

Scientific Experimentation and Evaluation

- Assignment 06 -

AICISS

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1 ABSTRACT

In this assignment we were supposed to get familiar with the AICISS optical tracking system. This report describes the experimental setup of our robot, the additions made to be able to get it tracked by the system and tests we did to check if the robot gets recognized by the system.

2 EXPERIMENTAL SETUP

The AICISS system uses small ArUco patches to keep track of the robot and estimate its pose (see figure 2.1).

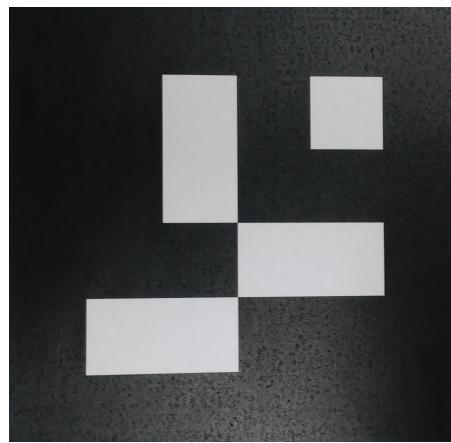


Figure 2.1: Image of the patch used

These patches have to be applied on top of the robot. To be able to attach one of those patches to our robot, we needed to add some structure on top of the robot (see figure 2.2).

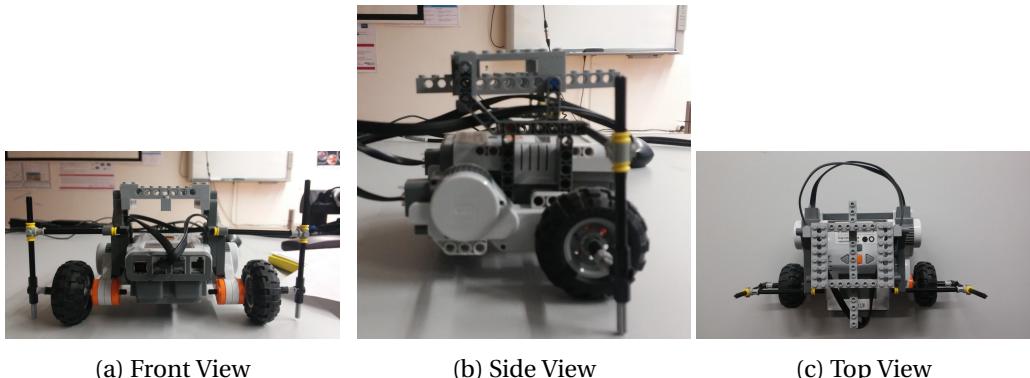


Figure 2.2: Improved Robot

Using this structure we fixed the patch on top of the robot in a way that the center of the patch

3 TESTS

The robot has been placed in the arena and the AICISS system recognized its position. Its pose is given by its x and y position plus its orientation. We tested two scenarios and compared resulting values with expectations.

- Move robot by one meter in a straight line
 - Turn the robot by 180 degrees

Our measurement probably include some errors that we introduced while measuring. We should do these kind of experiments repeatedly and use the average to have a valid estimation about the error.

3.1 STRAIGHT LINE

Position start: [3316 2870]

Position end: [3325.5 3854.5]

Measured distance moved: 984.84mm

Expected distance moved: 1000.0mm

The measurement is about 1.5cm off.

3.2 ORIENTATION

Orientation start: 3.08

Orientation end: 6.20

Expected Value: 6.22

The measurement is off by 0.02 radiant.



(a) Start position of test



(b) End position of test

Figure 3.1: Straight Line Movement Test