

Virtual Robotic Laboratory and Learning Materials for ROSin (Uplat)

Inovasyon Muhendislik Education Project

1st Training Report



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Supported by ROSIN - ROS-Industrial Quality-Assured Robot Software Components.
More information: rosin-project.eu



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Ek'teki dokümanda yer alan bilgiler, "TİCARİ GİZLİ" bilgi niteliğindedir. Doküman, herhangi bir maksatla veriliş sebebi dışında kullanılamaz, İnovasyon Mühendislik dışındaki şahıs ve kuruluşlara açıklanamaz ve diğer şekillerde istifadelerine sunulamaz.

DOKÜMAN REVİZYON SAYFASI

REV. NO	TARİH	SAYFA NO.	AÇIKLAMA
1.0	-	-	İlk versiyon

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1. Introduction

15 people participated in the ROS Applied Trainings held in Eskişehir Osmangazi University Robotics and Computer Laboratories lasting 2 and a half days between 26-28 September. 9 of the participants were students, 1 was an academician and the remaining 5 were from the private sector. The interests of the participants are as follows; Robotics, Computer Vision and Drones. 6 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 and the application development integrated with Gazebo. On the last day, the training ended with real robot mapping, the use of the robot arm, visualization of the robot and the environment with visualization and the realization of the navigation package. As the feedback from the participants, it was stated that the Linux section was a bit intense but they were very pleased with the ROS applications and the Q & A activity.

ROS PRACTICAL TRAINING

2019



Training Date
September 26-28, 2019

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TRAINING SCHEDULE



1st DAY – 1st Session: Introduction	
09:00-09:45	Introduction and Meeting People
10:00-10:45	The current situation in mobile robot and autonomous vehicle studies
11:00-11:45	Autonomous robot intelligent control architectures, software tools, interface
12:00-13:00	Lunch Break
1st DAY – 2nd Session : Linux ve ROS Basics	
13:00-14:45	Linux History and Distributions, Linux Introduction and Installation, Linux File Structures
15:00-18:00	Linux Code Development/ IDEs and Applications
2nd DAY – 1st Session : ROS Applications	
09:00-09:45	Installation and Deployments, Linux Basics for ROS
10:00-12:00	ROS Structure: Node, Topic, Publisher, Subscriber
12:00-13:00	Lunch Break
2nd DAY – 2nd Session : ROS Applications	
13:00-14:45	ROS Applications: ROS Environment Preparation, Catkin Package Creation, TurtleSim Application, ROS Message Creation, Publisher & Subscriber Application, Service & Client Application
GAZEBO Introduction Level Applications: Creating Environment Models, Building a Mobile Robot Model	
16:00-18:00	Interaction between ROS-GAZEBO and Sample Applications
3rd DAY – Applications on Mobile Robot / Autonomous Transportation Vehicle (ATV) / Robot Arm	
09:00-09:45	Introduction of Mobile Robot / ATV / Robot Arm Components, Sensor Reading of Mobile Robot / ATV / Robot Arm, Sensor data Visualization in RVIZ
10:00-12:00	Mobile Robot / ATV / Robot Arm Applications: Media Mapping with Mobile Robot / ATV, Autonomous Navigation with Mobile Robot / ATV Application on Robot Arm
12:00-18:00	Lunch / Social Activity

2. First Education



2.1 First Day of Training

On the first day of the training, Assoc. Prof. Dr. Ahmet YAZICI and 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. Assoc. Prof. Dr. Metin ÖZKAN 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. Abdullah Taha ARSLAN.



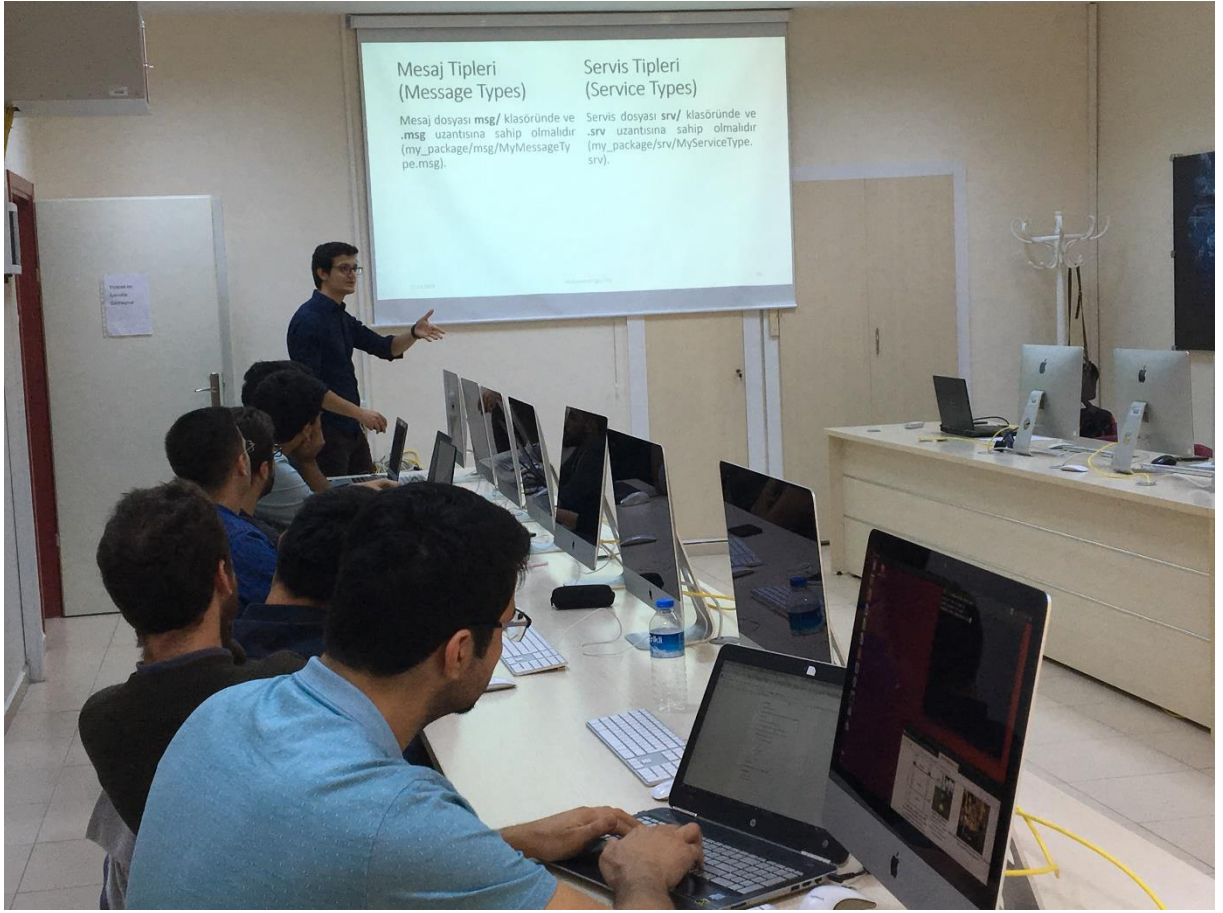


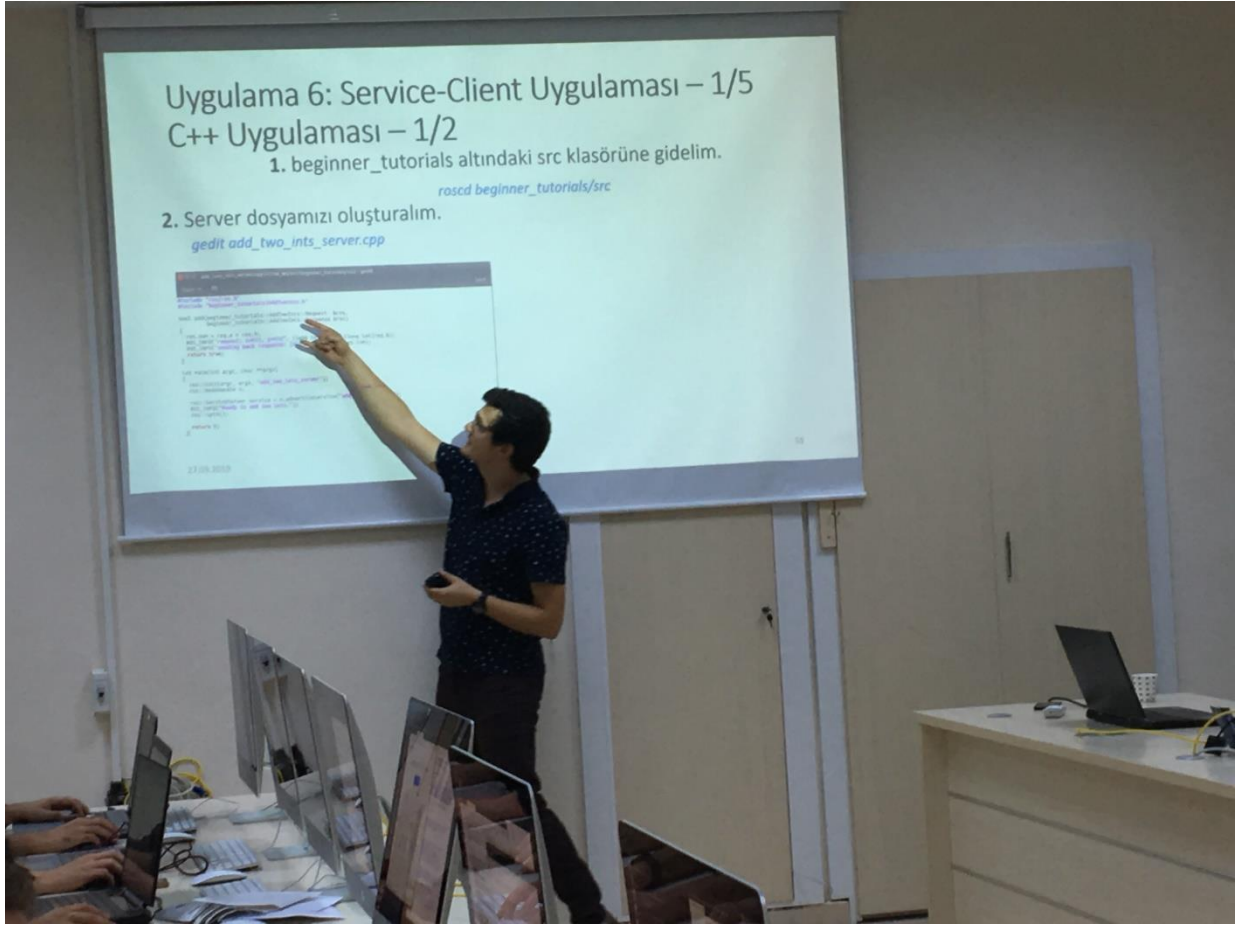


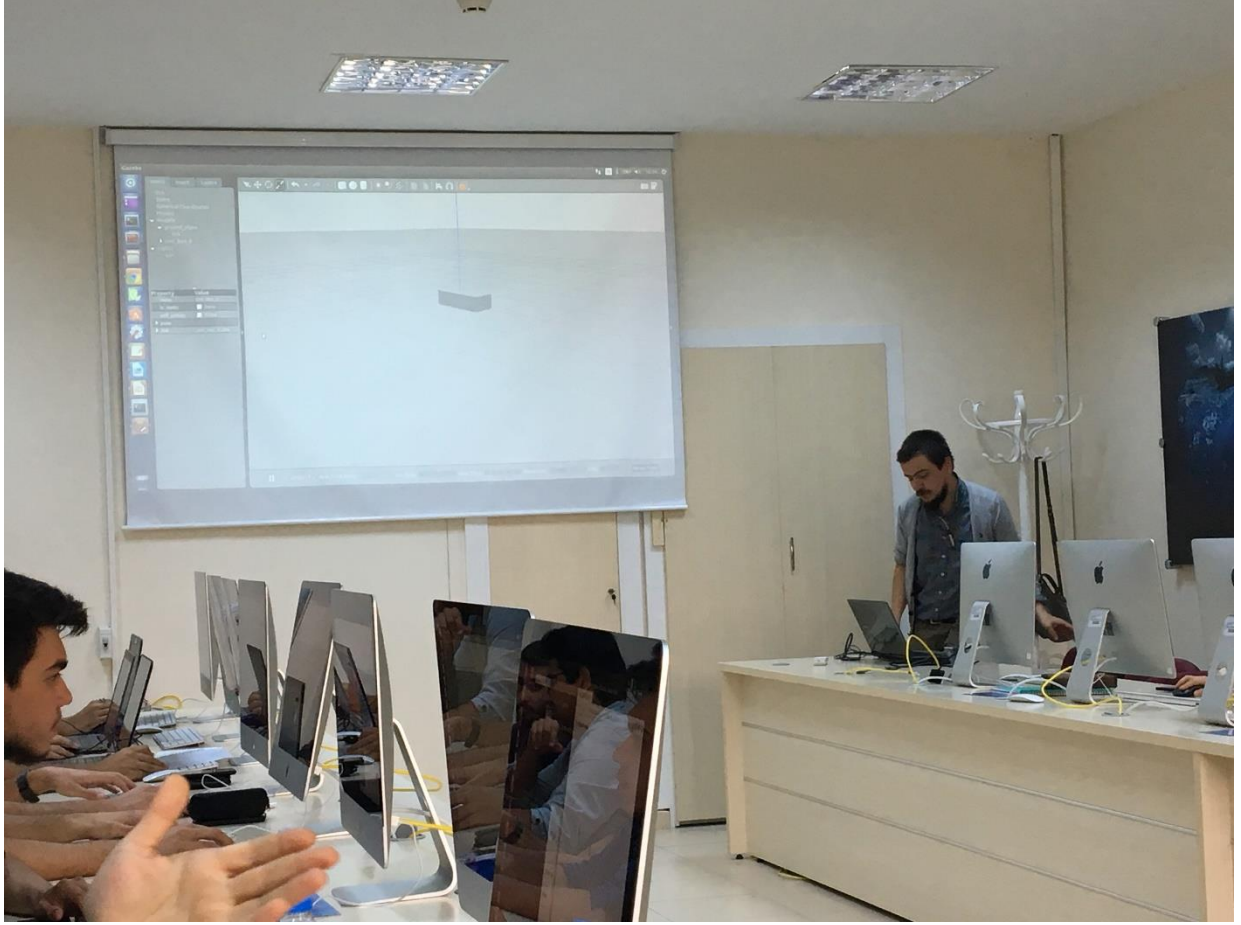


2.2 Second Day of Training

On the second day of the training, ROS training was given by Research Assistant Muhammed Oğuz 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. By making practical examples in Gazebo, the interaction between ROS and Gazebo is shown by Research Assistant Sezgin SEÇİL.







2.3 Third Day of Training

On the last day, training about the application on Kawasaki Robot Arm and visualization in Rviz was given by Research Assistant Sezgin SEÇİL. 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.





