UCF team takes two vehicles to IGVC Robotics competition

IST's student robotics laboratory took two intelligent ground vehicle prototypes to the 2004 version of the annual IGVC Robotics competition held at Oakland University in Rochester, Michigan.

Lab members are undergraduate and graduate students from a variety of disciplines. Their projects are sponsored by IST, the Army's Research, Development and Engineering Command (RDECOM) and the UCF collaboration for Advanced Research on Agents and Teams (CARAT).

Dr. Fernando Gonzales, assistant professor of UCF's School of Electrical Engineering and Computer Science and joint faculty member at IST, advises the lab.

The Black Knight vehicle, a veteran of the 2002/03 IGVC, was designed to locate GPS points and navigate courses while avoiding obstacles.

The Black Knight detects obstacles using computer vision with input from four cameras. The onboard computer's neural network processes the images at 15 frames per second per camera and, properly trained, can successfully identify objects.

RDB3k uses a fuzzy ARTMAT neural network to drive four independent motor-to-wheel systems with sensors coordinated by a control center.

As its legs move somewhat independently, the vehicle constantly changes shape to accommodate variations in terrain.

Although the vehicles performed better than last year, competition among the 26 teams was tough. The Black Knight was 12th among the 18 qualifiers and received 8th place in navigation.

Rain prevented completion of all events.

The lab has set its sights on the 2005 DARPA Grand Challenge, set for October 2005 at a location yet to be announced.

Motivated by a $1 million prize, more than 100 applications went in for DARPA's first grand challenge, held in California last March. Next year the prize is $2 million to the team that completes the challenge's grueling events.

The 2004 challenge's ultimate event pitted car-size autonomous vehicles against 200 miles of California and Nevada desert. No vehicle was up to it, and the prize money went unclaimed—an enticing carrot dangling before UCF's robotics laboratory team.

Robotics team captain Tim Roberts (front) helps roll out the UCF robot vehicle RDB3k in preparation for an event. Below: team member "talks" with the Black Knight, UCF's other entry in the rigorous competition.

Contact US

We'll be happy to provide more information about these and other research efforts at IST. Visit the IST Web site for overall information about the institute, e-mail the various program managers listed below or call us.

Web site: www.ist.ucf.edu
General Information: info@ist.ucf.edu
Phone: 407-882-1300

M&S Graduate Programs
Dr Peter Kincaid, Co-chair pkincaid@ist.ucf.edu
Dr Charles Reilly, Co-chair creilly@mail.ucf.edu

UCF Robotics
Dr Fernando Gonzales fgonzale@pegasus.cc.ucf.edu
Michael Dolezal, IST mdolezal@ist.ucf.edu
Art Cortes, IST cortes@ist.ucf.edu

IST, Augmented Reality Research
Brian Goldiez bgoldiez@ist.ucf.edu