Aalto University

Year 2024

ELEC-E8111 – Autonomous Mobile Robots

Practical Work Report

Date: xx.x.2024

Student name – Student number

Write a description of what was done for each section in this template, considering as well the questions formulated. Also, remove the instructions text before submitting your report.

DO NOT WRITE A QUESTION/ANSWER TYPE REPORT

# First steps

Is there a master node in ROS2? Why?

What’s the difference between ROS2 and ROS?

What happens with the messages which are not read by the subscriber of a node?

# RViz2 application

What is RViz2 used for?

Which nodes do the Turtlebot publish camera data? What about the Lidar data?

What kind of camera is on the Turtlebot4? Is the Lidar 2D or 3D?

# SLAM FROM REAL DATA

What is SLAM? What is it used for?

What type of map does the system provide?

Briefly describe the environment of your result map.

Remember to include here the TF2 tree and the map you have obtained.

# Ros 2 bag

Are there any limitations to ros2 bag?

Which topic do you record? Why?

Include here the ros2 bag info.

# SLAM FROM DATASET

Briefly describe the environment of the result map.

Remember to include the map you have obtained.

Which tf tree would you consider more detailed: the one from the real robot, or the one from the rosbag?

# Navigation

What is a launch file and how can it be used?

Is the current robot holonomic?

Why are transformation frames so important? How are they used?

What is configuration space?

Does the robot automatically update the path if/when an obstacle appears in its path?

What happens if you give a goal inside an obstacle?

Remember to add here the screenshot showing the autonomous drive of the robot and short description.

Add the image as well, obtained after running “rqt\_graph”, describing its content.