The President's Perspective

When I was a child, I enjoyed skipping small stones over the surface of the water and watching each time the stone touched the water, causing ripples that expanded and intersected with one another throughout the pond. This visual image of the "ripple effect" demonstrates how one small action can have an ever-expanding reach. At the IEEE Foundation, we are continually looking for projects to fund that will have "ripple effects" extending well beyond the initial project itself.

The *Journalism Internship at IEEE Spectrum* is a good example of such a project. A journalism intern position is created each year over the course of the three-year project at *IEEE Spectrum*, the flagship magazine of the IEEE. Working with highly experienced staff members of *IEEE Spectrum*, these three individuals receive an intensive hands-on education in technology journalism, particularly as it relates to electrical and computer engineering. They acquire a strong foundation and the tools necessary to become capable members of the media, able to reach the general public and report on engineering matters in an accurate and responsible manner.

Holli Riebeek (left) shows IEEE Foundation President Emerson Pugh (right) some of the *IEEE Spectrum* issues she worked on during her journalism internship. Ms. Riebeek is the second of three journalism interns the IEEE Foundation grant will support.
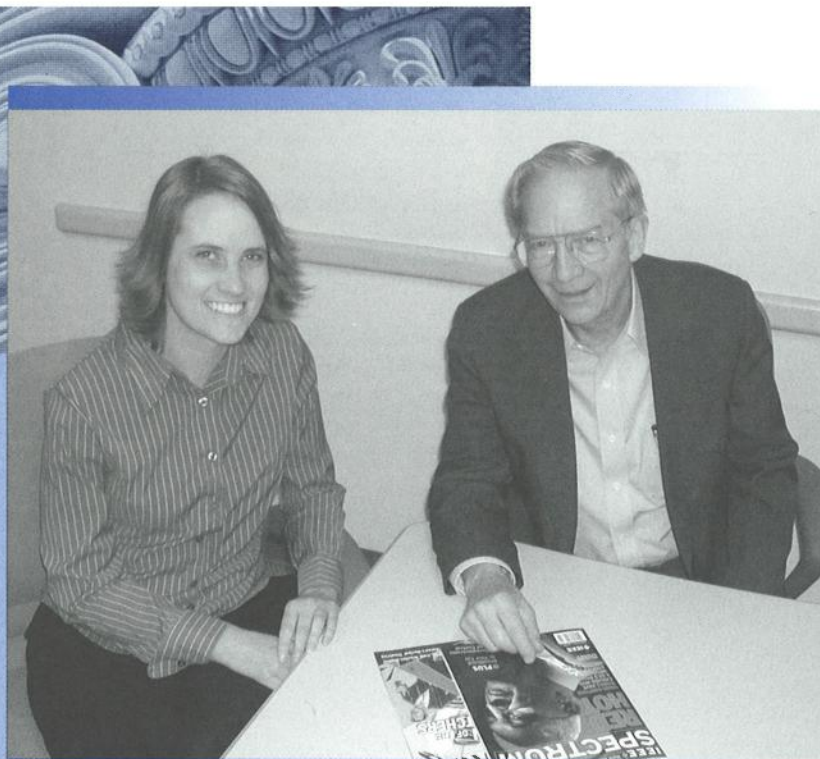
Other examples of grants the IEEE Foundation has awarded with the "ripple effect" are described in this newsletter. By turning the page and continuing to read, you will discover how IEEE members in Region 8 are working to connect with their local pre-university community. Those of you who are considering becoming mentors can read about the rewarding experiences of the IEEE members participating in the *Apprenticeships in Science and Engineering (ASE) Program*. You can also find out how one IEEE member is working with teachers from an inner-city school district to excite children about the wonders of robotics.

So please take a few moments to read this newsletter and learn about some of the ways in which contributions to the IEEE Foundation help support projects with potentially large "ripple effects." Even small stones can create endless ripples.

With best wishes for a good new year,

Emerson Pugh
President, IEEE Foundation

Engineers from IEEE Region 8 Learn How to Connect with the Pre-university Community

By: **Douglas Gorham**, IEEE Educational Activities

There is currently a worldwide shortage of engineers and other technical professionals, which is being exacerbated by decreasing enrollments in university and college engineering programs. The shortage is due in part to the limited exposure of schoolchildren and teachers to both general concepts of engineering and to engineers themselves. In addition, university educators are often poorly informed about the problems and issues facing pre-university teachers. It is especially true relative to the critical subject of science, mathematics, engineering, and technology that stimulate interest in engineering and technical careers and prepare students for future engineering study.

"Connecting Engineers with the Pre-University Community", sponsored by the IEEE Foundation, the IEEE Life Members Committee, IEEE Region 8, and the IEEE Educational Activities Board, brought together twenty-seven volunteers from more than a dozen countries from within IEEE Region 8 to discuss strategies and activities that would connect engineers with pre-university educators and their students.

Attendees developed action plans that included a series of steps that would begin or enhance a partnership with their local pre-university community. This event, held in Nice, France from 26 to 28 September 2003, is part of the ongoing effort of IEEE Educational Activities to share successful pre-university programs and to expand the involvement of IEEE volunteers in enhancing the level of technological literacy of pre-university educators and their students.

At the conclusion of the meeting, Nico Beute from the Republic of South Africa Section, summarized the benefits of IEEE Section volunteers connecting with their local pre-university community, "The workshop presented a wonderful opportunity to share and to generate ideas on how we can inform school children on the important role engineers play in our world, how engineers improve living conditions all over the world and how exiting it is to be an engineer – in that way we also draw more students to an engineering career." To learn more about the programs IEEE Educational Activities is implementing to enhance the level of technological literacy of the pre-university community and to promote engineering and other technical professions, please visit **http://www.ieee.org/organizations/eab/precollege**.

Aleksandar Szabo, Croatia Section; Nico Beute, South Africa Section; and Jasmina Bujaroska, Macedonia Section, discuss strategies to enhance the level of technological literacy among local pre-university educators and their students.

Marianne Samaan, Egypt Section; Costas Stasopoulos, Cyprus Section; George Paunovic, Serbia Section; and Yildirim Uctug, Turkey Section discuss potential strategies to connect engineers with their local pre-university community.

Learning Through Play

By: **Dr. William Conrad**, IEEE Senior Member

Teach a child how to think like a scientist and the child will be a better learner forever, this is the motto of the *Introducing Robotics to K12* project funded by the IEEE Foundation. This multi-year, multi-phased project targets the next generation of engineers and scientists by employing the notion that learning through play is all about encouraging students to construct knowledge in their minds through building meaningful constructions in the real world.

During June 2003, three fifth grade teachers from Indianapolis Public Schools School # 20 and I began Phase 1 of this project during the Young Scholars Program at the Indiana University Purdue University Indianapolis (IUPUI), Indianapolis, IN, USA. Using LEGOS, we made play time learning time for 30 fifth grade students from central Indiana. The students had the opportunity to build, design and program a motorized car and merry-go-round. Special emphasis was placed on the programming of the robot-like objects, using ROBOLAB, a low-level programming language produced by LEGO, National Instruments Corporation and Tufts University. Both the students and their parents were very pleased with program.

We have begun work on Phase 2, which involves evaluating the results from Phase 1 and modifying the lesson plans as necessary for use in the classroom. Phase 3 will involve putting the finishing touches on the program and disseminating the program to other schools and school districts. The program results will be presented at the annual meeting of the American Society for Engineering Education and a web site will be developed that will include all of the teachers' lesson plans. This information should allow those interested to use the material with minimal support.
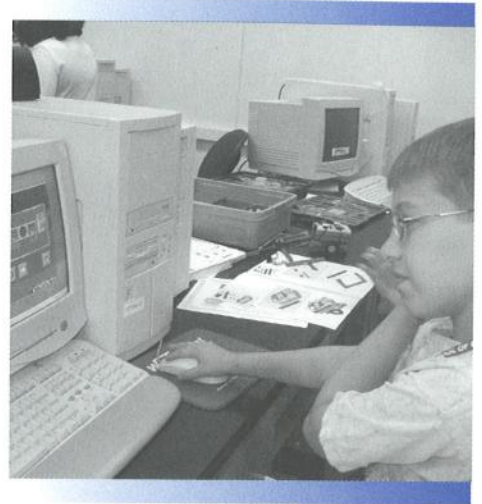
Using ROBOLAB software, this student works on programming his LEGO Mindstorm Robot.
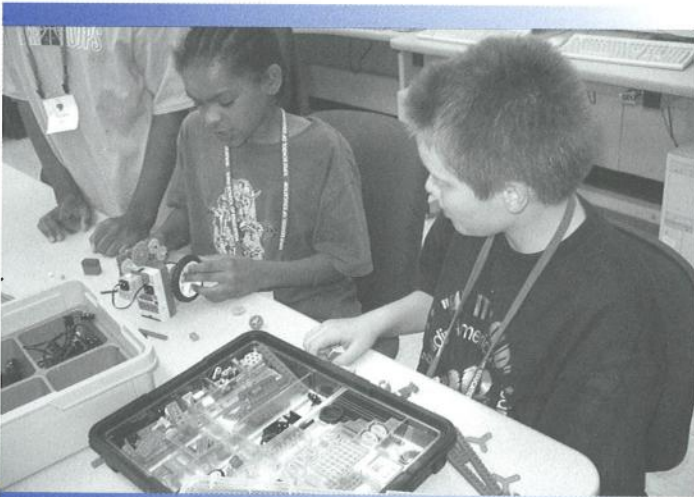
Two Fifth grade students from Central Indiana assemble their LEGO Mindstorm Robot during the 2003 Young Scholars Program LEGO/Robotics workshop.

Three students test their robotic car in preparation for the big "Snail Race" where the slowest robotic car wins.

Encouraging Engineering Excellence World-Wide

By: **Karen Galuchie,** IEEE Development Office

On 19 August 2003 during INTERCON 2003, Dr. Amadeo Prado-Benitez became the second recipient of the *Asociación Electrotécnica Peruana (AEP)/IEEE ELEKTRON Award*. Dr. Amadeo Prado-Benitez was recognized for extraordinary contributions to national welfare through electricity, electronics and computer sciences. The IEEE and the Asociación Electrotécnica Peruana jointly present this Award.

The *AEP/IEEE ELEKTRON Award* was established in 2000 as part of a program, funded by the IEEE Foundation, entitled *IEEE Joint National Society Awards Project*. Under the direction of IEEE Director Emeritus Ted Hissey and 1995 IEEE President J. Thomas Cain, the *IEEE Joint National Society Awards Project* seeks to create cooperative ventures between the IEEE and national societies throughout the world that recognize and encourage engineering excellence.

Evangelia Micheli-Tzanakou, 2003 Chair IEEE Awards Board (left) and J. Thomas Cain, Co-Chair *IEEE Joint National Society Awards Project* (middle) present Dr. Amadeo Prado-Benitez with the *Asociación Electrotécnica Peruana /IEEE ELEKTRON Award*.

Mentors Win with Apprenticeships in Science and Engineering (ASE) Program

By **Walter E. Myers, PE**, IEEE Life Senior Member

Mentors have the satisfaction of helping a student succeed. Most of us can name one or more individuals who were instrumental in our own success in becoming a practicing science professional. Mentoring is an opportunity to honor our mentors by multiplying and returning the benefits we have received to the next generation

Practically speaking, mentoring provides an opportunity to refresh the mentors' understanding of the basic principles of their discipline in preparation to effectively teach them to an apprentice. This extends beyond maintenance of the basic skills of a discipline. It includes review and synthesis of the

science behind current practices and the technology based tools used in the continually evolving state-of-the-art application of a discipline. Younger mentors also have an opportunity to begin development and application of supervisory skills especially if they are included in the student selection process (hopefully with interviewing) and the student progress evaluation during the experience.

The IEEE Foundation's support of mentoring is embodied in a three-year grant to the *Apprenticeships in Science and Engineering (ASE) Program*, in which the IEEE Foundation is supporting two high school

students working in the electrical/electronic engineering discipline and their mentors.

Since its inception in 1990, the ASE Program has served a total of 2,231 high school students to help them test and refine their interest in science and engineering as they chart their future education and employment paths. During June through August 2003, the ASE Program served 144 student apprentices through the collaboration of 59 employers and their volunteer mentors in a wide variety of science and engineering disciplines. To learn more about the ASE Program visit **www.aseprogram.org**.

2003 Apprentices funded by the IEEE Foundation

Ms. Jiyea Park —
South Eugene High School —
Eugene, OR, USA

Two IEEE members served as Jiyea's co-mentors — Mr. Dean Ahlsten, PE, Electric Engineering Manager at the Eugene Water & Electric Board and Mr. John Schaad, Customer Service Engineer for the Bonneville Power Administration. Under their direction, Jiyea

Jiyea Park (left) describes her project to Michael G. Garretson (right), a former IEEE Foundation Board Member, during the ASE Symposium.

worked on a project diagram that proposed adding high-speed tripping to two power lines of the Eugene Water & Electric Board. To start the project, Jiyea researched the effects of not having high-speed tripping and learned that high-speed tripping is used to avoid extended voltage loss and allows an electrical problem to be cleared away quickly enough to continue providing power. Using AutoSketch, she drew one of the sheets of the proposed design, which was necessary to obtain budget approval from Bonneville Power Administration. During the project, she also utilized the Bonneville Powerflow program and the PowerWorld Simulator, as well as a digital camera, and visited the site where the proposed work will take place.

Mr. Samuel Heinzman —
McKay High School — Salem, OR, USA

Samuel worked with Mr. Ben Clifton, Vice President of Technology, Clarity Visual Systems, Wilsonville, OR, USA, to test a new back projection display that uses Liquid Crystal Displays, various lenses, and mirrors. To help the design team discover problems and predict modifications, Samuel conducted five different tests including a signal test and a luminance uniformity test. During the tests, he learned to use a spectrophotometer and a Sequel Monitor tool to measure brightness while using Excel to graph the data. To understand how the displays work, he was shown how to build a unit from its component pieces. He then built three units to use as prototypes. Mr. Clifton described Sam as "a great help who was very

Samuel Heinzman (left) thanks Michael G. Garretson (right) for the IEEE Foundation's support of the ASE Program and shows Mr. Garretson the exciting project he had the opportunity to work on because of the IEEE Foundation grant.

capable in each task he was given." When asked to describe his experience as a mentor, Mr. Clifton said, "These mentorships are particularly rewarding. First, because it is always encouraging to see the bright young minds of the future. Second, because it is a chance to develop working relationships with these future employees. And third, they are invariably much more productive than one might expect. I plan to continue Clarity's participation in this very worthwhile program, and look forward to next summer."

IEEE Foundation Announces 2004 Proposal Deadlines

The IEEE Foundation, the philanthropic arm of the IEEE, is now accepting grant proposals. For projects to be considered at the June 2004 meeting, abstracts are due 12 March and full proposals by 23 April. For consideration in November 2004, abstracts are due by 6 August and proposals by 17 September. Proposals should be for projects that:

- Improve education in mathematics, science and technology from pre-college through continuing education;

- Preserve, study, or promulgate the history of IEEE-associated technologies;

- Recognize major contributions to these technologies and their applications; or

- Show promise of making a major contribution to the worldwide communities the IEEE serves or significantly advancing the profession.

To learn more about the IEEE Foundation and obtain a copy of the grant guidelines, visit:

http://www.ieee.org/foundation

or email:

foundation-office@ieee.org

or call: **+1 732 981 3435**.

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The IEEE Foundation Board of Directors thanks the outgoing Directors for their combined thirty-six years of dedication and service to advancing the IEEE Foundation's mission to further the scientific and educational goals of the IEEE. Picture from left to right: Dr. Wallace S. Read, Mr. Jerrier A. Haddad, Mr. Jose F. Valdez C. and Mr. Charles A. Eldon. Not pictured are Mr. Theodore S. Saad and Dr. Narain G. Hingorani.

The staff of the IEEE Development Office wishes to express their appreciation to Mr. Charles A. Eldon for his three years of commitment and leadership as the IEEE Foundation, Vice President, Development. Pictured from left to right: Ramona Ponce, Kristina Collmann, Charles (Bud) Eldon, Karen Nowicki, and Karen Galuchie.

During the November 2003 IEEE Foundation Board meeting, IEEE Foundation President, Emerson Pugh (right), presents Henry Bachman (left) with a certificate acknowledging Mr. Bachman's election as *IEEE Foundation President Emeritus*. The certificate reads "The Board of Directors of the IEEE Foundation, Inc. elects Henry L. Bachman *IEEE Foundation President Emeritus* in recognition of his outstanding service as a Director of the IEEE Foundation from 1986 through 2002, during which time he held the offices of President (1987 & 1994-1999), Secretary (1986), and Treasurer (1991-1993), was instrumental in creating the strategic plan of 1994, and initiated the office of Vice President, Projects, from 2000 through 2002."