

The President's Perspective

The IEEE Foundation is preparing to increase the services it provides to IEEE members, societies, sections, and other organizational units with the addition of Peter Sobel to the IEEE Foundation Development Office, as Director, Corporate and Foundation Partnerships. Mr. Sobel will lead the development effort, guide corporate donor solicitations and facilitate cooperative projects with other foundations. This expansion to the Development Office is part of the IEEE Foundation's preparations to serve the changing membership of the IEEE.

The rate of growth in IEEE's membership outside of the United States continues to increase and now accounts for over 40% of the total IEEE membership. While the majority of donations to the IEEE Foundation are made by donors in the United States, corporations headquartered outside of the United States are major supporters of the IEEE awards program and the IEEE History Center. The continuing increase in the percentage of members outside of the United States provides new opportunities to expand relationships with donors in those regions to support programs both in the donor's country and the global IEEE philanthropic activities in awards, education, and history.

As part of the process of updating the IEEE Foundation development plan, I have traveled to IEEE Region Leadership meetings outside of the United States to consult with IEEE, industry, and government leaders. These meetings provided an opportunity to assess the potential for donor



IEEE Foundation President Richard J. Gowen (center) receives a copy of a book based on the content of the IEEE Virtual Museum and a shirt from IEEE Thailand Section Secretary Ekachai Leelarasmees (left) and IEEE Thailand Section Chair Siri Tandhavatana (right). The book, published in Thai, highlights the history of engineering which is often overlooked in schools in Thailand. Thanks to a grant from the IEEE Foundation and the hard work of the IEEE Thailand Section, as of January 2007, over 6,000 copies have been distributed to more than 4,000 high school libraries in Thailand

contributions and to identify high priority projects for possible funding through the IEEE Foundation.

While my discussions with leaders identified many specific needs in each region, including areas of the United States, there is recognition that the IEEE can provide access to the experiences of our global membership to identify technologies to improve health, social, and economic conditions.

Leaders seek cost acceptable, environmentally appropriate, and sustainable technologies for: the generation and distribution of energy, communications, transportation, medical care, and mitigation of natural disasters. I am pleased to report that IEEE is working on plans to develop activities to enable members to collaborate to adapt existing technologies or develop new technology-based solutions to address some of these vexing humanitarian challenges. The IEEE Foundation will support these efforts by identifying and linking philanthropic support for these activities.

In closing, I thank you for your donations to the IEEE Foundation that support innovative and exciting philanthropic programs that advance the educational and scientific mission of the IEEE. The IEEE Foundation provides a grant process to select and fund the most outstanding projects in the areas of education, history, awards and student activities. We receive more requests for grants than we are able to fund and appreciate your continuing support. Your continued support is critical to the IEEE Foundation's ability to fund as many worthy grants as possible, as well as to help IEEE succeed in its efforts to respond to the identified humanitarian challenges.

Yours Truly,

Richard J. Gowen
President, IEEE Foundation

To get the latest news from the IEEE Foundation sign-up for our free quarterly E-newsletter by visiting www.ieeefoundation.org

Dreams Soar at the 2007 IEEE Honors

Hosted by IEEE President Leah H. Jamieson and IEEE President-Elect Lewis M. Terman, the IEEE Honors Ceremony was held on 16 June 2007 in Philadelphia, PA, USA. The event honored eighteen individuals and two corporations for their achievements in innovating the way people live by advancing technology. This distinguished group of recipients contributed to innovations that have become integral parts of everyday life, including personal computers, wireless communication, plasma TVs and hybrid automobiles.



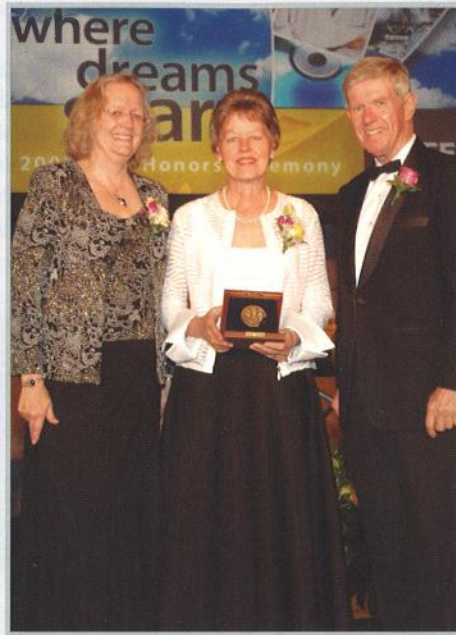
ABOVE: **Leah H. Jamieson** (front row, 4th from left) with the recipients honored during the 2007 IEEE Honors Ceremony. Not pictured: Aart deGeus and Ian C. McRae.

LEFT: **2007 IEEE Medal of Honor** recipient Thomas Kailath (back row middle) and his family enjoy the reception following the 2007 IEEE Honors Ceremony. Kailath generously donated part of his honorarium to the IEEE Foundation General Fund and IEEE History Center Fund, helping to support the scientific and educational goals of the IEEE.

Ceremony



Thomas Kailath proudly displays his IEEE Medal of Honor, which is sponsored by the IEEE Foundation. He received the award "for exceptional development of powerful algorithms in the fields of communications, computing, control and signal processing."



Anita K. Jones (center) with IEEE President Leah H. Jamieson (left) and IEEE Foundation President Richard J. Gowen (right) after receiving the 2007 IEEE Founders Medal "for outstanding leadership in academic research and in directing science and engineering research in the Department of Defense." The IEEE Founders Medal is supported by the IEEE Foundation.



Leah H. Jamieson presents the 2007 IEEE Haraden Pratt Award, sponsored by the IEEE Foundation, to Luis T. Gandia "for outstanding leadership in promoting technical activities at the regional level and the transnational character of the IEEE at the Board level."



2007 IEEE/RSE Wolfson James Clerk Maxwell Award recipient and co-founder of Qualcomm, Irwin Mark Jacobs (center), with (from left to right) Tariq Durrani, IEEE Awards Board Member; David Milne, former CEO, Wolfson Microelectronics plc; William Duncan, Chief Executive, Royal Society of Edinburgh; and Sanjay Jha, Chief Operating Officer, Qualcomm.



Andrew Viterbi, co-founder of Qualcomm, received his 2007 IEEE/RSE Wolfson James Clerk Maxwell Award from HRH The Duke of Edinburgh (center), at the 2007 RSE Summer Soiree held at Edinburgh's Telford College. (Shown are left to right) IEEE Foundation President Richard J. Gowen, his wife Nancy Gowen, Andrew Viterbi, The Duke of Edinburgh, Qualcomm COO Sanjay Jha, IEEE Foundation Executive Director Fern E. Katronetsky, and President of the Royal Society of Edinburgh Sir Michael Atiyah. Viterbi generously donated his honorarium to the IEEE Foundation General Fund.

IEEE Student Branch from Belgium Experiences Italian Industry and Culture

By **Susan Frentz**, IEEE Development Office

In July 2007, the IEEE Leuven Student Branch from Belgium traveled to Padua, Italy, for a five day tour of engineering companies and to learn about Italian culture. The 21 students on the trip, which was partially supported by an IEEE Foundation grant, also had the opportunity to exchange information with the IEEE Student Branch in Padua, who had visited Leuven in September 2005. Their tour of engineering technology in the area began at the Lamborghini factory, where students saw the assembly line where the famous sports cars are built.

At their next stop, STM Agrate, the group got to take a closer look at the technology behind flash memory and its possible replacement, phase change memory. The final company they visited was Prysmian Cables & Systems, where the power engineering students especially enjoyed a tour of the testing site for AC cables. While in Italy, the students also received an introduction to Italian culture by touring the cities of Padua, Venice and Milan.



Two students from the IEEE Leuven Student Branch examine a Lamborghini engine after a tour of the factory where the cars are assembled.



The group of 21 students from the IEEE Student Branch in Leuven, Belgium, at the Lamborghini factory in Sant'Agata Bolognese, Italy.

Introducing Biomedical Engineering to Middle School Students in California

By: **Steve Johnson**, EMBS Buenaventura Chapter Chair

IEEE Student members from California Lutheran University (CLU) are introducing biomedical engineering to middle school students (ages 11 to 14) through an entertaining road show. The objectives of the road show are to demonstrate that Biomedical Engineers are cool, that biomedical engineering has a significant humanitarian impact, and that this engineering work is based on fundamental scientific principles. To date, the program has been presented to over 400 middle-school students in southern California.

Why Middle School?

Middle school students are intellectually curious and advanced enough to understand basic engineering and scientific principles. By this age, these students have been introduced to topics that are crucial to understanding the road show including physiology,

anatomy, and the scientific method. They are energetic and fun, and their sense of enthusiasm is brought out through the road show.

Course Materials

The lesson plan and presentation were developed through the efforts of IEEE Buenaventura Section Engineering in Medicine & Biology Chapter Officers in collaboration with students at CLU's Bioengineering Program. The lesson is about 45 minutes long and combines didactic, interactive, and hands-on elements. To make the lesson more tangible, a BioPac Science Lab kit is used to display the students' electrocardiogram (ECG) signals.

So far, school district officials have been enthusiastic. They have been impressed with:

- the degree of preparation of the lesson plan and the presentation
- the partitioning of the proposed sessions in to didactic, interactive and hands-on parts
- the involvement and leadership of CLU bioengineering students
- the fact that we had anticipated their needs in designing this to fit within a 45-minute period
- how well aligned the material is with the curriculum
- the small amount of advance preparation required of the teachers

Schools are continuing to contact us to schedule dates and times for the 2007-2008 school year. The road show was made possible in part by a grant from the IEEE Foundation.

Members Discuss Foundation Initiatives in Atlanta, GA, USA

By Susan Frentz, IEEE Development Office

IEEE Foundation President Dr. Richard Gowen traveled to Atlanta, GA, USA during June 2007 to conduct a series of events in the area. The goal of the trip was to meet with as many local IEEE members and industry leaders as possible to discuss the future initiatives of the IEEE Foundation and build awareness about current Foundation-supported activities.

On 5 June 2007 an IEEE Foundation reception for local IEEE members was held in the Technology Square Research Building near the Georgia Institute of Technology campus. IEEE Foundation Board member Wayne Bennett, who attended the event, felt it was particularly successful. "The reception brought together a broad spectrum of members and enabled interchange that would not normally occur. The questions they asked Dick [Gowen] and the discussion that followed were most beneficial," he said.

In addition to the reception on 5 June, a luncheon for local IEEE Life Members was held on 6 June at the Petite Auberge Restaurant. Meetings were also held with industry leaders from Scientific Atlanta, Georgia Power, Scientific Research Corporation and Xpansion.

These types of events help the Foundation better understand the ever-changing needs of the constituency it serves and discuss ways it might support future initiatives that strengthen core areas of need. For more information about the technological and educational goals of the IEEE Foundation, or to schedule an IEEE Foundation event in your local IEEE Section, e-mail supportieee@ieee.org.



Attendees pose after lunch at the Petite Auberge Restaurant on 6 June. From left to right: Robert Duggan Jr., Kathleen Duggan, A. Wayne Bennett, William Harrison, Kenneth Carr, Richard L. Drane, George Cline and Louise Drane.



Wei Zhao, IEEE Atlanta Chapter Past Chair (left), William Harrison, IEEE Life Member (center) and Richard Hartlein, Engineering Professor at Georgia Tech (right), enjoy refreshments at the 5 June reception.

IEEE FOUNDATION

The IEEE Foundation, Incorporated raises and distributes funds to support activities that further the scientific and educational purposes of the IEEE for the benefit of society as a whole. It is an organization qualified under U.S. Internal Revenue Code 501(c)(3) and is eligible to receive tax-deductible contributions in the United States. For other countries, please check with your local tax advisor regarding tax deductions of charitable contributions.

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The IEEE Foundation Focus is published twice a year. It reports on the programs supported through the IEEE Foundation and the individuals and organizations whose charitable gifts make the programs possible. Questions or comments on the newsletter should be directed to:

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"I Want a Holodeck" Wins 2007 IEEE Presidents' Scholarship

By: **Jessica Czeczuga**, IEEE Educational Activities

A full-color, high resolution, 360 degree viewable volumetric display which projects a 3-D image built by 17 year old George Francis Hotz of Glen Rock, New Jersey, USA, earned him a US \$10,000 scholarship from the IEEE Foundation. His project, "I Want a Holodeck", was awarded the 2007 IEEE Presidents' Scholarship at the 58th Annual Intel International Science and Engineering Fair (ISEF), held from 13-18 May in Albuquerque, New Mexico USA.

For his project, Hotz mounted a screen and a Digital Light Projector (DLP) on a spinning platform. To create a 3-D image, he spins the platform very quickly while displaying different cross sections of a particular image. Since the cross sections are displayed so rapidly on the screen, it "tricks" the eye into seeing the image in three dimensions.

It took Hotz, a student at Bergen County Academies in Hackensack, NJ, USA, more than a year to develop his project. His original device was only 2-dimensional using spinning LEDs (light-emitting diodes). From there, he created a device that was 3-dimensional using a spinning LCD (Liquid Crystal Display) screen to generate symmetric objects. Finally, his third and final attempt was based on Digital Light Projection

(DLP) integrated circuits. Amazingly enough, Hotz redesigned his project almost entirely between the regional and national competitions for ISEF.

*"The Internet.
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Internet and someone has
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I can't do it too."*

While developing the Holodeck, Hotz learned VHDL (VHSIC Hardware Description Language) for programming logic devices. He reverse engineered the Texas Instruments DLP chip, and developed a custom printed circuit board. He also populated the Ball Grid Array (BGA) components on a printed circuit board using a modified toaster oven.

When asked who inspired him most to take on projects such as the one he created for ISEF, Hotz responded, "The Internet. If I read about it on the Internet and someone has done it, I see no reason why I can't do it too." He said he enjoys spending

time reading about projects and inventions that others have created and showing them what he did to improve them. He also credits his father, who works with computers, for inspiring him to create his own website and to spend time learning on the internet as a child.

Hotz plans to spend the summer working on a variety of new projects including building an interactive 3-D display that can draw three dimensional images in real time. He said while he excels in working with electronics and programming, he is still undecided on his future career. He plans to attend the Rochester Institute of Technology in September to study Electrical Engineering Science.

The IEEE Presidents' Scholarship is payable over four years of undergraduate study in an IEEE field of interest. It has been awarded every year at the ISEF since 1999 and is given to a high school student who creates a project that demonstrates a fine understanding of electrical and electronics engineering, computer science, or other IEEE area of interest. In addition to the cash prize, the winner receives a framed certificate, an engraved plaque and an IEEE student membership.



George Hotz accepts the IEEE Presidents' Scholarship from Lewis M. Terman, IEEE President-Elect, during the Special Awards Ceremony of the 58th Annual Intel International Science and Engineering Fair (ISEF)

UPDATE—IEEE Presidents' Scholarship Match: Meeting the Dollar-for-Dollar Challenge

Less than two years remain in the IEEE Presidents' Scholarship Match: Meeting the Dollar-for-Dollar Challenge! The IEEE Foundation is matching every dollar, up to US\$100,000, donated to the IEEE Presidents' Scholarship Fund. Thus far, just over US\$60,000 in cash gifts and pledges has been received and will be used to endow a US\$10,000 scholarship to one deserving high school student who is planning to study in an IEEE related field each year. With a donation to this fund, you will help support the continuation of engineering education in a world where the cost of college tuition continues to rise.

Are you ready to respond to the challenge? Contribute your gift towards helping the future of engineering and science by visiting www.ieeefoundation.org and clicking on the "Donate Online" tab.

Life Fellow Remembered for Commitment to IEEE Activities and Students

By Susan Frentz, IEEE Development Office

With a life full of dedication to students in the engineering field, IEEE Life Fellow James A. Rooks left his mark on many people before his death in May 2007. To honor her father, Becky Rooks with her mother, Rita, and four sisters, decided that donations to the IEEE Foundation to support students would be fitting. With the help of IEEE-Industry Applications Society (IEEE-IAS) Vice Chair David Durocher and the IEEE Foundation, donations have established the *IEEE-IAS James A. Rooks Memorial Student Intern Program*. The program will help send students to the annual IEEE-IAS Pulp and Paper Industry Conference.

"I don't know when he first became a member of IEEE but as long as I can remember we girls knew the initials," says Becky Rooks of her father, adding, "[His] passion in the pulp and paper industry has had a long history so it was easy to think that donations should help to carry on this passion."

That long history includes authoring or co-authoring many papers, as well as serving as a member of the IEEE-IAS Pulp and Paper Industry Committee (PPIC) Drives and Control Systems subcommittee and on the PPIC Local Conference Committee. Rooks received the 2001 *Pulp and Paper Industry Technical Conference Award for Meritorious Service*.

"Jim had the reputation of being the engineer's engineer,"

Described by long-time friend and colleague John Holmquist as, "an outgoing person who made friends wherever he went," Rooks won over many difficult to please electrical mill workers throughout his career and always pushed colleagues to work harder. "Jim had the reputation of being the engineer's engineer," adds Holmquist.

Rooks was not only passionate about his work on the Pulp and Paper Industry Committee, but also about being an active local IEEE member. As co-founder of the Oregon/SW Washington IAS Chapter, Rooks regularly attended monthly meetings, frequently



James A. Rooks, seated front row left, surrounded by colleagues and students at Oregon State University.

offering technical presentations on motor design and motor efficiency estimators, while persistently supporting IEEE members in achieving Senior Member status. He also served as membership chair of the Oregon Section in Region 6 until the time of his death. He led a Senior Member "Rodeo" at least once a year to encourage members who were candidates for senior status to complete their applications. His efforts resulted in over 300 members being elevated to senior status.

Outside of his IEEE activities, Rooks worked with the same zeal at the Wallace Energy Systems & Renewables Facility (WESRF) at Oregon State University in Corvallis, OR, USA. Professor Annette von Jouanne, who worked with Rooks at the facility, says, "He was always interested in finding opportunities for our students to enhance their educational experiences through hands-on industrial projects. He had a true heart for students (and professors), a wonderful charm, and is dearly missed!"

Rooks' dedication to engineering students and IEEE activities will be carried on through the *IEEE-IAS James A. Rooks Memorial Fund* established by the IEEE Foundation, which will support the *IEEE-IAS James A. Rooks Memorial Student Intern Program*.

The fund will support travel, expenses and full registration for the annual IEEE-IAS Pulp and Paper Industry Conference for young engineering students serving as summer interns at user and consulting firms supporting the industry. The recipients of the 2007 Program are Jim Havlik, a senior at Western Michigan University in Kalamazoo, MI, USA; Erik Newman, a senior at the University of Minnesota in Minneapolis, MN, USA; and Evan Penberthy, a senior at the University of Idaho, Moscow, Idaho, USA. The award recipients were recognized during the IEEE-IAS Pulp and Paper Industry Conference in Williamsburg, VA, USA, 24-28 June 2007.

You are invited to remember James A. Rooks with a gift to the *IEEE-IAS James A. Rooks Memorial Fund*. By making a gift, you will not only be paying tribute to the memory of this amazing individual, but helping the future of the pulp and paper industry. You can make your gift by returning the enclosed business reply envelope and checking off the box marked *IEEE-IAS James A. Rooks Memorial Fund* or visiting www.ieeefoundation.org and selecting the "Donate Online" tab. If you have any questions or wish to discuss alternate methods of giving, please contact the IEEE Development Office by telephone at +1 732 562 3915, or by email at supportieee@ieeefoundation.org.

Through the middle of September 2007, US\$10,517 has been given in memory of James A. Rooks to the *IEEE-IAS James A. Rooks Memorial Fund* by 31 of his family members and friends.

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