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The President's Perspective

Your support and donations to the IEEE Foundation continue to enable activities which support the innovative use of technologies to improve the lives of people throughout the world. Through the generosity of donors like you, the IEEE Foundation awarded US\$374,789 to support technological education, innovation and preservation in 2009.

The Foundation Focus newsletter highlights the programs supported through the IEEE Foundation and the individuals and organizations whose charitable gifts make the programs possible. This issue features stories about 2 new donor recognition groups. The IEEE Goldsmith Legacy League, on page 4, which honors IEEE members who are *Forever Generous* and remember IEEE Foundation in their estate planning; and The IEEE Heritage Circle, on page 7, which honors those who give consistently and generously throughout their career and lifetime.

This year's Honors Ceremony is highlighted on pages 2 and 3. The theme: *Celebrating 125 Years of Engineering the Future*, set the tone for the importance of our role in enabling the innovative use of technologies to change the lives of people throughout the world.

Inspired by IEEE's 125th Anniversary Celebration, a very special, new initiative of IEEE Foundation – the IEEE Humanitarian Technology Fund (HTF) was established to provide funding for project grants that will create a critical difference in the developing areas of our world. These humanitarian initiatives and the HTF are so vital that IEEE President **John R. Vig**, IEEE Past President **Lewis M. Terman**, and others have joined me personally in seeding the Fund. Read more about IEEE Humanitarian Technology Fund on page 6. This is just the beginning of the difference we can make.

On behalf of the IEEE Foundation, I thank you for your interest in its initiatives and look forward to your support of this important new fund and other initiatives of the IEEE Foundation that are of interest and importance to you. Together we support the mission of the IEEE through education, innovation and preservation.



Richard J. Gowen
2009 President, IEEE Foundation



IEEE Staff Director, **Matthew Loeb**, IEEE Executive Director, **James Prendergast**, IEEE Foundation President, **Richard J. Gowen** and Executive Director of Foundation Awards, **Fern E. Katronesky** pose together at the 2009 IEEE Honors Ceremony.



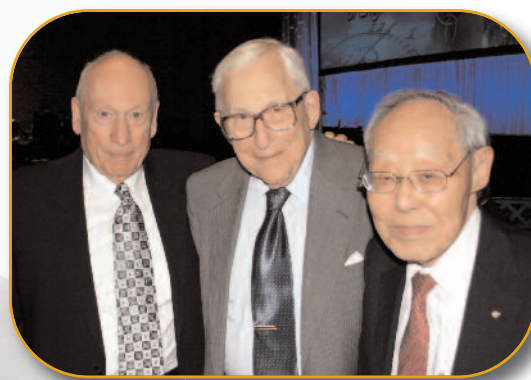
2009 IEEE Honors Ceremony – Celebrating 125

Its most prestigious event, the annual IEEE Honors Ceremony, held on 25 June 2009 at the Hyatt Regency Century Plaza in Los Angeles, Calif. recognized exceptional contributions that have made a lasting impact on technology, society and the engineering profession. **John R. Vig**, 2009 IEEE President, hosted the event, along with **Pedro A. Ray**, 2009 IEEE President-Elect. The fitting theme was "**Celebrating 125 Years of Engineering the Future.**"

Each year, the IEEE Awards Board selects industry leaders, inspiring educators and distinguished colleagues as recipients of the IEEE's prestigious Medal and Recognition awards. Sixteen individuals and two corporations were honored as we celebrate of 125 years of engineering the future.



IEEE James H. Mulligan, Jr. Education Medal, for a career of outstanding contributions to education in the fields of interest to the IEEE, sponsored by The Mathworks, Inc., Pearson Prentice Hall, National Instruments Foundation and IEEE Life Members Committee to **Jose B. Cruz, Jr.** (center), Distinguished Professor of Engineering and Professor of Electrical and Computer Engineering, Ohio State University, Columbus, OH, USA. **John Vig** (left) and **Giampero Campa** from Mathworks (right), award the medal.



At the Honor Ceremony Dinner, IEEE Past President, **Arthur Stern** (center) stopped by to visit IEEE Foundation table guests IEEE Past President and IEEE Goldsmith Legacy League Member **Gerald Suran** and Heritage Circle Member, **Kiyo Tomiyasu**.



25 Years of Engineering the Future



The IEEE Foundation sponsored awards include:

- **IEEE Medal of Honor**
for an exceptional contribution or an extraordinary career in the IEEE fields of interest, went to **Robert H. Dennard** - IBM Fellow, IBM Thomas Watson Research Center, New York City, NY, USA "For invention of the single transistor Dynamic Random Access Memory and for developing scaling principles for integrated circuits." Pictured with **Richard J. Gowen** - IEEE Foundation President.



- **IEEE Founders Medal**
for outstanding contributions in the leadership, planning and administration of affairs of great value to the electrical and electronics engineering profession, went to **Craig R. Barrett** - Former Chairman, Intel Corporation, Chandler, AZ, USA, "For outstanding contributions in the leadership, planning and administration of affairs of great value to the electrical and electronics engineering profession." Pictured with **Richard J. Gowen** - IEEE Foundation President.



- **IEEE Haraden Pratt Award**
to recognize outstanding service to the Institute, went to **James H. Beall** - Engineering Consultant, New Port Richey, FL, USA, "For a lifetime of continued leadership and service to the IEEE at all levels." Pictured with **Richard J. Gowen** - IEEE Foundation President.



IEEE Presidents' Change the World Competition

A first for this ceremony, the IEEE honored student members who were selected as winners in the IEEE Presidents' Change the World Competition. The Competition recognizes students who took on the challenge of developing unique solutions to real-world problems using engineering, science, computing and leadership skills to benefit their community and/or humanity.

IEEE Student Humanitarian Supreme Prize: U.S. \$10,000

NanoLab: A Hand-Held Diagnostic Laboratory

By students at Stanford University, California, USA

IEEE Distinguished Student Humanitarian Prize: U.S. \$5,000

Electronic Aids for Physically/Mentally Handicapped Children

By students at B.V. Bhoomaraddi College of Engineering and Technology, India

IEEE Exceptional Student Humanitarian Prize: U.S. \$2,500

Engineering Innovators Without Borders - Human Powered Grain Crusher

By students at Rowan University, New Jersey, USA



IEEE Presidents' Change the World Competition student recipients and **John Vig**, 2009 IEEE President (sender).



Auerbacher Bequest Goes to IEEE Foundation

By Karen Galuchie

Werner F. Auerbacher, an IEEE member for more than 60 years, died on 19 January, just shy of his 100th birthday. His engineering career spanned the early days of electronics and radio to the present through the electronic components company he founded, Inter-Technical Group.

Auerbacher joined the IRE, one of IEEE's predecessor societies, in 1938. He credited his membership with his professional success. He particularly valued the publications, which he read well into his retirement and attending IRE meetings and networking with other engineers was also important to him. In his will, he directed his executors and two children, Roger Auerbacher and Judith Ellis, to select charities worthy of his support. Aware of the important role IEEE played in his life, they made a gift to the IEEE Foundation. With this gift, Auerbacher became a member of the IEEE Goldsmith Legacy League, comprised of donors — members and nonmembers — who leave a bequest in their will to the IEEE's philanthropic arm or include it in their trust.

Auerbacher's passion for radio began at age 13 when he spotted his first radio at an inventor's fair he attended in Mannheim, Germany. Auerbacher's father wanted his son to become a dentist, doctor, or lawyer. Auerbacher struck a compromise with his father by studying law and engineering to become a patent attorney.

Ultimately, his love of engineering and physics won out. In the late

1930s, Auerbacher emigrated to New York City. His first jobs were as an engineer working for radio manufacturers. With the outbreak of World War II, these manufacturers were converted to military operations. Because he was not a U.S. citizen, and from Germany, he was identified as an "enemy alien" and had to change his job. To support his family, he taught classes in radio at the Radio Television Institute, a technical school also in New York City.

According to Auerbacher's oral history conducted by the IEEE History Center in 1996, the Defense Department wanted Auerbacher, enemy alien or not. Auerbacher, was cleared and made a U.S. citizen and hired.

Once the war ended, Auerbacher returned to radio to work on FM converters and television. While at Pilot Radio Corp. in Long Island City, N.Y., Auerbacher came up with an idea for the "Candid TV," announced in The New York Times on 8 June 1948 as the first portable television receiver. The 3-inch TV set displayed a picture 1-3/4 inches by 2-3/4 inches.

He later joined Emerson Radio Corp., rising to the level of vice president. He left there to launch his Inter-Technical Group, in Irvington, N.Y, in 1963, which is still in business. He retired from there in 1999.

Read a transcript of the oral history interview of Auerbacher by the IEEE History Center and posted on the IEEE Global History Network www.ieeeahn.org/wiki/index.php/Werner_F_Auerbacher_Oral_History

New Members Join IEEE Goldsmith Legacy League

The IEEE Foundation is pleased to announce that during the last few months, the roster of the IEEE Goldsmith Legacy League has grown. Four individuals have shared the good news that the IEEE Foundation is included in their estate plans. We welcome to the IEEE Goldsmith Legacy League:

- John Impagliazzo, Ph.D.
- Karen Kaufman
- Peter A & Gretchen Lewis
- Arthur W. Winston

As the planned giving donor recognition group of IEEE and the IEEE Foundation, the IEEE Goldsmith Legacy League recognizes individuals who share the good news that they have included IEEE or the IEEE Foundation in their estate plans. To acknowledge their special commitment, members of the League receive a keepsake coin, certificate of member-

ship, an invitation to attend the annual IEEE Honors Ceremony, the IEEE Foundation Focus newsletter, periodic updates on planned giving, as well as recognition in the annual Honor Roll of Donors and on the "Wall of Honor".

This elite group is named in memory of Alfred N. and Gertrude Goldsmith whose planned gifts seeded the IEEE Foundation's ability to support the mission of the IEEE. Members of the IEEE Goldsmith Legacy League are Forever Generous. They are building tomorrow by making planned gifts that will benefit future generations of engineers.

You too can make a planned gift to the IEEE Foundation and become a member of the Goldsmith Legacy League. To find out how, call +1 732 562 3860 or send an e-mail to donate@ieee.org.

Subscribe to IEEE Foundation E-newsletter

The IEEE Foundation is pleased to offer a free quarterly E-newsletter. It reports the latest news about the programs supported through the IEEE Foundation and the individuals and organizations whose charitable gifts make the programs possible. Keep current by subscribing today through ieeefoundation.org or by e-mailing donate@ieee.org

Presenting and Preserving History

The IEEE Global History Network (GHN), a wiki-based web site that provides a completely new way of organizing and carrying out IEEE's historical activities, was launched at the September 2008 Sections Congress. Developed by IEEE History Center staff under the supervision of the History Committee to integrate existing IEEE history resources with Web 2.0 capabilities, the GHN's mission is to become the premier Web site worldwide for the preservation and dissemination of information about the history of technological innovation. Unlike other on-line encyclopedias that may include technological topics, the GHN is solely focused on the history of technology, and no other wiki site offers the personal accounts of the technical innovators themselves.

"The GHN focuses on the history of IEEE, its members, and their professions and technologies," said John Vardalas, History Center outreach historian. History in the making can be documented through personalized, first-hand accounts. IEEE members have the opportunity to share their experiences in developing products and services — from invention, R&D, design, testing, production and commercialization — with the world. These first-hand accounts include the broader range of experiences that led to member success as professionals, such as education and affiliations.

"Though the GHN has a narrower subject range than such prominent wiki sites as Wikipedia, the GHN is broader in the form of the content, offering more ways of collaborating and more multimedia capability. The depth of GHN's content is also much deeper in the areas that it covers." The GHN is designed to reach the global public and directly engage IEEE members and others with a stake in technological innovation. It allows users to discuss current activities in technology — as well as what will happen in the future — while linking to history.

"We've achieved many of our goals in the first year," said Vardalas, "and we have much more planned for the year ahead as well." Among the GHN's initial successes are:

- Addition of more than 1,300 documents from IEEE's archives;
- Addition of more than 350 oral history interview transcripts to the First-Hand Histories section;
- Enhancement of Milestones program process;
- Addition of social networking features;
- Integration within myIEEE;
- Creation of STARS area.

The History Center endeavors to become IEEE's "corporate memory," therefore the Global History Network will be leveraged further to:

- Reactivate programs to capture IEEE's corporate history and institutional memory;
- Document, preserve, and store IEEE's corporate history from 1984 to present day;
- Capture IEEE's corporate history closer to the actual date of occurrence;
- Move toward capturing information of historical significance as close to the source and time of occurrence as possible.



The mission of the IEEE History Center is to promote the preservation of, research into, and dissemination of the heritage of IEEE, of its members, of their professions and of the related sciences and technologies. Overseen by the IEEE History Committee, the activities of the History Center are largely funded by the IEEE Foundation General Fund through a memorandum of understanding between the Foundation and IEEE.

The IEEE Global History network can be visited at <http://www.ieeeghn.org>.

Metamaterials Research Earns Teen IEEE Presidents' Scholarship

Budding metamaterials researcher **Rahul Kumar**, a 17-year-old from Rochester Hills, Mich., is the latest recipient of the IEEE Presidents' Scholarship.

Kumar, who graduated from Stoney Creek High School, received the US \$10 000 scholarship, payable over four years of undergraduate study, for his project, "A Microwave Metamaterial Lens With Negative Index of Refraction." The scholarship was presented in May at the 60th annual Intel International Science and Engineering Fair, in Reno, Nev. The prize includes a complimentary IEEE student membership, a framed certificate and engraved plaque.

Administered by IEEE Educational Activities, the scholarship from the IEEE Foundation is awarded annually to a high school student who creates a project that demonstrates an understanding of electrical or electronics engineering, computer science, or other IEEE area of interest. "While many students were anxious about speaking to judges, I felt the fair was a great opportunity to share my passion for research with so many smart people," Kumar says. "And I definitely learned about effective communication. I have a much better understanding of how to send a meaningful message to an intended audience in a limited time."

Metamaterials are manmade composites that display electromagnetic properties beyond those available in nature. In theory, Kumar says, metamaterials can bend light waves around a region and emerge as though the waves went through empty space, in effect cloaking an object to make it invisible.

Kumar's idea for his two-year, award-winning project came from reading an article describing research that could make the invisibility cloak, featured in the Harry Potter books, a reality by using negative refraction.

Kumar attends Stanford University and will study theoretical physics or electrical engineering.

"The generous support of the donors and the IEEE Foundation means a great deal to me," he says. "Knowing I have such support makes me realize how privileged I am in pursuing the many opportunities at Stanford."



IEEE Presidents' Scholarship winner **Rahul Kumar** (right) is congratulated by **Teofilo J. Ramos**, IEEE Board of Directors Vice President of Educational Activities.

IEEE Foundation: A Humanitarian Investment

The IEEE Humanitarian Technology effort and IEEE emerging technology programs are bringing together talented, caring individuals to leverage the power of innovation to improve the human condition.

In celebration of IEEE's 125th anniversary, the IEEE Foundation recently established the IEEE Humanitarian Technology Fund (HTF). The HTF invests wisely in the development and implementation of ventures designed to address the world's most pressing challenges, particularly in developing countries. Focused on regions where technology is sparse, and basic needs are not being met, the HTF will award grants to help fund projects that provide sustainable technological solutions to humanitarian challenges related to: health, disaster relief, economic development, energy and communication. The HTF reinforces IEEE's core commitment to technological innovation for the benefit of humanity.

IEEE Humanitarian Technology Fund Awarded its first two Grants in June.

- The Brown University chapter of Engineers Without Borders was awarded US\$15,000 to help fund the Rainwater for Humanity project in Kuttanad, India. The project entails the construction of rainwater storage reservoirs and catchment systems with built-in purification devices to capture rain from existing rooftops. The project also includes a training program for local women which will empower them to eventually manage the reservoirs on their own;
- Virginia State University was awarded US\$4,000 to support its Wireless Messaging Device for Disaster Relief. The project is intended to combat instances of communication failure that hinder relief efforts during natural or man-made disasters.

These were just two of the 12 grants awarded from three distinct funds (IEEE Foundation General Fund, the IEEE Life Member Fund, and the Humanitarian Technology Fund) totaling US\$146,467.

The HTF is complemented by the Humanitarian Technology Challenge (HTC) and the associated Humanitarian Technology Network (HTN). The HTC is a ground-breaking partnership of IEEE, the United Nations Foundation, the Vodafone Foundation Technology Partnership and IEEE Foundation. To find out more, go to www.ieee.org/go/htc. The HTN encourages IEEE members who are eager to improve the quality of life in the global community to visit the site www.ieeehtn.org and submit their ideas.

You and your company can invest in this philanthropic effort and support humanitarian project grants awarded by the IEEE Foundation. For more information on contributing to the HTF – or how you can apply for a grant, visit ieeefoundation.org or e-mail donate@ieee.org.

The need is great, as is our potential to make a difference. IEEE Humanitarian Technology effort hopes to engage more IEEE members, corporations, academicians, nonprofit organizations and caring individuals to come together to invent, inspire and invest in advances in technology to better our world.

Tomiyasu Joins IEEE Heritage Circle



Kiyomi Tomiyasu and his wife.

IEEE Life Fellow Kiyomi Tomiyasu's loyalty and his commitment to IEEE spans nearly 70 years, from the time he joined the Institute of Radio Engineers, one of IEEE's predecessor societies, in 1941 as a student until today.

He donates annually to the IEEE Life Members and IEEE Foundation general funds. He helped establish two IEEE Foundation funds that recognize students: the Harold Sobol Student Grant, administered by the IEEE Microwave Theory and Techniques Society; and the Mikio Takagi Student Prize, administered by the IEEE Geoscience and Remote Sensing Society. He also set up and funded the IEEE Kiyomi Tomiyasu Award Fund, the technical field award named in his honor that recognizes outstanding early to mid-career contributions to technologies holding the promise of innovative applications.

To honor his lifetime of giving to IEEE, Tomiyasu, 90, will be inducted into the IEEE Heritage Circle, which is the IEEE Foundation's donor recognition program [see sidebar]. He will be recognized at the Thomas Alva Edison level, the third of five levels, which is reserved for donors whose cumulative gifts fall in the range of US \$100 000 to \$249 999. An induction ceremony will be held during the IEEE International Microwave Symposium, taking place from 23 to 28 May, in Anaheim, Calif.

"I believe strongly in the noble objectives of the IEEE Foundation," Tomiyasu says. "The most compelling benefit of membership in IEEE is the integrity and commitment I witness through my association with similar professionals.

Tomiyasu graduated in 1940 with a bachelor's degree in electrical engineering from California Institute of Technology, Pasadena, and went on to earn a master's in communications engineering from Columbia University in 1941 and a Ph.D. in engineering science and applied physics from Harvard in 1948.

He spent most of his career working for the General Electric Co., at its offices in California, New York, and Pennsylvania. His work involved lasers and microwave technology, including microwave remote sensing from satellites and the propagation aspects of satellite communication links.

Tomiyasu a generous donor to IEEE and an active volunteer. He has been a member of the IEEE Board of Directors, the Awards Board, the Technical Activities Board, the Educational Activities Board, and the Publication Products and Services Board. At the society level, he has been a member of the administrative committees of the Microwave Theory and Techniques Society and the Geoscience and Remote Sensing Society. Tomiyasu is now retired and resides in Pomona, Calif.

The IEEE Heritage Circle recognizes donors who demonstrate commitment and loyalty to the IEEE Foundation through their generous and continued giving. The circle recognizes individuals whose cumulative contributions since 1 January 1995 total US\$10 000 or more. There are five giving levels named in honor of great innovators and they range from US\$10 000 to more than US\$500 000. For more information contact the Major Gifts Officer, **Michael Deering**, IEEE Development Office, +1 732 562 3915 or by e-mail: donate@ieee.org.

Call for Grant Applications

The IEEE Foundation accepts grant applications for new and innovative projects in March, June and November. Please submit your grant application using the online form, which can be accessed along with the exact 2010 deadlines at ieeefoundation.org.

The IEEE Foundation considers projects that use technology for humanitarian causes, Improve math, science and technology education from pre-college through continuing education, Introduce pre-college students to engineering and science, Support professional development and conference participation for university students, Preserve and promote the history of IEEE associated technologies and Recognize major contributions to IEEE associated technologies.

Before submitting an application, please review the IEEE Foundation's grant guidelines, which can be found at www.ieeefoundation.org. Direct your questions to foundation-office@ieee.org.

IEEE and Senese Scholarship Recipients Announced

Piscataway High School senior Gueorgui Alexandrov is the 2009 recipient of a \$1,000 scholarship from IEEE. Alexandrov started at the college of engineering at Stanford University in September. This is the 12th year that the IEEE has awarded a scholarship to help a local New Jersey high school graduate who intends to study electrical/electronics engineering or computer science at a four-year college or university.

Carolynn Crute, also a senior at Piscataway High school, has been chosen as recipient of the IEEE Daniel J. Senese Memorial Scholarship, made possible by donations from IEEE staff and volunteers. Crute, who will receive a \$1,000 scholarship, will study biochemistry and engineering at Rutgers University.

As a tribute to former IEEE Executive Director Daniel J. Senese, who passed away in January of 2007, the IEEE Management Council created the Memorial Scholarship to honor Dan's interest in encouraging the study of science and technology.

Life Members Fund Small Radio Telescope.

In February 2009, the Life Members Committee (LMC) members and Regional Life Members Coordinators visited the Daytona Section in Daytona, Florida, USA. The LMC members had the pleasure of meeting with the volunteers who are giving back to the community by constructing a Small Radio Telescope (SRT) with funds donated by the IEEE Life Members Fund (LMF). The telescope has been constructed and will be placed in the Museum of Arts & Sciences in Daytona Beach. It is expected that approximately 8,000 students and 12,000 adults will view the telescope as part of the planetarium program. Once operational, the SRT will be used to conduct radio astronomy experiments and as a teaching tool for students and adults in the Daytona area.



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Questions or comments on the newsletter should be directed to Foundation Focus editor, Karen Kaufman

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