Robo@FIT 2ⁿᵈ Workshop

GETTING STARTED IN Robotics&ROS

- • BASIC KNOWLEDGE OF ROS USAGE •
- • EXPERIENCE PRACTICAL CASES •
- • ROS USAGE AS A R&D TOOL FOR A ROBOTICS RESEARCH TEAM •

This two-day workshop will take place **October 14th** and **15th, 2013** at **RoboLab (O104)**, Faculty of Information Technology, Brno University of Technology. This workshop is supported by research groups at FIT doing R&D in robotic topics.

Motivation & Objectives

This *workshop* provides a hands-on introduction to ROS - Robotic Operating System - and its use for *several robotic* platforms. *ROS* has been emerging as a standard for robot software development. It is an open-source, meta-operating system that provides hardware abstraction services. It implements low and high level functionality. The *speakers* at the workshop are researchers that are currently using ROS for their work. As an *outcome* of this workshop, attendees will have a basic knowledge on how to use ROS and have a good insight on how ROS can be used as a software development tool in the context of robotics research team.

Participation

We would like to invite you to *Getting started in Robotics&ROS* workshop, whether you are experienced experts or just getting started with robotics. Do not hesitate to contact Víťa Beran (beranv@fit.vutbr.cz) if you have any questions. Please *confirm your participation* by subscribing yourself by Friday 11.10. here:

- https://docs.google.com/spreadsheet/ccc?key=0AvzUx5K1kL6pdGM4OEFreTRycnZubUEwY0lyO EFYZGc&usp=sharing

The workshop participation is *free* and is *in Czech language* (unless stated otherwise).

Preliminaries

The workshop is focused on practical demonstration and tutorials, so it is convenient to have your *own notebook* (number of PCs is limited) with *Ubuntu* + *Eclipse* (or any other IDE) + *ROS* pre-installed and intermediate skills of *C/C++ programming*.

- install *Ubuntu 12.04* (Oneiric Ocelot)
  e.g. http://www.ubuntu.com/download/desktop/install-desktop-long-term-support
- install *ROS* (Hydro)
  e.g. http://www.ros.org/hydro/Installation/Ubuntu
- install *Eclipse* IDE
  e.g. http://wiki.ros.org/IDEs#Eclipse

Schedule

1. DAY – ROS

First day of the workshop is focused on fundamentals of ROS, basic robotics concepts, structures, objectives and simulation and visualization tools.

9:00-9:30	**Introduction (in English)** Concept of robotic system (sensory inputs, processing, actuation, simulations).	VIORELA ILA
9:30-12:00	**FaceDetector using OpenCV and ROS** Seeing Kinect data, OpenCV usage in ROS, sensory data basic management *node, topic, launch, package, Rviz, bag*	VITA BERAN
13:00-14:00	**FaceDetector as a Service** defining custom message, application parameters, clients and services *message, parameters, service*	MICHAL ŠPANĚL
14:00-16:00	**2D to 3D space** 3D space, pinhole camera model, coordinate frames, simulation tool *tf, gazebo, camera parameters*	ZDENĚK MATERNA

2. DAY - Robotic Platforms

Introduction to robotic platforms at Robo@FIT in parallel sections.

9:00-12:00	**Real Robots** practical skills, discussions with platform supervisors "how to …"

| Ed/Patrol | Toad/Pioneer | Tyra/Quadrocopter | TB/TurtleBUT |

Report

The seminar has been attended by 21 students, mostly from FIT. First day, every student worked on its laptop and lecturers took care that each attendee was able to go through and fulfill every tutorial. This was the main goal of the seminar, to help to all attendees with first steps in robotics and ROS.

Second day was focused on work with particular platforms. The workshop ran in parallel, each student choose one platform and the fundamental tasks (turn-on/off, recharging, starting basic software, safety procedures, etc.) with each particular platform have been introduced.