HUMANITY CENTERED ROBOTICS INITIATIVE

BROWN

Manuela Veloso
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"Symbiotic Autonomy: Robots, Humans, and the Web"

Wednesday, September 18, 2013
12:00 – 1:30pm
Barus and Holley Room 190

We envision ubiquitous autonomous mobile robots that coexist and interact with humans while performing tasks. Such robots are still far from common, as our environments offer great challenges to robust autonomous robot perception, cognition, and action. In this talk, I present symbiotic robot autonomy in which robots are robustly autonomous in their localization and navigation, as well as handle their limitations by proactively asking for help from humans, accessing the web for missing knowledge, and coordinating with other robots. Such symbiotic autonomy has enabled our CoBot robots to move in our multi-floor buildings performing a variety of service tasks, including escorting visitors, and transporting packages between locations. I will describe CoBot's fully autonomous effective mobile robot indoor localization and navigation algorithms, its human-centered task planning, and its symbiotic interaction with the humans, the web, and other robots, namely other CoBots and Baxter. I will further present our ongoing research on knowledge learning from our speech-based robot interaction with humans. The talk will be illustrated with results and examples from many hours-long runs of the robots in our buildings. The work is joint with Joydeep Biswas, Brian Coltin, Stephanie Rosenthal, Mehdi Samadi, Tom Kollar, Vittorio Perera, Robin Soetens, and Yichao Sun. Special thanks to Cetin Mericli and Daniele Nardi.

Manuela M. Veloso is Herbert A. Simon Professor in the Computer Science Department at Carnegie Mellon University. She researches in Artificial Intelligence and Robotics. She founded and directs the CORAL research laboratory, for the study of multiagent systems where agents Collaborate, Observe, Reason, Act, and Learn, www.cs.cmu.edu/~coral. Professor Veloso is IEEE Fellow, AAAS Fellow, and AAAI Fellow. She is the current President of AAAI, and the past President of RoboCup. She received the 2009 ACM/SIGART Autonomous Agents Research Award for her contributions to agents in uncertain and dynamic environments, including distributed robot localization and world modeling, strategy selection in multiagent systems in the presence of adversaries, and robot learning from demonstration. Professor Veloso and her students have worked with a variety of autonomous robots, for robot soccer, education, and service robots. See www.cs.cmu.edu/~mmv for further information, including publications.

This presentation is part of the HCRI's Multidisciplinary Speaker Series that showcases diverse and groundbreaking research undertaken by leaders in science, technology, design, and impact of robotics on society.

For more information on this talk and the HCRI Speaker Series,
contact Suzanne_Alden@brown.edu or visit hcri.brown.edu.