In this lab, we build boe bot car.

(1) Assemble Propeller Boe-Bot

In this part, we assemble parts into a Boe-Bot car, which is beautiful and powerful ☺

(2) Modulize BBCar Control

In this part we use the library, which make control the car more easily for capsulizing its function.

(3) Go Certain Distance

In this section, we use encoder to record the distance the car has go through as how we did in lab12.

(4) Calibration Table

In this part we collect different speed of 2 wheels by setting different PWM signal to motors, and sadly it is still not so accurate.

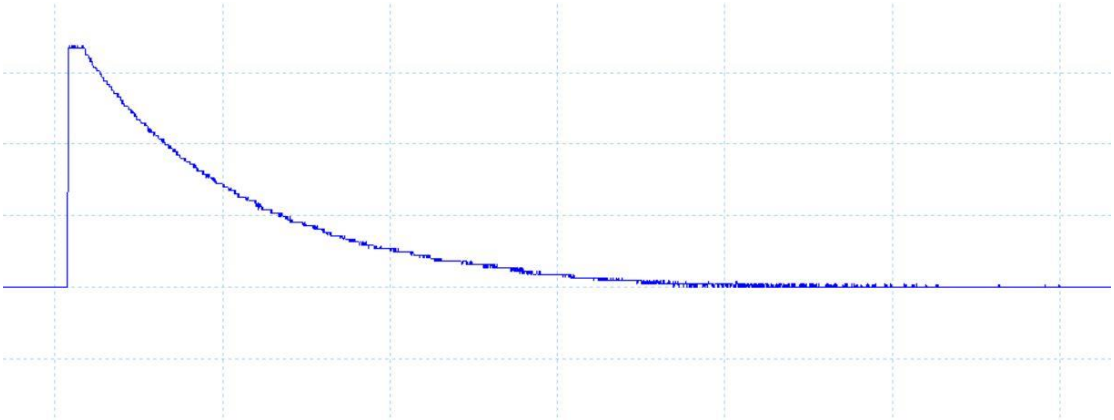
(5) Navigate by Ping

In this part we use ultrasound module, and the car will stop if the module detected setting threshold.

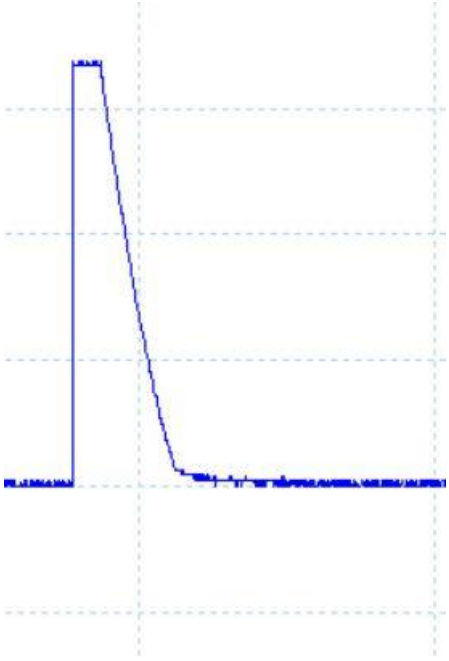
(6) QTI

In this part we use QTI sensor, which is an IR sensor.

First, charge capacitor on the module with an impulse, the voltage will with different speed due to surface of different materials. I use PicoScope to see how it works.



This is the picture when there is no object in front of the QTI sensor, it will slowly decay to zero.



This is QTI sensor with black line, we can see it still take a short time to decay, we can select some threshold time and then we can read 1 in GPIO.

And this is QTI sensor with white surface, like an impulse and we will read 0 in GPIO.

(7) UART and XBEE

In this part we use ERPC service to control our car, with XBEE(or remote UART ☺ ), we can then implement our remote control car.

(8) Discussion

So in this lab it take a lot of time for me to figure out how QTI sensor works. Thanks to Youtube.

https://www.youtube.com/watch?v=eEpd7MirKEg&ab_channel=DigitalLogic%26Programming