Aalto University

Year 2019

ELEC-E8111 – Autonomous Mobile Robots

Pioneer-Robot project report

Date: xx.x.2019

Student 1 name – Student number

Student 2 name – Student number

Student 3 name – Student number

Student 4 name – Student number

Write a description of what was done for each section in this template, taking into account also the questions formulated. Do not write a question/answer type report. Also, remove the instructions text before submitting your report.

# First steps

On which machine does a node run, when it is started through an SSH connection? Is the node and its topic (if created) available to all machines?

What is the purpose of the master node? And roscore? How many master nodes are there?

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

# Manual control

On which topic does the teleoperation node publish?

# RViz application

What is RViz used for?

# SLAM

What is SLAM? What is it used for?

What type of map does gmapping provide?

Are people or moving obstacles added to the map?

Remember to include here the map you have obtained.

# Path planning

What is a catkin package? What does it consist of?

What does catkin\_make do?

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

Is the current robot holonomic?

The planner will not plan a path closer to what distance of an obstacle (inflation radius of an obstacle)?

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

To which location on the map does the odom frame correspond? How is it updated?

# Motion control

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.

# Optional task: different SLAM and/or path planning algorithm

Describe here the package you have used (or implemented!) for the optional task of running a different algorithm for SLAM and/or path planning. Provide as an appendix any configuration files or launch files you may have used.

It is possible to pass the Pioneer robot laboratory project by completing the tasks in the guide, have shown a working motion control and reporting as described above.

By making one or more optional tasks with ROS, you can get extra points corresponding to a half grade in the exam grading.