Maybe Not Sci-Fi, but Robots Readied for Big Tests

GEOFF MULVIHILL, Associated Press KEVIN BEGOS, Associated Press

Pennsauken, NJ (AP) — The real world has not caught up yet with "Star Wars" and its talking, thinking robots, but some of the most sophisticated units that exist are heading to Florida this week for a Defense Department competition.

View: Attack of the Humanoid Robots **[1]**

Seventeen humanoid robots will be evaluated Friday and Saturday at Homestead Miami Speedway for how well they can complete tasks including getting into an all-terrain vehicle and driving it and opening doors.

It's all stuff people can do. But the mission for the teams in the competition is to make robots that could function in disaster zones where the conditions could be threatening to humans.

It's advanced but not sci-fi. The robots, which move far slower than humans, are controlled by people telling them what action to take.

The top bots will move into the finals next year. The winning team gets $2 million as part of a project of the Defense Advanced Research Projects Agency.

The entry by defense contractor Lockheed Martin's Advanced Technology Laboratories, made with help from students at the University of Pennsylvania and Rensselaer Polytechnic Institute in New York, has been tested in an industrial park in Pennsauken.

The labs did well enough in the virtual version of the competition this year to be supplied a prebuilt robot and allowed to continue to this month's round of the DARPA challenge.

With the machine already built, Lockheed's team was responsible for the software. "We want the system to be intuitive to untrained operators," said Bill Borgia, the director of Lockheed's intelligent robotics laboratory.

During a practice session last week, an engineer used a joystick and a computer mouse to tell the 6-foot tall, 300-pound robot where — and how — to move as it picked up pieces of rubble.

In a real-life rubble removing situation, the controller might not be close to the robot. That's why the operators did their work from behind a black curtain. They had monitors to show the view from a camera on the robot, but they could not see the whole action from the outside.

The robot designed at Pittsburgh's Carnegie Mellon University is called CHIMP — for CMU Highly Intelligent Mobile Platform. It is just over 5 feet tall and is one of 10 robots that were designed and built from scratch over the last 14 months for the DARPA challenge. Other teams are using their software on robots supplied by DARPA.

Anthony Stentz is the director of the National Robotics Engineering Center at Carnegie Mellon and the lead researcher on CHIMP.

"We wanted to design a robot that had roughly human form, so that it fits in the environment that humans operate in. But we didn't want to take on the difficult task of building a machine that is too humanlike," Stentz said. For example, walking on two legs presents a major engineering challenge, so CHIMP rolls on treads, like a small tank. It has treads on its arms, too, and gets down on all fours to go over rough terrain.

Like other robots in the competition, CHIMP gets some commands from humans but also has the ability to make limited decisions. "So we are telling it what to do, and it's deciding how to do it," Stentz said.

Stentz said many people don't really understand how difficult it is to get a machine to do even simple tasks. Robots excel in doing particular things such as welding a car part on an assembly line. But search and rescue missions take place in vastly different and constantly changing environments.

During practice runs at CMU, it took CHIMP several minutes to open a door or attach a fire hose to a water faucet. While less exciting than fictional robots' capabilities, those tasks are more complicated and varied than robots usually do, such as vacuuming a room.

"We think that the public ends up with a sense that robots are far more capable than they are," Stentz said of how Hollywood portrays the machines.

—

Begos reported from Pittsburgh.

Links:
[1] http://www.wirelessdesignmag.com/news/2013/12/photos-day-attack-humanoid-robots