



Outgoing Washington Section Chair's Message

An Amazing Year for the IEEE Washington Section

HARRY SAUBERMAN, P.E.
OUTGOING CHAIR, IEEE WASHINGTON SECTION

The Washington Section began 2011 with a celebration of our history and a look at the achievements of electrical engineers over the past 100 years. We conveyed the History Award to Dr. Michael Geselowitz, director of the IEEE History Center at Rutgers University, and, through his presentation, became acutely aware of the Global Network that surrounds us and gives us access to our records and accomplishments. The Washington Section was indeed privileged to take note of the technology milestones that have successfully elevated our standard of living and created a better life within our society. From a look at our past, we have continued to move forward.

In early spring, members of the Washington Section, in collaboration with IEEE-USA, participated in meetings and discussions with our elected representatives during IEEE Congressional Visit Day. We met with legislative assistants in their offices to raise the awareness of IEEE by bringing to their attention advances in medicine that have been fostered by technology. At the office of Congressman Gerry Connally, we discussed the use of high speed, large memory computers to map the human genome with a database that serves as a foundation for understanding the source and nature of complex diseases. We discussed positive increases in the "quality of life" in children and adults with cochlear implants and we discussed devices to mask the negative effects of tinnitus in patients with "ringing" in their ears. We also brought to the congressional staffers a bottom line initiative: the potential for significant savings in health care costs as a result of improvements in patient care from the applications of technology. At the office of Senator Jim Webb, we discussed the importance of activities to monitor air and water samples as a result of the earthquake and tsunami in Japan that damaged and shut down six nuclear reactors with the release of radioactive emissions. Our discussion led to the legislative assistant informing IEEE of Senator Webb's interest in small nuclear reactors. We discussed the neutron nuclear research reactor at NIST and mentioned that the IEEE Nuclear and Plasma Sciences Chapter had arranged and received educational tours of the NIST facility on two occasions. The legislative assistant suggested the idea of a tour for the senator. Initiatives are being made for this to occur. At the office of Senator Mark Warner, we highlighted the need to retain the interest of young minds in science and engineering as these school-age children progress through middle and high school. We brought to the staff's attention the ongoing IEEE activities that support student science fairs encouraging student engineering projects.

At the National Capital Area Awards Banquet in May, the IEEE Washington and Northern

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Mr. Oscar Reyes, PE, speaks to the George Mason IEEE Student Branch. Mr. Reyes is a newly-elected Director of the Northern Virginia Section.

Opportunities in Power Engineering

JEFF POSTON
CHAIR, IEEE NOVA SECTION

Mr. Oscar Reyes, P.E., gave an introduction to the power engineering field in his talk for the George Mason University (GMU) IEEE student chapter on Oct. 27 at GMU. His presentation retraced his career path from his days as an electrical engineering student at GMU to his present position as an Electrical Department Head at EKFox & Associates.

A recurring theme in his talk was that power engineers possess skills valuable in many industries beyond the electric utility industry. For example, the advent of data centers required for the Internet operation of companies such as Google, Yahoo and AOL means that power engineers play an integral role in the design, construction and operation of those facilities. The current generation of automobiles and, especially, the emerging hybrid and fully-electric vehicles need power engineering and its related discipline of power electronics. Even seemingly mundane topics as the selection of a light switch can, in fact, be a complex design decision in the current era of "intelligent" building systems that must account for energy efficient and security conscious policies. One sample light switch he brought to the presentation incorporated ultrasonic motion, pyroelectric infrared (i.e., body heat) and photocell light level sensing all in order to make a more sophisticated decision whether or not to turn off or dim the lights in a room.

He also spoke about recent trends in power engineering, particularly "smart grid" and "micro grid" technologies. Citing historical cases of large scale blackouts and inefficiencies in, for example, the California electric utility system he demonstrated the value of distributed monitoring and redistribution of transmission systems supporting changing loads. This dynamic adaptation is a key tenet of the smart grid. Also, the micro grid approach offers on-site generation to large industrial facilities, universities, military bases, etc. as a more robust source of power than battery-based uninterruptible power system (UPS) backup. Furthermore, the approach also is appealing to those with alternative energy sources (e.g., solar, wind and biomass), because there is the potential of selling surplus electricity to the utility and thereby recouping some of the capital investment in the alternative energy generation system.

In the last portion of his talk, Mr. Reyes, PE, explained the meaning of the two letters after his name--PE means licensed Professional Engineer--and described the prerequisites of completing the Engineer-in-Training examination, years of documented work experience as an electrical engineer and completion of the Practises-of-Engineering examination. He gave specific examples of compensation advantages and career mobility licensed professional engineers enjoy.

Both the IEEE Northern Virginia chapter and the local student chapters are very interested hearing about your experiences making the transition from student to professional and what opportunities different industries offer for new engineers. If you are interested sharing your insights please contact either the presenter (OMReyes@ekfox.com) or Jeff Poston (poston@ieee.org).

Dr. Milton Chang: Growing Your Business

WALLY LEE
SCANNER EDITOR, WASHINGTON SECTION

At the last Washington AdCom meeting, our friend Mary Tobin told us about a meeting that was going to be held at the University of Maryland Physics Department. The topic, Toward Entrepreneurship, sounded interesting, but there are a gazillion books out there with similar names. I really got enthused when I read the subtopic: Real Title, How to Start Your Company Without Taking A Huge Risk. It was like they had looked at my bank account before the book was written.

The speaker's first slide said he was shamelessly promoting his book, Toward Entrepreneurship, published by miltonchang.com. Honesty is always good so we got ready for an interesting talk. The speaker was Dr. Milton Chang and the companies he incubated after 1971 include Newport (Research Equipment, IPO), Uniphase (OEM lasers, IPO and

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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. Please 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 content 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 content editor. The deadline for the upcoming issue is February 15, 2012.

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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/nca.

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calendar of events

For the latest calendar information, go to www.ieee.org/escanner

Tuesday, January 10, 2012

It's About Time

Speaker: Dr. Demetrios N. Matsakis
Time: 5:30 p.m. to 7 p.m.
Place: National Electronics Museum, Pioneer Hall, 1745 W. Nursery Road, Linthicum, MD 21090
Registration: Visit https://meetings.vtools.ieee.org/meeting_registration/register/9845 to register.
Contact: William Kight, Secretary, wkight@ieee.org

Monday, January 23, 2012

Flexible Sensors: Applications and Challenges

Sponsor: IEEE Electron Devices Society
Cosponsors: IEEE Nanotechnology Council
Speaker: Jurgen Daniel of Teclination Consulting
Time: 6:15 p.m. to 8:15 p.m.
Place: TBD, Manassas, VA
Registration: Visit https://meetings.vtools.ieee.org/meeting_registration/register/9459 to register.
Contact: Email Sandra Hyland at sandra.hyland@baesystems.com.

Tuesday, January 24, 2012

IBM Watson Project

Sponsor: IEEE Computer Society, Northern Virginia and Washington Chapter
Speaker: David A. Ferrucci
Time: 6:30 p.m. (Networking) 7 p.m. to 8 p.m. (Program)
Place: MITRE, Room 1N100, 7515 Colshire Drive McLean, VA 22102
 FDA, Bld 66, Room G51210903, New Hampshire Ave, Silver Spring, MD 20993
 MITRE, Room 1M306 202, Burlington Rd (RT. 62), Bedford, MA 01730
More Info: For more information, visit <http://sites.ieee.org/wnv-cs/upcoming-events/>.
Cost: There is no cost to attend at McLean and Silver Spring.
Website: <http://sites.ieee.org/wnv-cs/upcoming-events/>
Registration: Visit <http://www.asq509.org/ht/d/DoSurvey/i/26913> for the registration website.
Contact: For registration problems or further information contact Scott Ankrum at ankrums@mitre.org or 703-983-6127.

Beaumont Section Gives up Another Volunteer to the NCA

MONICA A. MALLINI, P.E.

IEEE Senior Member Mithun Banerjee recently moved into the Washington area from Seattle. A former GOLD volunteer, Mithun came to the September GOLD picnic looking for volunteer opportunities in his new Section. At Monica Mallini's suggestion, he attended the Northern Virginia AdCom meeting and was appointed as GOLD chair, followed soon after by a nomination as Section Vice-Chair. Later, Mithun and Monica realized that they both received Masters degrees from the same school (Lamar University in Beaumont, Texas) and both volunteered in the same IEEE Section (Beaumont Section, where Monica was Newsletter Editor and Section Chair and Mithun founded the GOLD affinity group). After a recent IEEE meeting, Monica and Mithun reminisced about their Beaumont roots. Get acquainted with NoVA Section's incoming Vice Chair, Mithun Banerjee.

See Banerjee, p. 5

IEEE NCA Passes the Gavel



The IEEE National Capital Area Washington Section Alexander Graham Bell Gavel, which is thought to be used by Bell. (Photo by Michael Jacknis)

2012 International Conference on Systems and Informatics

The 2012 International Conference on Systems and Informatics (ICSAI 2012) will be held from 19-21 May 2012 in Yantai, China. Submission Deadline is 6 January 2012. ICSAI 2012 aims to be a premier international forum for scientists and researchers to present the state of the art of systems engineering and information science. Topics include (but are not limited to):

- ◆ Control and Automation Systems
- ◆ Power and Energy Systems
- ◆ Intelligent Systems
- ◆ Computer Systems and Applications
- ◆ Communications and Networking
- ◆ Image, Video, and Signal Processing
- ◆ Data Engineering and Data Mining
- ◆ Software Engineering

The registration fee of \$400 includes proceedings, lunches, dinners, banquet, coffee breaks, and all technical sessions. ICSAI 2012 is technically co-sponsored by the IEEE Systems, Man, and Cybernetics Society.

All papers in conference proceedings will be indexed by both EI Compendex and ISTP, as well as the IEEE Xplore (IEEE Conference Record #19873; IEEE Catalog Number CFP1273R-CDR; ISBN: 978-1-4673-0197-8). Substantially extended versions of best papers will be considered for publication in a special issue of a SCI-indexed journal.

Yantai was listed as one of the world's most inhabitable places by the United Nations and was recognized as the "most charming city of China" by China Central Television. Undulating hills rise above the area's many rivers and are framed by beaches and neighboring islands. Famous tourist attractions include the Tashan Mountain, Kongdong Island, and Penglai Pavilion Scenic Area. Seafood and fruits are plentiful in Yantai.

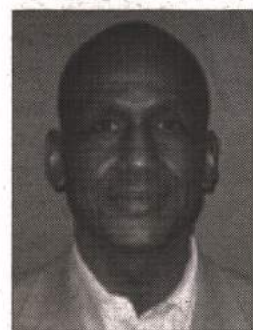
For more information, visit the conference web page at <http://ICSAI2012.ytu.edu.cn>. If you have any questions after visiting the conference web page, please email the secretariat at ICSAI2012@ytu.edu.cn. Join us at this major event in beautiful Yantai!

Outgoing NoVA Section Chair's Message

Closing an Eventful IEEE Northern Virginia Section Year

TIMOTHY F. SETTLE, PH.D.

OUTGOING CHAIR, IEEE NOVA SECTION 2011



Dear Northern Virginia (NoVA) Section IEEE members, this has been an exciting, rewarding, and productive year for our IEEE section. The year started with a smooth transition from the 2010 NoVA Section officers to the 2011 NoVA Section officers, and progressed throughout the year with notable accomplishments, activities, and events. The smooth executive transition is a credit to the hard work of the 2010 NoVA officers led by the NoVA past chair, Mr. Barry Tilton.

I am personally thankful for the talented 2011 NoVA Section officers and directors that supported my year as chair, making my job easier and less hectic. These individuals donated their respective times and talents to the

IEEE NoVA Section and their collective contributions are well appreciated. Therefore a well-deserved thank you goes out to Jeff Poston (Vice-Chair/2012 Chair-Elect), Hemant Mehta (Treasurer), Susanne Dreier (Secretary), and our 2011 directors: Dr. Pedro Rustan, Marc Apter, Monica Mallini, Katie Schofield, Nate Bailey, and Dr. Vinod Mishra. Special recognition is given to Murty Polavarapu, who has become our section's elder statesman and resident parliamentarian.

Murty's work with regional activities as well as section activities were among the many highlights our section experienced this past year, and the NoVA Section is indebted to him for his volunteer work. I am also thankful to the collective individuals who regularly attended our monthly administration committee (AdCom) meetings for their insightful commentary and rich debates.

Some of the notable events and activities that were

sponsored and/or jointly coordinated with the Washington DC Section include: Annual IEEE Officers Training, National Capital Area (NCA) IEEE Awards Banquet, introduction of the eReader Compatible Scanner publication, the IEEE Sections Congress, and the NCA IEEE Picnic. As the year winds down there remain several important activities to be completed. Among these are the election of our 2012 NoVA officers, the voting on our NoVA members elect to receive their Scanner publication, and transition of duties from the 2011 NoVA officers to the 2012 NoVA officers.

Indeed my tenure as chair of the IEEE NoVA Section has been challenging, thought provoking, and rewarding. It has been a tremendous honor to serve in this capacity, and I look forward to continuing my involvement in the IEEE NoVA Section.

2012 NoVA Section Chair's Message

Engaging the Northern Virginia Engineering Community in 2012

JEFF POSTON

CHAIR, IEEE NOVA SECTION



I thank the IEEE members of the Northern Virginia Section for electing me to serve as their chair for 2012, a humbling role given this section's exemplary record for volunteer service. I often hear the questions "Why join IEEE?" or "Why maintain my IEEE membership?" from area engineers.

Certainly, some will define IEEE's value from the journals it publishes or the technical standards it produces given the clout of an organization with over 400,000 members worldwide, but these materials may be provided already by an engineer's employer or university so the question remains. At the local level, I believe, participation in IEEE offers a kind of value in interacting with fellow engineers not found elsewhere. The local IEEE professional workshops offer value whether one is a mid-career professional seeking to strengthen credentials and make a job transition, a mature professional preparing to start a consulting practice or a student making the transition from classroom to workplace.

The local IEEE technical seminars offer access to subject matter experts without the distraction of vendor marketing or the expense of commercial training courses. Furthermore, the volunteer nature of activities at the local level of IEEE offer opportunities for peer interaction and exercising "soft skills" not taught in universities.

We are fortunate in the Northern Virginia Section to have such a dedicated core of volunteers, many of whom have been with IEEE for over a decade. I thank the outgoing 2011 chair, Dr. Tim Settle, for his excellence in leadership. He demonstrated the ability to think strategically about the needs of the section and acted with foresight to remove impediments to its future prosperity. In 2012 I look forward to working with Vice Chair Mithun Banerjee who has brought fresh energy into the section and the Graduates of the Last De-

cade (GOLD) chapter. I appreciate the continued service of Hemant Mehta as Treasurer for he has demonstrated dedication to a role without which the section cannot continue to exist.

It is commendable that Susanne Dreier has offered to continue with some administrative assistance to the section even as her other philanthropic responsibilities grow. Furthermore, I thank continuing and new directors Mr. Marc Apter, Mr. Michael Cardinale, Ms. Monica Mallini, P.E., Mr. Oscar Reyes, P.E., Dr. Pedro Rustan and Ms. Katie Schaffold, P.E. for their service to the section on a wide range of tasks. Also, I extend my best regards to the IEEE Washington, DC Section chair Prof. Paul Cotae. The collaboration of our two sections encompasses too many topics to list here; I look forward to continuing this excellent working relationship.

Returning to the theme of IEEE value, in 2012 I want to strengthen what IEEE Northern Virginia Section offers by expanding the extent of local activities. The continued economic instability leads many to question their own job stability and even to rethink career plans. It may dissuade students from completing the rigorous engineering degree coursework despite the widely-recognized shortfall of science, technology, engineering and math (STEM) skills in the workforce. The resources for addressing these questions exist within the expertise of the local engineering community. The Northern Virginia Section can act as a conduit for imparting this wisdom among its members. The IEEE is a not-for-profit and non-par-



Tim Settle (right) passes off the Northern Virginia Section gavel to Jeff Poston.

tisan organization; that statement, however, should not mean that IEEE members are detached from public policy that holds consequences for the engineering profession. A noteworthy recent example is the U.S. Patent Reform Act that holds the potential to dramatically change the development of intellectual property, particularly from the perspective of start-ups and individual consultants. Our proximity to IEEE-USA and lawmakers offers a unique access to inform public policy development. Also, in coordination with the IEEE Washington, DC Section, I plan to continue offering the Scanner in both electronic and print media according to member preferences. Having a variety of communication media and events help inform and engage our members.

I invite you to attend the Administrative Committee (AdCom) meetings on the second Wednesday of each month. At these meetings the officers, technical society chairs, affinity group chairs and members plan future professional and technical events. Even if you are unable to attend I welcome your suggestions for creating a vibrant year of activities for local IEEE members.

Sauberman: 'A Strong and Vibrant Section'

From Page 1

Virginia Sections joined together with our technical society chapter chairs for a festive and lively evening. We were fortunate to have Dr. Pedro Rustan, Director of Mission Support at the National Reconnaissance Office (NRO) and Program Director for the Clementine moon mission (the Clementine spacecraft has the distinction of having mapped the surface of the moon with over 1.8 million images) as the keynote speaker. Credit goes to Barry Tilton, P.E., past chair of the Northern Virginia Section, who arranged for Dr. Rustan to be the banquet event speaker. In his address, Dr. Rustan discussed the implications of physics on our technological progress. He spoke of the role that IEEE has as we move forward as a society. His message to his IEEE audience was definitely compelling: as engineers we have the responsibility to not only think outside the box, but to forget about the box entirely. We must learn to think freely, without boundaries and with a sense of creative innovation. As an example, Dr. Rustan spoke of the human endeavor to fly – to think of the ability to fly by oneself and what it would take to achieve the result. The process is one of considering the endpoint and then working to find the solution. Dr. Rustan received the highest honor this year that IEEE can bestow. He was accorded the status of IEEE Fellow in recognition of his extraordinary accomplishments. He is noted specifically for his contributions to miniature satellite technologies.

The Washington Section grew in structure this past year. With approval from IEEE headquarters, the section became the parent for the Washington-Baltimore-Northern Virginia chapter of the IEEE Instrument and Measurement (I&M) Society. We welcome this new association and look forward to I&M activities and participation at section meetings.

The Section is also very proud of its technical chapters, affinity groups and its initiatives for member development. The Communications Society Chapter received the Chapter-of-the-Year Award. Dr. Paul Cotae, chapter chair, accepted the award on behalf of the members. The Graduates of the Last Decade (GOLD) Affinity Group attracted many new members, including students and faculty, for its program entitled: Panel Discussion on the Smart Grid. The event featured an overview of the technical infrastructure that will have the capability to respond to electric power users in an adaptive and predictive manner for the efficient delivery of electricity. The program was held at the University of the District of Columbia (UDC), under the leadership of chapter chair Christopher Magnan. The Section also nominated Richard Hill, chapter chair, Computational Intelligence Society, as a candidate for IEEE-USA Congressional Fellow. Initiative programs were also established wherein several members of the Section completed the requirements for eligibility to the next level of membership. These members were elevated to Senior Member. Many members have contributed to the Section's accomplishments in 2011. Several have participated and judged at student science fairs. A feature at these fairs has been robotics competitions. For other member contributions, one only has to look at the Calendar of Events posted monthly in the IEEE NCA eScanner to fully appreciate the spectrum and depth of many technical presentations, activities and programs. These are cited as Section events. I congratulate these contributors who have given their time and expertise for the benefit and education of others. In so doing, they have given students a window to see scientific achievements. They have aided our members in advancing their knowledge and understanding of new technologies. I especially want to thank the officers, past and present, for the support they have given this year. Special mention goes to: Past Chairs Raj Madhavan and Gerard Christman; Current Vice Chair Paul Cotae, Treasurer Monica Taysing-Lara and Secretary Wally Lee. The Section also benefitted from the support of our Directors: Mary Tobin, Varetta Huggins, Guru Madhavan, Tom Starai and Raj Madhavan. Sincere thanks go to our Scanner and eScanner staff for their publication and website services to keep our members informed and connected: Pete Sypher, Rex Klopfenstein, Paul Frommelt, Wally Lee and Jerry Gibbon. Together, this team all worked under the IEEE banner "Advancing Technology for Humanity". A special word of thanks also goes to Peg Kay and her affiliation with the Washington Academy of Science. Her efforts gave the Section secure meeting rooms in the AAAS Building on New York Avenue. The IEEE Washington Section has been my professional base for the past year. I have greatly enjoyed our meetings and discussions. I have seen how the Section can enable growth in one's career, how it can offer opportunities for exploring new initiatives outside the walls of everyday work, and how it can provide support for understanding and dealing with the challenges that face engineers along the way. I encourage the members and officers at all levels within the Section to see the opportunities that IEEE can deliver and to engage these to the fullest extent possible. Build on your careers and carry your achievements to your communities. Interact with your congressional representatives. As engineers, you are the future technology planners, designers and leaders. The Section will give you leverage in your pursuits. I thank you all for your dedication and support. I thank my colleagues in the Northern Virginia Section for the collaboration we shared. We have a strong and vibrant Section. We had an amazing year.

Come Up With the Big Idea, Get Rich and Famous

From Page 1

later JDSU), Cyonics (OEM argon lasers, a sister company of Uniphase) and eight more high tech organizations. In 2000 he formed a venture capital company, Incubic Ventures, that has led to about twelve companies. It sounds like he should know what he is talking about. He talks about conventional start-ups, saying "Go For It!" Come up with a big idea and get rich and famous. Get venture capital and gain first mover advantage... But statistically, 10 out of several hundred get funded and maybe three get to a meaningful exit point. The high-risk approach can lead to high pay-offs for investors who have a portfolio of companies but it takes a toll on the entrepreneur because good ideas can fail if everything is not lined up. A hot idea is often behind the wave; haste makes waste; mistakes are unavoidable; and so on and so on. Just look at Segway and Solenda. Falling back on the fundamentals can help you. Start with a grand vision, make a business case and follow project management principles: do the right thing in accordance with everything you have read and learned; Do things right, Execute! This can be almost risk free if you follow the fundamentals:

- ◆ Take time off with risk.
- ◆ Start with a niche business within your field of expertise and make a commitment to build out the business logically over time one step at a time.
- ◆ This sensible approach allows you to use capital to create value which is what entrepreneurs do.

You will achieve capital efficiency because you will have insider insight and expertise to provide a competitive advantage. Initial capital would be low, you can manage with common sense and mistakes are recoverable. You can get new product ideas from the customer, use existing infrastructure to grow the business and raise additional capital at an attractive valuation. An alternative to first mover advantage is to learn from the mistakes of the pioneers (the ones with arrows in their backs) and launch your business when you have all your ducks lined up. Make effective use of capital and avoid mistakes by making a "business prototype". Avoid being shut out of the market by developing IP.

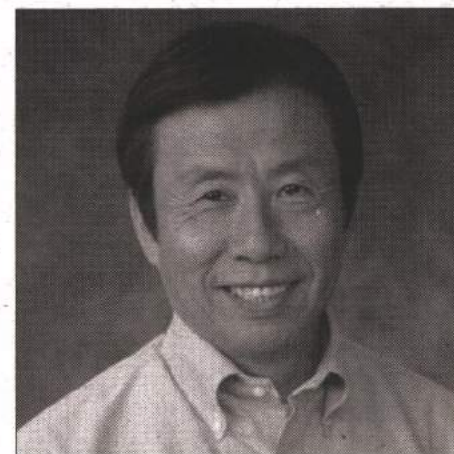
It is prudent to first develop a "prototype business" to verify assumptions and refine strategy before making a major financial commitment. You can get orders from the leading customers. This will allow the potential acquirer to recognize the potential of your business. Then decide to build out the company quickly, work toward an early acquisition or abandon the project. An early acquisition makes sense for all involved:

- ◆ For the startup company: The founding team is most productive in the developing stage.
- ◆ For investors: They get higher ROI without the risk/dilution.
- ◆ For the acquiring company: It is capital efficient to commercialize a "business prototype".
- ◆ That's system optimization! Does it work?
- ◆ Every one of the dozen or so companies he built over time has been successful.
- ◆ Co-investing as a venture capitalist he did no better than average.

After the lecture I got to talk to Milton (we are on a first name basis now) and he seems like a genuinely nice man. He said all of his work he considers open and offered us any help we needed in writing this article.

Time passes... I read the book and thoroughly enjoyed it. He covers all the stuff he talked about in the lecture and more. It is filled with little hints about growing your business.

Makes me want to discover the next big thing and go out to become an entrepreneur.



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Congratulations!

Congratulations to the following members of Northern Virginia and Washington Sections who have been conferred the grade of IEEE Fellow in recognition of their extraordinary records of accomplishments in their fields (effective January 1, 2012). The grade of Fellow is IEEE's highest membership level and the total number selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership. The deadline for nominations for the Fellows Class of 2013 date is 01 March 2012. For more information, visit www.ieee.org/fellows.

♦ Thomas Marbory Antonsen, University of Maryland, Potomac, MD, for contributions to the theory of magnetically confined plasmas, laser-plasma interactions and high power coherent radiation sources

♦ George William Arnold, National Institute of Standards & Technology, Gaithersburg, MD, for leadership in architecture and protocols for the electric grid and telecommunication networks
David Alan Grier, George Washington University, Washington, DC, for contributions to crowd sourcing

♦ Nadim F. Haddad, BAE Systems, Oakton, VA, for development of radiation hardened semiconductor device technology and products for space applications

♦ Ray O. Johnson, Lockheed Martin, Bethesda, MD, for leadership in national security technologies

♦ Francis J. Kub, Naval Research Laboratory, Arnold, MD, for leadership in the development of wide bandgap semiconductor power electronics
John Eric Maenchen, Sandia National Laboratories, Arlington, VA, for leadership in the development of intense pulsed charged particle beams, and their application for flash radiography

Mark Jeffrey Rosker, Defense Advanced Research Projects Agency (DARPA), Falls Church, VA, for leadership in microwave and millimeter-wave phased arrays, gallium nitride semiconductors, and terahertz electronics

♦ Pedro L. Rustan, National Reconnaissance Office, Chantilly, VA, for contributions to miniature satellite technologies

♦ Ben Shneiderman, University of Maryland, College Park, MD, for contributions to human-computer interaction and information visualization
John S. Suehle, National Institute of Standards and Technology, Gaithersburg, MD, for contributions to the understanding of thin gate dielectric films
Edward Weldon Tunstel, Johns Hopkins University Applied Physics Laboratory, Laurel, MD, for contributions to space robotic system applications on planetary missions.

The following local members were elevated to Senior Member level recently.

Northern Virginia Section:

William Coburn, Kakoli Das, Shamik Das, James Giordano, Joseph Kindel, Janet Lou, AbdulKareem MohamedYaseen, Manisa Pipattanasomporn, Douglas Taggart and Anthony Tether.

If you have been in professional practice for at least ten years and demonstrated "significant performance" over a period of at least five years, you are eligible to apply for elevation to senior membership. For more details visit www.ieee.org/seniormember or contact Murty Polavarapu (murtyp@ieee.org) for NoVA Section.

Metamaterials, MEMS and More in MTT Meeting

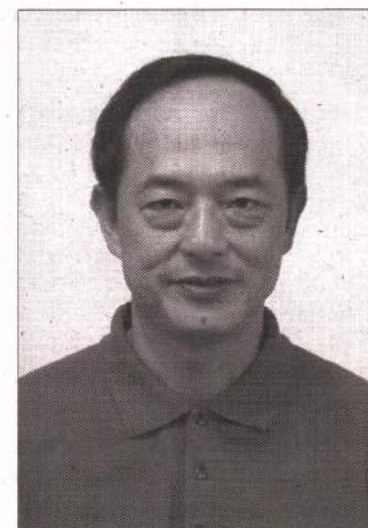
JEFF POSTON
CHAIR, IEEE NOVA SECTION

The IEEE Microwave Theory and Techniques (MTT) chapter sponsored a seminar by Prof. James C. M. Hwang, Ph.D. "Metamaterial-Based Micro-Electromechanical Ultra-Compact Non-Dispersive Phase Shifters" held at MITRE on Dec 6, 2011. Prof. Hwang is with the faculty of Lehigh University and currently has an appointment as a program manager with the US Air Force Office of Scientific Research.

Prof. Hwang opened his talk with the motivation for phase shifters in radar and communications applications. He then drew the distinction between constant group delay versus constant phase response and the consequential value in creating non-dispersive phase shifters, particularly for broadband wireless array processing. He noted the utility metamaterials have in managing dispersion for these broadband systems. Metamaterials are engineered structures or circuits that—in contrast to naturally occurring bulk materials—can exhibit a macro scale behavior of negative permittivity and negative permeability. Due to these attributes and their influence on electromagnetic waves some metamaterials are known as "left handed" materials in contrast to the "right handed", natural materials. Readers interested in exploring metamaterials in greater depth may consult the October 2011 special issue of the Proceedings of the IEEE, entitled "Metamaterials: Fundamentals and Applications in the Microwave and Optical Regimes." The articles are available on-line via IEEE's Xplore service (<http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=6021970>).

A careful combination of these materials into the microwave engineering construct known as a "slow-wave" structure can, in conjunction with MEMS switches, create a compact, non-dispersive, broadband phase shifter. Microelectromechanical systems (MEMS) devices are created by the same technology employed in the creation of integrated circuits or microchips, but MEMS also incorporate microscopic structures such as actuators, cantilevers or resonant combs. Perhaps the best known examples of MEMS are the accelerometers found in automotive airbag deployment sensors and smart phone gesture recognition sensors. In the context of Prof. Hwang's work the MEMS devices perform RF switching. He then recounted over 15 years of experimental work by his group and others and showed the progress in reducing size and insertion loss while improving dispersion management and range of operating frequencies.

The MTT chapter has a continuing technical seminar program and an interest in new speakers; please refer to the chapter website for their contact information (http://ewh.ieee.org/r2/wash_nova/mtt/).



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diamond ♦ stories

Tuesday, January 10, 2012

It's About Time

Abstract:

Time is the most precisely and accurately measured quantity, in the sense that its derivative, frequency, is measured to 15 decimal points on a daily basis. This talk will cover the timekeeping art from hardware to software, from the technicians to the users, from local to international. Special emphasis will be given to the activities of the U.S. Naval Observatory, whose ensemble of over 100 frequency standards includes cesium beam clocks, hydrogen masers, and rubidium atomic fountains, and whose direct users include GPS, the Department of Defense, and perhaps your children - if they have configured your home computer to get time from the USNO via Network Time Protocol (NTP).

Biography:

Demetrios Matsakis received his undergraduate degree in Physics from MIT. His PhD was from U.C. Berkeley, and his thesis, under Charles Townes, involved building masers and using them for molecular radio astronomy and interferometry. Hired at the US Naval Observatory (USNO) in 1979, he measured Earth rotation and orientation using Connected Element Interferometry and Very Long Baseline Interferometry (VLBI). Beginning in the early 90's, he started working on atomic clocks and in 1997 was appointed Head of the USNO's Time Service Department. He has over 100 publications, has served on many international commissions, and for three years was President of the International Astronomical Union's Commission on Time.

Monday, January 23, 2012

Flexible Sensors: Applications and Challenges

Abstract:

In our daily lives, we are increasingly surrounded by sensing devices. For example, mobile phones feature accelerometers, gyroscopes, digital compasses, microphones and sensors for touch, radio frequency and light/image. Today's cars incorporate about 20-50 MEMS (Micro-Electro-Mechanical-Systems) sensors. Novel sensor technologies will expand the application space much further. Flexible electronics is an emerging field that has been primarily stimulated by the notion of flexible, conformal, or rollup displays. Recently though, there has been growing interest in flexible sensors because of promising applications in medical, structural or environmental monitoring, shipping/packaging, toys or sports, etc.

The motivation for flexible electronics (including flexible sensors) originates in the potentially lower cost and the flexible form factor of resulting systems. Nevertheless, many challenges are still ahead with regard to materials, device fabrication and systems performance. For example, new processes such as roll-to-roll printing of electronic materials on a variety of flexible substrates are being developed. Also, the integration of flexible sensors with sensor electronics, memory and power sources is being addressed. The most recent research focuses on electronic devices that are not only flexible but stretchable. In this talk, an overview of the field of flexible sensors will be given with a discussion of technologies, applications and challenges.

Biography:

Jurgen Daniel is principal at Teclination Consulting and affiliate at the Institute for Systems Research of the University of Maryland. He was previously with the Palo Alto Research Center (PARC) where his research included MEMS, displays, printing technologies, flexible/printed electronics and photovoltaics. Earlier, he had been with Oxford Instruments and FEI Europe and he was visiting scientist at the Matsushita Research Institute, Tokyo. He holds a degree in physics from the University of Erlangen-Nuremberg, Germany, and a Ph.D. in electrical engineering from the University of Cambridge, UK. He is founder of the Silicon Valley Photovoltaics Society (SVPVS) which is in discussion of becoming part of IEEE.

2012 Washington Section Chair's Message

Building on Professional Activities, Attracting and Supporting Members and Social Networking

DR. PAUL COTAE

CHAIR, IEEE WASHINGTON SECTION

It is my honor and privilege to serve as the Chair of the IEEE Washington Section for 2012. I am very proud to call to order our AdCom meetings by using Alexander Graham Bell's gavel. The Washington Section has been serving electrical engineers in the Washington DC Metro area for almost 109 years, providing members with opportunities for professional activities and networking, gaining new technical skills through continuing education and, serving the greater Washington community through activities such as student competitions, technical meetings and science fairs.

Our section is the most historic one in the nation, and my membership in IEEE is the most enduring affiliation of my professional life. I joined first as a student in the Electrical Engineering Department and later as a faculty member while being active in research and publications in the IEEE Xplore database. It was IEEE conferences and technical publications that kept me coming back. Now, my involvement in IEEE is underpinned by my desire to try to make a difference in our profession by coordinating the activities of our section in 2012.

This coming year I am very fortunate to have the support and counsel of Monica Taysing-Lara (Vice Chair), Richard Hill (Treasurer), Wally Lee (Secretary) and the following Directors: Dr. Mary Tobin, Ms. Varetta Huggins, Dr. Brian Riely, Dr. Min Wu, Dr. Raul Cruz-Cano, Dr. George Simonis, Dr. Raj Madhavan and Past-Chair Mr. Harry Sauberman. I also extend my very best wishes to Mr. Jeff Poston, my counterpart in the Northern Virginia Section. I look forward to working with Jeff as we pursue the idea of holding joint meetings to enable activity sharing, partnering and collaborative efforts. I would like to thank my predecessor Mr. Harry Sauberman for his inspirational leadership during the past year.

Our 2012 goals will focus on the areas of professional activities, attracting and supporting our members, and social networking.

We will try to diversify our professional activities by including and encouraging chapter activities of technical presentations on how to reduce the energy consumption in engineering infrastructures and connected devices. We would like to focus on the knowledge of applied sensors networks, and on communications aspects of bioengineering and genomics, which may contribute to solving global issues. Also we would like to provide an open forum for discussion and services for industry in terms of standards development including educational components.

We will focus on reaching young students, especially women and minorities, at the undergraduate level by encouraging and motivating them to pursue the engineering fields. We will continue our efforts to create and to maintain our student activities such as contests and science fairs. We need to develop mechanisms for clustering around hot topics in a fast dynamic way and to capture shifting at the individual level. We need to use our vTools to extend and to seamlessly update interests that are finely tuned to the individuals and the community. We will try to improve the quality of our meetings and inter-member interactions.

The IEEE Washington Section needs to become the network that delivers vital information based on building specific understanding of the needs of individual members. In this context, we will more aggressively adopt social networking tools. This needs to be done while respecting privacy issues, giving each individual the opportunity to either use or not use such tools. This social networking approach will ensure that each member will understand the implications of all issues that are being addressed within our Section.

I welcome your input on how we can improve the Section and better serve the interests and needs of IEEE members in the Washington DC Metro area. Of course, we would love your active participation as a volunteer. Please feel free to contact me with your ideas and suggestions. Best wishes for a happy, healthy and prosperous new year.



Mr. Harry Sauberman (left) passes the Washington Section Alexander Graham Bell Gavel off to Dr. Paul Cotae. (Photo by Michael Jacknis)

For the latest calendar information,
go to www.ieee.org/escanner.

Banerjee: Vice Chair of NoVA Section

From Page 3

Monica Mallini: Are you the first engineer in your family? How were you inspired to study engineering?

Mithun Banerjee: No, My father is also an Engineer. He has a Bachelors Degree in Mechanical Engineering and a Diploma in Electrical Engineering. My mother has her Bachelors Degree in Hindi, Masters Degree in English, Diploma in Journalism, and Masters in Business Administration. In my family we have several Engineers and no medical doctors. My cousin's brother is a Civil Engineer and cousin's sister is a Chemical Engineer currently pursuing her PhD in The Netherlands. When I was a small boy, I didn't do well in math, but as a stubborn person, I took the challenge to master math and science. I was successful in scoring good marks in exams. In addition to understanding the subjects, I developed a passion for the courses and selected Engineering to pursue further.

MM: What are your future educational objectives?

MB: I am divided in whether to pursue my PhD in Electrical Engineering or to pursue my doctoral degree in Business Administration. I am not sure yet, but more inclined toward the latter due to the nature of my current work as a Program/Project Manager.

MM: What do you like to do in your spare time?

MB: I love to watch movies, but lately I have not had any time due to my busy schedule. I also love to cook & go for long drives. When I moved from Seattle to Washington DC area, I drove all the way.

MM: Who is the most interesting person you have met?

MB: I met with Noble Laureate Professor Mohammad Yunis during a talk at the World Bank. I was amazed by his courage that he was critical of the World Bank while at a talk in the World Bank. Also, my undergraduate Professor Dr. S K Sen transformed my life. I think that the greatest experience I ever had was when I did my Bachelor Thesis under Professor Dr. Sen and got the First Place in National Level Technical Paper Presentation Contest in India in 2001.

MM: Why did you come to the Washington area?

MB: I had some extended family in the area and decided to move here.

MM: What have you learned from volunteering in Sections of all sizes from tiny Beaumont Section to Santa Clara Valley, the largest Section in IEEE?

MB: I was first part of IEEE Bangalore Section, then in the USA I became the founding Chair of the Beaumont Section GOLD Chapter. I already had experience in a big Section, so it was not difficult for me to work with a small Section. In a small Section, you have more duties and responsibilities than a big Section, as there are fewer volunteers to work with you. When I moved to the Bay Area, I was part of the world's biggest IEEE Section, Santa Clara Valley Section. One thing I learned is that you need to know how to work with everyone as a team. I think that experience was great.

MM: When your family visits you in the United States, what is the first thing you will want to show them?

MB: My family visited me twice, in 2009 and 2011. We visited several places: Las Vegas, Grand Canyon (West Rim), Los Angeles, San Francisco, Seattle, New York, Atlantic City, Ocean City (New Jersey), Niagara Falls (USA), Washington DC, Shenandoah Valley, and Luray Caverns, among others. I need to take them to Texas and Florida.

MM: What do you want to accomplish as incoming Vice Chair (and future Chair) of the Northern Virginia Section?

MB: As a Vice Chair, I want to help my Chair and give him my support. I am new to NoVA Section and still trying to learn about all the issues and problems that we are facing. I already identified issues with the Scanner and would like to address the problem with the help and support of the current Chair. My main focus is to hear the problems and issues from our members and try to provide optimal solutions using my valuable experience as an IEEE member so that they in turn can be forces for change in our society.

Students Propose Hydrogen Energy Solutions

MONICA A. MALLINI, P.E.

Northern Virginia Community College (NVCC) Adjunct Professor Monica Mallini believes in giving her students hands-on exposure to engineering practice. In "EGR 120 - Introduction to Engineering," a two-credit freshman course, technical, ethical, and professional topics are tied to semester-long team projects that allow students to practice engineering design and project management while they learn.

Past teams have proposed projects ranging from power generating fitness centers to a portable nuclear power station. The latter proposal was presented by the student team at a social sciences conference in Buffalo. This past semester, one of the teams wanted to take on a hydrogen energy project. Professor Mallini entered the team in the Hydrogen Energy Foundation's 2012 Hydrogen Student Design Contest. The NVCC team will compete against 32 universities worldwide to design the best campus energy system utilizing hydrogen for electrical, thermal, and transportation needs. The contest runs until April, so the Spring 2012 engineering class (which has an optional Honors component) will join the team and take up the project that was begun by their fall counterparts.

The fall class presented its recommendations, including a suggestion that NVCC utilize its automotive machine shop to build hydrogen-powered vehicle demonstration projects, at an IEEE-sponsored symposium on December 2. Professor Mallini, who holds dual teaching credentials in engineering and automotive technology, followed up immediately, and in a week's time, with help from an enthusiastic NVCC automotive department, developed a new course, "EGR 195 - Special Topics in Alternative Energy for Transportation," to run in Spring 2012. The EGR 195 class will design a fuel delivery system to adapt an existing vehicle for hydrogen, and the class will build and test the design in the automotive machine shop. As part of the course, students will be trained in safe hydrogen handling practices and machine shop safety. The Hydrogen Energy Contest's principal objective is to efficiently utilize campus and local resources in the design solution, so it is fortuitous that the community college owns an automotive machine shop, an asset that is probably unique among the 33 schools competing in the contest. Professor Mallini believes that this new initiative will stimulate excitement about the NVCC team's contest entry and give the community college team an edge for competing against large universities with more senior students.

The EGR 195 Special Topics class will meet on Thursdays from 2 to 5:30pm beginning January 12 at the MT building, 6901 Sudley Road at the NVCC Manassas campus. The NVCC Automotive Technology department runs a series of machine shop courses on Tuesday evenings throughout the year, for college credit. The Spring 2012 offering will be "AUT 114 - Cylinder Head Service," taught by NVCC automotive machine shop manager Gary Phares, an ASE Certified Master Automotive Technician and Master Machinist with over 30 years of instructional experience. Mr. Phares will also assist Professor Mallini with the EGR 195 class. Northern Virginia Community College also offers "AUT 193 - Hybrid Electric Vehicle Technology," which will meet on Monday evenings beginning January 9 at the Alexandria campus. For more information about these courses or the Hydrogen Energy Contest, please contact Monica Mallini at mmallini@nvcc.edu.

Consultants Networks' Patent Reform Town Hall Meeting



Three Past Chairs caught up during a session break at the November 5 Patent Reform Town Hall meeting co-hosted by the National Capital Area and Baltimore Consultants Networks. Pictured from left are Boris Gramatikov, Monica Mallini, and Haik Biglari, respective Past Chairs of the Baltimore, Northern Virginia, and Washington Sections. All three remain active IEEE volunteers. The event took place at the Loyola University Graduate Campus in Columbia, Maryland and was attended by 37 IEEE members, guests, and spouses. Interestingly, a few members registered for the workshop then sent a spouse to attend in their place. The workshop inspired a suggestion to hold an annual IEEE symposium on legal issues in technology.