

head of Carnegie Mellon's RoboCup teams, said creating a pair of robot commentators -- entertaining as Ami and Sango might be -- is a challenging technical task that, like robot soccer, demands teamwork.

"From a research point of view, we are trying to solve the observation problem," Veloso said. "We need to map the input from their vision sensors, combined with the wireless information from the Game Controller, into a recognition of the events that are occurring. And then that awareness of events has to be translated into language."

Neither robot can see the entire playing field, so Ami and Sango will share what they see as play proceeds. They also need to coordinate what they say, so they don't repeat or contradict each other.

"They don't talk at the same time," Veloso said. "But if one is explaining a rule and a nice goal is made, the other has the ability to interrupt." Finding ways for robots to work together is a major thrust of Veloso's core research laboratory, CORAL, where robots Cooperate, Observe, Reason, Act and Learn.

The commentary itself requires a degree of intelligence. A goal when the score is tied is much more significant, for instance, than a goal by a team already leading a match 4-0.

"It's a difficult problem because of all these dynamics," Veloso said. "And of course we don't know what's going to be happening in the game."

The robots were developed to expect and respond to a large range of situations. But the team has also included a system called Puppet Master, which allows humans to intervene and prompt Ami and Sango to do or say something if they are not able to autonomously perceive an important event.

The Carnegie Mellon researchers have developed new movements and behaviors for the small bipedal robots, which were developed by Sony, and are exploring possible applications for the watching, walking, talking robots.

On the Net: RoboCup 2006:www.robocup2006.org

Source: Carnegie Mellon University

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