IEEE NORTH JERSEY SECTION SEMINAR
OBJECT-ORIENTED C++ PROGRAMMING
TUESDAYS, APRIL 2 - JUNE 11, 1996
Jersey Central Power & Light Company, 300 Madison Avenue, Morristown, New Jersey

The North Jersey Section IEEE is offering an evening course entitled "Object-Oriented C++ Programming." Object-Oriented programming has been described as the biggest advance in computer programming since the creation of higher level languages 30 years ago. Instead of focusing on functionality (what the programs do) it focuses on the natural objects comprising the problem and how they, and their capabilities, are modeled in the program. C++ is, by far, the most widely used language today for object-oriented design and programming. This course will cover both the concepts of OOD and their implementation in C++ code. The course will begin with a review of common aspects of C and C++ but this time will be too brief to learn fundamentals of programming. **THEREFORE ONLY THOSE WHO ARE FAMILIAR WITH PROGRAMMING CONCEPTS SHOULD REGISTER FOR THE C++ COURSE.**

There will be ten weekly lectures and homework will be assigned and corrected. The topics listed below will be covered. The instructor is Dr. Edward (Ted) Byrne, owner of a software consultant business.

TOPICS

(1) Review common elements of C and C++: punctuation and key words, variable naming, typing and scope, functions and subfunctions, arguments, operators and assignments, conditionals and logical variables, looping and testing, handling text strings, arrays and structures, pointers.
(2) Concept of Object-Orientation: objects and classes of objects, methods and messages, encapsulation and abstraction, overloading of functions and operators, inheritance and polymorphism.
(3) C++ improvements to C: new commands and operators, comments, stream I/O, function prototypes, more explicit typing and linking.
(4) C++ implementation of objects: what is a C++ object, data and method functions within an object, public, private and friend, static and dynamic objects, constructors and destructors.
(5) Encapsulation and abstraction within C++ objects: references and aliases, scope control operator, 'this' object, overloading, functions, operators.
(6) Inheritance and polymorphism among C++ objects: parent class or object, extending classes, redefining object data and methods, multiple inheritance.
(7) C++ I/O streams: standard I/O, formatted I/O with manipulators, disk and device I/O.
(8) C++ library classes and their use: characteristics of a good library class, conversion base classes, video base classes, window base classes, database base classes.
(9) Overall program structure with C++ objects: how to lay out a C++ program, how to reuse classes in a program, how to test and evolve a C++ program, how to find errors and debug C++ object programs.
(10) Recent topics: object-oriented design methodologies, templates and the standard template library, namespaces and interactive program design.

Class size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone reservations will **NOT** be accepted. Reservations accepted after March 15, 1996 will require an additional late fee of $25. No reservations will be accepted after March 22, 1996.

WHERE: Jersey Central Power & Light Company, 300 Madison Avenue, Morristown, N. J.
WHEN: Ten sessions, Tuesday evenings, starting April 2, 1996, 6:30 PM to 9:00 PM
COST: With Text Book and Borland Turbo C++ Compiler, IEEE Members $300, Non-IEEE Members $400
With Text Books only, IEEE Members $200; Non-IEEE Members $300
CONTACT: Mr. John A. Baka at (201)455-8534 (Business)

REGISTRATION "OBJECT-ORIENTED C++ PROGRAMMING"

TO: Mr. John Baka, Distribution Engineering, JCP&L Company, 300 Madison Avenue, Morristown, NJ 07962-1911

Name _____ IEEE No. _____

Affiliation _____ Work Phone No. _____

Address _____

_____

Check if Borland Turbo C++ Compiler is needed or not Yes [ ] No [ ]

Please enclose required fee made payable to **"NORTH JERSEY SECTION IEEE"**

Signature _____

The IEEE
Newsletter

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

NJ MTT/AP Chapter:

Electro-Magnetic Simulation And Thermal Analysis

On March 20, 1996, the IEEE NJ Section MTT-S/AP-S Chapter and the New Jersey Institute of Technology, will present a talk on "Coupled 3D Electro-Magnetic Simulation And Thermal Analysis." The speakers will be Mark Jenich and James Neuner of MacNeal-Schwendler, Milwaukee, Wisconsin.

All Welcome

You do not have to be an IEEE member to attend. Free pre-meeting buffet will be provided starting at 6:15 PM and the meeting will start at 7:00 PM.

Time: 7:00 PM, Wednesday, March 20, 1996.
Place: NJIT, Engineering & Computer Center, ECE C202, 2nd Floor Conference Room. (Building located corner of Warren and Summer Streets, Newark, N.J.).
Reservations/Questions: Chandra Gupta (201) 633-4469 (GEC-Marconi); Edip Niver (201) 596-3542 (NJIT); Willie Schmidt (201) 492-0371.

NJ PES/IAS:

Monorail System At Newark Airport

On March 21, 1996, the NJ Power Engineering and Industrial Application Society Chapters will sponsor a presentation on the new monorail system being installed at Newark International Airport. Scott P. Essex of the Port Authority EWR redevelopment staff will be the speaker.

Installation of the monorail system was substantially completed in October 1995, with testing continuing into early 1996. When fully completed, the system will consist of fully automated computer controlled trains operating on a two-mile dual lane guideway linking the terminals and parking lots, with expansion capabilities to off-site transit connections.

Time: 7:00 PM, Thursday, March 21, 1996.
Place: Jersey Central Power & Light Co., 300 Madison Ave., Morristown, N.J.
Information: Ken Oexle (201) 455-8481.

Newly Elected IEEE Fellows

The North Jersey Section IEEE congratulates the following members who were elected to the Fellow grade:

Dr. Daniel C. Stanzione
"For leadership in applying advanced software technology in systems that have enhanced the performance and reliability of public telecommunications networks"

Dr. Webster E. Howard
"For pioneering contributions in two-dimension electron gas in silicon inversion layers, and contributions to flat panel displays"

NY/NJ/LI EMBS:

Hyperbaric Oxygen Therapy—Current Applications

On March 21, 1996, the Metropolitan Section Engineering in Medicine and Biology Society will present "The Hyperbaric Chamber—Current Applications." The speaker will be Dr. Michael Touger.

About The Talk

Hyperbaric oxygen therapy has a number of distinct mechanisms of action. Due to its ability to improve tissue oxygenation it is an adjunctive therapeutic modality in a wide variety of clinical problems where local or systemic tissue anoxia contributes to the condition's pathophysiology. Hyperbaric oxygen therapy contributes to the mechanical compression of inert gas bubbles. Under specific conditions it may promote tissue healing by improving microvascular circulation. Hyperbaric oxygen is recognized as a primary treatment of choice for carbon monoxide poisoning, decompression sickness and air embolism. It may be beneficial in the treatment of osteoradionecrosis of the mandible and other radiation-related causes of tissue necrosis. It may also have a role in the treatment of other intoxications including cyanide poisoning, and an adjunctive role in the treatment of gas gangrene and refractory osteomyelitis.

A clinical review of the application of hyperbaric oxygen therapy, its limitations and current use (and misuse) will be presented along with a review of several areas of current clinical research.

About The Speaker

Dr. Touger is specialty board certified in Emergency Medicine and Family Practice and is an Assistant Professor in the Departments of Emergency Medicine, Family Practice, and Epidemiology & Social Medicine at the Albert Einstein College of Medicine in New York. He is the Associate Director of the Emergency Medicine Department at Jacobi Medical Center in the Bronx and Medical Director of its Hyperbaric Medicine Program.

Time: 7:15 PM Registration (no charge); 7:30 PM Lecture, Thursday, March 21, 1996.
Place: Rockefeller Univ., Room 305 Weiss (Tower), 1200 York Avenue, NYC.
Further Information: Joel Levitt (212) 479-7805; or Susan Baxt (516) 678-6563.

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NEWSLETTER STAFF

Editor ..... M.M. Perugini
Business Manager .....A.M. Beattie

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 addressed to: The IEEE Newsletter, c/o Girard Associates, Inc., 6 Robert Terrace, P.O. Box 455, Mt. Arlington, N.J. 07856 (201) 398-5524.

IEEE North Jersey Section Home Page
The North Jersey Section home page can be accessed on World Wide Web at:

http://hertz.njit.edu/~ieeenj

REPORT ADDRESS CHANGES TO:
IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08854-1331, (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 in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings are open to all members. Information on meeting agenda is available from Sergei Bogaenko (201) 785-3673 (H).

NJ PES/IAS:

Welding With Homopolar Generators

On April 18, 1996, the NJ Power Engineering and Industrial Application Society Chapters will present a talk on "Pulsed Resistance Welding With Homopolar Generators." The speaker will be Mike Harville of Parker Kinetic Designs (PKD) in Austin, Texas.

About The Talk

Homopolar generators are energy storage machines that convert rotating mechanical energy into a large pulse of electrical current. The low voltage, high current output of the homopolar generator has historically been used for many applications, including spot welding and electromagnetic launchers. Development is now underway to commercialize the welding process for offshore pipeline construction.

About The Speaker

Mike Harville is a senior engineer with Parker Kinetic Designs, the manufacturer of the homopolar generators. His doctoral research and subsequent work with PKD has been focused on developing and commercializing industrial applications for the generators.

Time: 7:30 PM, Thursday, April 18, 1996.
Place: Jersey Central Power & Light Co., 300 Madison Ave., Morristown, N.J.
Information: Dennis Hildenbrand (201) 366-1362.

Personal Financial Planning

At the March 14, 1996 meeting of the NJ Section's Professional Activities Committee for Engineers, the talk will be on "Personal Financial Planning." The speaker will be Edward Landau, CFP.

About The Talk

A former engineer's paths and potholes—the talk will be a brief history of one person's financial planning illustrating strategies and errors leading towards financial independence—and how that experience may help other engineers faced with the same choices.

About The Speaker

Edward Landau is a Certified 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.

Mr. Landau will be available for a question and answer period at the end of the discussion.

All Welcome

You do not need to be an IEEE member to attend. All are welcome

Time: 7:30 PM, Thursday, March 14, 1996.
Place: JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.
Information: Dr. Robert Sinusas (201) 228-3941.

Interference Rejection And Signal Separation In Wireless Communications

On Tuesday, March 19, 1996, 9:00 AM to 5:00 PM, NJIT's Department of Electrical and Computer Engineering and The Center for Communications and Signal Processing Research, will present a one-day symposium on "Interference Rejection And Signal Separation In Wireless Communications. The location will be University Hall Theater, at NJIT in Newark and there is a $60 fee.

About The Symposium

The explosive growth in cellular telephony, in conjunction with emerging new applications, has increased the demand for spectrally efficient signaling methods. High spectral efficiency can be achieved through frequency re-use and overlay of applications. Either approach exacerbates the interference problems of multiple-access networks. Rejection of the interference is required to maintain adequate service. In addition, signal processing for signal separation is required to accommodate an increasing subscriber base. The symposium will consist of a series of invited talks in the morning and presentation of accepted papers in the afternoon.

Registration Coupon

Send To: Nirwan Ansari, NJIT, Dept. of Electrical & Computer Engineering
323 Martin Luther King Jr. Blvd., Newark, NJ 07102-1982 .
For information: (201) 596-3670.

Name: _____

Organization: _____

Address: _____

Phone/Fax: _____ E-Mail: _____

Fee of $60, includes lunch and proceedings. Make checks payable to: NJIT-CCSPR

IEEE NORTH JERSEY SECTION SEMINAR
VISUAL BASIC
THURSDAYS APRIL 11 THROUGH JUNE 27, 1996
JERSEY CENTRAL POWER & LIGHT CO.
300 MADISON AVENUE
MORRISTOWN, NEW JERSEY

The North Jersey Section is offering an evening course entitled "Visual Basic." This comprehensive course is intended for novice programmers and programmers migrating from procedural languages to Visual Basic. The prerequisites for the course are a familiarity with the Windows Operating system (version 3.1 or newer), knowledge of a procedural language (i.e., Basic, C) and programming concepts, access to Microsoft Visual Basic as well as Microsoft Windows 3.1 or newer.

Upon course completion, students will understand event-driven programming; standard control objects and their associated properties, methods and events; have the ability to design application solutions.

There will be 11 weekly interactive lectures. Homework will be assigned and corrected. The instructor is Paul Mazur, a member of the staff of a large communication company and a part-time consultant and instructor in computer programming. The topics listed below will be covered.

- Introduction to Visual Basic; Naming Conventions; Creating a Graphical User Interface (GUI); Properties, Events & Methods for Forms, Text Boxes, Command Buttons and Labels; Event Procedures; Variable Declarations; Environment Options; Saving programs
- Variables & Constants; Constant.txt File; Code Modules; Expressions & Statements; Procedures & Functions; Passing data by reference or by value; Built-in Functions; Static variables; Scope of variables.
- Properties, Events & Methods for Lines, Shapes, Check Boxes, Option buttons, Frames, Picture Boxes and Images; ToolBar; StatusBar, ZOrder, Program Flow constructs, Finite Arrays, Dynamic Arrays; Control Arrays.
- Properties, Events & Methods for List Boxes and Combo Boxes.
- Properties, Events & :Methods for Horizontal/Vertical Scroll Bars and Timers; DOS File commands; File Handling Functions; File System Controls (Drive Director and File List Boxes); File I/O; Common Dialog Boxes.
- Multiple Form Projects; Error Trapping & Handling; Debug Tools
- Data Manager & the Data Control; Data-aware controls; Grid Control
- Multiple Document Interface (MDI) Forms; Menu Design.
- Mouse Events; Keyboard Events; Drag & Drop; Dynamic Link Libraries (DLL).
- Clipboard; Dynamic Data Exchange (DDE); Shell Functions; DoEvents Function; Object Linking & Embeding (OLE).

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 April 5, 1996 will require an additional late fee of $25. No reservations will be accepted after April 9, 1996.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, NJ.
When: Eleven sessions, Thursday evenings starting April 11, 1996, 6:30 - 9:00 PM.
Cost: IEEE Members $250; Non-IEEE Members $350.
Contact: Mr. John A. Baka at (201) 455-8534 (Business).

REGISTRATION "VISUAL BASIC"

To: Mr. John Baka, Distribution Engineering, JCP&L Co., 300 Madison Avenue, Morristown, NJ 07962-1911

Name _____ IEEE No. _____

Affiliation No. _____ Phone Number _____

Address _____

_____

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

Signature _____

IEEE NORTH JERSEY SECTION SEMINAR
MICROWAVES IN INDUSTRY AND MEDICINE
WEDNESDAYS, APRIL 17, 1996 - MAY 15, 1996
JERSEY CENTRAL POWER & LIGHT CO.
300 MADISON AVENUE
MORRISTOWN, NEW JERSEY

The North Jersey Section is offering an evening seminar entitled "Microwaves In Industry and Medicine."

This seminar will consist of four weekly sessions and will concentrate on specialized applications of the microwave technology in industry and medicine. The more common uses, such as microwave cooking, speed traps, burglar alarms and communication links will not be discussed nor will predominantly military applications. Topics discussed will be:

1. Review of basic microwave techniques; the microwave spectrum, ISM frequencies; rationale for using microwaves and choice of frequency; short-range (FM/CW) Doppler radar, heating, resonance shifting; changes in signal reflection and transmission; microwave "tags" -- active, passive.

2. The measurement of distance and position. Level measurements in heavy industry; vital-signs measurements in medicine; error-correction systems; accuracy considerations; distance to a tag; piston position; position as a determination of speed.

3. The measurement of speed and flow. True ground-speed measurements; anti-collision systems; blood-flow measurements; the locomotive "creep" problem; the pilot blackout problem.

4. Moisture and metal-detection measurements. Water in an oil pipe; moisture in grain, cement slurry, etc.; metal slivers on a synthetic fiber.

5. Heating and "Non-thermal effects." Cancer therapy, angioplasty, BPH; penetration in fat and muscle; special frequencies (ophthalmic cancer); cancer diagnostics (radiometry) and prevention (?). "Non-thermal effects" -- EM fields and cancer, PO healing; animal behavior: rats, humans ("clicking"); d-c fields or frequency dependence?

6. Microwave tags. ID and security systems; "signposts;" station-keeping, warehousing. "Absence of tags" systems -- fire alarms, surveillance. Tags with existing transmitters.

Informal sessions are contemplated with opportunities for audience questions and participation.

The instructor will be Mr. Mark Nowogrodski. Mr. Nowogrodski was graduated with BEE and MEE degrees from the Polytechnic Institute of New York. He served in the U.S. Army in Africa and Europe during World War II where he was in Military Intelligence. He has 50 years of microwave engineering experience. Retired from RCA Laboratories where he headed a research group in the Microwave Technology Center, he is now an independent consultant.

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 April 5, 1996 will require an additional late fee of $25. No reservations will be accepted after April 12, 1996.

WHERE: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
WHEN: Four sessions, Wednesday evenings starting April 17, 1996, 6:30 PM to 8:30 PM
COST: IEEE Members $140; Non-IEEE Members $190
CONTACT: Mr. John Baka at (201) 455-8534 (business)

REGISTRATION "MICROWAVES IN INDUSTRY AND MEDICINE"

To: Mr. John Baka, Distribution Engineering, JCP&L Co., 300 Madison Avenue, Morristown, NJ 07962-1911

Name_____ IEEE No. _____

Affiliation No. _____ Phone Number _____

Address _____

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

Signature _____

NJ Communications Soc:

Channel Coding For Wireless Communications

The IEEE NJ Communications Society together with NJIT's Center for Communications and Signal Processing are sponsoring a series of three seminars on several critical design issues in wireless personal communications systems. The first of these, "Channel Coding For Wireless Communications" will take place March 6, 1996. The speaker will be Dr. Branko Jelicic of AT&T Bell Labs.

About The Talk

With the recent developments in mobile and portable wireless communications the problem of code design for reliable, high-speed data transmission over corresponding physical channels is of considerable current interest. The aim of this presentation is to first give an insight into the basic code design principles for channel models that arise in the wireless communications. It will be shown that there is an equivalent (in most cases) between coding and so called time diversity (sending the same message several times). Subsequently, an array of coding schemes available today will be presented, with the aim of matching a certain channel model to a particular channel coding technique. Two new coding schemes will be presented and directions for future research will be given.

About The Speaker

Dr. B. Jelicic received the Dipl. Ing. degree in electrical engineering from the University of Novi Sad, Yugoslavia, in 1990, and the MS and PhD degrees from the University of Pennsylvania in 1993, and 1995, respectively. Since 1991 he has been a Research and Teaching Assistant at the University of Pennsylvania in the Electrical Engineering and Mathematics departments. During the 1995 Spring semester he was a research scientist at the University of Texas at San Antonio. Since 1995 he has been with AT&T Bell Labs Advanced Multimedia Communications department in Middletown, NJ.

Seminars II and III

The second and third seminars in this series will both take place in April. The topics are: "Analysis Of Handoff Algorithms"; and "Distributed Dynamic Radio Resource Management In Wireless Networks." Call for day and date.

Time: 6:45 PM, Wednesday, March 6, 1996. Pizza and Pop, 6:15 PM.
Place: All seminars take place at NJIT, 202 ECE Center, Newark.
Information: N. Ansari (201) 596-3670, ang@hertz.njit.edu; Zoran Siveski (201) 596-5710, zoran@njit.edu
WWW: http://hertz.njit.edu/~ieeenj

North Jersey Section Activities March 1996

March 6–"NJ Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, NJ. Sergei Bogaenko (201) 785-3673 (H).

March 6—"Seminar I: Wireless Personal Communications Systems"—NJ Communications Society & NJIT's Center for Communications and Signal Processing, 6:45 PM, NJIT, 202 ECE Center, Newark, NJ. N. Ansari (201) 596-3670.

March 14—"Personal Financial Planning"–NJ Section PACE, 7:30 PM, JCP&L Co. 300 Madison Ave. & Punch Bowl Rd., Morristown, NJ. R. Sinusas (201) 228-3941.

March 19—"One-Day Symposium: Interference Rejection And Signal Separation In Wireless Communications"—NJIT & Center for Communications and Signal Processing Research, 9:00 AM to 5:00 PM, University Hall Theater, NJIT, Newark, NJ. Nirwan Ansari (201) 596-3670.

March 20—"Coupled 3D Electro-Magnetic Simulation And Thermal Analysis"—NJ Section MTT-S/AP-S Chapter, 7:00 PM, NJIT, Engineering & Computer Center, ECE C202, 2nd Floor Conference Room, Newark, NJ. Chandra Gupta (201) 633-4469 (GEC-Marconi).

March 20—"1996 Student Presentation Night"—NJ Section, 7:00 PM, Stevens Institute of Technology, Hoboken, NJ. Amy Bissmeyer (201) 742-2381, ext. 24.

March 21—"Monorail System At Newark International Airport"—NJ Industry Applications/Power Engineering Chapters, 7:00 PM, JCP&L Co., 300 Madison Ave., Morristown, NJ. Ken Oexle (201) 455-8481.

March 21—"The Hyperbaric Chamber: Current Applications"—Metropolitan Sections EMBS NY/NJ & LI., Registration at 7:15 PM, Rockefeller Univ., Room 305 Weiss, 1200 York Ave., NYC. Professor Joel Levitt (212) 479-7805.

March 26—"Ultrafast Optical Phenomena"—IEEE Laser and Electro Optics Chapter, 5:00 PM, NJIT, ECE 202, Newark, NJ Haim Grebel (201) 596-3533.

March 28—"Parallel Algorithms For Adaptive Control: Robust Stability"—NJ IEEE Control Systems Society, 5:PM, NJIT, 202ECEC, Dept. of Electrical Engineering, Newark, NJ. Prof. T. Chang (201) 596-3519.

March 28—" 'Getting The Business' On The Internet?"—NJ Consultants' Network, 7:30 PM, AT&T Bell Labs, 67 Whippany Rd., Whippany, NJ. Robert Walker (201) 736-0771.

Upcoming Meetings

April 2-June 11—"Seminar: Object-Oriented C++ Programming"—NJ Section, 10-Sessions, JCP&L Co., 300 Madison Ave., Morristown, NJ. John Baka (201) 455-8534.

April 3–"NJ Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, NJ. Sergei Bogaenko (201) 785-3673 (H).

April 10—"Very Low Bit Rate Video Compression: Standards And Technologies"—IEEE NJ Signal Processing Chapter and NJIT Communications and Signal Processing Center, 5:45 PM, NJIT, ECEC 202, Newark, NJ. Yun Shi (201) 596-3501.

April 11—"Engineers Network Association: An Experiment In A Career-Networking Forum"–NJ Section PACE, 7:30 PM, JCP&L Co. 300 Madison Ave. & Punch Bowl Rd., Morristown, NJ. R. Sinusas (201) 228-3941.

April 11-June 27—"Seminar: Visual Basic"—NJ Section, 11-Sessions, JCP&L Co., 300 Madison Ave., Morristown, NJ. John Baka (201) 455-8534.

April 17-May 15—"Seminar: Microwaves In Industry And Medicine"—NJ Section, Four-Sessions, JCP&L Co., 300 Madison Ave., Morristown, NJ. John Baka (201) 455-8534.

April 18—"Pulsed Resistance Welding With Homopolar Generators"—NJ Power Engineering/Industrial Application Society Chapters, 7:30 PM, JCP&L Co., 300 Madisoh Ave., Morristown, NJ. Dennis Hildenbrand (201) 366-1362.

April 25—"Jump Parameter Linear Stochastic Control Systems And Their Optical Control Via Lyapunov Iterations"—NJ IEEE Control Systems Society, 5:PM, NJIT, 202ECEC, Dept. of EE, Newark, NJ. Prof. T. Chang (201) 596-3519.

April 30-May 2—"ELECTRO '96"—Sponsored by Region 1, METSAC and CNEC, IEEE; New York and New England Chapters, ERA, Garden State Convention Center, Somerset, NJ. (800) 322-9332.

May 19—"NJ Section Awards Reception"—3:00 to 5:00 PM at the Birchwood Manor, 111 North Jefferson Road, Whippany, NJ. Anne Giedlinski (201) 455-8556.

NJ-SP Society:

Standards And Technologies In Video Compression

On April 10, 1996, the IEEE North Jersey Signal Processing Chapter and the NJIT Communications and Signal Processing Center, will present a talk on "Very Low Bit Rate Video Compression: Standards And Technologies." The speaker will be Dr. Ya-Qin Zhang of David Sarnoff Research Center, Princeton, NJ.

About The Talk

Very low bit rate video coding has received considerable attention in academia and industry in terms of both coding algorithms and standards activities. In addition to the earlier ITU-T efforts on H.320 standardization for video conferencing from 64 kbps to 1.544 Mbps in ISDN environment, the ITU-T/SG15/LBC has developed a new standard H.324 for visual telephone below 64 kbps. The ISO/SG29/WG11, after its highly visible and successful MPEG 1/2 work, is starting to focus on the next-generation audiovisual multimedia coding standard MPEG 4. The first version of the Verification Model and associated core experiments have been drafted based on a large number of submissions and test results in November 1995 and January 1996. The first part of the talk will summarize these on-going standards activities undertaken by ITU-T/LBC and ISO/MPEG 4.

The second part of the talk will focus on a specific scheme that Sarnoff has developed. The very low bit rate video coder developed at Sarnoff is based on the wavelet representation, especially on the Embedded Zerotree Wavelet (EZW) algorithm. The coder consists of five main components: global motion compensation, variable-block-size motion estimation, discrete wavelet transform (DWT), significance mapping, and Zero-Tree Quantizer (ZTQ). The VLBR coder allows a wide range of compression ratios and selection of parameters. It gives a reasonable quality at 15 to 24 kbps with a resolution of 360 pels by 288 pels (CIF) at 10 frames per second. This bit rate allows real-time video telephone in the existing Public Switched Telephone Network (PSTN) at 28.8 kbps and below, and can be used for video communications in low-bandwidth environments such as wireless communications.

About The Speaker

Ya-Qin Zhang is the Head of Digital Video Communications at David Sarnoff Research Center in Princeton, NJ. His group is actively involved in the research and development of video compression algorithms and products for Grand Alliance HDTV, DirecTV, MPEG 2 codec, and video-telephone applications. He was responsible for the video compression activities in the Applications Technologies and Systems Department at GTE Laboratories Inc. in Waltham, MA, and CONTEL Technology Center, Chantilly, VA.

Election Of Officers

Officer election for the Signal Processing Chapter will be voted on at this meeting prior to the talk.

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 PM, Wednesday, April 10, 1996.
Place: NJIT, ECEC 202, (2nd floor conf. room).
Information/Reservations: Yun Shi (201) 596-3501 or shi@tesla.njit.edu

NJ Consultants' Network:

"Getting The Business" On The Internet?

On March 28, 1996, the IEEE NJ Consultants' Network will present a talk on " 'Getting The Business' On The Internet?" The speakers will be Dan Gormley and Wayne Ferguson, representatives of Industry.Net, a provider of on-line engineering information on the Internet.

About The Topic

Everyone is talking about getting their business on the Internet, but what's *really* out there and how useful and profitable is it to be accessible on-line *right now* and in the near future? This presentation will focus on marketing opportunities and engineering resources available on the Internet which would be useful to the engineering consultant or practicing engineer.

Topics addressed will include: Options for Getting On-line—Pros and Cons; Determining which on-line marketing techniques are best for your practice?; Types of Products and Services already available on the Internet; After the sale—Finding engineering support, contract services and information on-line.

About The Speakers

Dan Gormley has been Industry.Net's Association Specialist for 3 years based in their Philadelphia offices, and is responsible for Membership Development.

Wayne Ferguson is an Account Executive for Industry.Net's New York Metro offices. He is responsible for Membership Development as well as Program Implementation.

About The Consultants' Network

The IEEE Consultants' Network of Northern NJ was founded in April 1992 to encourage and promote the use of independent technical consultants by business and industry. Meetings are held on the last Thursday of each month. For a complimentary copy of the Directory of Consultants and Consulting Services call Alex Richardson (201) 535-3440.

Time: 7:30 PM, Thursday, March 28, 1996.
Place: AT&T Bell Laboratories, 67 Whippany Rd., Whippany, N.J.
Information: For directions or up-to-date meeting status call Robert Walker at (201) 736-0771.
Attendance: Admission is free. Non-Network attendees and member guests must pre-register by 5 PM Wednesday, March 27th. Contact David Greenspan at (201) 882-8562 (answering machine). Leave your name and citizenship information. Calls will not be returned.

NJ Control Systems Soc.:

Jump Parameter Stochastic Systems

At the April 25, 1996 meeting of the IEEE NJ Section Control Systems Society, the talk will be on "Jump Parameter Linear Stochastic Control Systems And Their Opticam Control Via Lyapunov Iterations." The speaker will be Professor Zoran Gajic.

About The Talk

Jump parameter stochastic systems have been recently studied by many researchers due to their potential applications to several areas such as robotics, communication networks, optical renewal inventory and repair policies, micro and macro economics, and solar-powered receivers. These systems, very often called hybrid systems, are represented by linear continuous or discrete-time state space models whose coefficient matrices change according to discrete Markov chains. The opticam solution to the corresponding linear-quadratic control problem at steady state is given in terms of the N-coupled algebraic Riccati equations, where N indicates the number of operating modes of the given jump parameter linear stochastic systems. This talk will cover how to use the Lyapunov iterations to get the positive definite stablizing solutions of the coupled algebraic Riccati equations in terms of the decoupled algebraic Lyapunov iterations. Symptotic stability of feedback matrices corresponding to all operating system modes is established at each iteration. The presented results produce a generalization of the well known Kleinmans algorithm.

About The Speaker

Zoran Gajic is a graduate of the University of Belgrade (Dipl. Ing. and MS., both in electrical engineering) and Michigan State University (MS in applied mathematics and PhD in system science engineering). He is an associate professor at Rutgers University, Department of Electrical and Computer Engineering. His research interests include singular perturbations, linear stochastic control, differential games, output feedback, bilinear systems, weak coupling, Lyapunov and Riccati equations, jump parameter linear stochastic systems, and numerical methods. Dr. Gajic has published many journal papers and several books in the field of automatic control.

Time: 5:00 PM, Thursday, April 25, 1996.
Place: NJIT, 202ECEC, Dept. of EE., Newark, NJ.
Information: Prof. Timothy Chang (201) 596-3519 or tnc0766@tesla.njit.edu

IEEE LEO Chapter:

Ultrafast Optical Phenomena

On March 26, 1996, the IEEE Laser and Electro Optics Chapter will present a talk on "Ultrafast Optical Phenomena." The speaker at this meeting will be Anthony M. Johnson, PhD., Chairperson, Department of Physics at NJIT.

About The Talk

Ultrafast optical phenomena refers to dynamical processes that occur in various forms of matter on the time scale of picoseconds (10^{-12}s, ps) or femtoseconds (10^{-15}s, fs). These phenomena have been relegated to the optical domain, primarily because only lasers have been fast enough to probe many of these processes. Laser pulses as short as 6 fs have been generated and utilized to study various physical phenomena. Ultrashort pulses of light have been utilized in fundamental studies of disciplines as diverse as semiconductor physics, lightwave transmission systems, and biological systems. Recently, for example, a group at Lawrence Berkeley Laboratory reported that the initial steps in the process of vision occur in approximately 200 fs. On another research front, ultrashort pulses have led to the generation of extremely high peak power pulses of approximately ten terawatts (10^{13} W) and intensities of nearly 10^{19} W/cm^2. One application of these intense pulses is in the generation of soft X-rays, for use in X-ray lithography. Ultrafast optical phenomena continues to be a highly prolific field of fundamental and applied research. This lecture will describe several of the techniques used by ultrafast opticists to measure events on this incredibly short time scale and review some of the latest advances in the field.

About The Speaker

Dr. Anthony M. Johnson was most recently a Distinguished Member of Technical Staff in the Photonic Circuits Research Department at AT&T Bell labs in Holmdel, NJ. In 1995, after nearly 15 years in the Research Division of Bell Labs, he assumed the position of Chairperson of the Federated Physics Department, joint between the physics departments of NJIT and Rutgers University (Newark Campus). He is a Fellow, a General Councilor, and a member of the Executive Board of the American Physical Society (APS). His general area of research is in ultrafast optical and optoelectronic phenomena. Dr. Johnson is a Fellow and member of the Board of Directors of the Optical Society of America, a Charter Fellow of the National Society of Black Physicists, a Senior Member and member of the Board of Governors of the IEEE Lasers and Electro-Optics Society, a member of the American Association for the Advancement of Science, and a member of the American Association of Physics Teachers.

Time: 5:00 PM, Tuesday, March 26, 1996. Pizza & Soda will be served free of charge at 4:45 PM.
Place: NJIT, Room 202, ECE Bldg., Newark, N.J.
Information: Haim Grebel (201) 596-3533.

Student Presentation Night

WEDNESDAY, MARCH 20TH AT 7:00 PM. STEVENS INSTITUTE OF TECHNOLOGY

The ability to communicate ideas well is a skill in demand for engineers more than ever before. The IEEE North Jersey Section provides a forum for area student members to present electrical engineering related papers. Any undergraduate student member of IEEE is eligible. Subject matter should cover technical, engineering, management, or social aspects of electrical engineering. No student should be discouraged from entering the contest due to a false requirement of technical sophistication. The important thing is that students get the chance to practice presentation skills in front of an astute, supportive audience of local IEEE members from many fields and backgrounds.

Each presentation will be judged on several aspects including technical merit, effective use of visual media, organization, and audibility among others. Speakers will have 15 minutes to make their point and qualify for the prizes. The audience will then briefly critique each presentation. First place earns $100, second place $70, and third place $30. Best of all, the students get to take home the comment sheets used to select our local winners.

New this year will be the coordination with our Region 1 Student Paper Contest. The local contest rules will closely follow the Region 1 Contest Rules. Any North Jersey student wishing to enter the next tier is encouraged to do so, with the local contest serving as a valuable practice ground.

The next step will be the Area B Contest, that covers the New York Metropolitan area, North & Central Jersey, and Connecticut. This is tentatively scheduled for Saturday, March 23 at Poly in New York City. A month or so later, winners from Area B go to the Region 1 Contest which will include winners from all 4 areas of Region 1.

For contest rules and more information contact: Ms. Amy Bissmeyer, IEEE North Jersey Section Student Actities Chair at (201) 742-2381, ext. 24; FAX (201) 742-1452.

NJ Control Systems Soc.:

Parallel Algorithms For Adaptive Control

At the March 28, 1996 meeting of the NJ Section IEEE Control Systems Society, the talk will be on "Parallel Algorithms For Adaptive Control: Robust Stability." The speaker will be Felipe M. Pait.

About The Talk

A class of parallel algorithms for adaptive control of siso linear systems is described. The systems considered are assumed to belong to one among a finite number of classes of admissable process models, and each class is robustly stabilizable by some linear time-invariant controller. The control used is chosen in real time by a tuner or supervisor, according to observations of suitable defined "identification errors." The method preserves the robustness properties of the linear control design in an adaptive context. We expect that parallel algorithms of the type discussed here will be a useful tool to exploit the compromise between performance of an adaptive control system and the computational power of the hardware in which it is implemented. Another application is to fault-tolerant control.

About The Speaker

Felipe Miguel Pait received the Engineer degree from the University of Sao Paulo in 1985 and the PhD degree from Yale University in 1993, both in electrical engineering. Between 1985 and 1987 he worked in the development of real time automatic control systems. He is now an Assistant Professor with the Laboratory of Automation and Control, University of Sao Paulo. He is currently on sabbatical leave at the Department of Electrical and Computer Engineering, Rutgers University. His research interests include industrial process control, adaptive control, and applications of mathematical systems theory.

Time: 5:00 PM, Thursday, March 28, 1996.
Place: NJIT, 202ECEC, Dept. of EE., Newark, NJ.
Information: Prof. Timothy Chang (201) 596-3519 or tnc0766@tesla.njit.edu