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CIESE hosts Build IT student ROV competition, May 28

Build-IT program teaches students engineering, science and information technology

HOBOKEN , N.J. – On May 28, 2008, the Center for Innovation in Engineering & Science Education at Stevens Institute of Technology will host an all-day symposium and competition for students from 36 middle and high schools across New Jersey. These schools are participants in the Build IT program, in which students learn science and engineering concepts by building and operating underwater robots using LEGOs.

One team of five students from each school will bring the robot they developed and test their design against those from other schools. Using LEGOs, students will design and construct an underwater Remotely Operated Vehicle (ROV) with a motorized mechanical grabber that can retrieve balls from the bottom of a pool and bring them to a goal as fast as possible.

Prizes will be awarded in several different categories, and all participating students will receive a Build IT t-shirt. In addition, students will get to see the Stevens campus, visit a research lab, and hear a panel of recent graduates discuss their new careers in engineering.

"The ROV competition at the Build IT symposium will be a great opportunity for students to show off their underwater robots and to see the designs their peers from other schools have come up with," said Jason Sayres, Curriculum and Professional Development Specialist at CIESE and Co-Investigator of the Build IT project. "Prizes will be awarded for top achievements in several categories, such as design, efficiency, speed and overall performance. Plus, an extra mini-challenge will be introduced, unknown until that day, which will allow teams to score extra points by doing some on-the-fly redesign. It looks to be an exciting event as well as a great learning experience."

Build IT is a new, innovative research project sponsored by the National Science Foundation, under the Information Technology for Students and Teachers (ITEST) program. The program's goal is to catalyze student interest and achievement in engineering, science and information technology.

Appealing to a target audience of middle and high school students, Build IT employs an innovative design challenge — building submersible robots from LEGO and other parts that can perform a series of increasingly complex and sophisticated underwater tasks. The aquatic environment presents unique challenges that require students to problem-solve using successively deeper levels of science understanding, the iterative design process, teamwork and communication, and information technology.

Seventy-two teachers from 36 geographically, socio-economically and academically diverse schools throughout New Jersey and New York City are participating. Overall, approximately 2,600 students from the participating schools and districts will be impacted through this project.

Designing a robot to explore under the water is a stimulating task to many students, from middle school students through adult learners. A large part of the fascination is due to the variety of challenges involved, with success depending on broad spectrum of knowledge and skills in three different fields – science, engineering and information technology. In addition, the motion of an underwater vehicle, with six degrees of freedom, is more complex than any terrestrial vehicle design students may have encountered in typical robotics projects.

Through the design, construction, programming and testing of underwater robotic vehicles, students will learn the iterative design process. Build IT emphasizes the pedagogical approach of discovery-based learning and collaborative teamwork, and will give students practical experience in systems thinking.

About Stevens Institute of Technology

Founded in 1870, Stevens Institute of Technology is one of the leading technological universities in the world dedicated to learning and research. Through its broad-based curricula, nurturing of creative inventiveness, and cross disciplinary research, the Institute is at the forefront of global challenges in engineering, science, and technology management. Partnerships and collaboration between, and among, business, industry, government and other universities contribute to the enriched environment of the Institute. A new model for technology commercialization in academe, known as Technogenesis®, involves external partners in launching business enterprises to create broad opportunities and shared value.

Stevens offers baccalaureates, master's and doctoral degrees in engineering, science, computer science and management, in addition to a baccalaureate degree in the humanities and liberal arts, and in business and technology. The university has a total enrollment of 2,040 undergraduate and 3,085 graduate students, and a worldwide online enrollment of 2,250, with a full-time tenured/tenure-track faculty of 140 and more than 200 full-time special faculty. Stevens' graduate programs have attracted international participation from China, India, Southeast Asia, Europe and Latin America. Additional information may be obtained from its web page at www.stevens.edu.

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