT), Newark, NJ in 1973. He joined Public Service Electric and Gas (PSE&G) in 1973 as an Instrumentation and Control System Engineer. In this 23 years at PSE&G, Mr. Labos has designed Plant Control and Electrical Systems for Fossil and Nuclear Power Plants. He has held various senior level technical and supervisory positions and since 1992 has worked on new technology development in the power quality and communications areas for the Electric Distribution Department. He currently holds the position of Director-New Products and Services.

Mr. Labos is a member of IEEE, the Tau Beta Pi and Eta Kappa Nu Associations, and is a licensed Professional Engineer.

Time: 7:00 PM, Thursday, May 15, 1997

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

Information: Ken Oexle (201) 386-1156 or Tom Piascik (201) 430-6692.

Strategies for Math, Science and Technology

"Partners in K-12 Science Education Reform" is a handbook of effective strategies to creating effective partnerships in math, science, and technology education. It is available from Sigma Xi, The Scientific Research Society, PO Box 13973, Research Triangle Park, NC 27709, at (800) 243-6534 or fax (919) 549-0090.

NJ Section PACE: **Talk on Asset Diversification**

At the June 12, 1997 meeting of the North Jersey Section's Professional Activities Committee for Engineers (PACE), speaker Edward Landau will guide meeting participants through the definition of investment risk, the steps in asset diversification and case studies to show how strategies work to minimize the risk of investing.

About The Speaker

Mr. Landau is a Personal Financial Advisor with American Express. As a financial advisor, he is licensed by the National Association of Securities Dealers. He specializes in personal financial planning, including retirement and investment planning. Before becoming a financial advisor, Mr. Landau spent over twenty years as an RF Design Engineer, Consultant and Engineering Manager.

Time: 6:15 PM, Thursday, June 12, 1997. Free refreshments will be provided.

Place: Clifton Public Library, 292 Piaget Ave., Clifton, NJ, (201) 772-5500 for directions or see Newsletter web page.

Information: Dr. Robert Sinusas (201) 228-3941.

**IEEE NORTH JERSEY
ONE DAY JAVA WORKSHOP**

RAMADA INN, FAIRFIELD, NJ

9AM-4PM

SATURDAY MAY17, 1997

The North Jersey section is presenting a one day introductory JAVA workshop. No prior knowledge of JAVA is required but knowledge of a high level computing language such as Fortran, C+, P/L 1, is advisable. The workshop will include a live demonstration of JAVA and its applications with emphasis on visual programming for the Internet. The class will be taught by Professor Barry Burd of Drew University.

Topics include a discussion of the advantages of JAVA, comparison with similar languages, an overview of Object Oriented programming techniques, JAVA syntax fundamentals, designing classes and objects. The workshop also covers capabilities of the JAVA Application Programming Interface in interactive window-based applications using images, sound and animation.

Class size is limited and early registration is recommended. Phone reservations will not be accepted. Please use the application form listed below.

WHERE: Ramada Inn, 38 Two Bridges Rd., Fairfield, NJ

WHEN: Saturday, May 17, 1997

COST: IEEE members \$150; Non-IEEE members \$225

CONTACT: Dr. Fred Chichester (201)-744-3065

REGISTRATION: JAVA ONE DAY WORKSHOP

TO: Dr. Fred Chichester, 56 Gordonhurst Ave., Upper Montclair, NJ 07043

Name: _____ IEEE No. _____

Affiliation: _____ Phone No. _____

Address: _____

Please enclose the required fee payable to North Jersey Section, IEEE

Signature _____