

The



IEEE Newsletter

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

NJ Computer Chapter:

EZ-Pass and How It Works

On Monday, March 25th, 2003, the IEEE North Jersey Section Computer Chapter will host a presentation on "EZ-Pass and How It Works" by Alex Richardson.

About the Talk

The talk will describe the elements of the EZ-Pass system and how the components work together. The physical layout, tag and tag reader functions, error protection, signal formats and flow, communication protocols, and the fiber optic backbone will be discussed. Reliability and privacy concerns will be addressed. A look toward the future of the technology will be presented.

About the Speaker

Alex Richardson was, for five years, Project Engineer-Telecom for the New Jersey Turnpike, the lead agency in the five member Consortium charged with the implementation of the program. Prior to joining the Turnpike he was employed by ITT Avionics for 31 years, specializing in military electronics: ECM, communication, and navigation systems. He graduated from Cornell University in 1951 with BEE and MEng Degrees, and from Stevens Institute in 1961 with an MS. He is a Professional Engineer in NJ and NY and is a Life Senior Member of the IEEE.

All Welcome!

You do not have to be a member of the IEEE to attend. Bring your friends and network during the free pre-meeting buffet starting at 6:00 PM.

Time: 7:00 PM, Tuesday, March 25, 2003. Pre-meeting dinner 6:00 PM in the Public Meeting Room, Morris County Library.

Place: Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ, (973) 285-6930.

Information: Mario Bernadel (201) 489-8492 (mbernadel@ieee.org) or Howard Leach (973) 540-1283 (h.leach@ieee.org).

NJ Consultants' Network:

Security and the Small Office / Home Office Network

On Thursday evening, March 20th, the IEEE Consultants' Network of Northern NJ present a talk on "Security and the Small Office/Home Office Network" given by Frank Middleton of Apogee Communications Technologies, Inc. Security is a major concern for anyone connected to the Internet and this session addresses some solutions and their limitations.

About the Talk

Computers connected to the Internet modems with no intervening firewall are vulnerable to many threats beyond that of email-carried viruses. A properly configured firewall/router between the SOHO LAN and the modem can mitigate this risk effectively. Most popular routers also do support secure tunnels over the Internet, so, for example, you can connect your home network to your office network securely and cheaply. Terms such as DHCP, DMZ, NAT, PAT, IPSec, TLS, etc. will be explained; no prior knowledge of networking is required.

Topics will include:

- Security at different layers of the Open Systems Interconnect Reference Model
- How does NAT/PAT provide additional security?

- Hosting a web site behind a DHCP DSL/Cable modem through a NAT/PAT firewall router
- Connecting networks together securely over the Internet at very low cost
- A solution for WiFi (IEEE 802.x) security issues

About the Speaker

Frank Middleton, a member of CNNNJ, has more than 20 years of experience in networking, security, infrastructure and applications architecture, design and implementation. He can be reached at (973) 543-9324 or fam@apogeect.com.

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. Admission is free.

Time: 7:30 PM, Thursday, March 20th, 2003.

Place: MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. (Entrance at rear of building)

Information: For directions and up-to-date meeting status, call Robert Walker (973) 728-0344 or visit our website at www.TechnologyOnTap.org. To download a map to KDI, go to: <http://www.kditriangle.com/directions.htm>.

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IEEE NJ SECTION HOME PAGE

<http://web.njit.edu/~ieeenj/>

IEEE NJ SECTION NEWSLETTER HOME PAGE

<http://web.njit.edu/~ieeenj/NEWSLETTER.html>

REPORT ADDRESS CHANGES TO:

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

NJ Section PACE:

Unemployed Engineers

On Wednesday, March 12, the North Jersey Section Professional Activities Committee will meet to discuss the unemployment situation for members of the engineering community. You do not have to be unemployed to attend. All jobs are being threatened. You are invited to attend.

About the Meeting

This meeting provides an opportunity to meet and discuss the unemployment situation. High on the IEEE-USA list of subjects is unemployment and the displacement of American citizens by foreign workers imported under the H-1B legislation. Past legislation increased the number of H-1B workers to about 200,000 while citizens have been discarded and replaced by foreign workers. This year we have an opportunity to roll the number back to 65,000. And, please do not confuse this as an "immigration" issue. This is all about money and wage busting.

We need input and views from the unemployed on this important issue. We will also like you to confirm your attendance via e-mail or telephone. When we reach a suitable attendance we will invite the press to give visibility to the employment situation here in New Jersey.

Our PACE meeting is open to discuss professional needs. PACE provides the opportunity to meet, address, discuss and perhaps improve the professional aspects of the engineering profession. We should take advantage of the opportunity to have a place and time to meet. Invite your associates to join us.

According to IEEE-USA leaders "Employment Assistance and Career Development are high on their list of priorities." More on these projects can be found at www.ieeeusa.org.

"Today's Immigrant - Tomorrow's Victim"
see www.aea.org.

Welcome!

You do not have to be a member of the IEEE to attend. Members of other professional societies and engineering disciplines are always welcome.

Time: 6:30 to 8:30 PM, Wednesday, March 12, 2003.

Place: Clifton Memorial Library, 292 Piaget Ave., Clifton, NJ. For directions call (973) 772-5500.

Information: Richard F. Tax, (201) 664-6954 (rtax@bellatlantic.net), Paul Ward, (973) 790-1625 (PWard1130@aol.com).

PACE NEWS

By Richard F Tax

Unemployment Legislative Alert

IEEE-USA is inviting you to write, FAX and/or call your Representatives at the federal, state or local level. This is an important step in enhancing the job market for engineers.

With your much needed help we will be more successful in informing your representatives and pave the way for meetings with these Reps.

Companies are having American workers train their own H-1B replacements. This has got to stop.

Special attention: as the result of a recent meeting with Congressman Rodney Frelinghuysen, 973-984-0711, we need you to write or call his office about your unemployment/job situation.

Further, your Representatives can be contacted through the following web sites using your 9 digit zip code.

- US Congress: <http://www.house.gov/writerep/>
- US Senators: <http://www.senate.gov/>
- New Jersey Legislature search by municipality: <http://www.njleg.state.nj.us/districts/municipalities.asp>
- The Governor can be contacted via html form: <http://www.state.nj.us/governor/govmail.html>

To reach elected officials the most convenient web page is www.congress.org. Just enter your zip code and select Federal, State or Local.

For more information go to:

- <http://www.ieeeusa.org>
- <http://www.ZaZona.com>
- <http://www.aea.org>
- <http://www.numbersusa.com>
- <http://www.fairus.org/>
- <http://www.zazona.com/ShameH1B/>
- <http://heather.cs.ucdavis.edu/itaa.htm>

Remember: the job you save may be your own. We have 5000 members in North Jersey. Make it work.

For more information attend our PACE meetings. See meeting notice in this issue.



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a Crisis!**

FREE referral service:
IEEE CONSULTANTS' NETWORK
OF NORTHERN NJ
www.TechnologyOnTap.org

IEEE North Jersey Section Activities

March 2003

Mar. 5–“NJ Section Executive Committee Meeting” – 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Dr. Sanghoon Shin at (973) 492-1207 Ext. 22 or s.shin@ieee.org.

Mar. 11–“Student Paper Contest” – 5:30 PM (free dinner provided), Fairleigh Dickinson University, Teaneck Campus, NJ. Amit Patel (973) 284-2708 or a.j.patel@ieee.org. Check http://ewh.ieee.org/r1/north_jersey/sac for the latest updates including building and room location.

Mar. 11-Apr. 29–“Object-Oriented C# Design & Programming” – North Jersey Section, Tuesday Evenings, 8 sessions, 6:30-9:00 PM, Ramada Inn Clifton, 265 Route 3 East, Clifton, NJ. Bhanu Chivakula (b.chivakula@computer.org).

Mar. 11 & 12–“IEEE Sarnoff Symposium 2003 - Advances in Wired and Wireless Communications” – 3/11 2:30-6:00 PM, 3/12 8:00 AM-6:00 PM, The College of New Jersey, Ewing, NJ. Dr. Gerhard Franz (609) 936-1919 (g.franz@ieee.org) or see <http://www.sarnoffsymposium.org>.

Mar. 12–“Unemployed Engineers” – NJ PACE, 6:30 – 8:30 PM, Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ. Richard F. Tax, (201) 664-6954 (rtax@bellatlantic.net), Paul Ward (973) 790-1625 (PWard1130@aol.com).

Mar. 15–2004 IEEE Fellow Nominations Due.

Mar. 18–“From Lord Rayleigh to Shannon: How do humans decode speech” - NJ Communications and Signal Processing Chapters, 6:15 PM (pizza and refreshments at 6:00 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu), Dr. Yun-Qing Shi (973) 596-3501, or check <http://web.njit.edu/~ieeenj/comm.html>.

Mar. 20–“Integrated Electrical Assemblies” - NJ IAS/PES Chapters, 7:00 PM, Eaton/Cutler Hammer, 690 Rahway Ave, Union, NJ. Ron Quade (212) 886-0275.

Mar. 20–“Security and the Small Office/Home Office Network” – NJ Consultants' Network, 7:30 PM, MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-0344 or www.TechnologyOnTap.org.

Mar. 25–“EZ-Pass and How It Works” - NJ Computer Chapter, 7:00 PM, Public Meeting Room, Morris County Library, 30 E. Hanover Ave, Whippany, NJ. Mario Bernadel (201) 489-8492 (mbernadel@ieee.org) or Howard Leach (973) 540-1283 (h.leach@ieee.org).

Mar. 25–“Eliminating Aversion to Software Process In Computer Science Students and Measuring the Results” - NJ Communications Society and EMS Chapters, 6:00 PM (pizza and refreshments at 5:45 PM), NJIT, 202 ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu), Wayne Owens, (201) 767-3400 x226 (wowens@ieee.org), or check <http://web.njit.edu/~ieeenj/comm.html>.

Mar. 27–“Characterizing the Internet Hierarchy from Multiple Vantage Points” - NJ Communications Chapter, 6:15 PM, NJIT, 202 ECE Center, Newark, NJ. Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu). Please check <http://web.njit.edu/~ieeenj/comm.html> for the latest updates.

Upcoming Meetings

Apr. 2–“NJ Section Executive Committee Meeting” – 7:00 PM, ITT, 100 Kingsland Rd, Clifton, NJ. Dr. Sanghoon Shin at (973) 492-1207 Ext. 22 or s.shin@ieee.org.

Apr. 7–“An Overview of Recent Developments in Nanotechnology” – EDS/C&S and LEOS Chapters, 5:00PM (buffet at 4:45PM), NJIT, 202 ECE Center, Newark, NJ. Prof. H. Grebel (973) 596-3538 (grebel@njit.edu).

Apr. 11–“Power Systems Design Seminar” – NJ IAS/PES Chapters, 9:00 AM to 3:00 PM, Cutler-Hammer, 379 Thornall Street (Alferi Building), 8th Floor, Edison, NJ. For additional information contact Ronald W. Quade at (212) 833-0268 or RonaldWQuade@eaton.com.

Apr. 24–“Tour of the New CNNNJ Website” – NJ Consultants' Network, 7:30 PM, MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. Robert Walker (973) 728-0344 or www.TechnologyOnTap.org.

Apr. 25 & 26–“The 12th Annual Wireless and Optical Communications Conference”, 8:00 AM-5:50 PM, Wyndham Hotel, Newark, NJ. Dr. Hongya Ge, (973) 642-4990 (ge@njit.edu) or see <http://www.wocc.org> for additional details.

May 4–“NJ Section Awards Reception” – 3:00 to 6:00 PM at the Birchwood Manor, 111 North Jefferson Rd, Whippany, NJ. Anne Giedlinski (973) 377-3175.

Aug. 10-13–“ITRE 2003 - IEEE International Conference on Information Technology: Research and Education.” - Newark, NJ. For further information see <http://web.njit.edu/itre2003> or email itre2003@njit.edu.

Members and Non-Members Welcome

PLEASE POST

PES/IAS:

Integrated Electrical Assemblies

On March 20th, 2003, the Power Engineering and Industrial Applications Chapters will sponsor a technical meeting on "Integrated Electrical Assemblies." The speaker will be Mr. Wayne Celeste.

About the Talk

Current trends in the electrical equipment design arena require that engineers fit more electrical distribution and control equipment into a smaller available space. Whether the project is a new construction retail store, or an electrical upgrade to an existing water treatment plant, the need for additional floor space is critical.

This speaker will explore several methods of consolidating electrical distribution equipment into one, space-saving assembly. Topics will include Integrated UL 891 switchboards, UL 845 Motor Control Centers, and small unit substation designs. In addition to floor space savings, the speaker will discuss additional advantages these designs offer, such as reduction in installed cost and time to project completion.

About the Speaker

Mr. Wayne Celeste is a District Application Engineer at Cutler-Hammer.

Time: 7:00 PM, Thursday, March 20, 2003.

Place: Eaton/Cutler Hammer, 690 Rahway Ave, Union, NJ. Directions: Route 82 Morris Avenue from either Springfield or Union to Rahway Ave.

Information: Ron Quade (212) 833-0268.

In Memoriam

Dr. Joseph J. Suozzi, a past Chair of the IEEE North Jersey Section Awards Committee in the 1970's and 1980's, recently passed away.

Through his leadership and enthusiasm, numerous qualified Section members were elevated to the Fellow Grade or the recipient of IEEE Field and Region awards.

He formerly resided in Convent Station, NJ and had relocated to Bethany Beach, DE.

He had retired as Director of the Electronics Power Systems Laboratory at AT&T Bell Laboratories and was a veteran of World War II, serving in the U.S. Navy.

His wife and 5 daughters survive him.

NJ Communications Society:

Characterizing the Internet Hierarchy from Multiple Vantage Points

On March 27, 2003, the IEEE North Jersey Section Communications Society Chapter along with NJIT will host a presentation on "Characterizing the Internet Hierarchy from Multiple Vantage Points" The speaker will be Jennifer Rexford.

About the Talk

The delivery of traffic through the Internet depends on the complex interactions between thousands of Autonomous Systems (ASes) that exchange routing information using the Border Gateway Protocol (BGP). This talk investigates the topological structure of the Internet in terms of customer-provider and peer-peer relationships between ASes, as manifested in BGP routing policies. We describe a technique for inferring AS relationships by exploiting partial views of the AS graph available from different vantage points. Next we apply the technique to a collection of ten publicly-available BGP routing tables to infer the relationships between neighboring ASes. Based on these results, we analyze the hierarchical structure of the Internet and propose a five-level classification of ASes. Our analysis differs from previous characterization studies by focusing on the commercial relationships between ASes rather than simply the connectivity between the nodes.

This is joint work with Lakshminarayanan Subramanian, Sharad Agarwal, and Randy Katz at the University of California at Berkeley. A paper describing the work is available at <http://www.research.att.com/~jrex/papers/infocom02.ps>

About the Speaker

Jennifer Rexford is a member of the Network Management and Performance Department at AT&T Labs--Research in Florham Park, New Jersey. Her research focuses on routing protocols and traffic measurement, with the goal of developing new methods and tools for operating large IP networks. Jennifer serves on the steering committee for the Internet Measurement Workshop, the editorial board of IEEE/ACM Transactions on Networking, and the advisory boards of ACM SIGCOMM, Arbor Networks, and MentorNet. She is a senior member of the IEEE and is coauthor of the book "Web Protocols and Practice: HTTP/1.1, Networking Protocols, Caching, and Traffic Measurement" (Addison-Wesley, 2001) with Balachander Krishnamurthy.

Jennifer received her BSE degree in electrical engineering from Princeton University in 1991, and her MSE and PhD degrees in computer science and electrical engineering from the University of Michigan in 1993 and 1996, respectively.

All Welcome!

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

Time: 6:15 PM (refreshments start at 6:00 PM), Thursday, March 27, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu) or check <http://web.njit.edu/~ieeenj/comm.html> for the latest updates. Directions to NJIT can be found at <http://www.njit.edu/University/Directions.html>.

Last Call for Registration for 2003 Presentation Contest

This is the last call for participation for the Spring 2003 Student Presentation Contest in North Jersey. If you have not checked it out yet, visit the NNJ Student Activities Website now (listed below) and find out the details of how you can enter this contest.

Just remember, it is open for both graduate and undergraduate students and 1st/2nd/3rd place prizes will be awarded in both categories. But to participate, you MUST register by filling out the form and submitting a short abstract at the website below. This year, due to great demands, we will be limiting the number of entries so sign up right now!

Check out the website for the format of the rules and judging criteria. The final presentations must be given in person at the hosting site. The contest details are as follows:

- Date: Tuesday, March 11, 2003
- Time: 5:30 pm and onwards, free dinner provided.
- Place: FDU in Teaneck, NJ (visit the FDU site for driving and parking directions)

Any and all questions can be emailed to the contest organizer, a.j.patel@ieee.org and check the website for the latest details and announcements.

http://ewh.ieee.org/r1/north_jersey/sac

NJ Communications Society & EMS Chapters:

Eliminating Aversion to Software Process In Computer Science Students and Measuring the Results

On March 25, 2003, the IEEE North Jersey Section Engineering Management Society and Communications Society Chapters along with NJIT will host a presentation on "Eliminating Aversion to Software Process In Computer Science Students and Measuring the Results." The speaker will be Dr. David Klappholz.

About the Talk

In this talk, Dr. Klappholz will present material he co-authored along with Lawrence Bernstein of Stevens Institute and Catherine Kelley of Fairleigh Dickinson University.

If the level of adoption of Software Engineering Best Practice is to be increased in industry, then an appreciation of its importance must be conveyed to Computer Science students. Accomplishment of this goal is often severely hampered by the fact that many Computer Science faculty view software process as intellectually shallow and that many Computer Science students come to the field with an aversion to the oppressive discipline which they perceive to be required to follow it. We have devised a method of forcing students to recognize the necessity of Software Engineering Best Practice by bringing them to the realization that without it they will fail, not in their course work, but in real-world software development projects. The method has been tested twice at Stevens Institute and is about to be used at a number of other universities. Evaluation of results is being done through the use of two standard instruments, the Felder Learning Styles Inventory and the Academic Locus of Control Scale and of a novel Attitude Toward Software Engineering (ATSE) instrument designed by the authors, two of whom are subject matter experts and one of whom is a cognitive psychologist. Research described here was funded by the New Jersey Commission on Science and Technology.

About the Speaker

Dr. David Klappholz is Associate Professor of Computer Science at Stevens Institute of Technology in Hoboken, NJ, and Co-Director of the New Jersey Center for Software Engineering. Before he turned his attention to software process, Dr. Klappholz was involved in

research in the fields of parallel computer architecture, automatic detection of parallelism in sequential code, and compiler optimization. His research has been funded by IBM Research, National Science Foundation, Department of Energy, and others.

Dr. Klappholz earned a BS at MIT, and an MSEE and PhD, both in computer science, at the University of Pennsylvania.

All Welcome!

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

Time: 6:00 PM (refreshments start at 5:45 PM), Tuesday, March 25, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu), Wayne Owens, (201) 767-3400 x226 (wowens@ieee.org), or check <http://web.njit.edu/~ieeenj/> for the latest updates. Directions to NJIT can be found at <http://www.njit.edu/University/Directions.html>.

NJ EDS, C&S & LEOS Chapters:

An Overview of Recent Developments in Nanotechnology

On April 7, 2003, the IEEE NJ Section Electron Devices, and Circuits and Systems Chapter, Laser and Electro Optics Chapter, together with the New Jersey Institute of Technology will host a talk on "Recent Developments in Nanotechnology." The speaker will be Dr. M. Meyyappan.

About the Talk

Nanotechnology deals with creation of functional materials, devices and systems in the nanoscale through exploiting novel properties (electrical, physical, chemical...) arising solely due to the nanoscale. This is a broad, enabling technology with expected impact on materials and manufacturing, electronics and computing, health and medicine, energy, transportation, national security and space exploration. The basic science and applications are of great deal of interest to the IEEE community. This talk will provide an overview of novel nanoelectronics concepts based on carbon nanotubes (CNTs) and molecular electronics, nanosensors and detectors, nanoelectromechanical systems (NEMS), nanoscale materials and fabrication techniques.

About the Speaker

Dr. M. Meyyappan is the Director of the Center for Nanotechnology at NASA Ames Research Center in Moffett Field, CA. NASA's Nanotechnology Center, established in 1997, consists of about 50 scientists working on various aspects of nanotechnology including carbon nanotubes for nanoelectronics, sensors and detectors, molecular electronics, inorganic nanowires for sensors and devices, protein nanotubes, nanotechnology in gene sequencing, quantum computing, computational nanotechnology, computational quantum electronics and optoelectronics. The center has strong academic ties through programs for undergraduate and high school interns, and visiting faculty and graduate students.

Dr. Meyyappan's research interests include nanoelectronics, nanodevices and sensors, CVD and plasma CVD approaches for growth of nanotubes and inorganic nanowires,. He has published over 80 papers in refereed journals including 25 in nanotechnology related subjects and has given over 50 Invited, Plenary and Keynote talks and Invited seminars in the last four years. He is a member of the Interagency Working Group on Nanotechnology (IWGN), which is responsible for the National Nanotechnology Initiative (NNI). He is the chairman of the Nanosensors Working Group of the IEEE Nanotechnology Council. He has a PhD from Clarkson University and is a member of IEEE, AVS, MRS, and ECS. He is on the Editorial Board of Journal of Nanoscience and Nanotechnology.

All Welcome!

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

Time: 5:00 PM, Monday, April 7, 2003. Free buffet will be starting at 4:45 PM.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Professor H. Grebel (973) 596-3538 (grebel@njit.edu).

From Lord Rayleigh to Shannon: How do humans decode speech?

On March 18, 2003, the IEEE North Jersey Section Signal Processing and Communications Society Chapters along with NJIT will host a presentation on "From Lord Rayleigh to Shannon: How do humans decode speech?" The speaker will be Dr. Jont Allen.

About the Talk

In 1908 Lord Rayleigh reported on his speech perception studies using the "acousticon" (a commercial sound system produced in 1905), demonstrating that he was well aware of the importance of the bandwidth and blind speech testing in speech perception. It was the development of the telephone that both allowed and pushed mathematicians and physicists to develop the science of speech perception. Critical to this development was probability theory. One of their main tools was the confusion matrix which estimates the probability of hearing phoneme Pi when speaking phoneme Pj.

From 1910 to 1950 speech perception was extensively studied by telephone research departments throughout the world. However it was the work of Harvey Fletcher in 1921 that made the first major breakthroughs. By 1930 millions of dollars were being spent every year on speech perception research at the newly created Bell Labs. The key was his quantification of the transmission of information, as characterized by phone error patterns. Fletcher's full and final theory was not published until 1950, following his AT&T retirement.

The next breakthroughs were provided by George Miller and his colleagues at the Harvard Acoustics Lab during and following WWII. Miller used concepts from information theory, developed at Bell Labs by Claude Shannon, to quantify speech entropy. While these studies provide key insight into speech perception, they do not take the final elusive step that would allow us to build robust automatic speech recognition (ASR) machines.

Regardless of what you read in the popular press, ASR is still an unsolved problem. Dr. Allen will attempt to pass along some wisdom he has learned over the years on what we now know about human speech recognition (HSR). It is hoped that by learning more about HSR we might make ASR robust to noise and filtering. Today ASR is based on language models which have not, and

can not, give ASR the basic robustness to noise and filtering found in HSR.

Dr. Allen will summarize important results from the 30 years of work by Fletcher and his colleagues, which resulted in the "articulation index." We now know that the AI is functionally the same as Shannon's channel capacity.

Next Dr. Allen will summarize the speech work of George Miller. Miller showed the importance of source entropy (randomness) in speech perception. He did this by controlling for both the cardinality (size of the test corpus) and the signal to noise ratio of the speech samples. Dr. Allen will show how to use the singular value decomposition to convert the sound confusion matrix into a metric of distances, to define perceptual sound groupings.

Finally Dr. Allen will show how language modeling cannot solve the speech recognition problem. The key to robustly decoding phones resides in extracting more fundamental events from the speech stream, which we call 'events.' These events are transient, and can last for only 10 ms. They seem to hold the key to consonant-vowel discrimination.

About the Speaker

Jont Allen received a BS in EE from the University of Illinois in 1966, and PhD from the University of Pennsylvania in 1970. He then joined Bell Laboratories in 1970, where he was in the Acoustics Research Department as a Distinguished Member of Technical Staff. From 1996-2002 he worked at AT&T Labs as a Technology Leader. In 2003 he joined the ECE faculty, University of IL, UIUC.

Dr. Allen is a Fellow of the Acoustical Society of America (ASA), an IEEE Fellow, a past member of the Executive Council of the ASA, the Adm. Committee (ADCOM) of the IEEE ASSP Society, an Editor of the ASSP transactions, the Chairman of the Publication Board of the ASSP Society, the General Chairman of ICASSP-1988. In 1986 he was awarded the IEEE ASSP 1986 Meritorious Service Award. In 1986-88 he participated in the development of the AT&T multi-band compression hearing aid, that is now sold under the Resound name. In 1990 he was an Osher Fellow at the Exploratorium Museum in San Francisco. In 1991-92 he served as an international Distinguished Lecturer for the Signal Processing Society. In 2000 he received an IEEE 3d Millennium Metal for 'Outstanding achievements and contributions.'

Dr. Allen has worked for 30 years on human perception and is an expert on cochlear function, the noninvasive diagnosis of cochlear dysfunction, and speech perception.

All Welcome!

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

Time: 6:15 PM (refreshments start at 6:00 PM), Tuesday, March 18, 2003.

Place: New Jersey Institute of Technology (NJIT), Room 202, ECE Center, Newark, NJ. Directions are available at www.njit.edu.

Information: Dr. Nirwan Ansari (973) 596-3670 (nirwan.ansari@njit.edu), Dr. Yun-Qing Shi (973) 596-3501, or check <http://web.njit.edu/~ieeenj/> for the latest updates. Directions to NJIT can be found at <http://www.njit.edu/University/Directions.html>.

Education Committee/Computer Society Announcement

The North Jersey Section Education Committee in association with Computer Society Chapter is thinking of conducting one day or half-day software workshops in the interest of our members. Please email your opinions on topics of interest, preference for weekend or week day, and locations so that we can arrange for speakers/instructors.

Some examples of topics of interests would be: Java, JSP, J2EE, Oracle 8i, SQL, PL/SQL, etc.

Please Contact Bhanu Chivakula, Chair, Education Committee at b.chivakula@computer.org or Mario Bernadel, Chair, Computer Society at mbernadell@ieee.org.

Conference Rooms Needed!

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

“Bell Labs-Life in the Crown Jewel”

Author: Dr. Narain Gehani

A Review By R. V. Snyder

I was looking for the Crown Jewel in the Tower of Murray Hill, but I didn't find it in this book! Admittedly, my time as a graduate student summer employee, mentored by Bill Mumford in the early '60s and as a research colleague, mentored by Harold Seidel in the late 60's, enticed me in the reading, with grand expectation of another trip to the Enchanted Forest, replete with anecdotes of quiet acoustically- anechoic chambers, mechanical parametric amplifiers, and a cast of characters with more knowledge than most on subjects as varied as Beethoven and beer....and the time to compare the two!

Don't get me wrong! This is a very informative book, nostalgic in a way, but a bit pedestrian in the treatment of what was (and might still be) a magnificent and invaluable monument to an earlier set of values, a vanishing but still shining resource for the United States and for the whole of humanity: the Bell Labs Research organization. Treating that institution as an adjunct to the business units of AT&T or Lucent is the root cause of the diminishment of the Labs, not the means for revitalization.

I'll give this to Dr. Gehani: he does indeed state clearly what would be required to return the Labs to its days of glory. Decoupling immediate business exigencies from research efforts using public funding, rather than business unit funding, would rebuild the "University without students", and once again make available to Americans and to the world a cornucopia containing the fruits of intellectual pursuit.

The book documents the approaching end of days, the time just before Alaric rides in with sacks akimbo. The Empire is falling and the inhabitants run scared! Given the very select group of denizens, the struggles have not yet resulted in rigor mortis, but the leaders run from the cure, simply quelling the symptoms. Dr. Gehani has documented an interesting portion of the Lab's history, but he's missed the glory days! He names many of the players, critiques the programs, and provides some humorous anecdotes. His recounting of his puzzlement over the backward-walking researcher certainly

was reminiscent of "expect the unexpected" any given day. Perhaps apocryphal, the story about the researcher trying to count all of the atoms in the Universe to see if the expansion of the Universe can be attributed to God or not* could have been the saga of many Lab sages. There were characters in them that Murray Hills! Yes, there is humor and enjoyment in this little volume, but pathos dominates the mood. Perhaps someone from a physical science background (at least someone from an earlier time) would have a different "take" on the history of the Labs, both past and future, and such a volume will be eagerly awaited by this reviewer. Indeed, I want to see and once more touch that Crown Jewel!

** If the number of atoms is less than a certain number, the Universe will expand forever and thus the big bang had to be caused by a supernatural force we call God, but if the number is larger than a critical value, expansion should slow, the Universe collapse to a singularity and the completely natural cycle repeat ad infinitum.*

For more about the book please visit:
<http://www.silicon-press.com>

NJ Consultants' Network: Tour of the New C>NNNJ Website

On April 24, 2003, IEEE Consultants' Network of Northern NJ will hold a meeting featuring a Tour of the New C>NNNJ Website, given by Chris Mesibov of TechGenesis, Inc. The presentation will be followed by an informal networking session for members and guests and by a meeting of the C>NNNJ Executive Committee

About the Talk

C>NNNJ website, TechnologyOnTap.org, serves as a focal point of the network, providing reference to our activities and offering information on our members. Our Webmaster, Chris Mesibov, will give a guided tour of the recently redesigned site, which has an all-new look and exciting new functions, giving members direct control over their entries and streamlining handling of referrals. The tour will outline resources available to visitors and members, in particular mechanisms to be used by members to manage their sections and listings, generate and send intra-network messages. The presentation will be of particular interest to those who intend to

maximize the effectiveness of their on-line presence on network site or who contemplate joining the group.

Information for site visitors:

- Meetings
- Member Consultants
- Referral Form
- Joining the Network

Member Services:

- Member Profile Editor
- Referral Archive
- Consultant Business Description Editor

Administrator Services:

- Managing New Members
- Meeting Editor
- Member Communications
- Session/Security Management

About the Speaker

Chris Mesibov is the President of TechGenesis Inc. His consulting business provides analog and digital design services, specializing in development of automated test systems in network environments. Mr. Mesibov's experience of 20+ years includes RF ATE systems for military avionics, cellular and satellite equipment, and power systems for telecom products. His website is www.techgenesis1.com; he can be reached at chris@techgenesis1.com.

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. Bring your friends.

Time: 7:30 PM, Thursday, April 24, 2003.

Place: MCE/KDI Triangle, 60 S. Jefferson Rd, Whippany, NJ. (Entrance at rear)

Information: For directions and up-to-date meeting status, call Robert Walker (973) 728-0344 or visit our website at www.TechnologyOnTap.org. To download a map to MCE/KDI, go to: <http://www.kditriangle.com/directions.htm>.

General Chair

Nirwan Ansari, NJIT

Technical Program Chairs

Fadi Deek, NJIT

Ching-Yung Lin, IBM Watson

Heather Yu, Panasonic

Special Session Chairs

Anthony Vetro, Mitsubishi Research

Uf Tureli, Stevens Ins. of Tech

Plenary/Panel Chairs

Yucel Altunbask, Georgia Tech

Chang Wen Chen, Sarnoff

Demo/Exhibition Chairs

Bartel Van De Walle, NJIT

K.P.Subbalakshmi, Stevens

Technical Track Chairs*Research/Edu Methodology Track*

Timothy Shih, TamKang Univ.

Danielle Kaplan, Columbia Univ.

Info. Networking Track

Gary Chan, Hong Kong U Sci &Tech

Nasir Memon, Polytechnic Univ.

Info. Management Track

Symeon Papavassiliou, NJIT

Chris Yang, Chinese U of Hong Kong

Multimedia Technology Track

R. Chandramouli, Stevens

Jacob Baal-Schem, Comsoc

Human Computer Interface Track

Belle Tseng, IBM Watson

Marilyn Tremaine, NJIT

Systems and Applications Track

Haniph Latchman, Univ. of Florida

J. DeFranco-Tommarello, NJIT

Finance Chair/Treasurer

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ITRE 2003

IEEE International Conference on Information Technology: Research and Education

Research and Education on IT for enabling the next generation technology development

August 10-13, 2003, Newark, New Jersey, USA

Sponsored by

New Jersey Commission on Higher Education, IEEE North Jersey Section and COMSOC Chapter, and Technical co-sponsorship with IEEE Communications Society

Call for Papers

Information Technology (IT) plays a vital role in today's global economy. Besides its phenomenal impact on financial and industrial sectors in the past decade, Information Technology is also rapidly changing the landscape of research and education. Research in advanced telecommunications, networking and computing, calls for innovative data representation tools, high-speed simulation platforms, and analytical instrumentation with which to explore and enhance both experimental and existing methodologies. Education is changing with the advent of new interactive on-line learning technologies, multimedia electronic libraries and collaborative workspaces, improving knowledge sharing and education practices.

ITRE2003 invites proposals for peer-reviewed individual papers, full panels, special sessions, demonstrations and workshops for the first international conference dedicated to Information Technology with specific focus on research and education. The mission of ITRE2003 is to provide a forum for IT professionals, theoretical researchers, and practical educators in which to share insights and experiences of the current state-of-the-art information technologies, pedagogy and academic-industry collaborations, and to contribute to a vision of the future of IT that will shape the emerging high-tech workforce. Topics of interested areas include but not limited to:

□ Research/Education Methodology –

- Impacts of on-line learning to education
- Practical and new models of on-line learning
- Web-based SW Eng. for on-line learning
- Simulation tools to support virtual lab
- CSCW to support joint research activities
- Open tech. for collaborative participant design

□ Information Networking –

- Network management and measurement
- Quality of service and network protocols
- Information and network security
- Wireless communication systems
- Internet and Intranet
- Peer-to-peer technology and networking
- Optical switches and WDM networks

□ Systems and Applications –

- Tutoring and learning systems
- Collaborative systems

□ Multimedia Technology –

- Multimedia sever and proxy design
- Real-time multimedia signal processing
- Multimedia indexing and retrieval
- Multimedia application system infrastructure
- Multimedia security

□ Human-Computer Interface –

- Multimodal interface
- Mobile collaboration
- Usability interface and designs
- Augmented virtual reality
- Interactive video conferencing

□ Information Management –

- Intelligent agents and mobile agents
- Parallel and mobile computing
- Monitoring information and data flow
- Information retrieval and visualization
- Data mining and data warehouse
- Knowledge acquisition and representation

Important Dates:

- January 15, 2003: *Special session or Workshop proposal due.*
- February 15, 2003: *Panel proposal due.*
- February 15, 2003: *Original, full-length, unpublished papers due.*
- March 1, 2003: *Demo/Exhibition proposal due.*
- April 1, 2003: *Notification of acceptance.*
- May 1, 2003: *Final camera-ready manuscript due.*

A *Student Best Paper* will be selected and awarded at the conference. The Proceedings will be published by IEEE. Authors of selected papers will be invited to publish their extended version on the special issues of two international journals. For further information: <http://web.njit.edu/itre2003>; or send e-mail to: itre2003@njit.edu;

IEEE 2003 SARNOFF SYMPOSIUM

The College of New Jersey
March 11-12, 2003

ADVANCES IN WIRED AND WIRELESS COMMUNICATIONS

SYMPOSIUM PROGRAM

March 11-12, 2003

The College of New Jersey, Ewing, NJ

<http://www.sarnoffsymposium.com>



Sponsored by:

IEEE Princeton Section, IEEE Microwave Theory and Techniques Society, IEEE Communications Society, IEEE Electron Devices Society, TCNJ Engineering Department and TCNJ IEEE Student Branch

Power Systems Design Seminar

The PES and IAS Chapters will sponsor a one-day seminar covering the basics of Power System Design. The session will be held on Friday, April 11th, from 9:00 AM – 3:00PM, at Cutler-Hammer, 379 Thornall Street (Alferi Building), 8th Floor, Edison, NJ.

About the Seminar

The seminar will cover the basics of designing power distribution systems for industrial and commercial facilities. The seminar will focus on the selection of the various types of power distribution equipment, and how to configure the systems to provide the proper level of reliability based on available project funding.

Topics to be covered include:

- Power System Design
 - ↖ Simple Radial Systems
 - ↖ Primary Selective Systems
 - ↖ Secondary Selective Systems
 - ↖ Spot Networks
- Low Voltage Distribution and Protection
 - ↖ Metal Enclosed Switchgear (UL 1558)
 - ↖ Dead-Front Switchboards (UL 891)
 - ↖ Secondary Unit Substations
- Medium Voltage Distribution and Protection
 - ↖ Metal Clad Switchgear (ANSI C37.20.2)
 - ↖ Metal Enclosed Switchgear (ANSI C37.20.3)
 - ↖ Primary Unit Substations
- Short Circuit and Overcurrent Protective Device Coordination
 - ↖ Circuit Breakers - Power, Insulated Case, Molded Case
 - ↖ Fuses
 - ↖ Selective Coordination
 - ↖ Series Rated Devices
 - ↖ Zone Selective Interlocking

The registration fee for this seminar prior to March 28th will be \$100 (non-IEEE members), \$75 (IEEE Members), and \$25 (students with valid ID). The fee will be waived for IEEE Life Member Grades with verification at the seminar. Registrations after March 28th 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 50% of the IEEE registration charge.

- Time:** 9:00 AM to 3:00 PM, Friday, April 11, 2003.
Place: Cutler-Hammer, 379 Thornall Street (Alferi Building), 8th Floor, Edison, NJ.
Directions:
- Garden State Parkway to Exit 131A (Metropark). The exit ramp (from either direction) puts you on Wood Ave.
 - At third traffic light, make a left onto Thornall Street.
 - Drive about 1/4 mile, see the ALFIERI Building (379 Thornall St.) on left. Make left into driveway, and proceed to parking garage. Cutler-Hammer is in the left wing (when entering from the rear of the buildings via the parking garage), on the 8th floor.
- Information:** Ronald W. Quade, PE, (212) 833-0268 or RonaldWQuade@eaton.com.

Registration: Power Systems Design Seminar 4/11/2003

Register via US mail to: Ronald W. Quade, PE
Eaton Cutler-Hammer
830 Third Avenue
Suite 920
New York, NY 10022

Name _____

Address _____

Phone _____ Email _____

IEEE # _____ Student @ _____ Non IEEE _____ Life Member _____

Payment Enclosed \$ _____ Add \$25 late registration after March 28th

Make Check payable to North Jersey Section IEEE

IEEE AWARDS RECEPTION

*North Jersey Section
May 4, 2003
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, 2003** from 3 to 6 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 28, 2003. 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 (973) 377-3175.

Use this form for Reception reservations. **ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE to receive tickets in advance.** **Reservations are required by April 28, 2003.** 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: _____

IEEE North Jersey Section Seminar

OBJECT-ORIENTED C# DESIGN & PROGRAMMING

Tuesday Evenings, March 11, 2003 through April 29, 2003, Eight weekly classes

(March 11, 18, 25, April 1, 8, 15, 22 and 29) from 6:30 PM to 9:00 PM

Ramada Inn Clifton, 265 Route 3 East, Clifton, NJ 07014

(Checks should not be mailed to this address)

ABSTRACT

Microsoft has created a new programming language, C# (Sea Sharp) as part of its new .NET development environment. Although MS still supports Visual basic and C++ (and maybe Java), clearly C# is its language of choice for Windows and Internet usage, and will be its best-supported language. C# is an Object-Oriented language of course. It is more powerful than VB but still allows simple programs to be created in the VB drag-and-drop tradition. It is simpler than C++ but still allows complicated programs with more obvious code.

This course covers the C# language itself, the sizeable libraries that support it, the ability to create screen images (for console or internet) and use of the MS Visual .NET development suite. This course begins with the environment and motivation for C# and mechanics of the language. It then describes C#'s ways to declare classes and use objects of those classes. Special facilities for creating Windows, or internet, programs are treated. A downloadable command line compiler can be used, however, the elegant visual .NET development suite is also described.

Finally several C# software engineering capabilities to enhance development efficiency and reliability are covered. Design is covered using UML. The course has a practical, "how-to-do-it" approach.

TARGET AUDIENCE

This is not a course in how to program computers. It is intended to extend the capabilities of those who are already programmers so a familiarity with foundation programming concepts will be very helpful. But O-O programming is still programming so the course will cover concepts, implementation and practical aspects of using C#.

COURSE TOPICS

1. What is the programming environment today: What is C#, why did Microsoft create it and where do they expect it to go.
2. C# classes and object instantiation: Fields and constructor and other methods, visibility, how classes encapsulate the real world and its characteristics.
3. Characteristics of code within methods: names, data types, operators and keywords, expressions and statements, control mechanisms for branching and looping, how everything is a class, value and reference types, boxing.
4. Mechanics of program creation: compilers, emulators, jit, formatting, layout, debugging, and testing, documentation and comments, O-O design, UML, development tools.
5. Anatomy of a console C# program: main, elementary input and output, static members.
6. Inheritance and derived classes: use of library classes, some special classes such as string, namespaces and using, other object interaction.
7. Deeper into classes and objects: delegates, properties, overloading methods, Interfaces, for each, containers and enumerators.
8. The concept of Windows programs: events and handlers, use of the mouse, the large Forms library, commonality between console and internet, examples of windows programs.
9. Engineering issues, garbage collection, unmanaged code, attributes, finalize, threads, ref and out, file I/O, efficiency and real-time.
10. Other actors in the game: XML, COM+, SOAP, ADO, Regex.

Class size will be limited to a maximum of 25. Early registration is recommended. The members are required to pre-register by calling Mr. Bhanu Chivakula on (732) 718-3818. Registration and checks are accepted only after pre-registration.

WHERE:	Ramada Inn Clifton, 265 Route 3 East, Clifton, NJ. (Checks should not be mailed to this address)
WHEN:	8 Sessions, Tuesdays on March 11, 18, 25, April 1, 8, 15, 22 and 29; Time: 6:30-9:00 PM
COST:	With textbook or notes: IEEE (& affiliate) members \$300; Non-IEEE members \$400.
CONTACT:	Bhanu Chivakula - email b.chivakula@computer.org.

REGISTRATION: OBJECT-ORIENTED C# DESIGN & PROGRAMMING

Please send checks with this form to Bhanu Chivakula, 19 Prestwick Way, Edison, NJ 08820. Include the sender's address and mark the envelope "OBJECT-ORIENTED C#."

(Checks payable to "North Jersey Section IEEE" with registration form should be mailed to this address)

Direct inquiries via email to B.Chivakula@computer.org.

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

Non-member ✉ email address ✉
 IEEE Member Member #: _____ Member of _____ technical society

Employer: _____

Employer Address: _____

Home Address: _____

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

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

Registration status will be mailed after March 4, 2003. In general, the effective date of the application corresponds to the date when BOTH a fully completed application/registration and payment are received.

Tuition receipt will be mailed only if this box is checked

Signature: _____