

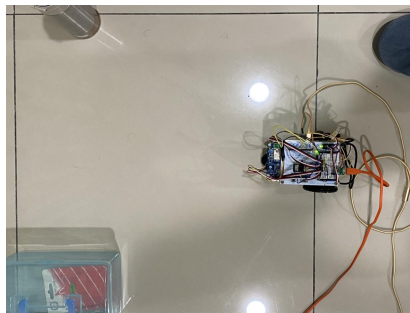
Davis 109006201

<https://github.com/davizjc/Embedded-System-Lab-Hw5.git>

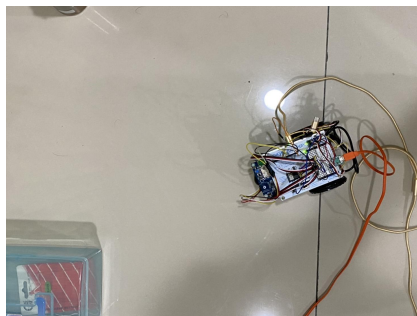
周志偉

Homework 5 Boe Bot Car

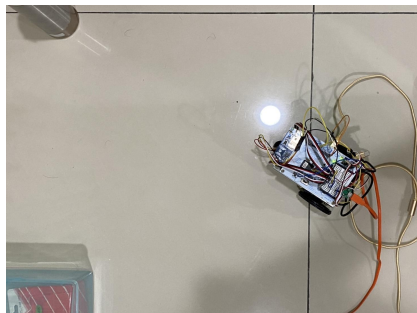
1. LaserPING (PING) and BB Car
 - a. For my project to work I have to put the bb car 51 cm away from a background and the two object 50 cm from the car. (this value can be change in the code if we want the object to be detected in a longer distance.)
 - b. The BB car will be placed in the middle between the two objects, and the ping will be read, which will read the background. I wrote my code so that the BB car will turn left and when it detects an object closer than 50 cm it will stop and print out the actual distance. Then it will turn right after, but during this the thread will sleep for 3 seconds so that it will turn the car until the ping detects the background instead of an object. I will continue to read the ping until the car stops at a second object and print the second object distance.
 - c. I have also edited the BBCar.cpp for this homework assignment so that when it turns, only one wheel is moving forward and backward so the position of the BBcar won't move forward.



Car position at middle



Car will turn left until it detect an object



Car will turn right until it detect an object

```
Ping = 47.351151  
  object on the left has a distance of = 47.488350  
go right  
Ping = 44.538551  
  object on the right has a distance of = 44.555698
```

Using the measure app on my phone the actual distance is pretty similar to the distance the ping reads

2. Line Following and Positioning of BB Car

- a. Since I wire the servo and the QTI sensor the opposite way from lab 13 my code will be kinda different a little bit. The four qti pins will be read and will output a pattern. When the pattern is 8 it moves right, when it 1 it goes left, and when both of the middle sensors read 6 it goes forward. Since my servo is wired in the opposite direction for it to go forward I use `car.goStraight(-50);` instead of `car.goStraight(50);`. To fix when the pattern (0) doesn't read anything or when the 4 sensor is completely out of the track I set the bb car to move backward. When the pattern is 15 or the 4 qti is on a black track, my bb car will stop for 5 seconds, record a checkpoint, and continue forward. At the four checkpoint it will stop completely and print the distance and break out of the while loop.