Little is known about these wooden models of human heads. A sample inscription on the bottom reads "National Bureau of Standards 6-1-1946. Size 7." The heads are thought to be 95% profile models, which means that their contours are common to 95% of the population. They might be used to design equipment such as respirator masks that must seal against the face. Know anything about these heads? Turn to **Page 4**. (*National Institute of Standards and Technology Digital Collections, Information Services Division, Gaithersburg, MD 20899*)

NIST ENGINEERING STUDENT TOUR

From Nano-Medicine to the Speed of Light

BY MONICA MALLINI AND MONTGOMERY COLLEGE PH262 CLASS
SCANNER EDITOR-IN-CHIEF

On the 12th of December, our Principles of Physics II class at Montgomery College, led by Professor Monica Mallini, took a trip to NIST in Gaithersburg, Maryland. It was a Wednesday, and it was also the day that my mind was changed about the research world. There was some pretty fascinating stuff at NIST. There were so many things that stunned me as a person of engineering that I felt the experience was something really out-of-this-world. According to the tour guide, NIST is a part of every consumer product in some way, but at NIST they do much more than set standards of measurement; they do a lot of innovative things to help people.

Our tour was divided into four components. First, we were shown the origin of NIST. NIST, which was first known as the National Bureau of Standards (NBS), was founded in 1901, taking over the role from the Office of Standard Weights and Measures, organized as part of the U.S. Treasury Department in 1830. The purpose of the establishment of NBS was ostensibly to unify the measurement system in the United States, replacing a hodgepodge of measurement scales and terms that not only were impediments to interstate and international commerce, but "made shopping a punishing exercise indeed for the early consumer!"

In 1901, the agency became the measurement, standards, and technology center for the United States, and it adopted its present name, the National Institute of Standards and Technology, in 1988. Through its 111-year existence, NIST has remained on the cutting edge of almost every scientific field. Charged to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology, NIST has become the first and last authority whenever any question arises about a scientific definition.

Next, we were shown the work done by Dr. William Phillips, the first NIST researcher to become a Nobel Laureate (in 1997). Dr. Phillips invented a laser cooling and trapping apparatus circuit and magnetic trap. In 1985, the invention helped NIST (then NBS) physicists trap atoms for the first time. Four Nobel Prize winners have

IEEE WASHINGTON SECTION CHAIR'S MESSAGE

Welcome to the Second 50 Years

BY MÓNICA TAYSING-LARA
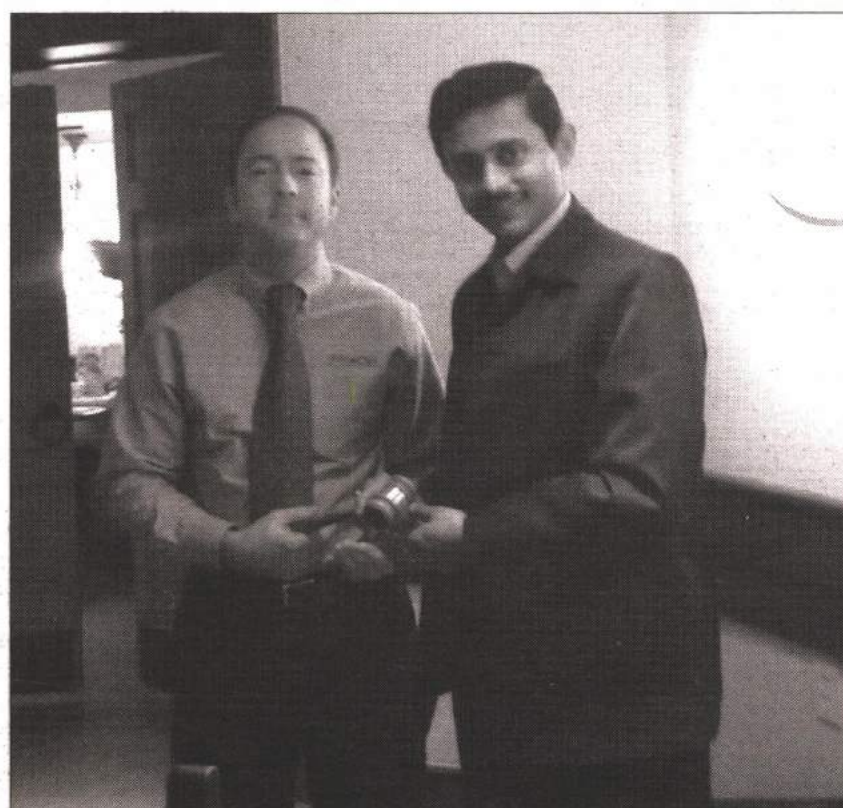CHAIR, IEEE WASHINGTON SECTION

I welcome the opportunity and the challenge of serving as Chair of the Washington Section 2013, just as I feel a deep commitment toward the members, the technical chapters, affinity groups, and student branches.

IEEE is celebrating the 50-year anniversary of serving the engineering and scientific community. On January 1, 1963, the Institute of Radio Engineers (IRE) and the American Institute of Electrical Engineers (AIEE) merged to become IEEE. This anniversary year arrives at a very exciting time, with the news that Washington has been awarded IEEE GLOBECOM 2016. We in the IEEE National Capital Area know how teamwork is done, and our dedicated volunteers will show the world in 2016 when we host this flagship conference. In 2013, we will also celebrate the Scanner's 30th anniversary. The Scanner itself is a tribute to the ability of its two founding Sections to put aside their differences – a daunting task – and work together to put out the very best local newsletter in IEEE. In 30 years, the Scanner has been through some hard times and has reinvented itself, but it has never faltered. Indeed, it may be part of the glue that binds the two Sections in harmony and cooperation.

I am fortunate to have the support of very enthusiastic leaders who will continue to dedicate their time to Washington Section: Richard Hill as the Vice Chair, Christopher Magnan as Treasurer, and Carolyn Carroll as Secretary. Also, I am pleased to have the counsel of the Section's Directors: Dr. Paul Cotae, Harry Sauberman, Dr. Mary Tobin, Dr. George Simonis, Dr. Brian Riely, Dr. Raul Cruz-Cano, James Christian, and Wally Lee. On behalf of the Washington Section, I welcome each of you to the second 50 years of IEEE.

PASSING THE GAVEL

Northern Virginia Section 2012 Chair **Jeff Poston**, left, passes the gavel and turns over Section leadership to Chair-Elect **Mithun Banerjee**. Read Mr. Banerjee's Welcome Message on **Page 6**. (*Photo by IEEE*)

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IEEE REGION 2 SOUTH AREA*

Chair
Ms. Carole Carey
c.carey@ieee.org
http://ewh.ieee.org/reg/2
*Washington, Northern Virginia, and Baltimore Sections

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.ieeecommunities.org/nca.

CHAPTERS

Council Chapters

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Technology Management (W/NV)
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dougholly@ieee.org

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Aerospace and Electronic Systems Society (W/NV)
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http://ewh.ieee.org/r2/wash_nova/aess

Antennas and Propagation Society (W/NV)
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Communications Society (NV)
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http://www.ieee-cis.org

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Electromagnetic Compatibility Society (W/NV)
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Geoscience and Remote Sensing Society (W/NV)
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Signal Processing Society (W)
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Society on Social Implications of Technology (NV/W/Baltimore)
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Vehicular Technology Society (W)
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Mithun Banerjee (NV)
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Employment Network (NV)
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swerdlow@erols.com
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Life Members (W/NV)
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NCA Consultants' Network (W/NV)
Mr. Wally Lee
chair@ieee-consultants.org
http://www.ieee-consultants.org/

Women in Engineering (W/NV)
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carrollca@yahoo.com
http://ewh.ieee.org/r2/wash_nova/wie

calendar *of* events

Tuesday, Jan. 8 / Feb. 5, 2013

Washington Section AdCom Meeting

Sponsor:	IEEE Washington Section
Time:	6:30 p.m.
Place:	American Association for the Advancement of Science (AAAS), 2nd Floor Conference Room, 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). Parking is available in the garage on 12th Street directly across from the AAAS building.
More Info:	All interested IEEE members are welcome.
Contact:	Carolyn Carroll at carrollca@yahoo.com.

Wednesday, Jan. 9 / Feb. 13, 2013

NoVA Section Administrative Committee Meeting

Sponsor:	IEEE Northern Virginia Section
Time:	6:30 p.m.
Place:	Olive Garden, 8133 Leesburg Pike, Vienna, VA 22182
Directions:	From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road.
Contact:	Please RSVP to the section secretary at nova.secretary@yahoo.com by Noon on Tuesday, January 8, 2013 / February 12, 2013.

Wednesday, January 9, 2013

ASQ Certifed Reliability Engineer Refresher Course

Sponsor:	ASQ Education; IEEE-CS
Speaker:	Robert J. Scanlon
Time:	6:00 to 9:00 pm
Place:	Washington Metropolitan Area Transit Authority, 600 5th Street Northwest, Washington, DC,(202) 962-1234 www.wmata.com
More Info:	http://www.asq509.org/ht/d/EventDetails/i/76580/pid/372
Cost:	Free
Website:	http://www.asq509.org/ht/d/EventDetails/i/76580/pid/372
Registration:	Education@asq509.org
Contact:	Robert Scanlon, Education@asq509.org, 571-227-1803

Thursday, January 17, 2013

NICE Cyber Security Workforce Framework Update

Sponsor:	IEEE-CS N. VA & DC, ISSA-NOVA
Speaker:	TBD
Time:	5:30 PM (Networking/Dinner); 6:15 to 8:00 PM (Program)

More Info:	http://www.issa-nova.com/meetings.aspx
Cost:	FREE (Preference is for increase in organizational membership)
Website:	http://www.issa-nova.com/meetings.aspx
Registration:	http://www.issa-nova.com/default2.aspx
Contact:	Mr. John Dyson, VP_Programs@ISSA-NOVA.ORG

Thursday, January 17, 2013

So You Want to be a Consultant . . . Now What?

Sponsor:	Consultants Network, Technology Management Council, Employment Network, Aerospace and Electronic Systems Society (W/NV)
Time:	6 p.m. to 9 p.m.
Place:	Room No. CSI 1115, Department of Electrical & Computer Engineering, A. James Clark School of Engineering, University of Maryland, College Park.
Cost:	$20 for IEEE members and guests, FREE for IEEE Student Members
Registration:	www.ieee-consultants.org/Jan2013.html

Saturday, January 19, 2013

Certified Manager of Quality/ Organizational Excellence Refresher

Sponsor:	ASQ Education; IEEE-CS
Speaker:	Robert J. Scanlon
Time:	8:00 am to noon
Place:	Montgomery College, Rockville Campus, South Instructional Building, 51 Mannakee Street, Rockville, Maryland 20850
More Info:	http://www.asq509.org/ht/d/EventDetails/i/76795/pid/372
Cost:	FREE
Website:	http://www.asq509.org/ht/d/EventDetails/i/76795/pid/372
Registration:	Education@asq509.org
Contact:	Robert Scanlon, Education@asq509.org, 571-227-1803

Tuesday, January 22, 2013

Cloud Computing Security

Sponsor:	IEEE-CS N. VA & DC, ASQ 509 N.VA, SSQ
Speaker:	Fred Whiteside
Time:	5:30 PM (Networking and Pizza); 5:50 to 6:50 PM (Program)
Place:	MITRE, room 1N100 7515 Colshire Drive McLean, VA 22102; FDA, Bld 66, room G512 10903 New Hampshire Ave Silver Spring, MD 20993; MITRE, room 1M306 202 Burlington Rd (Rt. 62) Bedford, MA 01730
More Info:	http://www.asq509.org/ht/a/GetDocumentAction/i/70192
Registration:	http://www.asq509.org/ht/d/DoSurvey/i/26913
Contact:	Scott Ankrum, ankrums@mitre.com

Wednesday, January 30, 2013

Panel Topic: Lean Six Sigma, Agile, & CMMI Experts

Sponsor:	IEEE-CS N. VA & DC, ASQ 509 LSS SIG
Speaker:	Danny Moore, Girish Seshagiri, etc.
Time:	6:00 - 6:45 PM (Networking and Pizza); 6:45 - 8:00 PM (Program)
Place:	TEQCORNER, 1616 Anderson Road, Center Conference Room (3rd Floor), McLean, Virginia 22102
More Info:	http://www.asq509.org/ht/d/EventDetails/i/71010/pid/372
Cost:	FREE
Website:	http://www.asq509.org/ht/d/EventDetails/i/72301/pid/372
Registration:	http://www.asq509.org/ht/d/DoSurvey/i/38891
Contact:	Rhonda Farrell, SixsigmaSIG@asq509.org.

Thursday, February 21, 2013

Designing Your Own Career

Sponsor:	Consultants Network, Technology Management Council, Employment Network, Nuclear and Plasma Sciences Society (NV/W/B)
Time:	6 p.m. to 9 p.m.
Place:	Room No. CSI 1115, Department of Electrical & Computer Engineering, A. James Clark School of Engineering, University of Maryland, College Park.
Cost:	$20 for IEEE members and guests, FREE for IEEE Student Members
Registration:	www.ieee-consultants.org/Feb2013.html

Thursday, February 21, 2013

CyberScope and FISMA, and the CyberStat Review Process

Sponsor:	IEEE-CS N. VA & DC, ISSA-NOVA
Speaker:	TBD
Time:	5:30 PM (Networking/Dinner); 6:15 to 8:00 PM (Program)
Place:	TBD
More Info:	http://www.issa-nova.com/meetings.aspx
Cost:	FREE (Preference is for increase in organizational membership)
Website:	http://www.issa-nova.com/meetings.aspx
Registration:	http://www.issa-nova.com/default2.aspx
Contact:	Mr. John Dyson, VP_Programs@ISSA-NOVA.ORG

There and Back Again: Students Rejuvenate IEEE Branch

By Gabriel Isaacs
Catholic University IEEE Student Branch President

The IEEE Student Branch at Catholic University of America is a relatively small one but only in numbers! We had recently learned about IEEE from our professor Dr. Scott A. Mathews, as he was lecturing his junior class. After thoroughly explaining both the professional and academic advantages of becoming members of the IEEE, we pursued the idea of becoming an active branch again, and here we are today.

It was a long road, having to navigate the correct channels of University offices, as student officers of a recently rejuvenated IEEE Student Chapter. Weishu Huang was elected Vice President, and Wiaam Al-Salmi is our Treasurer (and the only female in the junior year in our department). Our President is Gabriel Isaacs, who cannot express fairly in words how grateful he shall remain for being given this opportunity to be Student Chapter President, even though it was just for one semester. Within this short time, we have managed to get funding from the school to get over 90% of our Electrical engineering Department student memberships and hope to start becoming a more active part of the IEEE community in Region 2.

We exchanged correspondence with Andrew Thompson, the R2 student representative from Ohio State University. Unfortunately, the process of reactivation did not move up in time for us to be able to attend the Region 2 conference. Our focus mainly lies on establishing the IEEE as a strong presence within our campus as an active student body.

My year is the largest electrical engineering class Catholic University has seen this decade. Full of diversity in terms of education and background, we have a thriving alternative energy program. Our treasurer hails from Oman, and is she is also a computer science minor. Mr. Huang is now in the alternative energy track, which does amazing work in the community around us; the graduating senior project from this track has built a GPS tracking highly efficient solar panel using Arduino microprocessors. I am a citizen of Botswana, a humble country in Africa, currently studying in this great university, having come to this country in my family's diplomatic service. Our department of engineering has a thriving exchange program with Vietnam, and we have many of their nationals partaking in this student chapter.

We hope to enjoy many more years as active members of the Institute, reaping many benefits and furthering our careers through research material and conferences. Our faculty has been supportive as we strive to become a better recognized student body among our fellow students, despite our relative size in comparison to the Mechanical and Civil Engineering Departments.

NIST Archives Need Your Help

The National Institute of Standards and Technology maintains a Digital Archives including a digital library, digital museum, and a special collection of images of certain NIST museum artifacts that have unknown histories or minimal background information. NIST depends on members of the public to come forward to fill in missing details of the identity, purpose, and history of these items. Browse the collections at http://www.nist.gov/nvl/. Examples of unidentified artifacts are shown in these photos. If you have information about these items, send it to the Scanner at editor@nca-scanner.org, or contact NIST directly through links on the Digital Archives website.
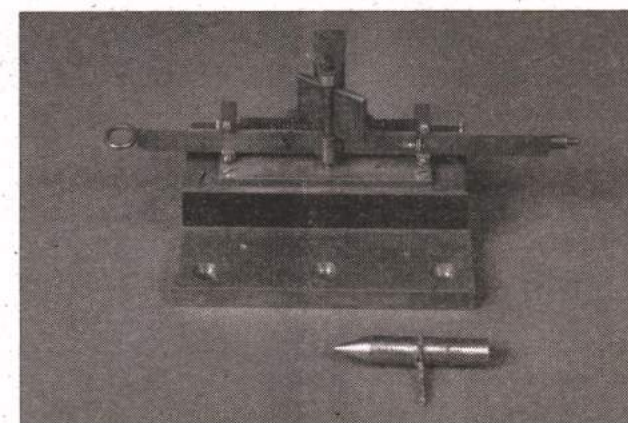
This artifact at the NIST museum is known only as "Unidentified Metal Instrument in a Wooden Case." Can you identify it? (*National Institute of Standards and Technology Digital Collections, Information Services Division, Gaithersburg, MD 20899*)

Student Professional Awareness Committee

Fatma Nur Alkas is an engineering student at the George Washington University majoring in Electrical Engineering with minors in Systems Engineering and Management. She will graduate in December 2013. Nur is the co-President of IEEE George Washington University Chapter and also serves as Secretary of the Society of Women Engineers George Washington University Chapter. The IEEE student branch philosophy is to show students how professional activities can put them one step ahead in the job market. Due to her dynamic leadership and enthusiastic participation in local IEEE events, the Northern Virginia and Washington Sections have nominated Nur for a position on the IEEE-USA Student Professional Awareness Committee. The Committee will finalize the selection of its new member in March. Good luck, Nur!

calendar *of* events

Tuesday, February 26, 2013

Risk & Issue Management

Sponsor:	IEEE-CS N. VA & DC, ASQ 509 N.VA, SSQ
Speaker:	Al Florence
Time:	5:30 PM (Networking and Pizza(*); 5:50 to 6:50 PM (Program)
Place:	MITRE, room 1N100 7515 Colshire Drive McLean, VA 22102; FDA, Bld 66, room G512 10903 New Hampshire Ave Silver Spring, MD 20993; MITRE, room 1M306 202 Burlington Rd (Rt. 62) Bedford, MA 01730
More Info:	http://www.asq509.org/ht/a/ GetDocumentAction/i/70192
Cost:	FREE
Website:	http://www.asq509.org/ht/a/ GetDocumentAction/i/70192
Registration:	http://www.asq509.org/ht/d/ DoSurvey/i/26913
Contact:	Scott Ankrum, ankrums@mitre. com

Wednesday, February 27, 2013

Business Process Management

Sponsor:	IEEE-CS N. VA & DC, ASQ 509 LSS SIG
Speaker:	Victor Cascella
Time:	6:00 - 6:45 PM (Networking and Pizza); 6:45 to 8:00 PM (Program)
Place:	TEQCORNER, 1616 Anderson Road, Center Conference Room (3rd Floor), McLean, Virginia 22102
More Info:	http://www.asq509.org/ ht/d/EventDetails/i/71010/ pid/372
Cost:	FREE
Website:	http://www.asq509.org/ ht/d/EventDetails/i/72301/ pid/372
Registration:	http://www.asq509.org/ht/d/ DoSurvey/i/38891
Contact:	Rhonda Farrell, SixsigmaSIG@ asq509.org

Tuesday, March 5, 2013

Washington Section AdCom Meeting

Sponsor:	IEEE Washington Section
Time:	6:30 p.m.
Place:	American Association for the Advancement of Science (AAAS), 2nd Floor Conference Room, 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). Parking is available in the garage on 12th Street directly

across from the AAAS building.

More Info:	All interested IEEE members are welcome.
Contact:	Contact Carolyn Carroll at carrollca@yahoo.com.

Wednesday, March 13, 2013

NoVA Section Administrative Committee Meeting

Sponsor:	IEEE Northern Virginia Section
Time:	6:30 p.m.
Place:	Olive Garden, 8133 Leesburg Pike, Vienna, VA 22182
Directions:	From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road.
Contact:	Please RSVP to the section secretary at nova.secretary@yahoo.com by Noon on Tuesday, March 12, 2013.

Thursday, March 21, 2013

Computer Society Meeting

Sponsor:	IEEE-CS N. VA & DC, ISSA-NOVA
Speaker:	TBD
Time:	5:30 PM (Networking/Dinner); 6:15 to 8:00 PM (Program)
Place:	TBD
More Info:	http://www.issa-nova.com/meetings.aspx
Cost:	FREE (Preference is for increase in organizational membership)
Website:	http://www.issa-nova.com/meetings.aspx
Registration:	http://www.issa-nova.com/default2. aspx
Contact:	Mr. John Dyson, VP_Programs@ ISSA-NOVA.ORG

Thursday, March 21, 2013

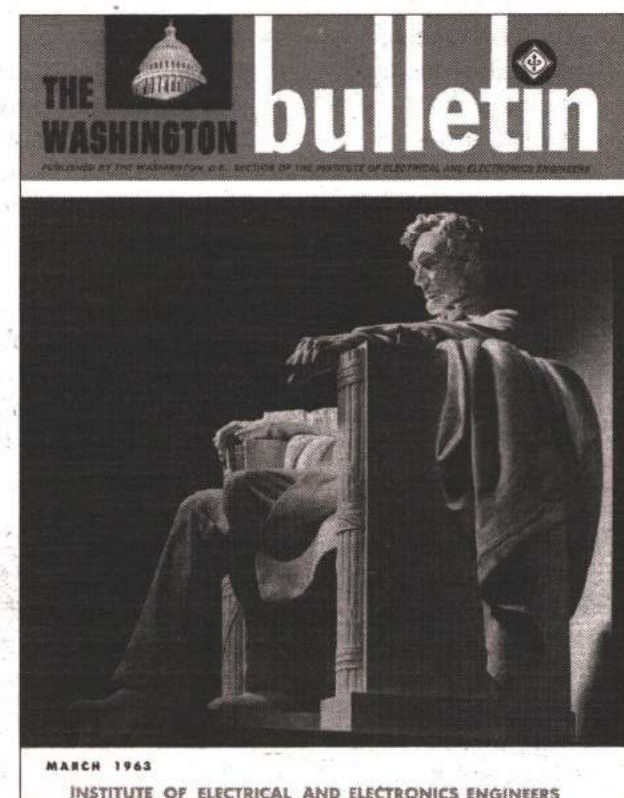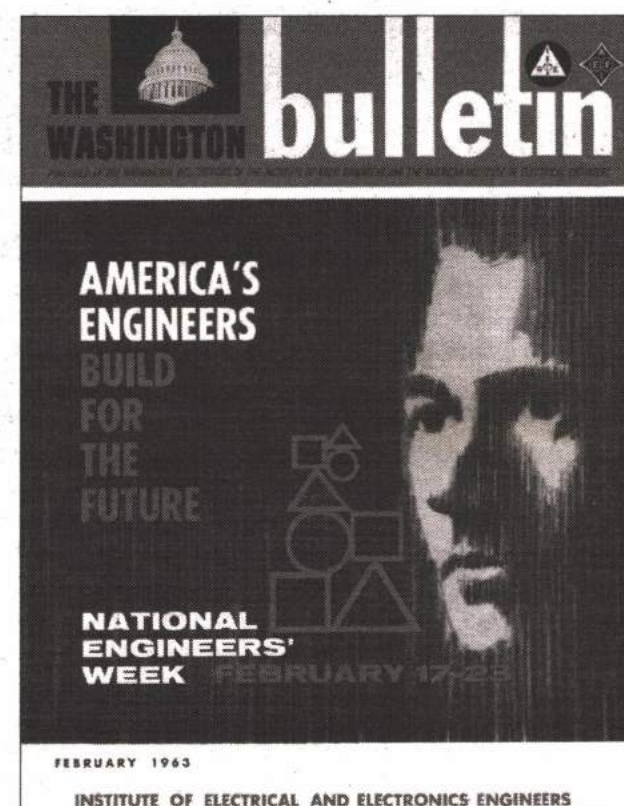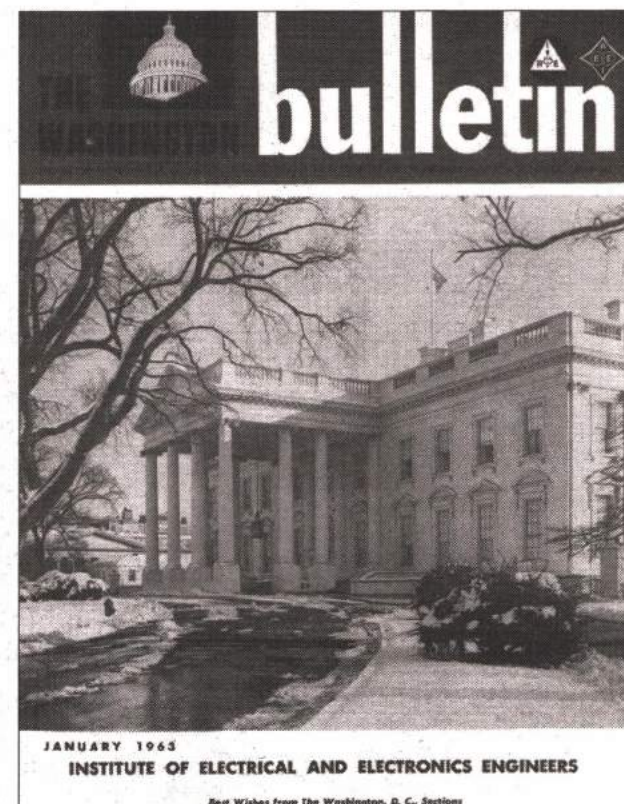### Getting Business (Without Getting the Business)

|	
Sponsor:	Consultants Network, Technology Management Council, Employment Network, Professional Communication Society (NV/W/B)
Time:	6 p.m. to 9 p.m.
Place:	Room No. CSI 1115, Department of Electrical & Computer Engineering, A. James Clark School of Engineering, University of Maryland, College Park.
Cost:	$20 for IEEE members and guests, FREE for IEEE Student Members
Registration:	www.ieee-consultants.org/Mar2013. html

JANUARY 1965
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
Best Wishes from The Washington, D. C. Sections

AMERICA'S ENGINEERS BUILD FOR THE FUTURE

NATIONAL ENGINEERS' WEEK FEBRUARY 17-23

FEBRUARY 1963
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

MARCH 1963
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

To celebrate the 50th anniversary year, the Scanner is publishing covers of 50-year old Bulletins from our archives. Visit *www.ieee.org/ escanner* and view this issue's Digital Edition for the complete issues.

IEEE NORTHERN VIRGINA SECTION CHAIR'S MESSAGE

Take an Active Part: Making a Difference in 2013
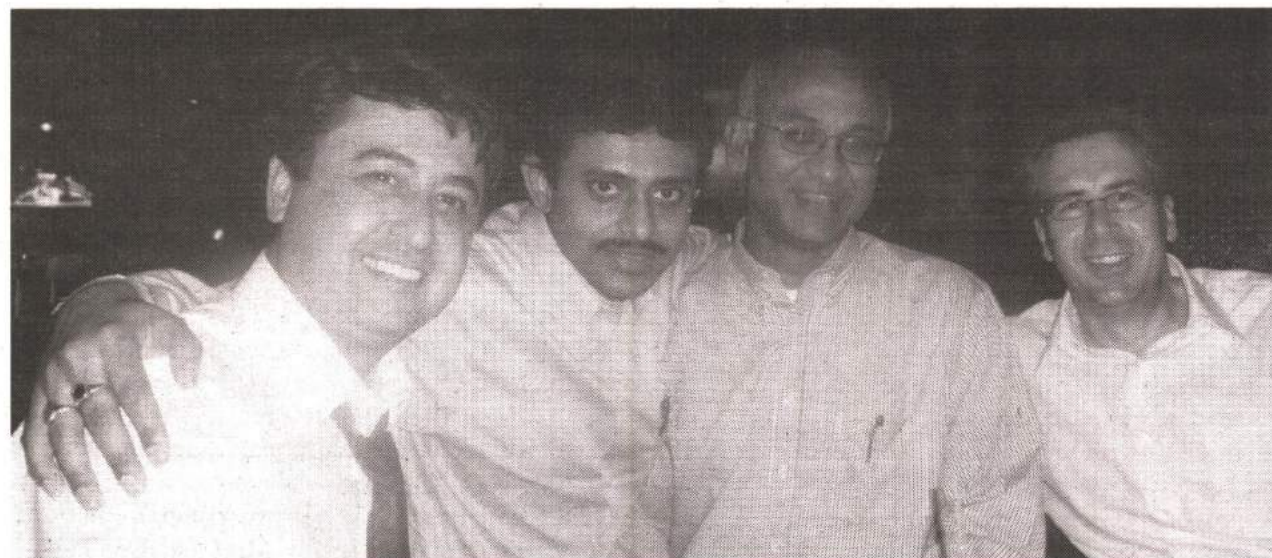
Northern Virginia Section leaders **Mithun Banerjee** and **Murty Polavarapu**, center, enjoy dancing and fellowship at the IEEE-USA Annual meeting with 2013 Region 2 Director **Dr. Parviz Famouri** (left) and Region 2 Past Director **Dr. Ralph Ford** (right). (Photo courtesy of Mithun Banerjee)

By MITHUN BANERJEE
CHAIR, IEEE NORTHERN VIRGINA SECTION

First, I would like to thank all IEEE Northern Virginia Section members for electing me as your Chairman for 2013. I promise to make a difference to our IEEE members in the coming year. I believe that action speaks louder than words; hence, I will show my commitment to my Section members by action and not by words. I am not going to tell you all about IEEE, as you are all IEEE members, but I want to say that your involvement in IEEE can change your life, career, leadership quality, outlook, and thought process. I am going to share some of my life story to encourage you to get more involved in IEEE for the betterment of your life.

I joined IEEE as a Student Member and have grown with IEEE in my professional career from Student Member to Associate Member, Associate Member to Member, and Member to Senior Member. My friends and colleagues compliment me on my leadership qualities, and honestly, I think it's because of my participation in IEEE that I developed those qualities at a young age. When I was very young, I was not able to speak in front of any gathering, as I used to feel awkward and shy, but today, if you wake me up in the middle of the night and want me to give a speech, I am ready. This character has been developed by organizing and participating in IEEE events, conferences, meetings, and activities. The inspiration came to my mind that if the speakers can do it, so can I, and that's how I generate my skills of talking to a large audience. The reason I am sharing this is to illustrate the importance of IEEE in our daily lives and why we should be part of the biggest and oldest technical organization of the world, with over 400,000 members worldwide. Also, it's a great place to network with like-minded professionals. Hence, I encourage you to take an active part by volunteering and participating in future IEEE events and meetings for your own benefit.

I thank the outgoing 2012 Chairman, Mr. Jeff Poston, for his excellent service to the Section. He brought some new ideas to our Section Administrative Committee to achieve larger participation from the members. His calm nature and leadership quality is very much admirable. During my term as Vice-Chair, Jeff and I worked very closely, and his professionalism was really outstanding. I want to welcome our Treasurer, Mr. James "Dan" Cross-Cole, back to the Administrative Committee. He did a phenomenal job of creating the official Operations Manual for the Northern Virginia Section. I look forward to working with him and using his immense experience in higher education to help us inspire more future student members. I want to welcome Ms. Rhonda Farrell back as our Secretary. She is an amazing person to work with. Before even getting elected as Secretary, she was already filling in to do the jobs that the Section needed. Her sincerity and dedication to her work are really admirable. Dr. Carolyn Carroll was elected as Vice-Chair but will not be able to serve in that role. As Chair of the Women in Engineering chapter, she did a fabulous job—with the help of her team—organizing some outstanding events. I look forward to her volunteering in other roles. I must thank Mr. Pete Sypher, Ms. Monica Mallini, and the Scanner team, especially the Content Editor, Mr. Paul Frommelt, for doing an excellent job publishing our treasured Scanner newsletter during a transitional period, and we welcome Baltimore Section to the Scanner family (thanks to the wisdom and guidance of the late Walter Willing, 2012 Baltimore Section Chair).

I want to welcome our newly elected Directors: Mr. Hemant Mehta, who did a superb job as Section Treasurer for the past two years, Mr. James "Jim" Magee, and Professor Seddik Benhamida. I also want to thank our continuing Directors, Mr. Marc Apter, Mr. Michael Cardinale, and Mr. Oscar Reyes, PE, for their help and support. I want to extend my best wishes to Mr. Marc Apter as incoming President of IEEE-USA. I am very proud that one of our fellow IEEE Northern Virginia Section members is the President of IEEE-USA, and I look forward to working with him and encouraging more local volunteers to aspire to IEEE leadership roles. I must extend my special thanks to Dr. Tim Settle for his faith in my leadership when he nominated me as a Vice-Chair candidate. I will always remember his statement that a successful Chairman is one who leaves the Section in a better state than before. We are very fortunate in the Northern Virginia Section to have such a dedicated core of volunteers serving our IEEE members.

Also, I extend a special welcome and offer my best wishes to the incoming IEEE Washington, DC Section Chair, Ms. Mónica Taysing-Lara. Our two Sections share a special bond, and as Chairman of the Northern Virginia Section, my main objective will be to strengthen it even more in 2013. Focusing on the activity of 2013, I have many ideas to share with you in the coming year. I offer the accompanying list of my top seven priorities (see sidebar). I welcome you all to attend the Administrative Committee (AdCom) meetings on the second Wednesday of each month. In these AdCom meetings, the officers, technical society chapter chairs, affinity group chairs, and members plan future professional and technical events. Even if you are unable to attend, I welcome your suggestions. Please don't hesitate to contact me and let me know your specific needs so that I, with the help of the Section Executive Committee, can serve you.

NIST Joint Cloud Computing and Big Data Workshop

Dates: January 15-17, 2013
Location: Red Auditorium, National Institute of Standards and Technology, 100 Bureau Drive, Gaithersburg, MD
Audience: Industry, Government, Academia
Cost: Free. Registration is required to attend.

The NIST Cloud and Big Data Workshop will bring together leaders and innovators from industry, academia and government in an interactive format that combines keynote presentations, panel discussions, interactive breakout sessions and open discussion. The conference will be led off by Pat Gallagher, Under Secretary of Commerce for Standards and Technology and Director, NIST, and Steven VanRoekel, the Chief Information Officer of the United States.

On the first day, the workshop presenters will provide information on the USG Cloud Computing Technology Roadmap initiative as well as a status update on NIST efforts to help develop open standards in interoperability, portability and security in cloud computing. The second and third days of the workshop will focus on the intersection of Cloud and Big Data. Fully realizing the power of Big Data depends on meeting the unprecedented demands on storage, integration, and analysis presented by massive data sets--demands that Cloud innovators are working to meet today. The workshop will explore possibilities for harmonizing Cloud and Big Data measurement, benchmarking, and standards in ways that bring the power of these two approaches to bear in driving progress and prosperity. Whether you're interested in Big Data as a service, analytics and visualization, operational infrastructure, or other areas, the workshop will give you the opportunity to share your ideas and explore those of others on key questions.

Security Instructions: If you are not registered, you will not be allowed on site. Registered attendees will receive security and campus instructions prior to the workshop. All foreign national visitors who do not have permanent resident status and who wish to register for this meeting must supply additional information prior to arrival to avoid significant delays (up to 24 hours) in entering the facility. When registration is open, the required NIST-1260 form will be available.

Registration: https://www-s.nist.gov/CRS/conf_disclosure.cfm?conf_id=5908.
Registration closes January 9.
Registration Contact: Angela Ellis, 301-975-3881 or angela.ellis@nist.gov
NIST Visitor Information is found at http://www.nist.gov/public_affairs/visitor/index.cfm
Technical Contact: Robert Bohn, 301-975-4731 or cloudcomputing@nist.gov
Additional information: http://www.nist.gov/itl/cloud/

IEEE R2 Student Activities Conference 2013

West Virginia University will be host to the next IEEE R2 Student Activities Conference on Saturday April 20th, 2013. The conference is divided up into three sections: workshops in the morning, competitions in the afternoon, and dinner/keynote/awards in the evening. The conference afternoon will be very similar to previous years, with several competitions including the Brown Bag, Micromouse, Ethics, Project Showcase, Paper, Physics and T-Shirt Design. One change this year however is that 2013 organizing committee would like to invite the graduate student members of R2 to attend and participate at the SAC 2013! As such, there will an additional paper competition exclusively for our GSMs. The GSMs will also be able to participate in most competitions as described on the competitions page on the SAC 2013 website, which can be found at http://ieee.studentorgs.wvu.edu/sac.

The morning will retain the traditional leadership workshops that have been held successfully in numerous years past. In addition there will be several workshops to choose from in the later part of the morning. More details will follow as we get closer to the SAC.

Up to 14 members of each branch will be accommodated with their registration, until the conference is at full capacity. The registration this year will be individually based and require a small registration fee. With every registration, the attendee will receive a SAC 2013 T-Shirt upon check-in at the conference. Travel assistance will be the same as in recent years, the details of which can be also found on the SAC 2013 website. There will be an email announcement to the student branches when registration opens. We look forward to seeing everyone in April!
R2 Regional Student Representative
Mikey McLaughlin – m.mclaughlin@ieee.org
SAC 2013 Chair
Stephen Itschner - stephen.itschner@ieee.org

IEEE Judges Needed!

Do you think Science and Technology are important?

The Junior Academy (http://www.dickdavies.com/junior-academy) of the Washington Academy of Sciences is an activity that originated in IEEE a decade ago. We provide professional scientists and engineers to judge school science fairs in Maryland, Virginia, and the District of Columbia.

We are looking for judges for the 2013 spring season. Atypical assignment takes three hours, we work in groups, giving students an opportunity to show their work to professionals. It's an opportunity for the students to meet and talk with technologists.

It's also rewarding and fun for the judges!

If join us, you will receive an email invitation for every event. If you can join us for that event, great! If not you will be invited to the next event. For more information, please contact Jerry Gibbon, Senior Judge, at j.t.gibbon@ieee.org, or Dick Davies, Vice President of the Junior Academy, dick.davies.dc@gmail.com.

To join, send your name and preferred email to Dick Davies at dick.davies.dc@gmail.com. Please include your IEEE affiliation. We need your help. Thank you!

An 'Out-of-this-World' Experience

been a part of NIST, including a 2012 winner of the Nobel Prize in Physics, Dr. David Wineland, whose work to develop the world's most precise atomic clock was built on his previous research on trapped ions. Dr. Wineland's research over the past 35 years enabled subsequent Nobel awards to other researchers, including Dr. Phillips. This cycle illustrates the climate that NIST provides scientists to build on other scientists' work.
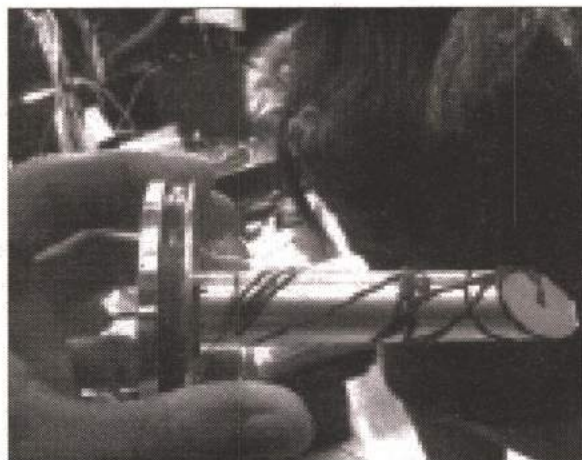
This optical detector on display at the NIST laser laboratory gets its electrical signal from an optical input. *(Photo by Dickson Ibiebele)*

Visitors to NIST's Gaithersburg campus are treated to a view of Newton Apple Tree Court, home of a descendant of the apple tree that purportedly inspired Sir Isaac Newton to formulate the theory of gravitation in 1665. The Newton tree was planted on the NIST Gaithersburg campus in April 1966. Another Newton tree grows at the former National Bureau of Standards site on Connecticut Avenue. *(Photo by Monica Mallini)*

During the remainder of our two-hour tour, we visited three separate lab facilities that had vastly differing goals. Our tour had stops at distant laboratories, so be prepared for a long walk, depending on which labs are included in your personalized tour. Weather is hardly an obstacle because most of the campus is accessible through a system of covered walkways and corridors.

At the first lab we visited, the Nanobiotechnology project laboratory, physical scientist Dr. John Kasianowicz was conducting experiments to test the hypothesis that DNA and proteins can be individually identified by their physical shape.

For many decades, scientists have been trying to sequence DNA for health care applications. Maxam and Gilbert tried to sequence DNA by radioactive labeling and using chemicals to break the nucleotide bases. This method is no longer used because it requires the use of dangerous chemicals. The research of Dr. Kasianowicz is to find a better way to sequence DNA, based on the ability to electronically detect and characterize individual polynucleotides as they are driven through a single protein ion channel. His method works like water flowing through a tube: if there is a small obstacle in the flow, the flow will slow down, and one side will have more water than the other side. When this happens in a single protein ion channel, it will cause a change in the potential difference, and the bigger the obstacle, the greater the potential difference. Thus, the ion can be characterized based on an electrical signature. However, there is a problem that the DNA can run through the pore too fast to detect any change in potential difference. This problem is overcome by using a chemical in the pore that has affinity to the DNA, so that the chemical reacts with the nucleotide and prolongs the time for the nucleotide to pass through the pore, allowing detection of the change in potential difference.

The resulting process consists of testing miniscule voltages when proteins are forced through a "hole" in a pseudo-cell membrane. The longer the protein takes to pass through the lipid membrane, the higher the spike in voltage, and therefore, the larger the molecule in question. Dr. Kasianowicz said that he wants to create a device that will be able to read human DNA, just like the device that can read the level of glucose in diabetic patients. The motivation for this research is that a chemical medicine has a different effect on each individual patient because each person has a different set of DNA. As a result, if we can sequence the DNA of each individual human being, we can find the best way to treat their diseases. Moreover, working with DNA will lead to the ability to detect DNA sequences linked to mutation or cancer, and eventually, a cure for disease through DNA repair. Two of us (Trinh and My Duyen) have done research on Dr. Kasianowicz and his project, "The Effects of Diffusion on an Exonuclease/Nanopore-Based DNA Sequencing Engine." NIST scientists are developing techniques for improving DNA detection systems to single-molecule sensitivity in real-time.

According to Dr. Kasianowicz, within 10 years, we will hold a machine in our hand which can measure the deficiencies in our body and let us know the cure as well. The idea itself is amazing, and Dr. Kasianowicz, who was the person behind this idea, explained his remarkable theory. I wish that I could witness him actually building that device. This would be a revolutionary product if finished, and it makes you wonder how many other scientists are working on stuff just as extraordinary.

The second lab we visited was located at the Center for Nanoscale Science and Technology. This center started in May 2007, and its goal is supporting U.S. nanotechnology enterprise from discovery to production. NanoFab, as it is called, includes a comprehensive suite of tools and processes for nanofabrication and measurement. The actual building is 400 feet below ground in order to measure things accurately to the highest precision. We were not allowed to enter the clean room in the underground building, but there is a window tour, which was amazing as well. There was a cleaning area, an inspection department, and a section where the instruments are dried at a sub-microscopic level. Other areas are the metal deposition room and the dry etch bays. The NanoFab is open to anyone with the proper training, and the facility is accessible through a streamlined application process designed to get users into the lab within a few weeks. If you do not know how to use the equipment there, then a NIST worker will train you. Companies as large as IBM come to use this world-class facility because it has "an unusual level of operational flexibility, [and] it can accommodate the needs of a wide range of researchers, from novices to the world's experts in nanofabrication." This facility is used for hundreds of things, including laser writing, plasma etching, and silicon micro/nano-machining. Basically, this is the place for anything on the order of 10^{-9} meters that needs to be analyzed, produced or researched. The Laser Laboratory, the last stop on our tour, we were able to visit only briefly. This lab deals with everything to do with light and reflection, including measurement of the speed of light. NIST calibrates and produce light bulbs that become the standard for the industry's production. It was amazing to see how technology has advanced. We were shown a diffusing surface that was invented by NIST researchers, a compacted Teflon powder that reflects 99.99% of light that hits it. The material does not allow a laser beam to reflect or pass through; it absorbs part of the light and reflects and disperses the rest so perfectly that the surface appears to glow. An application is the calibration of satellites by comparing the reflection off of a special brick of this diffuser. Unfortunately, with the diffuser demonstration, our tour was over, and we did not have a chance to study more.

Overall, the visit was amazing, and it definitely changed my mindset about research. After our visit, I decided to apply for the NIST SURF program, which allows students to actually perform research in NIST laboratories with an experienced scientist. The internship is very competitive and pays very well. [Editor's Note: The application deadline for this program is February 15, 2013.]

The trip to NIST is an eye opener. It opens you to the community of science and technology. You will learn how NIST is using technology to help the universe. You will find a lot of really cool equipment and state-of-the-art laboratories. A visit to NIST is a very unique experience, for you can hear some of the smartest people in the world talk about the work they love and use terms that we learned in our physics class. These scientists do not hold back explaining their complex ideas, and it amazes me how simple they can make it sound. I really enjoyed the tour at NIST, and would recommend it to any other science and technology fanatic. We really appreciate the talk with Dr. Kasianowicz about his research sequencing DNA. Thank you, Professor, for giving us a chance to be at NIST.

Conclusion: NIST is a proof that science is continuously evolving to improve life on earth.

Montgomery College engineering students Mark Adams, Dickson Ibiebele, Khush Kotak, My Duyen Le, Trinh Nguyen, Jesse Lynch, Risheng Wang, Ketchazo Paho, and Francisco Robles contributed to this article.

For more information:

1. Elio Passaglia with Karma A. Beat, A UNIQUE INSTITUTION: The National Bureau of Standards, 1950-1969, Washington, DC: U.S. Government Printing Office, 1999.

2. Rexmond C. Cochrane, Measures for Progress: A History of the National Bureau of Standards, U.S. Department of Commerce, Washington, DC: U.S. Government Printing Office, 1966. (Available for download at http://www.nist.gov/nvl/upload/Measures_for_Progress-MP275-FULL.pdf)

3. David R. Lide, Ed., A Century of Excellence in Measurements, Standards, and Technology: A Chronicle of Selected NBS/NIST Publications, 1901-2000 (SP958), 2001. (Digital collection available for download at the NIST Virtual Library, http://www.nist.gov/nvl/)

4. For information about the Summer Undergraduate Research Fellowship (SURF), visit http://www.nist.gov/surfgaithersburg/.

CELEBRATE INTRODUCE A GIRL TO ENGINEERING DAY

Introduce a Girl to Engineering Day
February 21, 2013

20th Anniversary "Discover Engineering Family Day" Opens National Engineers Week

O n February 16, ten thousand people will converge at the National Building Museum to welcome Engineers Week, the annual week-long celebration of engineering in the United States.

Nearly thirty exhibitors will present hands-on science and engineering exhibits and demonstrations aimed at families, children, youth groups, and others interested in engineering. For the second year in a row, former astronaut Dr. Roger Crouch, a payload specialist on two 1997 Space Shuttle Columbia missions, will sign autographs all day.

This year, the IEEE-USA exhibit table will feature a dynamo, a model wind turbine, and Elenco Snap Circuit kits provided by the IEEE Electron Devices Society. The kits have modular components that can be configured into projects such as radios, motion detectors, and doorbells.

The first Family Engineering Day was held in 1993 as an Engineers Week Gala at Intelsat in Washington, DC. Since IEEE-USA was the lead society to host National Engineers Week that year, IEEE President Martha Sloan was selected to emcee the program. The following year, the event moved to the National Air & Space Museum, and it has been celebrated as a Saturday daytime festival at the National Building Museum since 2002.

The National Building Museum is located at 401 F. Street, N.W., Washington, DC (between 4th and 5th Streets). Since metered street parking is very limited, it is highly recommended that visitors take the Metro. The National Building Museum is directly across the street from the Judiciary Square Metro Station on the Red Line.

Chris McManes, IEEE-USA's Public Relations Manager and Vice-Chair of the Discover Engineering Family Day Planning Committee, contributed to this article.

For more information:
IEEE Electron Devices Society Engineers Demonstrating Science program:
http://eds.ieee.org/the-eds-etc-program.html
Discover Engineering Family Day website:
www.engineeringfamilyday.org
Future City Competition:
http://www.todaysengineer.org/2008/Mar/FCC.asp
Engineers Week "Celebrate Awesome" poster and logo download:
http://www.eweek.org/NewsStory.aspx?ContentID=287

Engineers Week 2013 February 17–23

CELEBRATE AWESOME

Local Engineers Week Event Schedule:

February 16
Discover Engineering Family Day, National Building Museum, 10am-4pm
February 16-20
Future City Competition National Finals
February 20
DC Council of Engineering and Architectural Societies Proclamation Luncheon
February 23
Introduce a Girl to Engineering Day
February 23
DCCEAS Engineers Week Awards Banquet
February 28
Engineering Movie Night, Montgomery College Germantown Campus, 6-8:30pm

iPad 2 Winner Announced!

Kudos to Baltimore Section member **Sean Healey**, who won an Apple iPad 2 tablet computer in the IEEE early renewal drawing! Sean is one of seven IEEE members worldwide whose names were selected in a random drawing on November 15, 2012.

Johns Hopkins Invites Grades 6-12 to Compete at Olympiad

The use of computers for the comprehension and production of language is partly a progression from Alan Turing's proposal in 1950 that computers might one day be capable of thought. The interdisciplinary field of computational linguistics arose from a need to improve on early attempts at mechanical translation, which failed because natural languages, with their subtle textures, combined with the abstract nuances of human personality, are far too complex to yield to a simple substitution of vocabulary terms.

Computational linguistics (or CL) is the science of understanding human language using logic, computer algorithms, and math. It is all around us! We actually see the products of CL in use every day with Google, Facebook, Twitter, Microsoft, Yahoo, and many other websites and applications.

The idea of holding academic challenges in linguistics originated in Moscow about 50 years ago then spread to Bulgaria in the 1980s. The first contest in the U.S. was held at the University of Oregon in 1998. The North American Computational Linguistics Olympiad (NACLO) introduces students to computational problem-solving specifically as it relates to natural languages. In this contest, students exercise their logic skills to solve linguistic puzzles. Although the contest generally involves language translation exercises, no prior knowledge of foreign language is needed because the problems are solved through logic and reasoning.

Johns Hopkins University is one of several local hosts of NACLO competition events this year. A practice session on January 19 is open to everyone, and the local first-round competition will be held on Thursday, January 31 at the Center of Excellence in the Stieff Building at 810 Wyman Park Rd, Baltimore, MD 21211. RSVP for either event to jhu.naclo@gmail.com, and register for the competition by January 30 at http://www.naclo.cs.cmu.edu/reg_student.php. (When registering, select Johns Hopkins – or your choice of available hosts – as your test location.) Both events are free, and pizza will be served. A second round of competition will be held by invitation in March, and participants will get a chance to represent the United States in the 2013 International Linguistics Olympiad in Manchester, England. Local competitions will also be held at Georgetown and Howard Universities and several high schools.

2013 marks the ten-year anniversary of the International Olympiad, the first of which was hosted in Bulgaria. Students from 27 counties competed in the 2012 International Linguistics Olympiad, held at the Faculty of Electrical Engineering of the University of Ljubljana in Slovenia in July-August 2012. Twelve students from North America trained together and competed in teams of four. Team USA Blue placed first in the overall competition, and Sam Zbarsky of Rockville, a senior at Montgomery Blair High School, competing with Team USA Red, was awarded an honorable mention individual citation.

Congratulations!

C ongratulations to our National Capital Area Fellows, whose election to the Fellows Class of 2013 was announced by IEEE in December 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. For more information, visit www.ieee.org/fellows.

◆ **Stephen B. Alexander** of Ciena Corporation for contributions to optical communication technologies.
◆ **Sushil Jajodia** of George Mason University for contributions to information security, data protection, and privacy.
◆ **Carl Edward Landwehr** of McLean, Virginia for contributions to cybersecurity
◆ **Shunlin Liang** of the University of Maryland for contributions to remote sensing from satellite observations
◆ **Sanjay Raman** of the Defense Advanced Research Projects Agency (DARPA) for leadership in adaptive microwave and millimeter-wave integrated circuits
◆ **Jie Yang** of the National Science Foundation for contributions to multimodal human-computer interaction

The following local members were elevated to Senior Member level recently.
Baltimore Section: Katherine Duncan, Mahbub Hoque, Michael Ochs, Sharad Sharma, Xiaoxiao Wang, David Yoo
Northern Virginia Section: Aaron Cohen, Carl McCants, Victor Minak, Vikram Narayana, Kenneth Nidiffer, Karl Nyberg, Mark Schaeffer, Kim Schaffer, Joseph Schumer, Angelos Stavrou, Jonathan Williams
Washington Section: Lawrence Cohen, Azim Eskandarian, Xue Qi

All members with 10 years of professional experience are invited to apply for elevation to IEEE Senior Member. For assistance with this process, please come to a meeting of the new IEEE Employment Network, or contact your Section Chair.
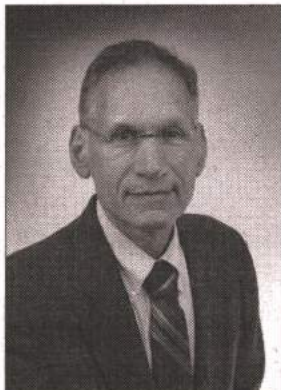
NCA Welcomes IEEE Employment Network

BY RICHARD SWERDLOW, PMP

The IEEE Northern Virginia Section is launching an Employment Network for members in the Northern Virginia, Washington, and Baltimore sections. The Network will be a career tool for members to facilitate their finding a job. Initially, the focus will be on members who have already graduated. We foresee adding students as the Network moves beyond the start-up phase. The scope of the Network will be all 39 technical societies of the three sections. Job-hunting can be a frustrating and unsettling time. An objective for this group will be to provide positive feedback and encouragement that will help build a sense of optimism in the job-seekers and motivate them to become more proactive in their search.

Richard Swerdlow, PMP, is the founding Chair of the National Capital Area chapter of the IEEE Employment Network.

The central activity of the Network will be face-to-face networking. Ask any recruiter, human resources person, or Executive Coach what is the number one way to find a job, and they will tell you networking. The power of this technique was demonstrated at our first meeting on December 13 of this past year, held at the Department of Electrical & Computer Engineering at the University of Maryland at College Park. The CEO of a company was there who briefly described a position that he needed to fill.

A member of the audience told him that it sounded like something he was looking for, and the two exchanged contact information and arranged a meeting. Our first activity, planned for the spring of 2013, will be a gathering of job seekers and industry people aimed at encouraging this face-to-face networking. The programs at these networking events will also include speakers who will provide information on an array of tools such as work histories, resumes, and use of the Internet. There will be games woven into the gatherings to aid networking and let us have some fun doing it. We are also planning a website to assist members in finding work that will be fulfilling for them.

We will be providing more information through the Scanner and other Section and Chapter publications as we move into the activity stage of the Network. Thanks to IEEE-USA for providing seed funds to facilitate startup of this Employment Network.

Never Eat Alone: A Few More Thoughts About Project Management

BY DOUGLAS HOLLY

Thank you for inviting me to talk to your class about project management. I certainly enjoyed it and hope they found it valuable. Two things I would like to follow up with. One, I would like to recommend a reference book, Project Management for Dummies. Although I hate the title, it has great reference material that is easy to use.

Second, I would like to follow up on the question about women in engineering and business. I have thought about it a bit more, and I would like illustrate some points with examples.

One of the best managers I ever had was Sue Outman. She had worked her way up to a middle management position by working hard, being smart, and cultivating a network of mentors and coworkers by behaving as a peer. She was accomplished and well respected for being able to handle challenging assignments. Many people are smart and work hard, but it was her ability to network with her peers and the next level of management that distinguished her. This was not an easy challenge; it was in the 70's and in the aerospace industry, a classic "old boys" network.

One of the key things Sue told me, one time when she found me eating at my desk, was "Never eat alone." Get out and meet with people and get to know them. People want to hire/work with people they know. She was not pushy about it; she was interesting and easy to talk too. When managers needed a tough job done, they felt they could trust her because they knew her so were comfortable giving her the opportunity. Because they asked her to take on the tough assignments, they had a vested interest in her success and would provide help and coaching. On her part, she was a good communicator: direct, keeping people informed, and working hard to never let her management get blind-sided. So her keys to success were behaving like the peer she was, developing a good network, and keeping people informed and not blindsided.

I am a Star Trek fan, so this is an example from the Star Trek: the Next Generation, Season 7 episode called "Attached." Captain Jean-Luc Picard and Officer Beverly Crusher develop a telepathic connection and can read each other's thoughts. They are lost and trying to find their way back to the others. They come to a location where the map is unclear, and Beverly is unsure and expresses discomfort about which way to go. The Captain takes the map, looks at it for a second, then says with complete confidence, "This way."

Beverly, able to read his mind, exclaims, "You don't really know, do you? You are acting like you know exactly which way to go, but you are really guessing. Do you do this all the time?"

Jean-Luc pauses, and then says something that is very important for all leaders/project managers: "No . . . , but there are times when it is necessary for a Captain to give the appearance of confidence."

The lesson is not that you should guess with confidence. The lesson is expressing confidence when you have to make a call with less than perfect data. Whom would you rather follow, the person who says, "We should go this way, I think?" or "Go this way!"

The energy, momentum and determination created when the team is confident will allow it to recover from problems or challenges which are inevitable anyway, whereas a nervous team will trip itself up—even if on the right path. Unfortunately, more often than not, the information available to make decisions is incomplete, so there is a certain amount of guessing.

Additionally, there is usually great time pressure to get going, so there is high value in making the call as early as possible. The point is for anyone in a leadership position, as project managers often are, to get the information you need to make the best call you can, then make the decision confidently and move forward. Making a decision and moving forward is tremendously energizing and gets people engaged toward a goal. If issues arise, they will adapt.

> "Today we saw Doug Holly give a nice presentation about being a project manager. I enjoyed the speech and it gave me more of an idea how being an engineer is like. He had very good tips and interesting stories."
> — Colby Nguyen, sophomore

> "This week in class we were surprised by the visit of Mr. Doug Holly. Though we received an assignment last week of developing a gracious introduction, we had no idea that we would be seeing him in class today. He talked with us about various business strategies and the role of an engineer in the outside world. I really liked the way he answered our questions."
> — Darpan Shah, freshman, Computer Engineering

New Career-Focused Meeting Series Announced

Brainstorming at the December 13 professional development meeting at University of Maryland led to a new career-focused meeting series, which the Consultants Network and the Employment Network will launch on January 17. (See related article on this page) The meetings will feature networking, workshops, and information for IEEE members in all stages of their career, from students to retirees, and senior member elevation assistance.
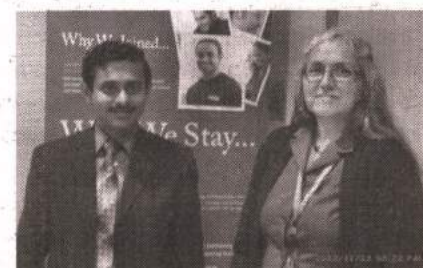
(Right) Northern Virginia Section Chair **Mithun Banerjee** and Consultants Network member **Monica Mallini** collaborate on the new meeting series. (Left) **Mr. Peter Kos** of the Project Management Institute's Baltimore chapter, **Dr. Peter Sandborn** of Maryland Technology Enterprise Institute, **Mr. Carl Pritchard** of Pritchard Management Associates, and host **Mithun Banerjee** presented an outstanding program to 40 members and students on December 13. (Photos by Mr. Rajyeswar Banerjee and Mrs. Bratati Banerjee)
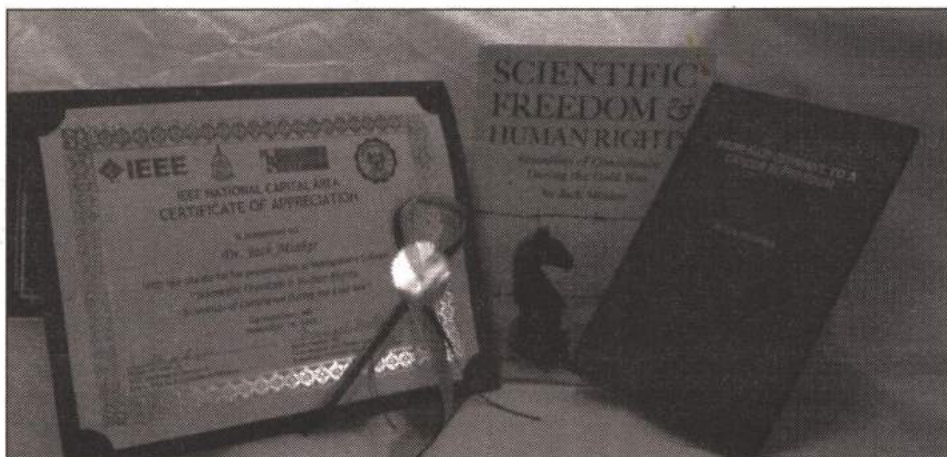
IEEE presents Dr. Minker with tokens of appreciation, including a signed copy of Tom Doeppner's autobiography, incribed to another "Jack." (*Photo by Monica Mallini*)

Science is Something Greater than a Career

By Brandon Jordan, Josue Serrano and Darpan Shah
Montgomery College engineering students

Most times, the classes we take in the beginning of our college journey are simply the classes we need to get to the degree we want and then hopefully the career we want. In the process, we don't really consider what it took for us to actually have these fine choices available to us. The faces or names of pioneers are lost on us when we see the future before us but rarely pay attention to the past that gave us the present. I had never heard of Dr. Jack Minker, and if it wasn't for my EE140 professor, Prof. Monica Mallini, I probably never would have. Yet this one man's works and deeds have had major impacts on a global scale.

This week we had one of the best classes in our engineering course. On November 14, 2012, Dr. Jack Minker, distinguished speaker from the University of Maryland, who is also a human rights activist, gave a talk about his recently published book, Scientific Freedom & Human Rights: Scientists of Conscience During the Cold War, at the Montgomery College Germantown campus. The day of this class was the Indian New Year, and I think I got one of the best gifts of the New Year.

Seeing Dr. Minker in person and hearing him speak for the first time, I kind of thought to myself, "Hmm, he's a professor who's written a book. What's all the hype?" And then he begins to recount his stories from the past: how he started out, and what eventually led him on his path. Dr. Minker's book documents his work on human rights since 1972 to the present. In his lecture, he familiarized students with his book and how he ended up writing that book. He spoke of his work with the Committee of Concerned Scientists and the International Coalition of Scientists. About his struggles for those scientific freedoms and human rights in the Soviet Union as well as several other countries. Listening to him recount over forty or fifty years of history that is his own was a bit overwhelming and inspiring at the same time.

Dr. Minker went on to tell the story of how he campaigned on behalf of Andrei Sakharov and his wife, Yelena Bonner. I learned a lot from his story. Now I know that Andrei Sakharov was a nuclear scientist and the father of the Soviet hydrogen bomb. He was awarded the 1975 Nobel Peace Prize award, and his wife had to receive it on his behalf due to the Soviet Union exiling him to Gorky in 1980, stripped of his awards and honors. Then, on May 2, 1984, he went on a hunger strike because the Soviet Union wouldn't give his wife the correct medical attention. Gorbachev released Sakharov from exile on December 26, 1986. Sakharov died Dec. 24, 1989, and his wife Yelena Bonner died on June 18, 2011.

I never would think that a scientist would have had such a hard life with governments stripping away their human rights. I thank God that things have changed for the better. In the end, Dr. Minker still feels that the war for human rights is not over; there is a long way to go before complete freedom has been reached.

One thing that really captured my attention is what he said at the end of the lecture: "The lesson to learn in all of this is that one individual rarely makes a difference."

We need to care for our colleagues as a community and start helping others, like Dr. Minker is doing, not just think of ourselves. This is what I took away from the lecture overall. For a moment, I saw something greater than just a good career with pretty nice pay. The job and pay are definitely worth it, but something more valuable lies beneath: using your intelligence and life's work to be a part of the creation of the future and advancement of the human race, instead of just living in it.

Dr. Minker has achieved excellence in artificial intelligence and has received top honors from several organizations. I was lucky enough to get plenty of time to interact with him personally. Despite of all his achievements, he is a kind man full of simplicity and respect for every individual. He interacted with all the students before the lecture. At the end of his lecture, he remained to satisfy a few questions from some curious minds. I was lucky enough to get a signed copy of his book. It was truly a great pleasure to have him at our campus.

The event was organized by our ES100 class but was also funded and supported by IEEE, the IEEE Montgomery College student branch, and the MC Germantown Engineering Club.

Website is APS Formula for Success

By Dr. Brian Riely,
APS Chapter Chair

The Antennas and Propagation Society Chapter in the NCA, which serves both the Washington and Northern VA Sections, rose from the dead in 2010 with a very informative website.

The top of the home page, http://ewh.ieee.org/r2/no_virginia/aps/, has tabs, such as Calendar, Past Meetings, and NCA eScanner, that feature events that pertain to local A&PS chapters. The bottom of home page has tabs, such as IEEE A&PS Meetings, Symposia, and Short Courses, for international events.

A feature of the website that is designed to be helpful to the A&PS community is the link to Past Meetings. For each meeting/lecture, the website gives the title of the talk, a biography of the speaker, an abstract of the talk, a picture of the Chair Dr. Brian Riely with the speaker, and a picture of the speaker and the attendees, as shown here, with a link to the speaker's contact information, and most importantly, a link to the presentation.

The website features talks from many distinguish lecturers and world renowned A&PS presenters. For 2011, the website featured a talk for each month from March 2011 to December 2011. As a testimony to the contributions that the A&PS community gave to the NCA, the Washington Section awarded "Chapter of the Year" to the A&PS chapter.

Dr Brian Riely and Professor Dennis Prather.

Dr. Yakup Bayram and attendees at a September 2011 APS presentation.

Always Accepting Submissions

Please submit calendar items in the format used in the Calendar of Events. You can send an email to *nca-scanner@ieee.org*. Events must have an IEEE or affiliate sponsor. Other contributions, such as reports on chapter events and other member activities, are most welcome. Please submit articles to the content editor at *nca-scanner@ieee.org*.

Dear Scanner Readers,

On behalf of the George Washington IEEE, we would like to welcome you to our chapter! Located in the heart of the District of Columbia, the GW IEEE chapter started off the semester seeking to revitalize and reenergize, and did we ever! Our Vice President, Lauren D., came up with an ingenious plan to have a night-time Krispy Kreme donut fundraiser outside the largest dorm on campus – we sold 200 donuts in three hours for a draw of $300! The success really came from the members on the Executive Board going above and beyond – staying up late to sell donuts and even contributing some of their own money for supplies. We hope to have another fundraiser near the beginning of the winter semester, except this time with hot chocolate, too!

One of our biggest goals for the 2012-2013 academic year is to take as many students as possible to the Region 2 IEEE Regional Conference! We had a blast at last year's conference in Ohio State and want each of our peers to be able to have the same experience. We are also a very competitive group of engineers – last year we won the Physics Competition award, and the two years before that, we were Ethics Competition winners! Most importantly, though, we met a lot of truly inspiring people and were able to establish long-term connections with our fellow IEEE peers at other schools, and that is something we would love to keep on doing in the years to come. This year, we hope to take as many as fifteen people to West Virginia University, and we hope to see many of you there!

Finally, we have been working feverishly to set up events for the graduate students in our chapter as well as reaching out to our local IEEE branches. So far, we have set up an exclusive museum tour at the beginning of January to see Apple 1 and the history of computing, thanks to Professor David Alan Grier, head of the IEEE Computing Society. We were also able to meet with the chapter treasurer Richard Hill to talk about plans for getting involved with the DC chapter and came up with some really great ideas! The GW IEEE group is really looking forward to working with IEEE to host events, speakers and other activities so if anyone reading this would like to get involved, please contact us at gwieee@gwmail.gwu.edu!

We hope to work with all of you (yes, all of you!) soon and we wish you all the best this holiday season! See you in 2013!

Sincerely,

Bhargavi Puppala
Fatma Nur Alkas
Co-Presidents, IEEE GW Student Branch

50-Year Milestone Revisited

Washington, DC hosted the 50th anniversary IEEE GLOBECOM, a premiere Communications Society international conference, in 2007. Washington again looks forward to hosting the conference (with neighboring Northern Virginia and Baltimore Sections) in 2016. Additional information and a call for local volunteers will be posted in February 2013.

NSF REU is for You!

BY DR. PAMELA ABSHIRE
ASSOCIATE PROFESSOR, UNIVERSITY OF MARYLAND

It's that time of year again ... chestnuts roasting on open fires, snow throwers gunning at full throttle, and undergraduate engineering students scrambling to find internships for summer 2013. The National Science Foundation sponsors Research Experiences for Undergraduates, programs that offer summer research internships for undergraduate students in all areas of research funded by the National Science Foundation. The goal is to expand student participation in all kinds of research and to get them excited about technical careers. Studies have documented many benefits of summer research, including improved technical preparation, better grades, and greater success finding employment after graduation. These programs pair students with faculty mentors to work on research projects during the summer break; students receive a stipend and sometimes other perks such as housing, meals, and travel support. There are REU site programs in every state, DC, and in US territories including Puerto Rico. The DC area is fortunate to host many REU site programs in technical areas relevant to IEEE, including:

Interdisciplinary Program in High Performance Computing, University of Maryland Baltimore County
http://www.umbc.edu/hpcreu/
Biosystems Internships for ENgineers (BIEN), University of Maryland College Park
http://www.ece.umd.edu/BIEN/
Research Opportunities in Miniature Robotics, University of Maryland College Park
http://robotics.umd.edu/2012_REU/
Computational Sensing and Medical Robotics (CS&MR), Johns Hopkins University
https://www.lcsr.jhu.edu/Education/REU
Training and Research Experiences in Nonlinear Dynamics (TREND), University of Maryland College Park
http://www.ireap.umd.edu/TREND/
Undergraduates Engaged in Cyber Security Research, University of Maryland College Park
http://www.cyber.umd.edu/education/reu
EXERCISE-Explore Emerging Computing in Science and Engineering, Salisbury University
http://faculty.salisbury.edu/~ealu/REU/REU.html
SURFing Cross-Disciplinary Electronics Research at NIST
http://www.nist.gov/surfgaithersburg/index.cfm

Depending on the availability of funding, additional REU programs in our area may get started or continue into summer 2013.

Interested students are strongly encouraged to investigate these offerings and more at the NSF REU search site or the topically specific lists of REU site programs below:
http://www.nsf.gov/crssprgm/reu/reu_search.cfm

NSF Computer and Information Science and Engineering Directorate:
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5049

NSF Office of Cyberinfrastructure:
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=10526

NSF Engineering Directorate:
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=10006

University of Maryland College Park:
http://www.eng.umd.edu/html/survey/reu-engr/