

Virtual Robotic Laboratory and Learning Materials for ROSin (Uplat)

Inovasyon Muhendislik Education Project

2nd Training Report





Supported by ROSIN - ROS-Industrial Quality-Assured Robot Software Components.

More information: rosin-project.eu



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İçindekiler

İciı	ndeki	ler	2			
_		Introduction				
	Second Education					
	2.1	First Day of Training	5			
	2.2	Second Day of Training	. 8			



1. Introduction

15 people participated in the ROS Applied Trainings held in Eskişehir Osmangazi Technopark education room lasting 2 days between 24-25 December. 6 of the participants were students, 3 was project manager and the remaining 6 were from the private sector. The interests of the participants are as follows; Robotics and Computer Vision.2 participants came from outside of Eskişehir for training.

During the training, participants had an introductory level of Linux and Python training. Apart from this, they have made examples with many ROS applications from beginner to intermediate level. Thanks to these applications, the participants learned about the structure of ROS. The last day of the training ended with the development of integrated applications with ROS and Gazebo, real robot mapping, use of the robot arm, visualization of the robot and the environment, and the realization of the navigation package. As the feedback from the participants, they were very pleased with the ROS applications and Q & A activity. Based on the feedback from the previous training, the Linux section was organized and the details were removed from the training.



TRAINING INOVASYON **MÜHENDİSLİK SCHEDULE** 1st DAY - 1st Session: Introduction Introduction and Meeting People The current situation in mobile robot and autonomous 09-00-09-45 10:00-10:45 11:00-11:45 Autonomous robot intelligent control architectures, software tools interface 12:00-13:00 1st DAY - 2nd Session : Linux ve ROS Basics Installation and Deployments, Linux Basics for ROS, ROS Structure: Node, Topic, Publisher, Subscriber 13:00-14:45 ROS Applications: ROS Environment Preparation, Catkin Package Creation, TurtleSim Application, ROS Message 15:00-18:00 Creation, Publisher & Subscriber Application, Service & Client Application 2nd DAY - 1st Session : ROS Applications 09:00-09:45 Level Applications: Creating Environment Models, Building a Mobile Robot Model Interaction between ROS-GAZEBO and Sample 10:00-12:00 12:00-13:00 Lunch Break 2nd DAY - 2nd Session : Applications on Mobile Robot / Autonomous Transportation Vehicle (ATV) / Robot Arm Introduction of Mobile Robot / ATV / Robot Arm Components, Sensor Reading of Mobile Robot / ATV / 13:00-14:45 Robot Arm, Sensor data Visualization in RVIZ Mobile Robot / ATV / Robot Arm Applications: Media Mapping with Mobile Robot / ATV, Autonomous 16:00-18:00 Navigation with Mobile Robot / ATV Application on Robot



2. Second Education

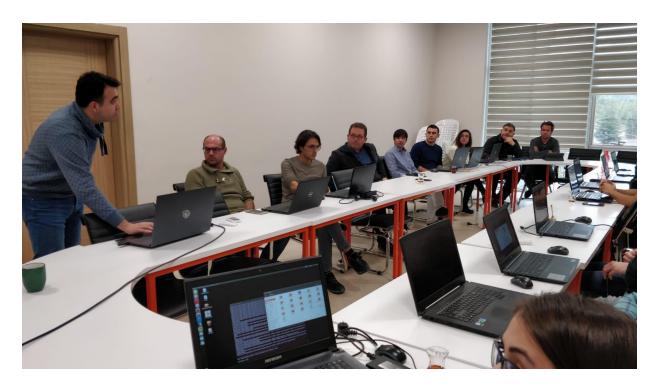






2.1 First Day of Training

On the first day of the training, Dr. Uğur YAYAN talked about the current situation in the Robot and Autonomous Vehicle studies and mentioned the studies carried out in Eskişehir in these fields. R&D Engineer Didem ÖZÜPEK TAŞ has covered autonomous robot control architectures, software tools and middlewares. After completing the "Linux History and Distributions", "Linux File Structures", "Code Development and Compilation in Linux" trainings, "Introduction to Python and Applications" training was given by Dr. Uğur YAYAN. ROS training was given by R&D Engineer Didem ÖZÜPEK TAŞ. In the ROS training, informations about the installation and distributions are provided. The necessary Linux information for ROS is explained again. Node, Topic, Msg, Srv structures and Publisher-Subscribe, Service-Client structures of ROS are explained practically. In addition to this, preparation of ROS environment, structure and creation of catkin, TurtleSim applications were explained to the participants.

















2.2 Second Day of Training

On the second day of training Gazebo training was given by Dr. Uğur YAYAN. He gives to participants examples of creating entry-level models and environments in Gazebo and demonstrates the interaction between ROS and Gazebo. Training about the application on Kawasaki Robot Arm and visualization in Rviz was given by R&D Engineer Didem ÖZÜPEK TAŞ. Then again by R&D Engineer Didem ÖZÜPEK TAŞ gave general information about Mobile Robots and Autonomous Carriers. On the ATV (Autonomous Carrier Vehicle), mapping the environment using the Navigation Stack package and using the extracted map to move the ATV autonomously, visualizing the laser data were performed. Finally, the questions of the participants were answered and the training was ended.







