



The IEEE

Newsletter

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

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New Fellows able to attend the IEEE Awards Reception on May 18, 1995 are (from left): Ephraim Suhir, Juin-Hwey Chen, Nim Kwan Cheung, Joshua Alspector and Jack Holtzman.

North Jersey Section PACE: Your Future In EE

At the August 10, 1995 meeting of the North Jersey Section's Professional Activities Committee for Engineers, the highlights of the 1994 National PACE Conference in Phoenix, including keynote speakers, will be presented via videotape. This meeting should not be missed by anyone contemplating a career in EE, or those already entrained in an EE career, but stymied by the current employment situation and wondering how to make the transition from defense to commercial industry. All are welcome.

Topics And Speakers

Four exemplary presentations from the '94 PACE Conference will be viewed and discussed. These include: (1) "Engineers and Employment in the Global Economy,"

by Ms. Edith Holleman (Counsel, Science, Space and Technology Committee, U.S. House of Representatives); (2) "Coping with Defense Downsizing: Lessons for all Engineers," by V. William Souveroff (Exec. Dir. of the National Center for Career Change); (3) "Engineering Skills Assessment," by Charles K. Alexander, Jr. (Chairman, IEEE USAB); and (4) "The Fate of U.S. Engineers," by David M. Ostfeld (Chairman, IEEE USA Government Activities Council).

Time: 7:30 PM, Thursday, Aug. 10, 1995.
Place: JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.
Information: Michael Liechenstein (201) 471-0721; Robert Sinusas (201) 228-3941.

AUGUST, 1995

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(Courtesy of United Societies of Engineering & Science of NJ, Inc.)

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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.

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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 Dr. Fred Chichester (201) 744-7340.

AT THE SCHOOLS

Students Present Papers

At the First Annual North Jersey Section Student Presentation Night held June 13, 1995, two presentations were made, both coincidentally on the topic of Asynchronous Transfer Mode (ATM) network communications. Papers were presented by Mr. Ambalavanar Arulambalam, a New Jersey Institute of Technology student and a team from Stevens Institute of Technology: Mr. Sudheer Tyagi and Mr. Tony Rodriguez, both recent graduates.

Abstract of ATM Paper by

Mr. Ambalavanar Arulambalam

The emergence of Asynchronous Transfer Mode (ATM) technology into Local Area Networks (LAN) has generated new challenges for many computer network designers especially to those providing switching equipment. Providing services successfully to users in a LAN depends on how the traffic in the network is managed, and one of the challenges is how to react in an event of network congestion. Recently, the momentum on the rapid standardization of ATM has come from data networking applications. Thus, an explicit guarantee of service cannot be provided. Since data applications usually require a service that dynamically shares the available bandwidth among all active users, such a service is referred to as best-effort or Available Bit Rate (ABR) service. Due to the highly bursty nature of data traffic, congestion control for ABR service poses more challenging problems than other services, and it is the focus of recent standardization efforts at the ATM Forum (a consortium to accelerate the development and standardization of ATM technology).

In this presentation the problem of congestion, requirements of a control scheme, the description of the algorithm and some performance analysis are discussed.

Abstract of ATM Paper by

Mr. Sudheer Tyagi and Mr. Anthony Rodriguez

Traditionally, the network architectures have been distinctly defined as LAN, MAN, or WAN. This design addresses the integration of existing Ethernet LANs in the broadband systems. The applications of shared LANs such as Ethernet will probably continue into the next century, and in the future the emerging demands and quality of services such as transmission of data, voice, and video over a single network could only be addressed by ATM. Under these conditions, we believe, it is important for any premises product architecture to support both environments. Hence, LANs could use ATM systems to overcome their geographical limitations. In this context, efficient IWU (interworking unit) with high throughput must be conceived in order to support the exchange of information between LANs via ATM. In this design, we have deployed the connection oriented data service using the ATM (AAL 3/4) supporting variable bit rate. Our design deals with various issues that an IWU must resolve in terms of network interface design, developing the ATM adaptation layers for error and flow control, segmentation and reassembly, modem control, and measurement of various performance matrices e.g. average and variance of cell delay, average network throughput, and effective utilization. Additionally, with slight modifications, our design has the capability that would allow the other AMT networks to connect to our setup and also would provide access from our setup to the Internet.

Vehicular Technology Soc.:

FORTRAN 90 Applications

On September 19, 1995, the IEEE North Jersey Vehicular Technology Society will present a talk on "Fortran 90 Applications." The speaker will be Dr. William Schick.

Time: 7:30 PM, Tuesday, Sept. 19, 1995.
Place: Fairleigh Dickinson University, Teaneck Campus, Rm. M207, Muscarelle Bldg., River Road at Route 4.
Information: Mel Lewis (914) 968-2500, ext. 2304.

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NJ MTT/AP Chapter: Transitioning To Commercial/ Industrial Economy

On August 15, 1995, the IEEE North Jersey Section MTT/AP Chapter will present a talk on "Transitioning From A Military Based Economy Into A Commercial/Industrial Economy." The speaker at this meeting will be Mr. Gus Kamnitsis, President and Chief Executive Officer of Phoenix Microwave Corporation, a leading supplier of RF/Microwave components.

Upcoming meetings and topics:

Sept. 20—"Monolithic Circuits And High Density Packaging" speaker and location to be announced.

Oct. 18—"Microwave CAD, including EM Optimization And Modeling Of Arbitrary Geometries" at NJIT, with speaker Dr. John W. Bandler, President, OSA Inc., Dundas, Canada.

All Welcome

You do not need to be an IEEE member to attend. All are welcome. Free refreshments will be provided starting at 6:15 PM and the meeting will start at 7:00 PM.

Time: 7:00 PM, Tuesday, August 15, 1995.

Place: GEC-Marconi, Plant 11, 164 Totowa Road, Totowa, N.J.

Information:

Chandra Gupta (201) 633-4469.

North Jersey Section PACE: Talk On Asset Diversification

At the September 14, 1995 meeting of the North Jersey Section's Professional Activities Committee for Engineers, 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

Edward 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: 7:30 PM, Thursday, September 14, 1995.

Place: JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.

Information:

Robert Sinusas (201) 228-3941.

North Jersey Section Activities August 1995

Aug. 2—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, N.J. Dr. Fred Chichester (201) 744-7340.

Aug. 10—"Your Future In EE"—North Jersey Section PACE, 7:30 PM, JCP&L Co., 300 Madison Avenue & Punch Bowl Road, Morristown, N.J. Robert Sinusas (201) 228-3941.

Aug. 15—"Transitioning To Commercial/Industrial Economy"—IEEE North Jersey Section MTT/AP Chapter, 7:00 PM, GEC-Marconi, Plant 11, 164 Totowa Rd., Totowa, N.J. Chandra Gupta (201) 633-4469.

Upcoming Meetings

Sept. 6—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, N.J. Dr. Fred Chichester (201) 744-7340.

Sept. 14—"Asset Diversification: Strategies For Investing"—North Jersey Section PACE, 7:30 PM, JCP&L Co., 300 Madison Avenue & Punch Bowl Road, Morristown, N.J. Robert Sinusas (201) 228-3941.

Sept. 19—"FORTRAN 90 Applications"—IEEE North Jersey Vehicular Technology Society, 7:30 PM, Fairleigh Dickinson University, Rm. M207, Muscarelle Bldg., River Road at Route 4, Teaneck Campus. Mel Lewis (914) 968-2500, ext. 2304.

Sept. 20—"Monolithic Circuits And High Density Packaging"—IEEE North Jersey Section MTT/AP Chapter. Location to be announced.

Sept. 21—"Geothermal Heat Pumps And HVAC Systems"—North Jersey PES/IAS, 7:00 PM, JCP&L Co., 300 Madison Avenue, Morristown, N.J. Ken Oexle (JCP&L) (201) 455-8481.

Sept. 26-Dec. 5—"Seminar: Object-Oriented C++ Programming"—IEEE North Jersey Section, JCP&L Co., 300 Madison Ave., Morristown, N.J. John Baka (201) 455-8534.

Sept. 27—"1-Day Seminar: Power Harmonics"—North Jersey PES/IAS, tentatively scheduled at JCP&L, 300 Madison Ave., Morristown, N.J. Watch for details in next issue.

Sept. 27-Nov. 29—"Seminar: C++ For Windows"—IEEE North Jersey Section, JCP&L Co., 300 Madison Ave., Morristown, N.J. John Baka (201) 455-8534.

Oct. 18—"Microwave CAD, Including EM Optimization And Modeling Of Arbitrary Geometries"—IEEE North Jersey Section MTT/AP Chapter, NJIT, Newark, N.J. Chandra Gupta (201) 633-4469.

Oct. 21—"One-Day Seminar: Recent Trends In Adaptive Filtering"—IEEE Philadelphia Section Signal Processing Chapter, University of Pennsylvania, Phila., PA. Prof. Moeness Amin (610) 519-7305.

Oct. 25—"Seminar: Getting The Most Out Of Your Electric Power System"—North Jersey Section IAS & PES Chapters, 9:00 AM - 3:00 PM, JCP&L Hq., 300 Madison Ave., Morristown, N.J. Vittal Rebbapragada (201) 804-2011.

Members and Non-Members Welcome PLEASE POST

IEEE North Jersey Section Seminar Object-Oriented C++ Programming

Tuesdays, September 26 - December 5, 1995
Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

The North Jersey Section 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 C. THEREFORE ONLY THOSE WHO ARE FAMILIAR WITH C 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 local software consultant business.

TOPICS:

- (1) - Review common elements of C and C++; punctuation and key words, variable naming, typing & scope, functions & subfunctions, arguments, operators & assignments, conditionals and logical variables, looping & testing, handling text strings, arrays & structures, pointers.
- (2) - Concept of Object-Orientation: objects & classes of objects, methods & messages, encapsulation & abstraction, overloading of functions & operators, inheritance & 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, templates.
- (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) - Object-Oriented design methodologies: Booch method, Coad Yourdon Nicola method, Shlaer Mellor method.

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 September 15, 1995 will require an additional late fee of \$25. No reservations will be accepted after September 22, 1995.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Ten sessions, Tuesday evenings starting Sept. 26, 1995, 6:30 - 9:00 PM.
Cost: With Text Book and Borland Turbo C++ Compiler: IEEE Members \$320, Non-IEEE Members \$420.
With Text Book 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 _____ Phone No. _____

Address _____

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

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

Signature _____

AN IEEE SEMINAR ON **GETTING THE MOST OUT OF YOUR ELECTRIC POWER SYSTEM:**

**HOW TO OBTAIN HIGHER PRODUCTIVITY, LOWER COSTS,
AND BETTER PROFITABILITY FROM YOUR EXISTING SYSTEM**

Presented by the IAS and PES Chapters, North Jersey Section

**Wednesday, October 25, 1995, 9:00AM to 3:00PM
Jersey Central Power and Light HQ
300 Madison Ave., Morristown, NJ 07962**

Topics

- Introduction
 - Seminar overview
 - Basic concepts
 - Costs of power problems
 - Factors that affect system productivity
 - Reliability, availability, maintainability
 - Preventive maintenance
 - Life extension
- System productivity evaluation
 - Single-line diagram
 - Walkdown inspection
 - Capacity and expandability evaluation
 - Power quality assessment
 - Energy efficiency evaluation
 - Reliability and availability assessment
 - Techniques and tools
 - FMEA and other hazards analyses
 - Reliability block diagrams
 - Fault trees
 - Computer tools
 - Reliability and availability data
 - Collecting and analyzing plant data
 - Generic data
- System productivity improvement
 - Identifying and upgrading critical items
 - Productivity-centered maintenance
 - The PCM concept
 - Benefits of PCM
 - Database development
 - Procedures review
 - "Smart" databases and AI resources
 - Maintenance tracking and closeout
 - Inspection and testing
 - Trending maintenance and test results
 - Managing a living PCM program
 - Improving energy efficiency
 - Improving power quality
 - System life extension
- Justifying investments in power system hardware or maintenance upgrades
 - Life-cycle costing
 - Investment analysis concepts
 - Probabilistic cost-benefit analysis
- Final overview and discussion

Seminar Leaders

Richard H. McFadden, P.E., Fellow, IEEE. Chief Electrical Engineer, Advanced Technology Division, Science Applications International Corp., New York, NY.

R. Vittal Rebbapragada, P.E., Senior Member, IEEE. Senior Consulting Engineer - Electrical Power Systems, Ebasco Services Division, Raytheon Engineers and Constructors, New York, NY.

Cost - including materials, morning refreshments, and luncheon:

IEEE members	\$150.00
Non-members	\$195.00
Students with valid ID	\$50.00

Reserve your place by mailing a check payable to "IEEE Jersey Section" to R.H. McFadden, SAIC, 7 West 36th St., New York, NY 10018 by **October 16, 1995. \$50.00 DISCOUNT ON FULL (NON-STUDENT) REGISTRATIONS RECEIVED BY OCT. 1!**

IEEE North Jersey Section Seminar

C++ FOR WINDOWS

Wednesdays, September 27 - November 29, 1995
Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

The North Jersey Section is offering an evening course entitled "C++ Programming for Windows." The Windows environment for personal computers is becoming increasingly important and will become even more important with the release of Windows 95. This course will cover all the major aspects of creating programs to run under Windows, using the C++ programming language. C++ is a prerequisite for the course. The emphasis is not on programming, however, but on the various components that have to be created for a Windows package: the interactive structure of the program itself, the message handling, the definition of resources, creating icons and cursors, the design of help and make files. The linking of data and programs within the Windows multiprogramming environment (DDE and OLE) will also be covered. This course is based on the Borland C++ development package, including ObjectWindows and the Resource Workshop. Therefore, every student should have access to Borland C/C++ Version 3.x or 4.x, as well as Microsoft Windows 3.1 or later. (Future plans may include another course, based on the Microsoft development package.) There will be nine weekly lectures which will be quite interactive. Homework will be assigned and corrected. The topics listed below will be covered. The instructor is Dr. Edward (Ted) Byrne, owner of a local software consultant business.

TOPICS:

- (1) - Review of Microsoft Windows from a developer perspective. The desktop metaphor. Constituents of a window. The mouse. Characteristics of different kinds of window objects. Use of the File Manager. Use of the Application window.
- (2) - Overview of the Borland C++ package: compilers, linkers, libraries, base classes and resources. Microsoft variable naming conventions.
- (3) - Nature of an interactive Windows program: winMain, event handlers. Files that make up a windows program package. Constraints on a windows program. Standard versus enhanced mode.
- (4) - Short review of C++: classes and objects. Inheritance and virtual functions. Overloading. The C++ switch/case statement and use in handling messages. The Borland C++ Base Classes.
- (5) - Other aspects of a Windows program package: creating icons. Creating Help. Concept of hypertext. Creating new cursor shapes. Saving program state from one execution to the next.
- (6) - Kinds of boxes: the dialog box, menu, accelerator keys, buttons (radio, check boxes, bitmapped buttons). Designing your own control boxes.
- (7) - Creating output in your program's window. Print output, Pixel output. Bitmap files. Choosing, sizing and using fonts.
- (8) - Communication between tasks or applications: passing data, the clipboard. More general communications, Dynamic Data Exchange (DDE). Using parts of one windows program in another: Object Linking and Embedding (OLE).
- (9) - What next?: how to create an install package for your Windows program. Interacting with the Windows Program Manager. Introduction to Windows 95.

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 September 15, 1995 will require an additional late fee of \$25. No reservations will be accepted after September 22, 1995.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Nine sessions, Wednesday evenings starting Sept. 27, 1995, 6:30 - 9:00 PM.
Cost: With Text Book only: IEEE Members \$225; Non-IEEE Members \$325.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "C++ FOR WINDOWS"

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

Name _____ IEEE No. _____

Affiliation _____ Phone No. _____

Address _____

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

Signature _____