

# SCANNER

A JOINT PUBLICATION OF THE NORTHERN VIRGINIA AND WASHINGTON SECTIONS

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Volume 20, No. 3

## DCCEAS Recognizes Jerry Gibbon as 2005 Engineer of the Year

By Tim Weil  
Washington Section Editor

At its February awards banquet, the District of Columbia Council of Engineering and Architectural Societies (DCCEAS) presented the 2005 Engineer of the Year award to Jerry Gibbon, a Senior Member of the IEEE Washington Section.

The DCCEAS banquet was a highlight of the activities surrounding National Engineers Week here in the nation's capitol. The evening program was directed by Dr. Issa Khozeimeh, vice president of DCCEAS. In recognizing Mr. Gibbon's lifetime achievements, Dr. Khozeimeh remarked on the crucial role of engineers in our society.

"The general public has a good perception of the engineer. We as engi-

neers are reliable, trustworthy, and in short, problem solvers. National Engineers Week allows us to showcase our talents and abilities that turn ideas into realities. Engineers are the very profession that makes things happen in our everyday lives," she said.

Mr. Gibbon's career in electrical and telecommunications engineering spans more than 40 years in the military, federal, commercial and education sectors. His contributions and recognition within IEEE include serving as the current chair of the IEEE Region 2 South Area, and as past chair of the National Capital Area Council, the Washington Section and the section's Communications Society chapter. He is a recipient of the IEEE Third Millennium Medal and two Federal Bronze Medals.

Currently, Mr. Gibbon is principal of J&BG Consultants in Falls Church, Virginia, a telecommunications engineering and management-consulting

firm. He also serves on the Capitol College Board of Trustees, chairs the college's Alumni Advisory Board, and is a Fellow of the college.



Susan Parsons, president of DCCEAS, presents the 2005 Engineer of the Year award to IEEE Senior Member Jerry Gibbon.

## Two Local Members Receive IEEE-USA Technical Awards

Two members of the Northern Virginia Section received prestigious technical awards at a ceremony during the IEEE-USA Leadership Workshop in Tucson, Arizona in March.

Dr. Robert K. Parker of the Naval Research Laboratory received the

Harry Diamond Memorial Award for "leadership in radio frequency vacuum electronics, and pioneering technical contributions in the fields of intense relativistic electron beam

**IEEE-USA AWARDS**  
*continues on page 7*



IEEE-USA President Gerard A. Alphonse (on the left in both photos) presents the Electrotechnology Transfer Award to Dr. David O. Patterson (left photo) and the Harry Diamond Memorial Award to Dr. Robert K. Parker (right photo).

## Congressional Visits Day Raises Awareness of Research Benefits

U.S. IEEE members are invited to join with hundreds of other engineers and scientists in the 2005 Science, Engineering & Technology Congressional Visits Day (SET CVD), to be held Tuesday, May 10 and Wednesday, May 11, to deliver the message that federally funded research promotes security, prosperity and innovation.

SET CVD is a annual two-day event that brings scientists, engineers, researchers, educators, and technology executives to Washington to raise visibility and support for science, engineering, and technology. Uniquely multi-sector and multi-disciplinary, the SET CVD is coordinated by coalitions of companies, professional societies and educational institutions, and it is open to all who believe that science and technology are the cornerstone of our nation's future. The two-day event consists of a series of briefings and meetings highlighted with visits to your Congressional delegates.

The objective of SET CVD is to raise awareness of the long-term

importance of science, engineering and technology to the nation through face-to-face meetings with members of congress, congressional staff, key administration officials and other decision-makers.

SET CVD is coordinated by the Science-Engineering-Technology Work Group, an information network comprised of representatives from professional, scientific, and engineering societies, higher education associations, institutions of higher learning, and trade associations who share a common concern about the future vitality of the U.S. science, mathematics, and engineering enterprise. Participation by IEEE members is coordinated through IEEE-USA's Technology Policy Activities.

The deadline for registration is May 3, 2005. For registration assistance or for more information on CVD, contact Deborah Rudolph at [d.rudolph@ieee.org](mailto:d.rudolph@ieee.org). For more information, visit <http://ieeusa.org/policy/cvd/index.html>.

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## Editorial Policies and Procedures

### Calendar Items and Announcements

Please submit calendar items in the format used in the Calendar of Events. You can send email to [ncac-scanner@ieee.org](mailto:ncac-scanner@ieee.org). If possible, include a synopsis of the event and a biographical sketch of the presenter including academic background, current position, notable achievements, and IEEE and other professional affiliations.

Other contributions, such as reports on chapter events and other member activities, reviews of books by or of interest to members, are most welcome. Please submit them to the managing editor, electronically if possible, at [ncac-scanner@ieee.org](mailto:ncac-scanner@ieee.org).

### On the Web

#### eSCANNER Calendar of Events

The calendar is available at <http://ewh.ieee.org/r2/capitalarea/eSCANNER> (case sensitive). 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](http://www.ieeecommunities.org/nca).

### Advertising

Contact the editor 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 adhered to to keep the publication on schedule. If you are planning an event and have insufficient information by the deadline, please contact the managing editor.

The deadline for the upcoming issue will always be published on this page.

**The deadline for the July–August issue is June 1, 2005**

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# CALENDAR OF *events*

**Tuesday, May 3, 2005**

## Washington Section Administrative Committee Meeting

**Time:** Dinner at 6:00 pm; meeting at 6:30 pm  
**Place:** Allie's American Grill, Bethesda Marriott, 5151 Pooks Hill Rd., Bethesda, Md.  
**Directions:** From the north, take 270 South to Route 355 and exit at Wisconsin Ave. From the south, take 495 exit 34 (which is Wisconsin Ave.) to Pooks Hill Rd.  
**More info:** All interested IEEE members are welcome to attend.  
**Contact:** Jackie Hunter 703-803-8701 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

**Tuesday, May 3, 2005**

## EPIware Demo and Networking

**Sponsor:** Consultants Network, Washington and Northern Virginia Chapter  
**Time:** Dinner at 6:00 pm; speaker at 7:00 pm  
**Place:** Corner 7 Café, Tysons Corner Marriott, 8028 Leesburg Pike, Vienna, VA  
**Directions:** From the east or I-495, take Route 7 West, turn right on Towers Crescent Drive, then immediately right into the Marriott parking lot. From the west on Route 7, turn right onto Old Gallows Road just opposite the Marriott, proceed around to the left until you have completed almost a full circle, and turn left into the Marriott parking lot. Free parking.  
**More info:** A guest speaker from EPIware, Inc. will describe how EPIware enables organizations to easily share information and effectively collaborate on documents in a browser-based environment.  
**Contact:** Sai Chiang at 703-203-0771 or creativesystem@ieee.org.

**Wednesday, May 4, 2005**

## Annual GMU Student Professional Awareness Conference (SPAC)

**Sponsor:** IEEE Student Chapter, George Mason University  
**Speakers:** Several local professionals will speak about employment, global perspectives, and other topics relevant to the transition from life as a student to a career in engineering.  
**Time:** 12:00 noon to 6:00 pm  
**Place:** Dewberry Hall, Johnson Center, GMU Fairfax Campus  
**More info:** Updates will be posted at <http://ite.gmu.edu/~ieee/main.htm>.  
**Contact:** Shery Salama, chapter president, at [ssalama1@gmu.edu](mailto:ssalama1@gmu.edu).

**Monday–Thursday, May 9–12, 2005**

## IEEE International Radar Conference: Radar – A Global Perspective

**Sponsors:** IEEE Aerospace and Electronic Systems Society; IEEE Washington and Northern Virginia Sections

**Place:** Crystal Gateway Marriott Hotel, Arlington, VA  
**More info:** Please see the official conference website at [www.radar05.org](http://www.radar05.org).

**Wednesday, May 11, 2005**

## Northern Virginia Section Administrative Committee Meeting

**Time:** 6:30 pm  
**Place:** Corner 7 Café, Tysons Corner Marriott, 8028 Leesburg Pike, Vienna, VA  
**Directions:** From the east or I-495, take Route 7 West, turn right on Towers Crescent Drive, then immediately right into the Marriott parking lot. From the west on Route 7, turn right onto Old Gallows Road just opposite the Marriott, proceed around to the left until you have completed almost a full circle, and turn left into the Marriott parking lot. Free parking.  
**More info:** All interested IEEE members are invited to attend.  
**Contact:** Jackie Hunter at 703-803-8701 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

**Thursday, May 19, 2005**

## Advanced Technology Program at NIST

**Sponsors:** Industry Applications Society, Washington and Northern Virginia Chapter; Power Engineering Society, Northern Virginia and Washington Chapter  
**Speaker:** Gerald Castellucci  
**Time:** Social hour at 5:45 pm; snacks at 6:00 pm, speaker at 6:30 pm  
**Place:** Alexandria Research Institute, 206 N. Washington St., 4th floor, Old Town Alexandria  
**More info:** Refreshments will include assorted sandwiches, potato chips, dessert, coffee, tea and soda.  
**Cost:** Free for members (including student members), \$10 for guests  
**Reservations:** Please RSVP by May 18 at 5 pm to Monica at 703-535-3446 or [mmallini@vt.edu](mailto:mmallini@vt.edu).

**Tuesday, May 31, 2005**

## Commercializing MIMO

**Sponsor:** Communications Society, Northern Virginia Chapter  
**Speaker:** Dr. Victor Shtrom, Video54, Mountain View, CA  
**Time:** Dinner at 6:00 pm; speaker at 6:45 pm  
**Place:** Mitre Corporation, Building 2, 7515 Colshire Drive, McLean, VA  
**Directions:** Off Route 123 in Tysons Corner. See [http://www.mitre.org/about/locations/mitre2\\_map.html](http://www.mitre.org/about/locations/mitre2_map.html).  
**More info:** Dr. Shtrom will discuss the development of a commercial in-home wireless network access point/router using MIMO technology. See Diamond story, p. 4.  
**Cost:** Free, including dinner.  
**Contact:** Please RSVP to Fred Seelig at [fseelig@mitre.org](mailto:fseelig@mitre.org).

**Tuesday, June 7, 2005**

## Washington Section Administrative Committee Meeting

**Time:** Dinner at 6:00 pm; meeting at 6:30 pm  
**Place:** Allie's American Grill, Bethesda Marriott, 5151 Pooks Hill Rd., Bethesda, Md.  
**Directions:** From the north, take 270 South to Route 355 and exit at Wisconsin Ave. From the south, take 495 exit 34 (which is Wisconsin Ave.) to Pooks Hill Rd.  
**More info:** All interested IEEE members are welcome to attend.  
**Contact:** Jackie Hunter 703-803-8701 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

**Tuesday, June 7, 2005**

## Small Business Involvement on Large Government Contracts

**Sponsor:** Consultants Network, Washington and Northern Virginia Chapter  
**Speaker:** Arnetta Cook, Small Business Utilization Center, U.S. General Services Administration  
**Time:** Dinner at 6:00 pm; speaker at 7:00 pm  
**Place:** Corner 7 Café, Tysons Corner Marriott, 8028 Leesburg Pike, Vienna, VA  
**Directions:** From the east or I-495, take Route 7 West, turn right on Towers Crescent Drive, then immediately right into the Marriott parking lot. From the west on Route 7, turn right onto Old Gallows Road just opposite the Marriott, proceed around to the left until you have completed almost a full circle, and turn left into the Marriott parking lot. Free parking.  
**Contact:** Sai Chiang at 703-203-0771 or [creativesystem@ieee.org](mailto:creativesystem@ieee.org).

**Wednesday, June 8, 2005**

## Mapping Beneath the Vegetation: The GeoSAR Mapping Instrument

**Sponsors:** Geoscience and Remote Sensing Society, Washington and Northern Virginia Chapter  
**Speaker:** Dr. Scott Hensley, Jet Propulsion Laboratory  
**Time:** 3:30 pm  
**Place:** NASA Goddard Space Flight Center Visitor Center, Greenbelt, MD.  
**Directions:** From the south, take the Baltimore-Washington Parkway (I-295) to Greenbelt Rd. East (Route 193). Follow Greenbelt Rd. past NASA's main gate. Turn left onto Soil Conservation Rd., then left onto Explorer Rd. to reach the Visitor Center. See [www.nasa.gov/centers/goddard/visitor/directions/index.html](http://www.nasa.gov/centers/goddard/visitor/directions/index.html)  
**More info:** Speaker provided through the GRSS Speakers program. See Diamond story, p. 4.  
**Cost:** Free, open to the public.  
**Contact:** James C. Tilton at [james.c.tilton@nasa.gov](mailto:james.c.tilton@nasa.gov).

CALENDAR  
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## CALENDAR

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**Wednesday, June 8, 2005****Northern Virginia Section Administrative Committee Meeting**

- Time:** 6:30 pm  
**Place:** Corner 7 Café, Tysons Corner Marriott, 8028 Leesburg Pike, Vienna, VA  
**Directions:** From the east or I-495, take Route 7 West, turn right on Towers Crescent Drive, then immediately right into the Marriott parking lot. From the west on Route 7, turn right onto Old Gallows Road just opposite the Marriott, proceed around to the left until you have completed almost a full circle, and turn left into the Marriott parking lot. Free parking.  
**More info:** All interested IEEE members are invited to attend.  
**Contact:** Jackie Hunter at 703-803-8701 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

**Thursday, June 16, 2005****PES & IAS Joint Meeting**

- Sponsors:** Power Engineering Society, Northern Virginia and Washington Chapter; Industry Applications Society, Washington and Northern Virginia Chapter  
**Speaker:** TBD  
**Time:** Social hour at 5:45 pm; snacks at 6:00 pm, speaker at 6:30 pm

- Place:** KEMA Consulting, 4400 Fair Lakes Court, Fairfax, VA  
**More info:** Refreshments will include assorted sandwiches, potato chips, dessert, coffee, tea and soda.  
**Cost:** Free for members (including student members), \$10 for guests  
**Contact:** RSVP by June 15 at 5:00 pm to Sirak Belayneh at sbelayne@ieee.org.

**Tuesday, June 28, 2005****Tour of Intelsat Satellite TT&C Center**

- Sponsor:** Communications Society, Northern Virginia Chapter; Communications Society, Washington chapter  
**Speaker:** Lynn Rector, Intelsat  
**Time:** 6:30 pm  
**Location:** Intelsat, 22001 Comsat Drive, Clarksburg, MD  
**Directions:** From the Washington Beltway, take I-270. Exit at Route 121 and go north towards Clarksburg. After less than 1 mile, turn right onto Gateway Center Dr., then right onto Comsat Drive.  
**More info:** This tour of an Intelsat Earth Station is limited to U.S. citizens only. Pre-registration is required. Only those individuals registered to take the tour will be permitted to enter the facilities.  
**Contact:** Please RSVP to Fred Seelig at fseelig@mitre.org.

**Thursday, June 30, 2005****New Age Fiber Crystals**

- Sponsor:** Lasers and Electro-optics Society, Washington and Northern Virginia chapter  
**Speaker:** Philip Russell, University of Bath, United Kingdom  
**Time:** Light refreshments at 6:00 pm; lecture at 6:30 pm; optional dinner following the lecture with the speaker at a nearby restaurant.  
**Place:** University of Maryland, A.V. Williams Building, Room 2460, College Park, MD  
**Directions:** From the north or I-495, take Route 1 South. Approx. 2 miles south of the Beltway, turn right onto Campus Drive, then immediately take Paint Branch Drive and the A.V. Williams Building will be on the right. From the south on Route 1, turn left onto Campus Drive, and follow above directions. Ample parking is available after 4:00 pm. See <http://www.parking.umd.edu/themap>.  
**More info:** See Diamond story, p. 5. For more information about LEOS activities, go to [http://ewh.ieee.org/r2/wash\\_nova/leos](http://ewh.ieee.org/r2/wash_nova/leos).  
**Contact:** Dominique Dagenais at 301-951-7095 or dominique\_dagenais@avanex.com or Lucy Zheng at 703-578-2721 or lzhen@ida.org.



# DIAMOND STORIES

**Tuesday, May 31, 2005****Commercializing MIMO**

MIMO (multiple-in, multiple-out) wireless is emerging as an important technology to enhance wireless performance. This talk will focus on the engineering aspects and tradeoffs in developing early MIMO products for the commercial marketplace. A key feature of MIMO systems is the ability to turn multipath propagation, traditionally a pitfall of wireless transmission, into a benefit. MIMO has evolved (and is still evolving), since its beginning in 1993, with contributions from hundreds of researchers around the world. Some aspects of MIMO have already entered wireless standards, and many more standards efforts are ongoing.

Multiple antennas at each end of a MIMO link can be used in different modes such as transmit-receive diversity, beamforming, antenna subset selection and spatial multiplexing. Which mode or option actually maximizes performance depends on the channel conditions and system SNR and QoS requirements, among other factors. Other important issues to consider for commercial MIMO systems are the overall system cost, power consumption and manufacturability.

**Victor Shtrom** is the chief wireless architect at Video54, which designs MIMO smart antenna systems for entertainment-quality wireless home video. He received his Ph.D. in communication theory from University of Cincinnati. He has been involved in smart antenna research and development from his first industry job with ArgoSystems, where he developed algorithms for the cellular telephone interference cancellation beamformer. After ArgoSystems was acquired by Boeing, he

was responsible for the Ellipso (a satellite cellular system) air interface along with what is now a commercially available internet-in-the-sky system called Connexion. Subsequently he was a systems engineer at Iospan Wireless, where he performed indoor and outdoor wireless MIMO channel measurements and characterization and was in charge of a group that developed Iospan's first Phy/MAC FPGA-based prototype. He was also involved in IEEE 802.16. Iospan Wireless developed the first commercially available MIMO silicon for last-mile wireless internet access.

**Wednesday, June 8, 2005****Mapping Beneath the Vegetation: The GeoSAR Mapping Instrument**

GeoSAR is a program to develop a dual frequency airborne radar interferometric mapping instrument designed to meet the mapping needs of a variety of users in government and private industry. Program participants are the Jet Propulsion Laboratory (JPL), Earthdata International, Inc., and the California Department of Conservation with funding provided initially by DARPA and currently by the National Imagery and Mapping Agency. Begun to address the critical mapping needs of the California Department of Conservation to map seismic and landslide hazards throughout the state, GeoSAR is currently undergoing tests of the X-band and P-band radars designed to measure the terrain elevation at the top and bottom of the vegetation canopy. Maps created with the GeoSAR data will be used to assess potential geologic and seismic hazards (such as landslides), classify land cover, map farmlands and urbanization, and manage forest harvests. This talk will present an

overview of the system and show some examples of X- and P-band data and maps generated using the GeoSAR systems and comparison with other sensor data such as LIDAR and photogrammetric data.

Dr. Scott Hensley received his B.S. degrees in mathematics and physics from the University of California at Irvine and his Ph.D. in Mathematics from the State University of New York at Stony Brook where he specialized in the study of differential geometry. Subsequent to graduating, Dr. Hensley worked at Hughes Aircraft Company on a variety of radar systems, including the Magellan radar. In 1992, Dr. Hensley joined the staff of the Jet Propulsion Laboratory where he studies advanced radar techniques for geophysical applications. His research has involved using both stereo and interferometric data acquired by the Magellan spacecraft at Venus. Dr. Hensley has worked with ERS-1, JERS-1 and SIR-C data for differential interferometry studies of earthquakes and volcanoes. Current research also includes studying the amount of penetration into the vegetation canopy using simultaneous L and C band TOPSAR measurements and repeat pass airborne interferometry data collected at lower frequencies. Dr. Hensley is the GeoSAR Project Manager and is currently leading the GeoSAR Processing and Algorithm Development Team for an airborne interferometric radar mapping instrument using X- and P-bands for mapping true ground surface heights beneath the vegetation canopy. He is the technical lead of the SRTM Interferometric Processor Development Team that is a shuttle based interferometric radar used to map the Earth's topography between  $\pm 60^\circ$  latitude.

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## DIAMOND STORIES

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Thursday, June 30, 2005

## New Age Fiber Crystals

Photonic crystal fibers (PCFs) have been the focus of increasing scientific and technological interest since the first working example was reported in 1996. Although superficially similar to a conventional optical fiber, PCF has a unique microstructure, consisting of an array of microscopic holes (i.e., channels) running along its entire length. These holes act as optical barriers or scatterers, which, when suitably arranged, can "corral" light within a central core (either hollow or made of solid glass). The holes can range in diameter from approx. 25 nm to 50 nm. Although most PCF is formed in pure silica glass, it has also recently been made using polymers and non-silica glasses, where it is difficult to find compatible core and cladding materials suitable for conventional total internal reflection guidance. PCF supports two guidance mechanisms: total internal reflection, in which case the core must have a higher average refractive index than the holey cladding; and a two-dimensional photonic bandgap, when the index of the core is not critical – it can be hollow or filled with material. Light can be controlled and transformed in these fibers with unprecedented freedom, allowing for example the guiding of light in a hollow core, the creation of highly nonlinear solid cores with anomalous dispersion in the visible, and the design of fibers that support only one transverse spatial mode at all wavelengths. The PCF concept has ushered in a new and more versatile era of fiber optics, with a multitude of different applications spanning many areas of science. Recent reviews are available in *Science* 299 (pp. 358–62), 2003 and *Nature* 424 (pp. 847–51), 2003

**Philip Russell** is a professor in the department of physics at the University of Bath, where he heads the optoelectronics group. He obtained his Ph.D. at the University of Oxford in 1979 and has worked in research laboratories and universities in Europe and the U.S. His group specializes in photonic crystals and optical fiber devices, and its work led to the formation of BlazePhotonics, Ltd. ([www.blazephotonics.com](http://www.blazephotonics.com)) in 2001, whose aim is the commercial exploitation of photonic crystal fiber.

Dr. Russell has over 400 publications and holds a substantial number of patents in many aspects of photonics. He is a Fellow of the Optical Society of America and in 2000 won its Joseph Fraunhofer Award/Robert M. Burley Prize for the invention of photonic crystal fiber, first proposed in 1991. He is the founding chair of the Optical Society of America's Topical Meeting Series on Bragg Gratings, Photosensitivity and Poling in Glass.

## A Visit to Delhi—Washington's Sister Section

By Saj Durrani  
Past Chair, Washington Section

In January, I had the pleasure of visiting three IEEE Sections in India, under the auspices of the Aerospace and Electronic Systems Society's Distinguished Lecturers Program (DLP). It all started when Dr. M.A. Joshi, a professor at the Pune Institute of Engineering and Technology, asked me to give a tutorial on satellite communications at a conference that she was organizing. Dr. J. Vasi, a past chair of the Bombay Section, learned about it, and asked me to speak there as well. My plan was to fly to Delhi after Bombay (or Mumbai, as it is called now), and then go to Pakistan for a family visit. An old IEEE friend, Dr. R.G. Gupta, who has held many offices in the Delhi Section, asked me to speak there also.

As some of you may recall, it was reported in the Scanner in 2001 that the Washington and Delhi Sections had become sister sections, the first such pair in the IEEE. I had intended to visit Delhi during a private trip that year and would have conveyed our section's greetings, but had to cancel the trip due to health reasons. I told Dr. Gupta that the current visit would allow us to make up for it.

Dr. Gupta organized the meeting at the Indian Institute of Technology (IIT) in Delhi in cooperation

with the current section chair, Dr. Subrata Mukhopadhyay, and some other officers. They held a brief ceremony at the end of my talk when we exchanged greetings by the sister sections. I told the group that this "sister relationship" came about primarily due to the efforts of Dr. Shyam Bajpai, who was the Washington Section chair in 2001. Shyam learned that the IEEE Board of Directors had approved the idea of sister sections, and he took on the task of forming a link between the two capital cities. He contacted his counterpart in Delhi, Dr. Balasubramanian, who welcomed the idea. It took a lot of effort on their part, but they got approvals from the two regional directors, the Regional Activities Board, and other relevant bodies, and finally the Washington and Delhi sections were declared sister sections. I was especially pleased that Dr. Balasubramanian was able to attend the function, and thanked him for his efforts four years ago to establish the sister relationship. Dr. Mukhopadhyay ended the ceremony by asking me to convey the Delhi Section's compliments and good wishes to the Washington Section.

My wife accompanied me on this trip, which was her first to India. Mumbai is a bustling financial metropolis. Pune is a medium size city with many colleges, including an engineering college for women. Delhi needs no introduction; it has many historical buildings and monuments, some of which

have been designated as parts of the World Cultural Heritage. We also took a side trip to Agra. The Taj Mahal fully stood up to its reputation as one of the wonders of the world, and I was struck by the restorations of the main monument and improvements in and around the grounds since my last visit about 20 years ago. We also visited some forts and shrines, including a 72 meter tower built in the 12th century and the tombs of two poets from the Mogul era, about whom I used to read in my college days.

Our total stay in India was rather short—just shy of two weeks—but we covered a lot of ground. I was impressed by the high caliber of Indian universities, especially the IITs. Many of their alumni have done well in their profession and have made generous donations to their alma maters.

After India, we went to Pakistan for a week to visit family and old friends in Lahore and Islamabad. I was pleased to learn that the IEEE was in good hands there, too, with a lot of interaction between academia and industry. Here also, some alumni have provided support to their alma maters, but not on the same scale as in India—Pakistan doesn't have as many successful businessmen (or off-shore call centers) as India!

## GOLD Volunteers Assist at Engineering Family Day

On Saturday, February 19, volunteers from the Northern Virginia chapter of the Graduates of the Last Decade (GOLD) helped IEEE-USA staff members welcome thousands of visitors to the annual ZOOM into Engineering Family Day festival at the National Building Museum in Washington.

The IEEE-USA display included interactive hands-on exhibits such as a dissected laser pointer, a simple electric motor built using household items, and circuits powered by batteries made from salt water and from fresh limes. Several dozen kits for a LED blinker and tone generator circuit assembly project were donated by IEEE-USA and distributed to interested visitors. The instruction booklet for this project, which was designed and prepared by Northern Virginia GOLD members, is available at the GOLD website (see p. 2 for URL).

Informational literature, copies of *IEEE Spectrum*, and IEEE-USA promotional items were also distributed. In addition to the display, major support for the festival was provided by IEEE-USA.



Standing (left to right): Syed Ahmed, GOLD membership development officer; Helen Hall, IEEE-USA communications operative; and Chris McManes, IEEE-USA senior public relations coordinator. Seated (left to right): Kerry Hartman, GOLD Vice Chair; and Kenya Allmond Raabe, IEEE member and volunteer.

## Chantilly Academy, Oakton High Teams Sponsored by IEEE Enter NASA/VCU FIRST Robotics Regional Competition



The Chantilly Academy team took their robot to the FIRST competition.

During the first week in March, 1,500 high school students from more than 60 schools converged on the Siegel Center at Virginia Commonwealth University (VCU) in Richmond, Virginia for the NASA/VCU FIRST Robotics regional competition. The Chantilly Academy team and the Oakton High School team, both sponsored by the IEEE Northern Virginia Section, took part in the competition.

This competition was one of 31 held throughout the United States in March and April. During the

six week period from January 8 to February 22, teams designed and built a robot utilizing a kit of parts supplied by FIRST and supplemented with no more than \$3,500 in additional materials and parts. Robots must meet various safety, size, weight, and construction requirements.

This year's "game" was called Triple Play and involved the manipulation and placement of tetrahedrons. Each match began with an autonomous period of 15 seconds duration when the robot was under computer

control. Following the autonomous period, there was a two-minute period when the robot was remotely controlled by a human operator via a radio link.

The team from Chantilly Academy had a rough start as the team members worked through some mechanical and coordination issues. But they recovered to score well in the later rounds and finished 42 out of 65. The team qualified to attend the Nationals in Atlanta in April.

The team from Oakton High School finished 21st in the final rankings, after being in the top 10 until the last two rounds. The team received the VCU Regional Entrepreneurship Award and the

Best Website Award. The team's IEEE member mentor, Charles Harris, received the prestigious VCU Regional Woodie Flowers Award for his sustained contributions.

Our congratulations to both teams, and we look forward to supporting FIRST Robotics teams in the coming years.

### Congratulations to These New Senior Members!

Steve M. Danziger  
James P. Hughes  
George F. Earl  
Dale A. Rickard  
Susan S. Young

## Mentors Help Student Teams Build Robots for FIRST Contest

By Charles Harris

FIRST (For Inspiration and Recognition of Science and Technology) is an organization dedicated to providing "innovative programs to build self-confidence, knowledge and life skills while motivating young people to pursue opportunities in science, technology and engineering." The FIRST robotics competition marks the end of an intense six-week period during which the students have the opportunity to learn about working as a team, sharing ideas, making tradeoffs, making mistakes, making something, making something work, figuring out why something doesn't work, and many other things. To make the program "happen" at each school requires a team of adults from both inside and outside the institution. Support is needed in areas of organization, logistics, fund raising, communications and engineering.

Building a robot is an engineering-intensive activity requiring expertise from multiple engineering disciplines, but building and maintaining a robotics team is an even bigger challenge. The students involved in the program have varying degrees of expertise and skills in math, physics, communications, web design, programming and other disciplines. What they may lack in expertise is more than compensated for by their energy and enthusiasm. The "glue" of a successful program is the adult mentors, who help harness and direct the energy of the students by providing "real world" experience and insight.

I have served as a mentor for the Oakton High School robotics

team for the past three years and have found it to be one of the most rewarding activities that I have had the opportunity to participate in. A mentor is part coach, part teacher, and part manager. Two of the most important skills are being a good listener and asking pertinent questions which help guide and facilitate discussions. A mentor lets the group go ahead on their own when they are capable, but is there to bridge gaps and guide choices to help bring the project to fruition.

The game played with the robot is not the only aspect of the competition. Awards are given in many other categories such as: best web site, CAD design, animation, and the prestigious Chairman's Award. Adult interaction with each group of students on the team is essential in achieving the goals of the program.

During the "preseason" leading up to the "build period," many teams conduct sessions to help teach students skill sets in areas such as: proper use of hand tools, web page layout, electrical wiring techniques, pneumatic systems, electric motors, design software, project planning and management, animation software, and computer/sensor interfacing. Mentors from a variety of different backgrounds are needed to help conduct these sessions as well as to help during the six week build period.

If you would like more information about how to get involved with FIRST Robotics in the Northern Virginia area, contact Charles Harris at [charris@telfordtech.com](mailto:charris@telfordtech.com). For more information about the FIRST program, visit [www.usfirst.org](http://www.usfirst.org).

## LEARN MORE, EARN MORE IT'S THAT SIMPLE!

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## Washington Chair's Column

By Ron Ticker

Our section has two critical vacancies crying out for volunteers to fill them. The first is our bridge to a future generation of engineers. We need a chair for K-12 education. This volunteer will work with local schools, encouraging math, science and engineering education; and help to identify ways the Washington Section can further the development of engineering education and young, probing engineering minds. This

promises to be a rewarding position.

The second vacancy is for a Graduate of the Last Decade (GOLD) chair. The IEEE GOLD affinity group interconnects recently graduated, young engineers. The GOLD chair will help the Washington Section devise programs to serve GOLD members and provide outreach to new graduate engineers and future engineers, as well as plan social and technical activities.

Please contact me with any questions, or to volunteer, at 301-286-1380 or [rlticker@ieee.org](mailto:rlticker@ieee.org).

### IEEE-USA AWARDS

*continued from page 1*

technology, free electron lasers and gyro-amplifiers."

Dr. David O. Patterson of the Defense Advanced Research Projects Agency received the Electrotechnology Transfer Award for "spearheading development of advanced lithographic approaches and tools that foster exceptional advances in Department of Defense system capabilities and their transfer to commercial application."

We extend our hearty congratulations to both awardees and thank them for their long and sustained record of outstanding contributions.

For more information, visit the IEEE-USA Awards and Recognition Web page at [www.ieeeusa.org/volunteers/committees/awards](http://www.ieeeusa.org/volunteers/committees/awards), or contact Sandra Kim at [sandra.kim@ieee.org](mailto:sandra.kim@ieee.org). Nominations are being accepted for the 2005 awards. The deadline is July 31, 2005.

**The Washington Section website has been updated at:**  
<http://ewh.ieee.org/r2/washsec>

## Solve Our Nation's Toughest Signal Processing Problems!

Science Applications International Corporation (SAIC), a Fortune 500® company, with more than 45,000 employees, is the largest employee-owned research and engineering company in the nation. SAIC provides information technology, systems integration and eBusiness solutions to customers, worldwide. We are seeking highly qualified engineers, research scientists, mathematicians, and statisticians to conduct exciting research and development of world-class technologies for a wide range of government customers. Opportunities exist within our Chantilly, VA office in the following areas:

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## Northern Virginia Chair's Column

By Murty Polavarapu

April is traditionally observed as the volunteer appreciation month and I would like to take this opportunity to thank all the volunteers from our section who take time out of their busy schedules to organize technical talks, share their experiences with student members or mentor pre-college activities. I would like to extend my special thanks to the members who judged the regional or county science and engineering fairs in March and April. These include Amarjeet Basra, Steve Danziger, Wolfgang Gruen, David Hsu, T.K. Ramesh and Don Rickerson.



Murty Polavarapu

During March 2005, I had the opportunity to attend the IEEE-USA Leadership Workshop in Tucson, Arizona (see story below). IEEE-USA, the organizational unit of IEEE that represents the interests of the U.S. members, is headquartered in Washington, D.C. The local members are therefore in a privileged position to play key roles in the IEEE-USA committees that span a vast of array activities such as research and development policy, transportation, and aerospace just to name a few. I urge you to make your voice heard in the areas that interest you. Check out [www.ieeeusa.org](http://www.ieeeusa.org) or contact me for more information.

## National Capital Area Leaders Attend IEEE-USA Workshop



Attending the IEEE-USA Leadership Workshop were (left to right): Mike Cardinale, Amarjeet Basra, Region 2 PACE Chair Bill Walsh, Kiki Ikossi, Murty Polavarapu and Shyam Bajpai. (Not pictured: Chuck Sisung)

By Shyam Bajpai and Murty Polavarapu

Six IEEE members from the Washington and Northern Virginia sections attended the IEEE-USA Leadership Workshop in Tucson, Arizona in March. Amarjeet Basra, Michael Cardinale, Murty Polavarapu and Chuck Sisung represented the Northern Virginia Section, while Shyam Bajpai and Kiki Ikossi were the attendees from the Washington Section.

At the workshop, the representatives had the opportunity to understand the workings of the

IEEE-USA volunteer structure and received training on holding workshops to benefit the local members. Topics addressed at the workshop included offshoring and U.S. competitiveness, career development, pre-college education outreach, and understanding how to influence policy makers on legislative issues.

One immediate outcome of the workshop for the local area is the decision by the Northern Virginia and Washington Sections to hold a Member Professional Activities Conference (MPAC) jointly.

## IWIA Conference Focuses on Security Engineering

By Tim Weil

Washington Section Editor

The Third IEEE International Workshop on Information Assurance (IWIA) convened with a two-day program in March at the University of Maryland's Computer Science Instructional Center in College Park. More than 30 attendees from university, government and private sectors took part in the presentation of formal papers addressing the topics of malicious software (malware), mobile ad-hoc network (MANET) security, IA simulation and policy, and intrusion detection systems (IDS). Among the presenters were faculty, researchers and doctoral candidates from European and American universities.

A diverse range of discussion topics included counter-measures for code-injection attacks, worm containment algorithms, MANET IDS architecture, survivability against wireless LAN attacks, visualization methods for IDS, risk assessment modeling, forensic analysis of file system intrusions, and XML-Guard proposals for Service-Oriented Architectures.

Dr. Roger Schell highlighted the workshop with a keynote presentation on "Creating High Assurance for a Product: Lesson Learned from GEMSOS." His talk focused on the architecture of GEMSOS, the only general-purpose operating system kernel in the world rated Class A1: Verified Protection by the National Security Agency. Dr. Schell's remarks emphasized that in the area of information assurance,



Stephen Wolthusen, program chair; Dr. Minisa Pipattanasomporn, attendee; and Jack Cole, general chair, at the International Workshop on Information Assurance in College Park, Maryland.

"security is not a probabilistic event." Towards that end, he described a software engineering methodology which has evolved from the security models of the Trusted Computer Security Evaluation Criteria (TCSEC-Orange Book) up to modern Common Criteria standardization frameworks.

IWIA 2005 was organized under the sponsorship of the IEEE Computer Society and its Task Force on Information Assurance (TFIA), and held in cooperation with the Association for Computing Machinery (ACM) special interest group on Security, Audit and Control. TFIA sponsors tutorials, workshops, and symposia each year and publishes a quarterly newsletter. For more information about TFIA, visit <http://www.ieee-tfia.org>.

## Scanner Puzzle

By Kerry Hartman, Northern Virginia Section Editor

### Across

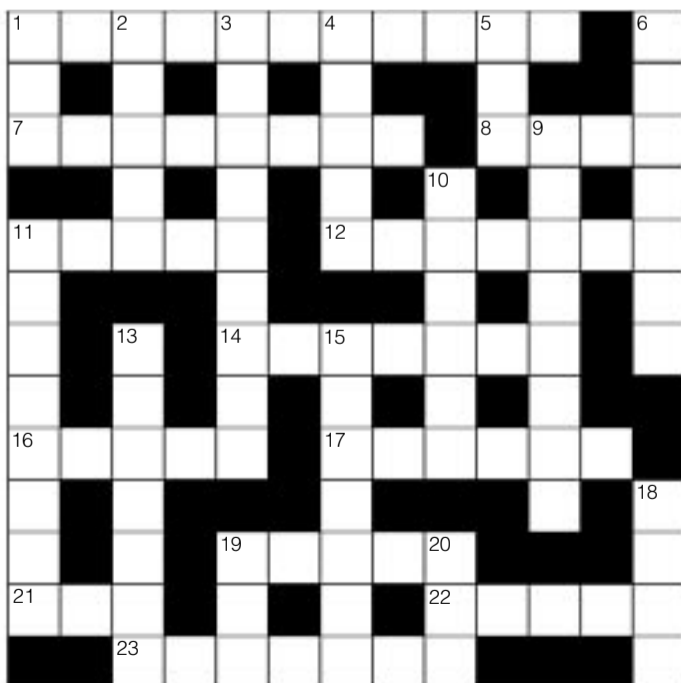
- Interference with dark consequences
- Pre-Qualcomm venture for Jacobs (with 15 down)
- Adds color to biometrics
- A nice figure
- A distribution of events over time, or a fish
- Modern-day Galileos (abbrev.)

- NTSC color coder
- These series are expansive
- At zero, this function can't be topped
- Pre-S DRAM (abbrev.)
- Bush directed its development
- He makes samplers work more than twice as hard

### Down

- Fast lane for a twisted pair (abbrev.)
- A ranging system that won't work in a vacuum
- What coils and plates have against AC
- Burst with a varying frequency
- Insert teletext here (abbrev.)
- Group V dopant
- Turns three oranges into 33,000
- How to count with your thumbs
- Found where the net flux from a closed surface is not zero
- Flashy Lucent spinoff
- His algorithm votes "most likely"
- A function that is unequalled for a Schottky device
- Partial for heat transfer (abbrev.)
- Looking at this is so 20th-century (abbrev.)

Answers will be available on June 1 in the eScanner at <http://ewh.ieee.org/r2/capitalarea/eSCANNER>.



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### Part-Time Position Available

IEEE National Capital Area is in the process of establishing a new contract for providing administrative services to the Northern Virginia and Washington sections. This is a part-time position.

Full details can be obtained by contacting Murty Polavarapu, chair of Northern Virginia Section, at [murtyp@ieee.org](mailto:murtyp@ieee.org) or 703-367-1497. Applications are due by June 15, 2005.

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