

HARDWARE VERSION 2.5 AND 3 DISCONTINUITIES TEST

GROUP 4

2nd December 2016
Verison 2

Abstract

These tests are used to determine which hardware version crosses the discontinuities best. Our tests involved driving the robot forward on discontinuities at various angles. We concluded that hardware version 3.00 was more effective than hardware version 2.5 as it was able to cross at all discontinuities.

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1 BACKGROUND

1.1 Edit History

Jake Zhu: 2016-10-28, Initial set up

Mamoun Benchekroun: 2016-11-11, Added abstract section

Benjamin Willms: 2016-11-13, Filled out the test information, procedure, expected result, and distribution

Quentin Norris: 2016-11-13, Ran the test for 2.5 and filled out the test report

Quentin Norris: 2016-11-16, Ran the test for 3.00 and filled out the test report, conclusion, the action and the abstract.

Jake Zhu: 2016-11-17: Edited Procedure

1.2 Test Information

Tester: Quentin

Author: Quentin, Ben

Hardware Version: 2.5 and 3

Software Version: Odometer.java, SquareDriver.java, Lab2.java (the same as the Navigation/Odometer test)

2 GOAL

To determine at what angles the two hardware versions can successfully cross discontinuities without getting hung up.

3 PROCEDURE

Setup:

1. The robot has been built
2. There is code for the robot's navigation and odometry.
3. There are discontinuities between two connected boards.

Test:

1. Place the robot close to the discontinuity at 0 degrees.
2. Upload the code.
3. Press the right button in order to run SquareDriver.
4. Observe the robot's performance when crossing the discontinuity.
5. Stop the code, and repeat from step 1 at an angle of 15 degrees more than the previous angle until 90 degrees is reached.

4 EXPECTED RESULT

From earlier tests on a simple robot design, it is expected that hardware version 2.5 will successfully cross the discontinuity at angles above 45 degrees. For hardware version 3, it is expected that it will succeed at angles above 15 degrees. The difference between hardware version 2.5 and hardware version 3 is that hardware version 2.5 uses the ball as a center wheel, while hardware version 3 uses a plastic spoon.

5 TEST REPORT

5.1 HARDWARE VERSION 2.5

Angle to hit Discontinuity	Success
0	False
15	False
30	False
45	False
50	True
60	True
75	True
90	True

From our tests as the robot crosses the discontinuities from 0 to approximately 45 degrees there are evident issues with the robots ability to cross without severely changing its direction.

5.2 HARDWARE VERSION 3

Angle to hit Discontinuity	Success
0	True
15	True
30	True
45	True
50	True
60	True
75	True
90	True

The robot performed better than expected and could cross any angle for the discontinuities with minimal error in direction.

6 CONCLUSION

In conclusion we have decided hardware version 3 with the spoon is clearly the most effective caster to use in this situation.

7 ACTION

We will be using the spoon from hardware version 3 for the rest of the project.

8 DISTRIBUTION

Hardware Team
Software Team