IEEE FOUNDATION Focus
September 2004 — ISSUE 9

The President's Perspective

During the past five years as President of the IEEE Foundation, I have witnessed first hand the positive effects of the many programs it funds, primarily in awards, education, and history.

On 19 June 2004, I represented the IEEE Foundation at the 2004 ***IEEE Honors Ceremony***. There I joined with 300 others in celebrating the engineering achievements of 19 individuals and two corporations. I am pleased to report that four of the awards presented during the ***Ceremony*** were sponsored by the IEEE Foundation: the IEEE Medal of Honor, the IEEE Edison and Founders Medals, and the IEEE Haraden Pratt Award. Some photos from the ***Ceremony*** can be found inside this newsletter.

Among the many educational programs sponsored by the IEEE Foundation was the 2003 and 2004 ***IEEE Computer Society International Design Competition (CSIDC)***. This innovative program encourages learning through hands-on experience by having competing teams, comprised of four undergraduate students, design and implement computer-based solutions to real-world problems. In 2004, 250 teams from 144 schools from around the world participated in the first round of the ***CSIDC***. The top ten teams were invited to compete in the World Finals in Washington, DC, from 25 to 28 June 2004. The winning team received a prize of US$15,000.
To find out who won, look inside.

The IEEE Foundation also devotes a portion of the funds you entrust with us to preserving, studying, and promoting the history of IEEE technologies. In recent years, a large part of this support has been directed toward the award winning ***IEEE Virtual Museum (VM)***. Targeted at educators and young students, the ***VM*** presents web-based exhibits that show how various technologies work and explain how these technologies have shaped the world in which we live. In July 2004, the ***VM*** launched its latest exhibit, ***Let's Get Small: The Shrinking World of Microelectronics***. If you have not already done so, check out the ***IEEE Virtual Museum*** at www.ieee.org/museum.

I hope you are proud of the programs we support and believe, as I do, that the IEEE Foundation is having a positive effect on the profession and society as a whole. Please take a few minutes to read this newsletter and explore the stories we are helping to unfold together.

Regards,

Emerson Pugh

Emerson Pugh
IEEE Foundation President

Emerson Pugh, IEEE Foundation President, chats with Fern Katronetsky, the new IEEE Foundation Executive Director, during the 2004 IEEE Honors Ceremony held in Kansas City, MO, USA.

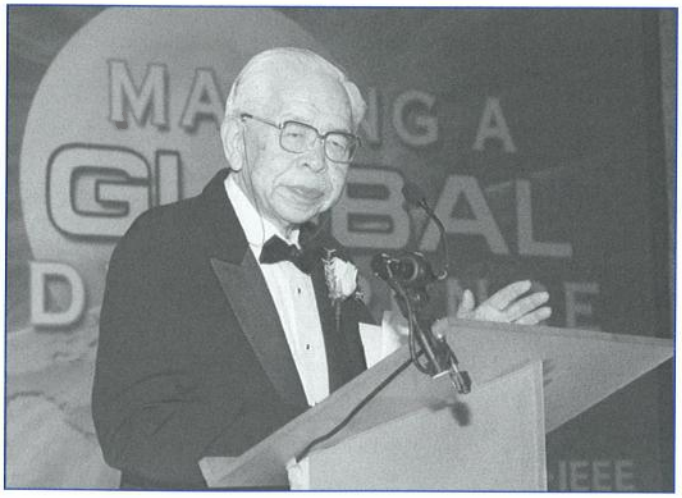
Making A Global Difference

Nearly 300 people attended the annual IEEE Honors Ceremony held 19 June 2004 in Kansas City, MO, USA. This year's event celebrated 19 individuals and two corporations for their impact on technology, society, and the engineering profession. Their contributions are seen in digital satellite and wireless communications, semiconductor lasers, magnetic recording, programming languages, storm tracking, laser printers, fire-protective clothing and more.

1ST ROW LEFT TO RIGHT:
James H. McClellan, ***IEEE Jack S. Kilby Signal Processing Medal***; Dick Pieranunzi on behalf of Pasquale Pistorio, ***IEEE Ernst Weber Engineering Leadership Recognition***; David Atlas, ***IEEE Dennis J. Picard Medal for Radar Technologies and Applications***; Kenneth R. Laker, ***IEEE Richard M. Emberson Award***; Craig R. Barrett, ***IEEE Robert N. Noyce Medal***; Thomas W. Parks, ***IEEE Jack S. Kilby Signal Processing Medal***

2ND ROW LEFT TO RIGHT:
Jerry R. Yeargan, ***IEEE Haraden Pratt Award***; Mildred S. Dresselhaus, ***IEEE Founders Medal***; Arthur W. Winston, IEEE President; Tadahiro Sekimoto, ***IEEE Medal of Honor***; W. Cleon Anderson, IEEE President-Elect; Barbara H. Liskov, ***IEEE John von Neumann Medal***

3RD ROW LEFT TO RIGHT:
Paul R. Gray, ***IEEE James H. Mulligan, Jr. Education Medal***; Federico Capasso, ***IEEE Edison Medal***; Thomas E. Neal, ***IEEE Medal for Engineering Excellence***; Frank Cloutier, ***IEEE Corporate Innovation Recognition – Hewlett-Packard Company***; Jack Keil Wolf, ***IEEE Richard W. Hamming Medal***; Irwin Jacobs, ***IEEE Corporate Innovation Recognition – QUALCOMM Incorporated***; Frederick H. Dill, ***IEEE Jun-ichi Nishizawa Medal***; H. Landis Floyd, II, ***IEEE Medal for Engineering Excellence***; Richard L. Doughty, ***IEEE Medal for Engineering Excellence***



Tadahiro Sekimoto accepts the ***2004 IEEE Medal of Honor*** during the 2004 IEEE Honors Ceremony. Dr. Sekimoto received the Medal for contributions to digital satellite communications, promotion of information technology R&D, and technical and corporate leadership in computers and communications. The IEEE Foundation sponsors the ***IEEE Medal of Honor***.

IEEE President Arthur W. Winston (left) along with IEEE President-Elect W. Cleon Anderson present Federico Capasso with the ***2004 IEEE Edison Medal*** for a career of highly creative and influential contributions to heterostructure devices and materials. The ***2004 IEEE Edison Medal*** is sponsored in part by the IEEE Foundation.

IEEE-USA President John Steadman (left) and IEEE-USA President-Elect Gerard Alphonse (right) take a moment to congratulate the first two women to receive the ***IEEE Founders*** and the ***IEEE John Von Neumann Medals***, Mildred Dresselhaus (second left) and Barbara Liskov (second right), respectively. Dr. Dresselhaus received the ***2004 IEEE Founders Medal***, sponsored by the IEEE Foundation, for leadership across many fields of science and engineering through research and education, and for exceptional and unique contributions to the profession. Dr. Liskov received the ***2004 IEEE John von Neumann Medal***, sponsored by IBM, for fundamental contributions to programming languages, programming methodology, and distributed systems.

Arthur W. Winston (left) and W. Cleon Anderson (right) congratulate Jerry R. Yeargan, the recipient of the ***2004 IEEE Haraden Pratt Award***. Dr. Yeargan was recognized for outstanding contributions to the Engineering Accreditation Activities of the IEEE. Sponsored by the IEEE Foundation, the Award is presented for outstanding service to the Institute.

Brain-Computer Interface Project Wins Scholarship

By: **Lynn Murison**, IEEE Educational Activities

Elena Leah Glassman, a 17-year old high school senior, was awarded the US$10,000 ***IEEE Presidents' Scholarship*** for her Intel International Science and Engineering Fair (ISEF) project entitled "***Brain-Computer Interface for the Muscularly Disabled***." IEEE President-Elect, W. Cleon Anderson, presented the IEEE Foundation supported Scholarship during the Special Awards Ceremony.

> *"why not have a computer anticipate and respond to thought-wavelets rather than training users to a computer's limitations?"*

Elena received the inspiration for her project when she attended a conference at Drexel University where she saw a video showing a man using brain waves to control arm movements by thoughts to implanted electrodes. She thought, "why not have a computer anticipate and respond to thought-wavelets rather than training users to a computer's limitations?" Her hope when she began her quest was to find a way to help people who are paralyzed or suffering from degenerative diseases such as Lou Gehrig's disease.

Her first step was to create an algorithm that interprets electroencephalography (EEG) signals with the highest possible accuracy. In 2003, she successfully achieved 90% accuracy against international researchers using the same public domain EEG datasets to distinguish between right and left movement. Encouraged by this achievement, in 2004 she used herself as the test subject to collect EEG wavelets by placing electrodes on her scalp. Then she spent six months working on her 2003 code. Her new code was able to predict her own right or left movement at 73% accuracy. The difference between the public domain data and data from her own brain illustrated that eventually her software would have to be customized for each user in order to be as effective as she wanted.

Please join us in wishing Elena well as she begins her undergraduate studies at the Massachusetts Institute of Technology in September 2004 where she will major in Electrical Engineering and Computer Science. She hopes to continue working on her project and in other areas of artificial intelligence.

Elena Leah Glassman (left) accepts the ***2004 IEEE Presidents' Scholarship*** from IEEE President-Elect W. Cleon Anderson (right) during the Special Awards Ceremony of the ISEF. This well-rounded high-school senior says "science fairs have made the biggest impact on my life, aside from my family. My projects have given me an outlet for my academic energy."

The 1999 Presidents' Scholarship Graduates and Says Thank You IEEE

Dear IEEE,
Once again, I want to thank you for presenting me with your inaugural Presidents' Scholarship at the Intel ISEF in 1999. It was such an honor to win this generous award from such a prestigious organization.

My family, friends and school were all so happy for me and I received so much publicity (radio, television, newspapers and magazines). Many people that I didn't even know phoned or wrote to congratulate me – even IEEE members, some professors at McMaster University and local engineers were so happy that someone from their own area won.

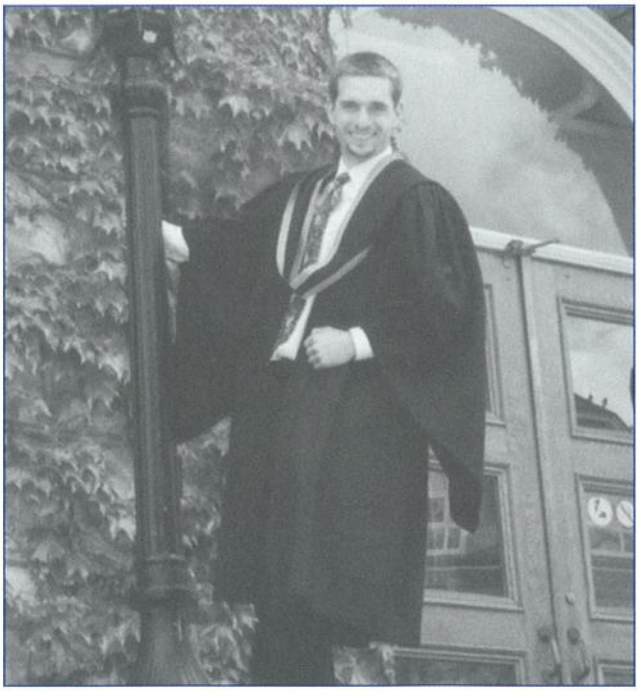
I used my scholarship towards my university tuition. On May 28, 2004, I graduated from Queen's University, Kingston, Ontario, with a Bachelor of Science - Computer Engineering degree.

I am an Engineer! Thanks IEEE!

I will be working in England for a few months. When I return home, I will either go to grad school for my Masters in Engineering or look for challenging work in engineering (possibly robotics or 3D graphics). Whatever I do, I will always remember all that the IEEE has done for me.

Sincerely,

Michael Sweeney Belshaw
1999 IEEE Presidents' Scholarship Recipient



Michael Sweeney Belshaw, the ***1999 IEEE Presidents' Scholarship*** recipient, celebrates after his graduation from Queen's University, Kingston, Ontario, Canada. Michael won the US$10,000 Scholarship during the 1999 Intel International Science and Engineering Fair (ISEF) for his project "Robotic Revolution."