Robot Design Template

SDSMT Robotics Team

Author Name(s)

August 12, 2015

Contents

Title i

Contents i

List of Figures iii

1 Purpose 1
- 1.1 Learning and Research . . . 1
- 1.2 Functional Examples . . . 1
- 1.3 Demos . . . 2
- 1.4 Not Competition . . . 2

2 Requirements 3
- 2.1 Provide a Stable Research Platform . . . 3
- 2.2 Be Good Examples of ROS Design . . . 3
- 2.3 Separate Noisy Components . . . 4
- 2.4 Easily Re-configurable . . . 4
- 2.5 Easily Maintainable and Accessible . . . 4

3 Mechanical Design 5

4 Electrical Design 7
- 4.1 Parts List . . . 7
  - 4.1.1 Part 1 . . . 7
- 4.2 Wiring Diagrams . . . 7

5 ROS Architecture 9
- 5.1 Nodes . . . 9
- 5.2 rqtplot . . . 9
- 5.3 Other Packages . . . 9
- 5.4 Other Files . . . 9

List of Figures

1

Purpose

This section should be brief. One or two pages at most. This section should be entirely non-technical and describe the purpose and reasoning behind creating the robot. The format of this section can vary wildly depending on the purpose of the robot.

2

Requirements

List all competition restrictions, customer requirements, or research goals here. First, provide a concise summary:

- Goal
- Constraint
- Requirement
- ...

Provide a section for each requirement, giving details and why the requirement is important.

3

Mechanical Design

This chapter details the mechanical design, as well as the reason behind some of the decisions that were made regarding the mechanical design. Provide pictures and talk about the general design concepts, such as kinematics and overall structure. If you did your own design, talk about the choices you made the motivation behind them. If you did something unique with the mechanical design, such as an unusual type of steering or suspension, make sure to discuss it in detail here.

If you did your own design, include solidworks models, schematics, or CAD drawings. It may also be useful to include the processes required to fabricate the robot.

4

Electrical Design

This chapter details the electrical components used in the design, and includes logical connection diagrams. Provide wiring diagrams both for data flow and power. Include all components, but don't worry too much about individual pins or wires. The main point is to supply the reader with a high level description of the electrical design. Also list all of the electrical components used and provide datasheets.

4.1 Parts List

- Provide a brief summary of the parts used here

4.1.1 Part 1

Use as many subsections as you have parts to describe the parts, their use, and provide links to datasheets. Include the datasheets with the document, rather than relying on web-links.

4.2 Wiring Diagrams

Provide two wiring diagrams. One for data, one for power.

5

ROS Architecture

In this chapter, list the nodes running and show an rqtplot or similar visualization. Provide reasons behind the choices made for the design, if algorithms were a strong point of the design.

5.1 Nodes

- Node 1
- Node 2
- ...

Describe the node functions here in as many subsections as you have nodes.

5.2 rqtplot

5.3 Other Packages

If you have any other important packages to note - simulators for instance - note them here.

5.4 Other Files

Supporting files, such as udev rules, service files, and the like, should be mentioned here.