

Scientists design intelligent 3-D simulation robots to compete in the Robocup 2010 (w/ Video)

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A University of Miami (UM) researcher will be presenting his work on Robotics and Artificial Intelligence (AI) at the 14th annual RoboCup World Championship and Symposium, an international robotic event whose goal is to advance AI and intelligent robotics research.

Ubbo Visser, research associate professor of [computer science](#) at UM College of Arts and Sciences and team leader for the UM robotics team RoboCanes, will describe the architecture of the multiagent system (MAS) and discuss motion capture techniques for graphical animation. Visser will share his findings in a paper titled: "TopLeague & Bundesliga Manager: New generation online [soccer](#) games" and participate in the 3D simulation soccer league with the RoboCanes, designed by the AI & Games group at UM. The event will take place in Singapore, June 19-25.

"The idea of using soccer as a test bed for robots is to learn about the needs of agents, or robots that act in real-time, dynamic, and adversarial environments," says Visser. "To understand what it takes for a [robot](#) to integrate knowledge and put information into context so that it can make decisions in a split second: that is one of the hardest problems in AI and robotics to solve right now."

[RoboCup](#) (originally called The Robot World Cup Soccer Games and Conferences) started in 1997, and over the years has become the prevalent robotics competition in the world. The primary focus of the

event is soccer games; it involves more than 3,000 researchers, about 450 teams and participants from over 40 countries.

For the event, the contestants develop autonomous robots and software agents and take part in games, simulations, conferences, and educational programs, but RoboCup is not just about playing games, explains Visser, who is one of the Trustees of the RoboCup Federation.

"There is a noble goal behind this work, namely to understand what's going on if we send robots in the field and let them do the work of humans," says Visser. "Doing this work gives one a lot of respect for the human mind; people can have this huge amount of experience of what to do in unforeseen situations and that is exactly what we are trying to solve with robots: what techniques are successful in these sorts of situations is what we are touching on."

The University of Miami team the RoboCanes is one of only two US teams participating in the 3D simulation soccer league. Like the real World Cup in soccer, in RoboCup a team has to qualify to participate. One way to qualify is to win a regional open; another is fulfilling guidelines and qualification rules. The games are divided into the following leagues: Simulation League- 2D and 3D; Small Size Robot League, Middle Size Robot League, Four-Legged Robot League, and the Humanoid League.

This is the first time UM participates in this event. To take part in this competition, the AI & Games Group had to develop a soccer team of six 3D robots, meaning they have a complete resemblance to a physical robot. The robots are autonomous and have the ability to acquire strategic knowledge and real-time reasoning and can communicate and cooperate with each other during a game.

Knowing how difficult it is to win this event, the team is setting their

sights to making it through its first round. "The idea is to develop our team and to be successful; this means to pass the first round this year," Visser says. "If we manage that, it will be a great success, but we would like to evolve into the real robot league, next year."

The other US team participating in the 3D simulation soccer league is from the University of Texas at Austin. In addition to the RoboCupSoccer, the event has three other areas: RoboCupRescue, RoboCup@Home and RoboCupJunior.

Provided by University of Miami

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