

Atlas teams head for DARPA Robotics Challenge

November 26 2013, by Nancy Owano



(Phys.org) —December 20 is a big day for teams competing in the Defense Advanced Research Projects Agency (DARPA) Robotics Challenge. The idea is to promote critical improvements in what robots can do to help out in disaster relief efforts, when human intervention is unsafe and time is of the essence, such as nuclear power plant disasters, oil spills, and wildfires. The challenge is for robots to be agile and responsive enough to move through such disaster zones and do needed rescue tasks. Enter Atlas, the six-foot two, 330-pound robot developed

by Boston Dynamics. As part of the contest, DARPA has been furnishing some of the teams with Atlas units. The teams are expected to come to Florida prepared to put their Atlas robots through tough paces. The Atlas factor in the competition is interesting because it calls upon team scientists and engineers to give their robot its "brains." In December, the teams will need to show they are up to the challenge, having worked out code and customized software to put their Atlas machine into action. Each team is to enter its own Atlas into the DARPA competition, performing tasks that prove their robot is disaster-site ready.

The original developer, Boston Dynamics, created Atlas to negotiate difficult outdoor terrain while picking up objects and carrying them in its arms. In July, the seven teams that had progressed from DARPA's Virtual Robotics Challenge (VRC) arrived at the Boston Dynamics site in Waltham, Massachusetts, to meet the real Atlas. Since then the teams have been preparing for next month's event by giving their Atlas the brains it needs to succeed in the challenge. The Atlas is one of the most advanced humanoid robots ever built, but the teams are expected to take its physical shell and develop its software. As DARPA points out, these seven teams are not starting from scratch. With the physical modeling of the DARPA Robotics Challenge Simulator, software algorithms employed by teams in the VRC may transfer with minor tuning to Atlas hardware.

"The Virtual Robotics Challenge was a proving ground for teams' ability to create software to control a robot in a hypothetical scenario. The DRC Simulator tasks were fairly accurate representations of real world causes and effects, but the experience wasn't quite the same as handling an actual, physical robot," said Gill Pratt, program manager for the DARPA Robotics Challenge. "Now these seven teams will see if their simulation-honed algorithms can run a real machine in real environments. And we expect all teams will be further refining their algorithms, using both

simulation and experimentation."

One of the teams that was kitted out with an Atlas robot is the Florida Institute for Human and Machine Cognition (IHMC). A video published earlier this month of their Atlas showed Atlas losing its walking grip, missing its step over a slab of wood, as it navigated its way through assorted debris purposely placed on the floor to tests its ability to walk on rough terrain.

Actually, the stumble indicates the hard tests the IHMC is putting its entry through, as the sophisticated sensors were purposely disabled, and yet the robot at least almost completed its way across the obstructive objects. "While the robot has some impressive sensors, including the Carnegie Robotics sensor head," said the team, "in this video we have the robot walk over the obstacles without any sensing of them, to demonstrate some robustness to rough terrain."

More information: robots.ihmc.us/drc/
www.darpa.mil/NewsEvents/Releases/2013/07/11.aspx

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