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## news from around the IEEE

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### Young Designer's 3-D Display Wins Presidents' Scholarship

BY JESSICA CZECZUGA

George F. Hotz, a 17-year-old from Glen Rock, N.J., won the 2007 IEEE Presidents' Scholarship for a color 3-D display that is viewable from all angles. He received the US \$10 000 scholarship for his project "I Want a Holodeck" at the 58th Annual Intel International Science and Engineering Fair, held from 13 to 18 May in Albuquerque, N.M.

The scholarship from the IEEE Foundation is payable over four years of undergraduate study in engineering or a related field. It is awarded 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. Hotz also received a framed certificate and will be presented with an engraved plaque. In addition, the IEEE will pick up the cost of his IEEE student member dues during his four years in college.

**OPTICAL TRICKS** A student at Bergen County Academies, in Hackensack, N.J., Hotz has always been fascinated by optical illusions. He remembers being intrigued by the hologram of Princess Leia projected by R2-D2 in the first Star Wars movie in 1977, then by the optical tricks used in the rides at Walt Disney World. At Disney, he noticed that most of the optical magic was created in two dimensions. This challenged him to create an optical illusion in three dimensions.

For his project, he mounted a screen and a digital light projector (DLP) on a spinning platform. He spun the projector very quickly while displaying different cross sections of a particular image. Because these cross sections were displayed so rapidly on the screen, it tricked the eye into seeing the image in three dimensions.

It took Hotz more than a year to fine-tune his project for the fair. His original device was only two dimensional, using spinning light-emitting diodes (LEDs). From there, he created a three-dimensional device using a spinning liquid crystal display (LCD) screen to generate symmetric objects. His third and winning design was based on a DLP. He learned the VHSIC Hardware Description Language to program the logic devices for the projector. Hotz then reverse engineered the Texas Instruments DLP chip and developed a custom-printed circuit board populated in part with ball grid array components. Hotz credits the Internet and his father with providing the inspiration to take on projects such as this one. His father, who works with computers, taught him how to use the Internet as a child and encouraged him to create his own Web site. "When I read about a device on the Internet and about what it took for the person to develop it, I see no reason why I can't improve on it," says young Hotz.

He plans to spend the summer working on a variety of projects, including building an interactive 3-D display that can draw images in real time. Then he will go on to study electrical engineering technology at the Rochester Institute of Technology, in Rochester, N.Y.

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