GMAR Robotics School 2021

Draft; do not publish

Organization

- Date: tentatively 2021-08-23 - 2021-08-27 (Monday-Friday)
- Location: Villa Blanka; Innsbruck
- Topic: Mobile Manipulation

Audience:

- advanced Master and young doctoral students in subject areas related to robotics (engineering, computer science, etc.)
- 15-25? participants, depending on the location
- prerequisite: familiarity with ROS, to be specified; recommend tutorials

Concept:

- hands-on, making things work on real robots
- technical lectures concentrated near the beginning of the week
- hacking starting day one, growing in importance as the course advances
- hacking in small teams dedicated to specific functionalities
- some application talks towards the end, not relevant to the hacking

Implementation Goal:

- SLAM, autonomous navigation
- vision-based grasping of (known and/or unknown?) objects from known locations
- placing objects in designated locations
- execution of high-level plans involving the above capabilities

Robots:

- 1 mobile base + arm platform for each group of 3-4 students
- or, 1 UIBK mobile manipulator (homebrew base with DOBOT M1 ? Franka Emika Panda)
- or, TUW Honda mobile manipulator

Schedule

Each session lasts 90 minutes; blank = hacking.

Sessions	Monday	Tuesday	Wednesday	Thursday	Friday
Morning I (8-10)	Mechatronics of mobile manipulators (Peter Manzl and Martin Siegfried Sereinig)	Robot Vision (Jean-Baptiste Weibel)	Visual Servoing (Antonio Paolillo)	Industry event + Robotics talks event in **Alpbach**. Departure at 8.30am, return 15.30pm	Task Planning (Gerald Steinbauer)
Coffee break					
Morning II (10.30 - 12.30)	Kinematics (Andreas Müller)	Picking and Placing (Justus Piater)	Hacking: Visual Servoing for Pick and Place		Hacking: Task Planning
Lunch					
Afternoon I (13.30-15.30)	Dynamics, Control (Wolfgang Werth)	Human-Robot Interaction and Safety Aspects (Mathias Brandstötter)	Introduction to ROS Navigation Stack (Matteo Saveriano)		Hacking: **Team competition**
Coffee break					
Afternoon II (16.00-18.00)	Hacking: Set-up the robots	Hacking: Path/Motion Planning in ROS	Hacking: Navigation in ROS		
Dinner	on site	on site	on site	in town	-

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