Computer Project I – Final Report

1st Asger Song
Aarhus University
Deparment of electrical and computer engineering
Study number:
AU-id:

2nd Andreas Kaag Thomsen
Aarhus University
Department of electrical and computer engineering
Study number: 202105844
AU-id: au691667

***Abstract*—This is our abstract.**

I. Introduction

Overall, the project can be divided into four parts with certain aim and objectives:

1) Understanding the basic concepts of robot programming by working with an Arduino - that is, the *think-see-act cycle*. Reading and analyzing data from Range sensor and RGB sensor.
2) ROS Programming on Raspberry PI. Learning the structure that ROS provides and going through the beginner's tutorial.
3) Programming the robot to avoid obstacles. Then optimize the robot's performance both with respect to linear speed and collision avoidance.
4) Finalizing the code and testing the robot on an obstacle course.

II. Specifications

We have used the following equipment throughout the course.

- Arduino PRO MICRO - 5V/16MHZ
- Ultrasonic Range Finder (LV-MAXSONAR-EZ0)
- RGB Light Sensor ISL29125
- LED's, cables etc.
- Turtlebot3 Burger Robot equipped with i.a. a Raspberry Pi 3 and a 360°LiDAR sensor.

For coding we have used the language C for programming the Arduino on the Arduino software. For programming the Turtlebot we have been using Python and the command prompt with the built in nano-editor.

III. Design and implementation

Design and implementation of the system.

A. Part 1

B. Part 2

C. Part 3

D. Part 4

IV. Experiment setup and results

V. Discussion

In this section of the report we will discuss some of the difficulties we encountered during the project. Again, we have divided it into the four main parts of the project described earlier.

A. Part 1

B. Part 2

C. Part 3

D. Part 4

VI. Personal contributions

VII. References