



Celebrating 125 Years
of Engineering the Future

IEEE National Capital Area

Scanner

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Elections

Washington Section Nominations

Nominations are being sought for the Washington Section election to be held in November.

Contact Gerard Christman at gerard.christman@ieee.org to nominate candidates for Chair, Vice Chair, Treasurer, Secretary, or a Director position.

N. Virginia Section Call for Nominations

The Northern Virginia Section Nominations Committee requests nominations for the following Section offices for 2010: Vice Chair (Chair Elect), Secretary, Treasurer, and four Directors. Section members of Member grade or higher are eligible to serve. Section members are requested to submit potential candidates for these offices to the Committee by September 30, 2009. Nominations may be submitted to Syed F. Ahmed, Nominations Committee Chair, at syed.f.ahmed@ieee.org.

Alternatively, any member eligible to hold office may secure a position on the election ballot by petition. Petitions must be signed by 25 eligible voting Section members and must include name and IEEE member number of all signers. Petitions will be accepted through September 30, 2009. Petitions should be mailed to Syed F. Ahmed, Nominations Committee Chair, 4022 Virginia Street, Fairfax, VA 22032.

Ballots will be published October 31, 2009 and will be due on November 30, 2009. Election results will be announced in December 2009.



Preserving History—(left to right) Monica A. Mallini, Chair, Northern Virginia Section; Wally Lee, Scanner Washington Section Editor; Raj Madhavan, Vice Chair, Washington Section; and Tim Weil, Chair, Washington Section attended the IEEE Conference on the History of Technical Societies. Lee holds a time capsule that the two sections are preparing to mark the 125th anniversary of IEEE.

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Conference Explored Multi-Faceted History of Technical Societies

Social & Scientific Achievements Highlighted

By Tim Weil Chair, Washington Section

The University of Pennsylvania's Department of the History and Sociology of Science, Drexel University's Department of Electrical and Computer Engineering, and the Philadelphia Section hosted the recent IEEE Conference on the History of Technical Societies.

An international audience representing IEEE regions, societies, academia, industry, volunteers, students, archivists and historians assembled in Philadelphia for a three-day program illuminating the social and scientific achievements of IEEE and other professional technical associations.

On behalf of the Washington Section, I traveled to the meeting to report on the 100-year story of our Section. Other local representatives included Raj Madhavan, Vice Chair of the Washington Section; Monica Mallini, Chair of the Northern Virginia Section; and Wally Lee, Scanner Washington Section Editor.

Our contingent networked with dozens of attendees from both national and international

technical societies. We attended many of the workshops, educational tours, and evening programs. Monica Mallini gave a talk on the "Birth of the Scanner" (see the May–June 2009 Scanner, p. 6, for a summary).

During our IEEE 125th Anniversary Year, this conference reinforced our vision to 'Engineer the Future' by learning the stories of our component organizations and weaving in the rich history of engineering and scientific achievement.

The program included two other presenters from the Washington area. Dr. David Alan Grier, Associate Dean of the Elliott School of International Affairs at George Washington University, presented "The Failed Societies of Computing," in which he speculated on why early computer organizations had trouble defining their purpose and maintaining longevity.

Dr. Anthony Ephremides, University of Maryland professor and IEEE Fellow, discoursed on the evolution of the IEEE Information Theory Society (ITS) in his talk, "How Infor-
See Weil, p. 7

Connections Between Societies Strengthened

By Raj Madhavan Vice Chair, Washington Section

One of the highlights of the IEEE Conference on the History of Technical Societies was the banquet, which was held at the Down Town Club, adjacent to Independence Hall in Philadelphia.

The banquet was billed as an opportunity for attendees "to join in celebrating the past achievements of IEEE and in looking forward to the role IEEE members will play in meeting the challenges of the future," and the speakers echoed this theme.

The keynote address, "History and Engineering: Building Bridges Together," was delivered by Dr. Henry Petroski, professor of engineering and history at Duke University. In his excellent multimedia presentation, he urged engineers to think outside of the box, question theories, and learn from their failures.

IEEE President John Vig spoke on diversity within IEEE, and the banquet program also featured remarks by past IEEE presidents Joseph Bordogna and Richard Gowen.

I also attended many of the technical sessions. Below is a summary of four sessions held on the second day of the conference.

Another past President, Kenneth Laker, spoke on the evolution of IEEE Xplore and how it has successfully delivered technical content to members. The title of Prof. Laker's talk was "IEEE—A Bold Leader in Changing the Essence of Technical Publications."

Janet Rochester, President of the IEEE Society on Social Implications of Technology (SSIT), discussed the history of the society. It was interesting to see many of the issues that SSIT is involved in, including environmental, health and safety implications of technology; engineering ethics and professional responsibility; the history of electrotechnology; technical expertise and public policy; peace technology; and social issues related to energy, information technology and telecommunications.

I have invited Dr. Rochester to be a speaker at a meeting of our Robotics and Automation
See MADHAVAN, p. 7

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ON THE WEB**eScanner Calendar of Events**

The calendar is available at www.ieee.org/escanner. Check here for events submitted too late for print publication.

IEEE National Capital Area Virtual Community

Exchange ideas and participate in discussions with local IEEE members at www.ieee-communities.org/ncac.

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EDITORIAL POLICIES AND PROCEDURES**Calendar Announcements**

Please submit calendar items in the format used in the Calendar of Events. You can send email to ncac-scanner@ieee.org. Events must have an IEEE or affiliate sponsor.

If possible, include a synopsis of the event and a biographical sketch of the presenter including academic background, current position, notable achievements, and IEEE and other professional affiliations.

Articles

Other contributions, such as reports on chapter events and other member activities, are most welcome. Please submit articles to the managing editor at ncac-scanner@ieee.org.

Advertising

Contact the advertising manager about ad rates and to place advertising orders. Ads must be submitted by the deadline below.

Deadlines

The editor reserves the right to set policies and procedures necessary to provide members with a newsletter that is informative and timely. Deadlines must be strictly observed to keep the publication on schedule. If you are planning an event and have insufficient information by the deadline, please contact the managing editor. The deadline for the upcoming issue will always be published on this page.

November–December issue deadline: October 1, 2009

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Postmaster: Send address changes to *IEEE National Capital Area Scanner*, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. (ISSN 0894-0452)

calendar of events

Tuesday, September 8, 2009

Washington Section Administrative Committee Meeting

- Time:** 6:45 pm
Place: American Association for the Advancement of Science (AAAS), 1200 New York Avenue NW, Washington, DC
Directions: Use the 12th Street entrance. The AAAS building is one block from Metro Center (Red, Orange and Blue lines). Street parking is free after 6:30 pm (no parking 4:00-6:30 pm). There is a pay parking lot at the intersection of 9th St. and New York Ave., and an underground parking garage at 14th St. and New York Ave.
 See map at www.aaas.org/dcwest.pdf.
More Info: All interested IEEE members are welcome. A video link is available at www.ieee.org/washsec/video1.html.
Contact: RSVP to Monica Taysing-Lara at m.taysinglara@ieee.org or 202-725-2225.

Wednesday, September 9, 2009

Northern Virginia Section Administrative Committee Meeting

- Time:** 6:00-8:00 pm
Place: Olive Garden Restaurant, 8133 Leesburg Pike (Tysons Corner), Vienna, VA
Directions: From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Parking garage is behind the restaurant.
More Info: All interested IEEE members are invited to attend.
Contact: Register by 12:00 noon on Tuesday, Sept. 8 at http://meetings.vtools.ieee.org/meeting_view/list_meeting/1007.

Thursday, September 10, 2009

◆ Digital Television

- Sponsor:** Life Members
Speaker: James O'Neal, Technology Editor, New Bay Media Publishing
Time: 12:00 noon
Place: Dolley Madison Library, 1244 Oak Ridge Ave, McLean, VA
Directions: Take Exit 46 from the Beltway and proceed on Route 123 North to McLean, VA, about 2 miles. After crossing Old Dominion Dr., turn left at the next street, Ingleside Ave., and then left on Oak Ridge Ave. The library is on the left.
More Info: See Diamond story, p. 5. A light lunch will be provided to those who make a reservation.
Contact: RSVP to Dave Booth at 540-364-1350 or dbooth@ieee.org.

Thursday, September 10, 2009

◆ Accelerating High Performance Computing with Tier Zero Solid State Storage

- Sponsor:** Computer Society
Speaker: Karl Bendorf, High Performance Computing Consultant, ViON Corporation
Time: 6:00-8:00 pm
Place: ViON's Dulles Demonstration Center, 196 Van Buren Street, Suite 100, Herndon, VA
More Info: See Diamond story, p. 5. Refreshments will be provided.
Contact: RSVP to Gordon Nelson at gordon.nelson@vion.com. Please include your name, affiliation and citizenship.

Friday, September 11, 2009

◆ Model-Based Design for DO-178B Certification

- Sponsor:** Control Systems Society (Washington chapter)
Speaker: Will Campbell
Time: Lunch 11:30 am; presentation 12:00 noon; discussion 12:30-1:00 pm
Place: Fairchild Controls, 540 Highland Street, Frederick, MD
More Info: See Diamond story, p. 5.
Contact: Please RSVP to Dr. Haik Biglari at 240-626-9205.

Monday, September 14, 2009

Advances in Antenna Test and Measurement Techniques: A Colloquium and Exhibition

- Sponsor:** Antenna Measurement Techniques Association (AMTA)
Cosponsors: IEEE Electromagnetic Compatibility Society (Washington and Northern Virginia Chapter, Baltimore Chapter), IEEE Antennas and Propagation Society / Microwave Theory and Techniques Society (Joint Baltimore Chapter)
Time: Registration & continental breakfast 7:30 am, program 8:15 am, reception 4:15-5:00 pm
Place: The Four Points by Sheraton BWI Airport Hotel, 7032 Elm Road, Baltimore, MD
More Info: See www.amta.org.
Cost: AMTA and IEEE members: \$150 through Sept. 2, \$195 after Sept. 2. Non-members and students, see website. No charge for AMTA and IEEE members who attend the reception *only*, provided a registration form is submitted in advance.
Contact: Register online at the URL above. For registration questions, contact Tom Boughner at tomboughner@emctech.com.

Tuesday, September 15, 2009

Accounting, Taxes and Payroll for Consultants and Small Businesses

- Sponsor:** National Capital Area Consultants' Network
Speaker: Eric Johnson, CPA
Time: 6:00 pm
Place: Olive Garden Restaurant, 8133 Leesburg Pike (Tysons Corner), Vienna, VA
Directions: From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Use parking garage.
Cost: \$25 cash for dinner.
Contact: Preregister at http://meetings.vtools.ieee.org/meeting_view/list_meeting/1005. Send questions to Monica Mallini at m.a.mallini@ieee.org or to Mark Pittelkau mpittelkau@acsinnovations.com.

Thursday, September 17, 2009

◆ Continuity of Operations and Disaster Recovery

- Sponsors:** Power Engineering Society, Industry Applications Society
Speaker: Chuck Ugalde
Time: 6:00-8:00 pm
Place: Virginia Tech Advanced Research Institute, 4300 Wilson Blvd., Suite 750, Arlington, VA
Directions: From Ballston Metro Station (Orange line), turn right at top of escalator then left on the street. Proceed two blocks toward Macy's, turn right and walk one block to Ballston Point at the intersection of Wilson Blvd. and Glebe Rd. If driving, see www.ari.vt.edu/ari_directions.html. There is a parking garage in the building with a \$1 charge for 3 hours. After 6:00 pm, there is limited free street parking.
More Info: See Diamond story, p. 5. A light dinner buffet will be served, followed by the program. All interested persons are invited.
Cost: Free for IEEE members; \$10 for non-members.
Contact: Rich Phillips at rdphillips@ekfox.com or 800-520-4771 ext. 113.

Tuesday, September 22, 2009

Cloud Computing

- Sponsors:** Computer Society, American Society for Quality (ASQ) Section 509 Software SIG, Society for Software Quality (SSQ)
Speaker: Shahid N. Shah, Netspective
Time: 6:30 pm
Place: Video teleconference with sites in McLean and Silver Spring. Addresses are at the registration link below.
More Info: All interested IEEE members and guests are invited to attend. Pizza and soda will be served.

See CALENDAR, p. 4

CALENDAR, from p. 3

Contact: Advance registration is required to enter the facilities. Please register online at www.asq509.org/ht/d/sp/i/2499/pid/2499. If your plans change, please email ankums@mitre.org to cancel your reservation.

Saturday, September 26, 2009**IEEE Northern Virginia Section Picnic**

Sponsors: Northern Virginia Section, Communications Society (Northern Virginia chapter), Control Systems Society (Northern Virginia chapter)

Place: Lake Fairfax Park, Reston, VA

Time: 12:00 noon to 3:00 pm

Directions: From the Beltway, take exit 47A (Route 7, Leesburg Pike) to Baron Cameron Avenue. Turn left on Baron Cameron Avenue and take the second left onto Lake Fairfax Drive. Follow signs to the picnic. See www.co.fairfax.va.us/parks/maps/lakefairfaxmap.htm or www.restonpaths.com/LakeFairfaxPark.

More Info: All NoVA members, guests, and friends are cordially invited. Hamburgers and hot dogs and grilling supplies will be provided. Please bring a side dish, dessert, or something to grill. A special welcome is extended to IEEE student members and prospective members.

Contact: Please RSVP to Jeff Poston at poston@ieee.org by Friday, Sept. 18. Let us know how many will be attending and what you plan to bring.

Monday, October 5, 2009**◆ The Science in Engineering and the Engineering in Science**

Sponsor: Communications Society (Washington)

Speaker: Dr. Frederica Darema, Senior Science Analyst, Directorate for Computer and Information Science and Engineering, National Science Foundation

Time: Pizza at 6:30 pm, program at 7:15 pm

Place: University of the District of Columbia, Building 41, Auditorium 03, 4200 Connecticut Ave. NW, Washington, DC

Directions: UDC is located at the Van Ness–UDC Metro station (Red line). See www.udc.edu for additional directions.

More Info: See Diamond story, p. 5.

Contact: Dr. Paul Cotae at pcotae@udc.edu.

Tuesday, October 6, 2009**Washington Section Administrative Committee Meeting**

Time: 6:45 pm

Place: American Association for the Advancement of Science (AAAS), 1200 New York Avenue NW, Washington, DC

Directions: Use the 12th Street entrance. The AAAS building is one block from Metro Center (Red, Orange and Blue lines). Street parking is free after 6:30 pm (no parking 4:00–6:30 pm). There is a pay parking lot at the intersection of 9th St. and New York Ave., and an underground parking garage at 14th St. and New York Ave.
See map at www.aaas.org/dcwest.pdf.

More Info: All interested IEEE members are welcome.

Contact: RSVP to Monica Taysing-Lara at m.taysinglara@ieee.org or 202-725-2225.

Friday-Saturday, October 9-10, 2009**Third International Conference on Future Energy**

Sponsors: Institute for Advanced Studies in the Space, Propulsion and Energy Sciences; Integrity Research Institute

Place: Washington Hilton, 1919 Conn. Ave. NW (Dupont Circle), Washington, DC

More Info: The conference theme is “Reinventing the Future of Energy.” Early registration deadline is Sept. 9. See ad on p. 7.

Contact: Request a conference brochure at 301-220-0440 or iri@starpower.net.

Wednesday, October 14, 2009**Northern Virginia Section Administrative Committee Meeting**

Time: 6:00–8:00 pm

Place: Olive Garden Restaurant, 8133 Leesburg Pike (Tysons Corner), Vienna, VA

Directions: From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Parking garage is behind the restaurant.

More Info: All interested IEEE members are invited to attend.

Contact: Register by 12:00 noon on Tuesday, Oct. 13 at http://meetings.vtools.ieee.org/meeting_view/list_meeting/1009.

Wednesday-Friday, October 14-16, 2009**Applied Imagery Pattern Recognition Workshop**

Sponsor: IEEE Computer Society

Place: Cosmos Club, Washington, DC

More Info: The theme for AIPR 2009 is “Vision: Humans, Animals, and Machines.” The deadline for early registration is Sept. 25. See www.aipr-workshop.org.

Contact: Murray Loew at loew@gwu.edu.

Wednesday-Friday, October 14-16, 2009**IEEE 59th Annual Broadcast Symposium**

Sponsor: IEEE Broadcast Technology Society

Place: The Westin Hotel, 400 Courthouse Square, Alexandria, VA

More Info: See www.ieee.org/bts/symposium.

Contact: Kathy Colabaugh at 732-562-3906 or k.colabaugh@ieee.org.

Thursday, October 15, 2009**Politics of Power**

Sponsor: Life Members

Speaker: Paul Nelson

Time: 12:00 noon

Place: Dolley Madison Library, 1244 Oak Ridge Ave, McLean, VA

Directions: Take Exit 46 from the Beltway and proceed on Route 123 North to McLean, VA, about 2 miles. After crossing Old Dominion Dr., turn left at the next street, Ingleside Ave., and then left on Oak Ridge Ave. The library is on the left.

More Info: Paul Nelson, a Life Member, will discuss the electrical power industry and how it fits into the U.S. economy. Included will be rules and regulations, and a system overview. Nelson is a member of the Power and Energy Society. His primary interests, based on past professional experience, are power engineering and microelectronic technology.

A light lunch will be provided to those who make a reservation.

Contact: RSVP to Dave Booth at 540-364-1350 or dbooth@ieee.org.

Saturday, October 24, 2009**Second Annual Autonomous Robot Speedway Competition**

Sponsor: Robotics and Automation Society

Place: University of Maryland, College Park, MD

More Info: This event invites teams of IEEE members, university students, and robotics club members to acquire a deeper appreciation of the state-of-the-art and challenges that are currently the focus of research in robotics and automation. Competing teams must build and demonstrate a robot capable of traveling one mile on an oval track outlined with orange cones. Competitors will be scored on speed and distance traversed as well as on a technical presentation about their robot.

For more details on the competition rules and how to register, please see www.ece.umd.edu/arasc.

Contact: Dr. Raj Madhavan at raj.madhavan@ieee.org.

Sunday-Wednesday, October 25-28, 2009**7th International Workshop on the Design of Reliable Communication Networks**

Sponsors: IEEE Communications Society, University of Pittsburgh

Place: Westin Alexandria, Alexandria, VA

More Info: See the conference website at www.drcn.us.

Contact: David Tipper at 412-624-9421 or tipper@tele.pitt.edu.

Tuesday, October 27, 2009**Agile Methods**

Sponsors: Computer Society, American Society for Quality (ASQ) Section 509 Software SIG, Society for Software Quality (SSQ)

Speaker: Camille Bell

Time: 6:30 pm

Place: Video teleconference with sites in McLean and Silver Spring. Addresses are at the registration link below.

More Info: All interested IEEE members and guests are invited to attend. Pizza and soda will be served.

Contact: Advance registration is required to enter the facilities. Please register online at www.asq509.org/ht/d/sp/i/2499/pid/2499. If your plans change, please email ankums@mitre.org to cancel your reservation.

diamond♦stories

Thursday, September 10, 2009

♦ Digital Television

The complete transition to digital transmissions by America's full-power television broadcasters is now three months old. What prompted this change in the way many receive television? Is it living up to expectations? What has the nation gained from the change-over? Why did the transition take so long? Are there any problems associated with the DTV transition? Can it be termed fully successful? What are the benefits derived from converting the nation's full power broadcasters to digital?

James O'Neal, in his role as technology editor at a leading industry publication, *TV Technology*, has followed the evolution of digital television closely, and will examine these and other issues associated with the June 12, 2009 U.S. transition to digital television broadcasting in his presentation.

O'Neal is a retired broadcast engineer with nearly four decades of experience in that field. He began a second career in 2005 as a technical editor and writer, and publishes on a regular basis in a number of periodicals, including *TV Technology*, *Radio World*, and the IEEE's *BTS Newsletter*. His topics range from cutting edge and controversial issues such as the implementation of nighttime AM radio IBOC operations, to an in-depth exploration of Reginald Fessenden's 1906 work in radiotelephony. Mr. O'Neal particularly enjoys bringing to light the work of neglected inventors in the field of early radio and television. He is a graduate of the University of Arkansas, and a member of the IEEE, SMPTE and SBE, as well as a number of organizations dedicated to the history of electronic communications.

Thursday, September 10, 2009

♦ Accelerating High Performance Computing with Tier Zero Solid State Storage

In the world of high performance computing, every cycle counts and response times are extremely critical. Please join us for a presentation and open discussion on getting the most from your computing environment by using the fastest storage available. Solid state disks are entering the mainstream from many storage manufacturers these days, but getting the most out of them is no easy job. Learn about the merits of special purpose solid state storage.

Karl Bendorf has worked in the high performance computing world for over 30 years, with the last seven being with ViON Corporation in Washington, DC.

Friday, September 11, 2009

♦ Model-Based Design for DO-178B Certification

Software systems deployed in safety-critical applications in aerospace and other industries must satisfy rigorous development and verification standards. One of the most widely used of these standards is DO-178B, "Software Considerations in Airborne Systems and Equipment Certification." DO-178B specifies 66 software development process objectives, distributed across various stages in the development lifecycle. It was published in 1992, when most software was hand-coded. As a result, it does not cover advanced software development technologies, and must be mapped onto the processes and tools in Model-Based Design.

During this session, formal verification and validation techniques applied within this workflow will be presented. Maintaining traceability between code and

model will be shown during demonstrations of tools to generate C Code from a Simulink model. System-Test will be used to execute tests and compare C code and Simulink results against expected values. Code-based verification will be shown to prove source code reliability and the absence of runtime errors in the generated code.

Will Campbell holds B.S. and M.S. degrees in aerospace engineering from the University of Texas at Austin. His coursework specialized in control systems, numerical methods, orbital dynamics, and earth sciences. Upon completion of a thesis in interplanetary navigation, Campbell joined the Aerospace Corporation as the chief architect of the Atlas V closed-loop 6DOF simulation and winds safety verification laboratory. He joined MathWorks in 2007 where he specializes in Simulink solutions for the aerospace industry and defense sector.

Thursday, September 17, 2009

♦ Continuity of Operations and Disaster Recovery

The goal of the Continuity of Operations (COOP) and Disaster Recovery (DR) presentation is to promote awareness about the various nuances of COOP/DR that may affect an organization's ability to support, execute, and maintain a successful COOP/DR program. The presentation will focus on tools and methodologies that facilitate an organization's ability to continue operations under adverse conditions by the introduction of appropriate resilience strategies, recovery objectives, continuity of operations and crisis management plans in collaboration with or as a key component of an integrated risk management initiative.

Chuck Ugalde is the Director of the Unisys Business Continuity Management line of business within the Unisys Federal Enterprise Security Group based in Reston, VA. He has performed COOP/DR and Information Technology Contingency Planning on numerous contracts with city, state and federal government agencies.

His most recent engagement was with the U.S. Army Logistics Innovation Agency where he was responsible for delivering an IT Contingency Plan as part of the overall upgrade of the U.S. Army Logistics Innovation Agency's COOP program.

From 2006 through 2008, Ugalde worked with the Department of Health and Human Services (HHS) where he provided COOP Program and Exercise support. In his role as Deputy Engineering Manager for the HHS ITSC program, he assisted HHS in streamlining their COOP Program to meet the new requirements of FCD-1, FCD-2 and the NCP Implementation Plan as well as aligning their COOP Response and Recovery Strategies with the various HHS alternate facilities and information technology platforms.

Prior to joining Unisys, Ugalde managed the planning, re-design, and implementation of major data center upgrades for the NYC Departments of Correction and Probation. The effort involved the implementation of a multitude of Response and Recovery Strategies incorporating the major data centers, 25 detention facilities and 30 branch offices throughout the NYC metropolitan area. During the NYC blackout of 2003, he executed and coordinated all data center incident response, backup and recovery operations prior to full power restoration.

Ugalde has been designing, building and operating data centers as well as providing disaster recovery services for the last 20 years for clients such as UBS Paine Webber, Polo Ralph Lauren, BMG Music Company, G&J Publishing, and Mitsui-Sumitomo Insurance.

He attended the State University of New York Farmingdale and studied mechanical engineering. He holds multiple industry certifications in routing, switching, security, and operating system and storage disciplines, including MCSE, CCNA, CCDA, CCNP, CCDP, CSMDS, and CBCP.

Ugalde is a regularly featured speaker at many government technical forums and is a frequent guest instructor for the Potomac Forum, a non-profit organization dedicated to providing continuing education for government staff in COOP program management.

Monday, October 5, 2009

♦ The Science in Engineering and the Engineering in Science

Over the last 150 years we have experienced an unprecedented and accelerating pace of advances in engineering and scientific fields, with commensurate wealth in technological innovation, which has revolutionized and dramatically improved many aspects of well-being world-wide. Through science and engineering advances we can peer into the insides of protons in the nucleus, and the insides of our planet, and to the outer galaxies in the universe, and moreover science and engineering have created the myriads of technological capabilities around us and in our every-day lives; we can connect with people and places all over the globe and we have gone to space, we are benefiting from advanced medical diagnosis and treatment capabilities, we have reduced but not eliminated hunger and poverty. Discovery and innovations have been enabled through symbiotic science and engineering pursuits. We have achieved a lot, and yet today we are faced with many remaining challenges, including daunting challenges in energy and the environment, and globalization of economies.

In this talk we reflect upon the many advances that have been made and those that we foresee, and discuss directions in science and engineering fields, in terms of research, technology development, and education, that will enable us not only enhance our capabilities to innovate, but also engender capabilities for socially responsible sustainable development as well as economic development.

Dr. Frederica Darema is the senior science analyst in the National Science Foundation's Directorate for Computer & Information Science & Engineering. She also directs NSF's Next Generation Software Program.

Her interests and technical contributions span the development of parallel applications, parallel algorithms, programming models, environments, and performance methods and tools for the design of applications and of software for parallel and distributed systems. She was elected IEEE Fellow for proposing in 1984 the SPMD (Single-Program-Multiple-Data) computational model that has become the popular model for programming today's parallel and distributed computers.

She received a B.S. degree from the School of Physics and Mathematics of the University of Athens, Greece, and M.S. and Ph.D. degrees in theoretical nuclear physics from the Illinois Institute of Technology and the University of California at Davis, respectively.

After physics research associate positions at the University of Pittsburgh and Brookhaven National Lab, she became a technical staff member in the Nuclear Sciences Department at Schlumberger-Doll Research. Subsequently she joined the IBM Thomas J. Watson Research Center as a research staff member in the Computer Sciences Department. She established and became the manager of an IBM research group on parallel applications.

Montgomery College Student Branch Designs Poster to Recognize IEEE's 125th Anniversary

This poster was designed by the IEEE Student Branch at Montgomery College, and emphasizes the many contributions IEEE has made throughout its long and productive history.

The timeline highlights some of the many breakthroughs in science that have shaped our lives today. It moves through important discoveries in the fields such as power generation and signal transmission,

and ends with the role of budding engineers for the future.

The words and images in the center highlight what we think are the pillars of IEEE's success as a professional organization: Creativity, Innovation, Leadership, and Teamwork. The central bulb serves to symbolize IEEE's role as a world leader in technology, illuminating the path to a brighter future.

The original idea was proposed by Montgomery College IEEE Student Branch members Sabree Blackmon and Khalifa Traore. After the design was finalized, IEEE student members Bathiya Senevirathna, Wody Edji, and Estefany Carrillo did research on some of the major events in IEEE and scientific history, and compiled all the different elements of the poster into one cohesive piece.



Celebrating 125 Years
of Engineering the Future



Volta's Electrical Battery Invention

1799

Alessandro Volta develops first electrical battery, the Voltaic Cell. It consisted of two plates of different metals immersed in a chemical solution. Volta's development of the first continuous and reproducible source of electrical current was an important step in the study of electromagnetism and in the development of electrical equipment.



Innovation

Demonstration of Practical Telegraphy

1838

Samuel Morse and Alfred Vail first demonstrated publicly crucial elements of their telegraph system, using instruments that Vail had constructed during the previous months. Electrical pulses, transmitted through two miles of wire, caused an electromagnet to ink dots and dashes (grouped to represent letters and words) on a strip of paper.



First Intelligible Voice Transmission over Electric Wire

1876

Alexander Graham Bell called out to his assistant Thomas Watson, "Mr. Watson, come here! I want to see you."



Mill Creek No. 1 Hydroelectric Plant

1893

The Mill Creek hydroelectric generating plant began operating on 7 September 1893. This powerhouse was foremost in the use of three-phase alternating current power for commercial application and was influential in the widespread adoption of three-phase power throughout the United States.



Marconi's Early Wireless Experiments

1895

Guglielmo Marconi carried out some of the first wireless experiments. He first transmitted a signal over a few meters and later, following one and a half months of careful adjustments, over a distance of up to one and a half kilometers. This was the beginning of Marconi's pivotal involvement in wireless radio.



experiments showed that radio signals could propagate far beyond the horizon, giving radio a new global dimension for communications in the twentieth century.



Transmission of Transatlantic Radio Signals

1901

1924

Directive Short Wave Antenna

Professor Hidetsugu Yagi and his assistant, Shintaro Uda, designed and constructed a sensitive and highly-directional antenna using closely-coupled parasitic elements. The antenna, which is effective in the higher-frequency ranges, has been important for radar, television, and amateur radio.



MIT Radiation Laboratory

The MIT Radiation Laboratory, operated on this site between 1940 and 1945, advanced the allied war effort by making fundamental contributions to the design and deployment of microwave radar systems. The laboratory's 3900 employees made lasting contributions to microwave theory and technology, operational radar, systems engineering, long-range navigation, and control equipment.



Teamwork

2008

Montgomery College IEEE Chapter
The mission of the IEEE MC Student Chapter is to provide a gateway for prospective engineers at Montgomery College to become part of an international engineering community as well as gain invaluable knowledge and experience.



1997

Development of 802.11 Standard
A network access technology for providing connectivity between wireless stations and wired networking infrastructures.



1973

Pioneering Work on Electronic Calculators
A Sharp Corporation project team designed and produced several families of electronic calculators. The integration of CMOS-LSI and LCD devices onto a single glass substrate yielded battery-powered calculators. These achievements made possible the widespread personal use of hand-held calculators.



1951

Manufacture of Transistors
The commercial manufacture of transistors began here in October 1951. Smaller, more efficient, and more reliable than the vacuum tubes they replaced, transistors revolutionized the electronics industry.



Leadership



Creativity



1940

1945

Rich History of Technical Societies Examined at Conference

WEIL, from p. 1

mation Theory Changed the World.” Dr. Ephremides traced the ITS history from the seminal communication theory work of Claude Shannon through several ‘birth-death’ cycles of the Society to today’s robust ITS organization.

Other talks on the first afternoon included Dr. Gary Fogel’s history of the IEEE Computational Intelligence Society, and Dr. James Flanagan’s presentation on the evolution of the IEEE Signal Processing Society. Dr. Flanagan is director of Rutgers University’s Center for Advanced Information Processing and was recognized in 2005 with IEEE’s Medal of Honor.

The first day concluded with a tour of Moore Hall and the ENIAC Museum at the University of Pennsylvania. Two talks on the ENIAC (Electronic Numerical Integrator and Computer) computer architecture and software development provided an in-depth description of the 1946 system known as the first general purpose computer. It was designed to calculate artillery firing tables for the U.S. Army’s Ballistic Research Laboratory, but was originally used in calculations for the hydrogen bomb. Dr. Mitch Marcus of the University of Pennsylvania animatedly described the work of ENIAC’s designers, John Mauchly and J. Presper Eckert, and the team of design engineers and programmers who assisted with the development of the ENIAC.

As we neared 6 p.m. on day one, I noticed an elderly gentleman near the auditorium exit and discovered we were heading back to the same hotel. After he agreed to share a cab ride with me, I quickly learned that I was speaking with yet another pioneer in the history of computing. My co-rider introduced himself as Dr. Luigi Dadda, from the Polytechnic School of Milan, Italy. In 1954, Dr. Dadda helped design one of the first programmable computers at Computer Research Corporation in San Diego. A Wikipedia article describes how Dr. Dadda transported the new computer from California to Italy packed in cotton balls to protect the valves from vibrations during the voyage on an aging Liberty ship. When he disembarked, he had to declare the machine as an “electrical appliance” because the only computer on the customs form was a “punch card machine.” Since no punch card reader accompanied his new machine, that description didn’t apply.

Dr. Dadda is an IEEE Life Fellow, credited with early enhancements to Arithmetic Logic Unit (ALU) design (the Dadda Multiplier). To read more about Dr. Dadda, see http://en.wikipedia.org/wiki/Dadda_multiplier.

His Oral History can be found on the IEEE Global History Network at www.ieeeeghn.org/wiki/index.php/Luigi_Dadda_Oral_History.

The Conference on the History of Technical Societies was a great enhancement to our IEEE 125th Year celebration. Conference proceedings should be available via IEEE Xplore early next year. Also, by networking with Dr. Frederik Nebeker and Dr. John Vardalis from the IEEE Global History Network, we are hoping to make available to our members an extensive digital archive of the history of the Washington Section’s first 50 years (1903-53) sometime this fall.

My thanks go out to our Dr. Raj Madhavan for supporting these efforts and helping make our participation in the conference possible.

MADHAVAN, from p. 1

Society (RAS) chapter. Her talk will be open to members of the Washington and Northern Virginia Sections. The tentative date is in mid-October.

I also attended talks on the history of RAS by Dr. Antal Bejczy and on the history of the International Federation of Automatic Control (IFAC) by Dr. Stephen Kahne.

Dr. Kahne and I had extensive discussions on how to involve IEEE in some of the IFAC activities, under the umbrella of the IEEE Control Systems Society (CSS). Many wrongly believe that IFAC is primarily a European entity, but in fact there is strong participation by U.S. researchers and professionals in the activities of IFAC, including joint conferences such as the American Control Conference. I will be pursuing efforts to involve RAS and CSS in some of the IFAC activities that are scheduled to take place in the U.S. in 2010.

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Dawn of the Electronic Age

A new book by Dr. Frederik Nebeker, Senior Research Historian at the IEEE History Center, looks at the origins of electronic technology in the first half of the 20th century.

Much of the infrastructure of today’s industrial world was established in the period from the outbreak of World War I to the conclusion of World War II. During those years the capabilities of traditional electrical engineering—generators, power transmission, motors, electric lighting and heating, home appliances—became ubiquitous. Even more importantly, it was during this time that a new type of electrical engineering—electronics—emerged.

Dawn of the Electronic Age explores how this knowledge and its key applications developed in various scientific, economic, and social contexts. The book is available at www.wiley.com.

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Massachusetts Institute of Technology, USA

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DeVry University Offers Accelerated Courses

By Pete Sypher, Scanner Editor

In 2001, DeVry University opened a location in Crystal City, offering degrees in business, management and technology. Some time ago, it began offering accelerated courses in management. This involves dividing the traditional semester into two parts, the A Session and the B session, each session lasting eight weeks. A student taking a typical course load takes two courses in each session, completing four courses in the complete semester.

The reasoning behind these split semesters is that adults learn better when they concentrate on fewer subjects at a time, according to Dr. Peg Pankowski, Associate Dean for the College of Engineering and Information Sciences.

DeVry began accelerated courses in Electronic Engineering Technology and Computer Electronic Technology this past November. These courses lead to Bachelor of Science degrees.

Dr. Pankowski remarked that students like these accelerated courses and enrollment has exceeded expectations. During a recent visit to the Crystal City location, I was impressed by the clean, bright, uncluttered facility and the friendliness I observed.

This location also offers associate, bachelor's and master's degree programs in management and business. Additional degree programs are offered through partnerships with other area schools.

MIT Club to Host Series on Hand-Held Communications

The theme of this year's MIT Seminar Series is "Hand-Held Communicators: The Defining Technology for the 21st Century." The series consists of six dinner meetings, held on the second Tuesday of the month, October through March, at Kenwood Country Club, Bethesda, MD, and Maggiano's Restaurant, Washington, DC.

Speakers include Rob Pegoraro, Technology Columnist, *Washington Post*, on "The Future of the Smart Phone"; Michael J. Marcus, former Associate Chief for Technology, FCC, on "The Regulatory Environment for Hand-Held Communications"; Luc Vincent, Engineering Director, Google, on "Geo-

spatial Applications"; Prof. Alexander Pentland, Media Lab, MIT, on "Social Networking"; Mark Epstein, Senior Vice President, Development, Qualcomm, on "The Evolution of Services and Devices in the Wireless Space"; and Erick Tseng, Product Manager, Mobile Content and Search, Google, on "Operating systems for Smart Phones."

Details and registration information are available at <http://alumweb.mit.edu/clubs/washingtondc/events/seminars/index.html>. Registration is for the complete series only.

Questions should be directed to Ken Gordon at kengordon@alum.mit.edu or 301-469-9240.

Louis (Lou) Costrell, Life Fellow, 93

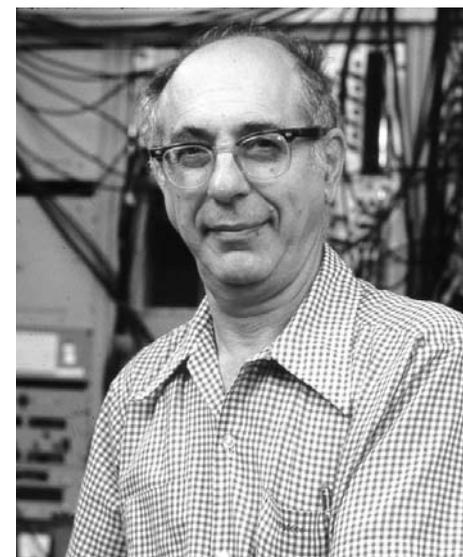
Louis Costrell, retired Chief of the Nuclear Instrumentation Section and Deputy Chief of the Accelerator Division at the National Institute of Standards and Technology (NIST), had a distinguished career in nuclear radiation measurement technology. He lived in Silver Spring for many years. He died June 8 in Rockville of prostate cancer.

Born in Bangor, Maine in 1915, he was a 1939 electrical engineering graduate of the University of Maine (with highest honors). He continued with graduate work in EE at the University of Pittsburg while working at the Ridgeway Company and then Westinghouse. During World War II he worked at the Bureau of Ships under Admiral (then Commander) Hyman Rickover. He earned a master's degree in electrical engineering from the University of Maryland in 1949.

In 1946, Mr. Costrell joined what is now NIST. He designed and operated gamma-ray instrumentation used at the early atomic bomb tests at the Nevada Test Site. This gamma-ray monitoring effort included measurement of intensities in Nevada, Arizona, Utah and California resulting from the explosions at the Nevada Test Site.

In 1964 he initiated the Nuclear Instrument Module system still used today by industry, laboratories and universities. Later in his career, his leadership resulted in the deployment of another modularized instrument system (CAMAC, still in use) for monitoring high-energy particle accelerators developed in the 1970s and 1980s.

He officially retired in 1982, but served as a rehired annuitant until 2008. He published 80 papers from 1949 to 1991.



Louis Costrell

Besides being a Life Fellow of IEEE, he was a Fellow of the Washington Academy of Sciences. A partial list of his awards includes the NBS Edward Bennett Rosa Award, Department of Commerce Meritorious Service Silver Award, IEEE Harry Diamond Award, and the IEEE Standards Medallion. He became president of the IRE Professional Group on Nuclear Science in 1960, and was one of the founders of the IEEE Nuclear and Plasma Sciences Society.

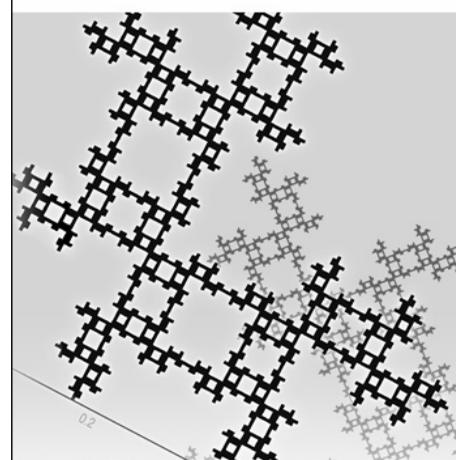
For over 50 years, Mr. Costrell enjoyed visiting Skyline Drive with his family. He participated in the 1963 March on Washington for Jobs and Freedom led by the Rev. Martin Luther King Jr.

Surviving Lou Costrell are sons James A. of Bethesda, Daniel N. of Colorado Springs, and Robert M. of Fayetteville Arkansas; a brother Edwin of Gaithersburg and a sister Natalie Frazis of Farmington Hills, Michigan; and three grandchildren and two great grandchildren. His wife Esther, whom he married in 1942, died in 2006.

Compiled by Pete Sypher, Scanner Editor, from a Washington Post obituary and material supplied by his son James.

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Senior Members

Congratulations to the following new Senior Members in the Northern Virginia (NV) and Washington (W) Sections:

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 Wei Chu (W)
 Hui-Min Huang (W)

If you are interested in becoming a Senior Member, please see www.ieee.org/seniormember for qualification requirements.

For assistance with references, Northern Virginia Section members may contact Monica Mallini at m.a.mallini@ieee.org and Washington Section members may contact Raj Madhavan at raj.madhavan@ieee.org.