

ICRA 2010 MOBILE MANIPULATION CHALLENGE

Overview: The Challenge brings together teams showcasing mobile manipulation platforms and demonstrating their capabilities. This is a chance to see **real-life robots** performing manipulation tasks and talk with the teams that have designed, built and developed new algorithms for them.

Where and when: All robot demonstrations will take place in the **Idlughet 3 Hall** on the first floor of the Dena'ina Center. Individual Team Spotlights will take place as described below. In addition, teams will be showcasing (and working on) their robots throughout the conference duration. For additional information, please visit <http://www.willowgarage.com/mmc10>.

PARTICIPANTS AND DEMONSTRATIONS

PR2 Team (Willow Garage Inc.): The PR2 is a two-armed robot with an omnidirectional base. It has an extensive sensor suite useful for mobile manipulation, including a tilting laser scanner mounted to the head, two sets of stereo cameras, monocular forearm cameras, etc. We will show the PR2 grasping and moving both known and previously unseen objects, using its stereo cameras for object detection, its tilting laser for collision avoidance in an unstructured environment and its tactile sensors for error correction. **Team Spotlight: Wednesday May 5th, 14:15 – 15:00.**



NimbRo Team (University of Bonn): Our domestic service robot, the home assistant Dynamaid, offers drinks and snacks to human guests. A guest chooses a snack by a pointing gesture or by simply ordering it using speech input. Dynamaid searches for the object and grasps it. With the object in hand, Dynamaid returns to the guest and delivers the ordered object. In addition, the guest can order a new drink, e.g., by showing an empty drink to the robot. Dynamaid will recognize the object and will fetch a new one for the guest. Dynamaid will also clean up the room, e.g., the table, by safely navigating around obstacles and collecting the objects that need to be cleaned up. **Team Spotlight: Wednesday May 5th, 15:00 – 15:45.**

homer@UniKoblenz Team (University of Koblenz-Landau): Our robot collects a set of items from the floor and a table and places them in a box. We demonstrate the combined use of a gripper and a robotic arm to pick up the objects. Object and obstacle detection is performed on 3D laser scans. A path planner based on motion primitives is used for collision-free grasping. Our grid-based online SLAM algorithm allows for safe navigation and autonomous exploration of the environment. The algorithms employed are being visualized during the demonstration. **Team Spotlight: Thursday May 6th, 14:15 – 15:00.**



Care-O-bot Team (Fraunhofer IPA): Care-O-bot@3 is a case study for future service robot platforms. The design guideline was the creation of a state-of-the-art service robot based on commercially available industry products. It is targeted as a tool for research in the field of Human-Robot Interaction under real-life conditions and as demonstrator for applications and new algorithms. We will demonstrate our work in the fields of navigation and undercarriage-control, as well as object recognition, environment reconstruction and manipulation. **Team Spotlight: Thursday May 6th, 15:00 – 15:45.**

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