WORKSHOP

ROS MOBILE ROBOTICS

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Teorical Part

ROS (Robot Operating System)

- Willow Garage 2007
- ROS Box Turtle 2010
- Open Robotics 2013
- ROS2(Stable Release) 2019
- ROS Noetic / ROS2 Humble 2025 / 2027

1. Filesystem level
2. Computation graph level
3. Community level

Used Cases - **VINBOT**

Used Cases - **PATHFINDER**

Used Cases - **FRAVEBOT**

Autonomous Platforms

Useful links

VMware - VMware - Delivering a Digital Foundation For Businesses

ROS wiki - Documentation - ROS Wiki

ROS2 docs - ROS 2 Documentation — ROS 2 Documentation: Foxy documentation

ROS Noetic Instalation Ubuntu - noetic/Installation/Ubuntu - ROS Wiki

ROS MIR repo - GitHub - dfki-ric/mir_robot: ROS support for the MiR Robots. This is a community project to use the MiR Robots with ROS. It is not affiliated with Mobile Industrial Robots.

Practical Part

Host OS

ubuntu

debian

Signle line installation (Ubuntu 20.04 – Noetic)

```
$ wget -c
https://raw.githubusercontent.com/qboticslabs/ros_install_noetic/mast
er/ros_install_noetic.sh && chmod +x ./ros_install_noetic.sh &&
./ros_install_noetic.sh
$ source ~/.bashrc
$ rosversion -d
Noetic
$ sudo apt install python3-rosdep python3-rosinstall python3-
rosinstall-generator python3-wstool build-essential
$ sudo rosdep init
$ rosdep update
```

Do not copy $ to terminal!
Ensure you have installed git!

ROS Turtle – Hello World

Terminal 1

```
$ roscore
```

Terminal 2

```
$ rosrun turtlesim turtlesim_node
```

Terminal 3 : Commands is presented in bash file on Github

ROS-Workshops/0MR at main · Steigner/ROS-Workshops (github.com)

If you don't have installed turtlesim:
sudo apt-get install ros-$(rosversion -d)-turtlesim

Creation of a catkin workspace

```
$ mkdir catkin_ws/src
$ cd catkin_ws
$ catkin_make
```

ROS Turtle – Own Control

```
# catkin_create_pkg <package_name> [depend1] [depend2] [depend3]
$ catkin_create_pkg turtlesim_control std_msgs rospy
$ cd ~/catkin_ws/src/turtlesim_control/src
$ wget -L https://raw.githubusercontent.com/Steigner/ROS-
Workshops/main/0MR/test.py
$ chmod +x test.py
$ cd ~/catkin_ws
$ catkin_make
$ source devel/setup.bash
$ rosrun turtlesim_control test.py 2.0 1.0
```

MIR Package integration

```
$ cd catkin_we/src
$ git clone -b noetic https://github.com/dfki-ric/mir_robot.git

$ cd ..
$ sudo apt-get update -qq
$ rosdep install --from-paths ./ -i -y --rosdistro noetic

$ catkin_make
$ source ~/catkin_ws/devel/setup.bash
```

MIR – Hello World

MIR github repository – tutorial

dfki-ric/mir_robot: ROS support for the MiR Robots. This is a community project to use the MiR Robots with ROS. It is not affiliated with Mobile Industrial Robots. (github.com)

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