IWT
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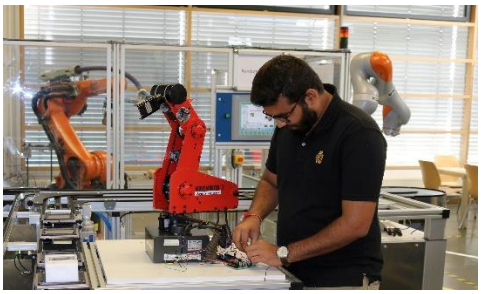

ROS (Robot Operating Systems) training

1. Problem statement

The use of ROS will increase in the future as the use of robots is increasing. The Open source approach and the community behind it made ROS widely accepted. The homepage „robotik UND PRODUKTION" states, that ROS will be an industrial standard in the future. The acceptance of this open source framework continues to grow. That`s why the original founders and new developers are seeking to establish ROS as the industry standard. As far as the research institute ABI Research is saying, 55% of the commercial robots will own a ROS package in 2024.[1] In recent years utilization of ROS is increasing. Therefor a lot of today`s jobs will be affected by that. Studies show that 57% of the jobs in the OECD could be affected.[2] That`s one reason why the employees need to be prepared and trained in ROS.

2. Explanation of teaching approach

Learning robotics by doing is far more effective than reading. This course will provide a good balance between theoretical and practical input. The course mainly concentrates on the basics of ROS.

- Since the ROS mainly works with Linux, it is essential to educate the participants with the basic knowledge of the Linux operating system.
- Similarly, introduction into Git is also significant considering most of the contribution to ROS for the developers are present in the repository such as GitHub, GitLab and BitBucket.
- The course teaches the participants to basics of ROS with the theoretical background as well as the guided practical's.
- It is always fun when the developed package is running with real hardware. Therefore, the time is given to the participants to understand and run the robots.

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[1] Robotik UND PRODUKTION, https://www.robotik-produktion.de/news-und-normen/ros-auf-dem-weg-zum-industriestandard/ (28.08.19)

[2] Carl Benedikt Frey and Michael A. Osborne „The Future of Employment: How Susceptible Are Jobs to Computerisation? | Publications". Oxford Martin School. Found in Wiesen, P. et al. (2018): Learning by doing – mobile robotics in the FH Aachen summer ROS school, https://www.oxfordmartin.ox.ac.uk/publications/view /2279 (11.09.19)

Due to the large support from the ROS community, the implementation of complex algorithms is made easy. The course will teach the participants how to use them and deploy them to the robots. The training material of the MASCOR Institute at the FH Aachen will be used.13

3. 4-day training

Day 1	Introduction to Linux Shell Basic and Introduction to Git Python Basics
Day 2	Introduction and Basic concept of ROS + workshop ROS programming and tools + workshop
Day 3	Robot description and transforms + workshop Robot manipulation with MoveIt! + workshop Hands with real robot
Day 4	Navigation & Path Planning + workshop Hands on with real hardware

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Please feel free to contact us if you are interested in attending our ROS-training or if you have any questions!

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