Ultrasonic Sensor Test

Project: Design an Autonomous Robot

Task: To design an autonomous robot that is capable of navigating to a predetermined position while avoiding obstacles and firing objects at two targets. This is to be done in the shortest time possible.

Document Version Number: 1.0

Hardware Version Number: 5.0

Software Version Number: 5.0

Date: April 8th, 2015

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### Purpose

The purpose of this report is to make sure that the ultrasonic (US) sensor works well before the competition day. The US sensor can affect the odometer reading. If the sensor is faulty, the output of the odometer will be wrong, in which it might cause the robot to travel out of the course in the worst case; therefore, it is important to make sure the US sensor’s reading is right.

### Objective

The objective of this test is to verify the US sensor’s reading and make sure it is reading the right value. In the best case scenario, the US sensor will detect the right value. In the worst case scenario, the robot will either read something that is off, or read 255, which means there is nothing in the detect range.

### Procedure

The Robot in the circle will be floated in 360 degrees around a circle in 45cm in radius. The data on the US sensor will be recorded once it detects a new wall. This precedure will be repeated 8 times.

### Format of Output

Refer to excel sheet provided in the Ultra Sensor Test Folder.

### Conclusions

According to the excel file, the error of the reading is only about +/- 1 cm off, which can be considered as accurate. In other words, the US sensors are good to use on the competition day.

### Distribution

This test belongs to the software development.