



Robotic System Challenge

When: 8 AM – 4 PM, Saturday, April 1, 2006
Where: Glass Pavilion, Levering Hall, JHU Homewood Campus
Cost: \$35.00 entry fee per team. If payment is mailed before 15 December the cost is \$25.00
Who: Teams of 2 or 3 students from anywhere in Maryland in grades 7-12
Why: **Local academic institutions and engineering companies will be present and ready to answer any questions you may have.** Prizes, Awards, T-shirts, and Food.
Sponsor: Johns Hopkins University Engineering Research Center for Computer-Integrated Surgical Systems and Technology

<p>Challenge 1 NOVICE</p> <p>Petite Slalom</p> <p>The Petite Slalom is a course in which competitor robots travel from the starting line to the finish line while traveling through “gates.” The gates are selected from pre-determined points on the rough side of a 3’ x 6’ section of tempered hardboard. Teams will be able to practice on tracks they can construct from provided directions. When they arrive at the competition they will be told which gates they must pass through to get points. The most successful robots will traverse the course correctly and will be the fastest to accomplish the route. Since all the points where gates can possibly be placed will be known in advance, teams will be able to program their robot to run segments of the course in preparation. They will then have to join these segments together at the competition to run through the correct gates. There are two categories of this slalom. Category 1 uses the Parallax Boe-Bot and Category 2 is any other robot.</p>	<p>Challenge 2 EXPERIENCED</p> <p>Mystery Course</p> <p>Teams will arrive at the competition with no knowledge of what the course will be. The course will be some type of blind course that requires robotic sensors to maneuver. They must come to the challenge equipped with a complete Boe-Bot and the knowledge required to effectively use the sensors provided in the kit. Teams will be given 90 minutes to assemble the sensors on the robot and program the robot. The course will not be available to the competitors during the programming and assembly phase. The students will place their robot in line when they feel they have programmed it successfully. All robots will be tested and the ones that complete the maze will be ranked by time, with the fastest time being the winner.</p>
<p>Challenge 3 EXPERT</p> <p>Unleashing the Mad Scientist</p> <p>Teams will design an innovative and practical new use for the Basic Stamp Board of Education. They will display a working model of their idea in an oral presentation along with a written report. Teams will be judged on quality of the idea, operation of the prototype, the oral report and the written report. This challenge is designed to be the result of innovation and robotic exploration and is considered the premiere challenge of the day’s event.</p>	<p>Challenge 4 EXPERIENCED</p> <p>Search & Destroy Robotic Brain Tumor Surgery</p> <p>Teams of Robotic Brain Tumor Surgeons will design and program their Boebots to find all the “tumors” (large dark circles) at various unknown locations in the patient’s brain, a 3’ x 3’ enclosure. The Boe-Bot will be placed in a random point inside the brain and should be able to detect the corners and sides of the enclosure and to search the entire brain for tumors on its own. When a tumor is found, the robot must signal to the surgeons (a buzzer or LED). The robot should stop once the entire brain has been searched. Teams will be judged on their robot’s ability to find all the tumors, time to complete the search, and efficiency. Bonus points will be awarded for creative signals!</p>

IMPORTANT NOTICE

There will be an important coordination meeting on December 1, 2005, from 6 – 8 PM at Johns Hopkins University, Krieger Hall 308.

Rules will be distributed. Mentors will be assigned. Hints will be given.

The tracks for the Petite Slalom and Search & Destroy will be available to view in advance.

Light refreshments will be served.

To become part of an event that we hope will benefit the future of many talented young scholars please contact Cyndi Ramey at cmiller@cs.jhu.edu or by phone at 410-516-6841.

For a complete description of the rules go to <http://www.cisst.org> and click on the link for the Robotic System Challenge.