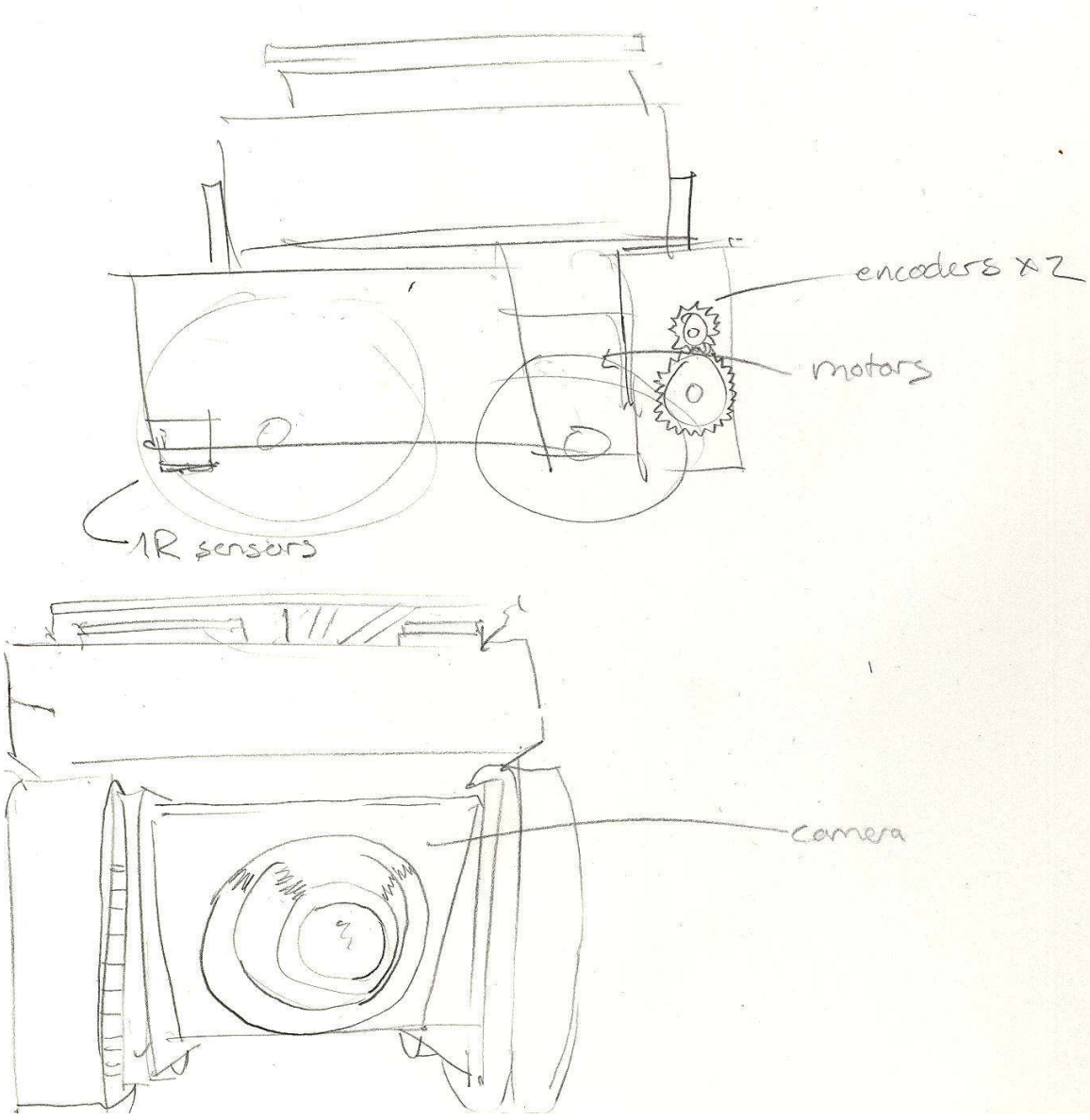
Hardware Design, Team 6: Project 3

Sensor List

- 2X encoders
- 2X IR reflectivity sensors
- 1X camera

Other Noteworthy Components

- 2 powered wheels in the back
- Encoders slaved to powered axles
- Free-wheels in front for balance



History

The robot faced numerous changes to the hardware during the course of the project. One of the main design philosophies that we held ourselves to was to make the robot less bulky than it had been in previous projects. However, many times throughout the course of this project the robot could not remain stable and we had to disassemble it to address these stability issues. We only got a stable hardware design a few days before the project was due.

Purpose

The purpose of the sensor layout was centered around the obstacles put forth in the project specifications and the limitations of the suite of sensors available to us. Initially we found that one sensor attached to a free wheel would be sufficient but it became evident that the dynamic precision needed for a 90 degree turn demanded something more than empirical testing of the timings. This issue was addressed by group meetings during the days before the first demonstration.

The purpose of the camera was another highly debated subject. Some members thought that it should only be used for detecting targets of which there was no knowledge. Others thought that its role should be expanded more into more mission critical tasks like determining the duration of the anticipated “turn ninety degrees” operation.

Throughout the project the role of the reflectivity sensors did not change that much. Their role, re-orienting the robot in the world, was well understood after the first project and did not need any further discussion.