
Computer Science Colloquium

Improving Human-Robot Interaction

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Wednesday, 1 December 2004

Olsen 311

Refreshments at 2:30pm, Talk from 3:00-4:00

This week's colloquium will feature three talks by students in Prof. Yanco's Robotics Lab. All of the presentations address efforts towards improving human-robot interaction for an urban search and rescue task.

Improved Interfaces for Human-Robot Interaction in Urban Search and Rescue

Mike Baker, Bobby Casey and Brenden Keyes

We have performed studies on more than a dozen interfaces at urban search and rescue (USAR) competitions and have also done usability testing with domain experts at the National Institute of Standards and Technology (NIST). In our studies, we found that operators rely heavily upon the video stream, to the exclusion of all other information on the interface. We have created a new interface that fuses information on and around the video window to exploit this fact.

Layered Sensor Modalities for Improved Feature Detection

Dan Hestand

Past attempts at using multiple sensor modalities in search and rescue activities have resulted in missed detection of victims and operator disorientation, largely due to information overload resulting from multiple displays requiring attention refocus. We propose a method wherein the multiple sensor inputs are layered into a single, integrated visual display. Such a display might eliminate most missed detections and alleviate operator disorientation by allowing the operator to focus on a single display with visual cues to aid in the use of sound and other sensor modalities. We have conducted initial trials with multiple sensors in the NIST Reference Test Arenas to validate the concept.

Autonomy Mode Suggestions for Improving Human-Robot Interaction

Mike Baker

Robot systems can have autonomy levels ranging from fully autonomous to teleoperated. Some systems have more than one autonomy mode that an operator can select. In studies, we have found that operators rarely change autonomy modes, even when it would improve their performance. This talk describes a method for suggesting autonomy mode changes on a robot designed for an urban search and rescue application.