

Semantic Perception, Mapping and Exploration (SPME)

Dirk Holz - holz@ais.uni-bonn.de

Abstract

As robots and autonomous systems move away from laboratory setups towards complex real-world scenarios, both the perception capabilities of these systems and their abilities to acquire and model semantic information must become more powerful. For example, a general-purpose service robot collaborating with a human user needs to know human spatial concepts and have an understanding of 3-dimensional objects, their use and functional relationships between them. More generally, semantic perception and mapping must become a resource for the robot, which links sensory information to the robots knowledge base and high-level deliberative components. A key issue is a robots ability to autonomously acquire information and extract semantic models from it, as well as exploration strategies to decide where and how to acquire the most relevant information pertinent to a specific semantic model. In this full-day workshop we will try to analyze the requirements of such a system, and discuss alternatives for achieving this goal, by bringing together researchers from areas such as Computer Vision, Cognitive Robotics, 3D Mapping, Mobile Manipulation, Machine Learning, Knowledge Representation, and Exploration. This is the second workshop at ICRA to discuss currently running projects and recent results to advance the state-of-the-art in semantic perception, mapping, and exploration.