

## Hector is the best rescuer



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### Rescue robots from TU Darmstadt win RoboCup world championship in Brazil

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**At this year's RoboCup, which was held July 19 to 25 in João Pessoa, Brazil, Team Hector of the TU Darmstadt beat the international competition in the RoboCup Rescue League to become world champion for the first time. In addition, the team once again won the prize for the most intelligent robot.**

In the RoboCup Rescue competition, the teams do not compete directly against each other; instead, they try to explore simulated disaster scenarios and to score as many points as possible. The robots operate in a scenario that looks like an earthquake or a tsunami, for example, has just occurred.

With the help of their various sensors – video cameras, infrared sensors, 3D cameras, laser scanners – the robots search for hidden victims and objects as autonomously as possible. They are scored according to the criteria developed by the U.S. National Institute of Standards and Technology (NIST).

#### Hector explores autonomously

Both autonomous and remote-controlled robots can be used in the competition. Team Hector places the focus of its research on the autonomy of the robot, i.e. the ability to fully explore disaster areas as independently as possible. This is very relevant for real deployments because radio connections between rescue workers and robots that operate inside buildings can break off.

Autonomous robot systems can continue to work in such instances, while remote-controlled ones may be completely lost in the worst case. Due to the high reliability of the developed autonomy functions, it was possible for the team to achieve high scores from day one because the automatic detection and mapping of simulated victims received high scores.

Work with the robots of the Rescue League is already being carried out today: one of the few Japanese robots that was used first in Fukushima was originally developed in the RoboCup Rescue League. Team Hector has released many of the key components of its research as freely available (open-source) software with the aim of accelerating the development of autonomous rescue robot systems and thus promoting real-world deployments to save human lives.



A rescue robot of Team Hector in action at the Robocup world championship 2014 in Brazil. Image: Dept. SIM

#### Background: Team Hector Darmstadt



Team Hector, of the DFG Research Training Group 1362, “Cooperative, adaptive and responsive monitoring in mixed mode environments”, is made up of students and doctoral candidates at the Department of Simulation, Systems Optimization and Robotics of the Department of Computer Science and at the Institute of Flight Systems and Control Technology of the Department of Mechanical Engineering. Team Hector is also supported by item Industrietechnik GmbH.

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