Response Time and Turning Angle Test
Integration of Motors and Proximity Sensor

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1   Test Conditions

- Location: Design Studio

- Date: Dec. 17, 2017

- Ambient Temperature: Room temperature (appx. 23-25 ˚C)

- Environment: Loud, luminous

- Measure: turning time and angle

- Measurement Tools: Chronometer, goniometer

2   Test Procedure

This test aims to observe the behavior of integration of two subsystems, which are motors and proximity sensor.

In the previous tests, we have observed successive results. In this test, the turn time and turn angle are measured. Two subsystems integrated on RaspberryPi 3. The scenario is that the robot continues on its route until it faces with an obstacle, in fact in our case a wall, and turns right first due to Standard Committee Regulations.

3   Test Results

3.1   Specifications

- Power Supply to motors, constant: 8 Volts

- Controller RP3

- Hbridge: L298P Shield

3.1.2   Measurement Results:

Detection time of an obstacle*:

> Almost instant. Not observable with human eye.

Rotating (Right) Time*:

1. 0.37s
2. 0.48s
3. 0.56s
4. 0.32s

Rotation angle:

1. 86^0
2. 84^0
3. 88^0
4. 88^0

*Please note that human reactions play crucial role of these measurements.

4   Conclusion

These tests are performed in order to observe integrated system response. As can be seen above, proximity sensor reacts very quickly. The time required to turn robot approximately 90^0 takes around 0.5s. However, please note that there is not neither gearbox in motor setup nor speed control software. Thus, motors are run at top speed at given voltage.