COMP3431

Robotic Software Architecture

Assignment 2: Report

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1 Introduction

In this assignment, both the hardware and software aspects of robotics were explored. The overall objective was to create a robot that would drive autonomously in an outdoor environment, whilst avoiding any obstacles. A motorised wheelchair was the baseline from which the robot was constructed.

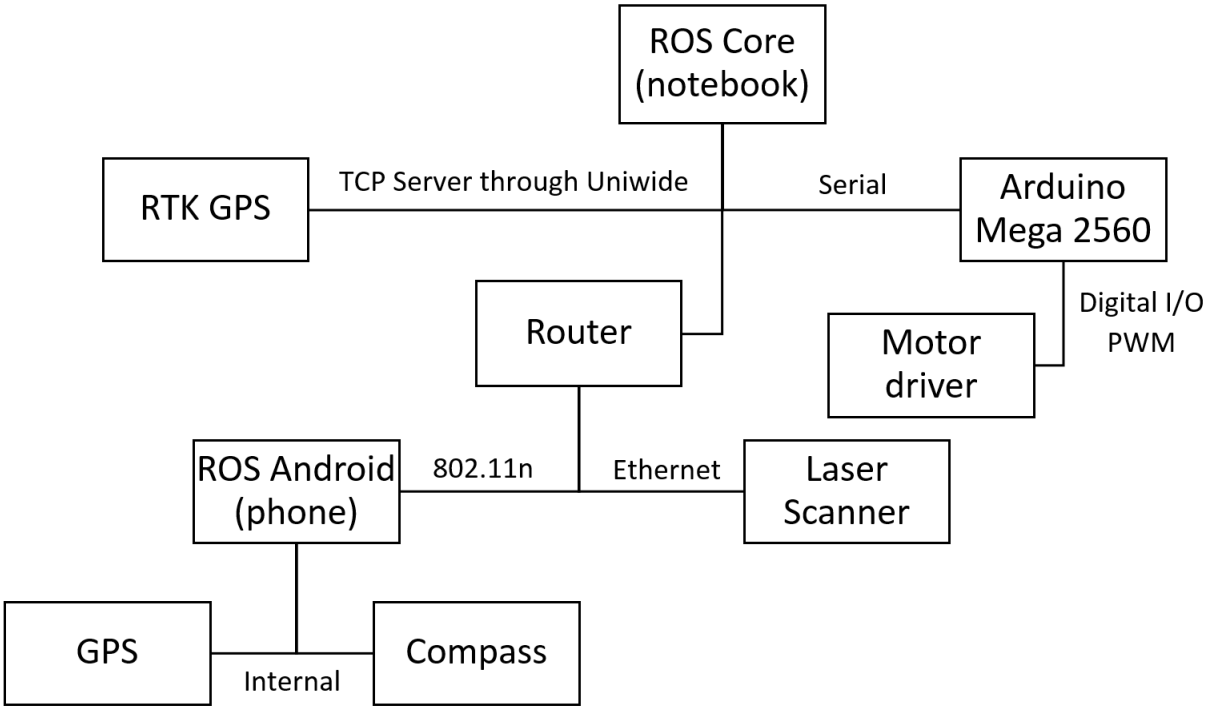
To achieve the objective, the robot is equipped with a GPS and compass (using an Android phone with ROS). A laser scanner is also attached to the front of the robot, gathering information about the robot's immediate surroundings.

1.1 Modules

Five modules run in conjunction to operate the robot.

2 Hardware

- Dell Latitude E6400 notebook
- SICK TiM551 2D laser scanner
- DLink DSL 2750B N300 Modem Router
- Sony Xperia Z3 compact
- Arduino Mega 2560 R3
- Sabertooth 2X25 regenerative motor driver
- 2 x 12V lead acid battery
- 2 x electric wheelchair motor



3 Software

4 Results

5 Future Work and Improvements

6 Appendix