Test Document

Project: LIBERTY

Task: Color Recognition Test

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Author: Andi-Camille Bakti
Editor: Andi-Camille Bakti

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McGill

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1. TESTS:

Test 1: Distance test
Date: 3/11/2017
Tester: Edward Son
Author: Edward Son

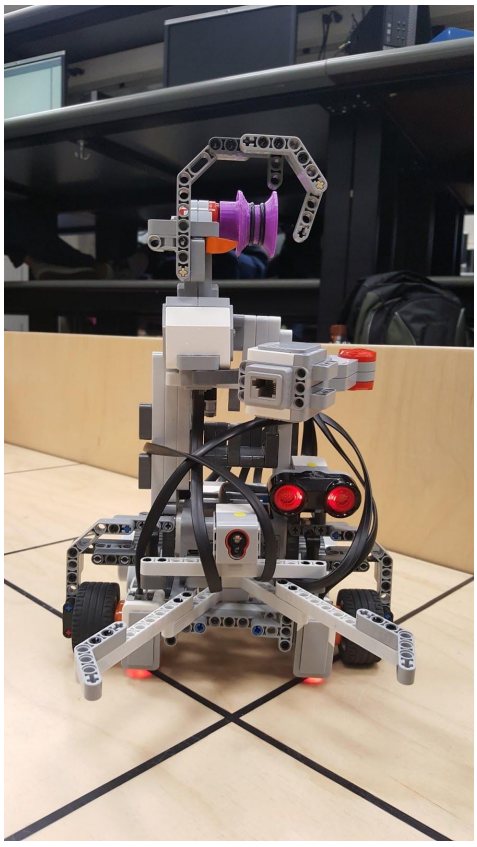
1) The purpose of this test is to determine at what point during capture will the robot be able to detect the colour of the flag.
2) The objective of this test is to determine the range for each coloured block that the light sensor can successfully identify the colour.
3) The sampling frequency shall be set to 20Hz (or every 50 ms). No filter shall be applied to the readings of the sensor. The block is placed at varying distances from the colour sensor, starting at 0 cm, and then slightly incrementing until the value detected is no longer the correct one. The test should end after 5 seconds, as there will be enough data gathered at that point.
4) The expected results upon success is a repeat of the colour ID, which signifies that the sensor is continuously detecting the right colour at that distance.
5) Results:

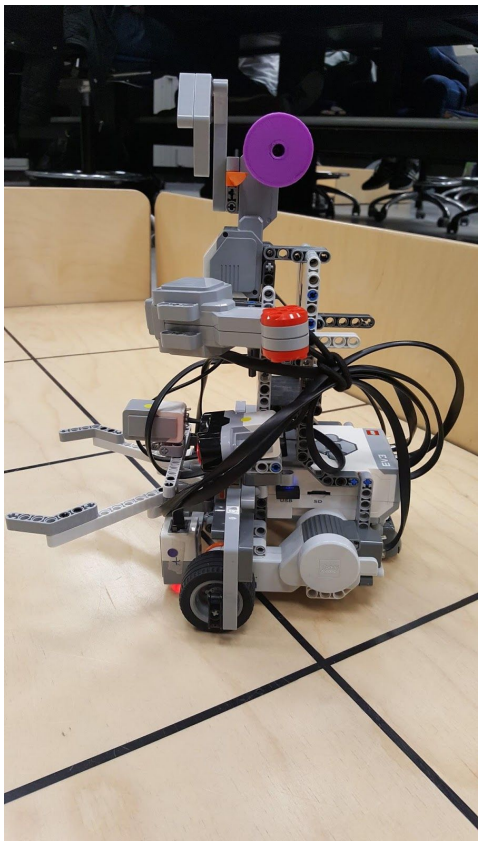
Distance from light sensor (mm)	**Blue block ID**	**Red block ID**	**White block ID**	**Yellow block ID**
0	7	7	7	7
2.5	7	7	6	3
3	7	0	6	3
5	2	0	6	3
12	2	0	6	3
15	13	0	6	3
16	13	7	6	3
17	13	7	6	13
20	13	7	6	13

Figure 1: Colour ID detected at varying distances by light sensor

6) From this table, the distance range for each color to be detected can be found. For the blue block, the minimum distance the light sensor detects it is 5 mm, and the maximum 15 mm. For the red block, the distance ranges from 3 mm to 15 mm. For the white block, the distance ranges from 2.5 mm to 20 mm. Finally, the yellow block has a range of 2.5 mm to 16 mm. The results show that light colours are more easily detectable.
7) From this data, we will be able to estimate at what distance to start detecting for the colour once the flag is found, depending on the colour given to us at the beginning over wifi.

2. Hardware used





See ***HARDWARE - 2.0***