

Checkpoint #2 Robot Motion Control

Purpose:

The purpose of this checkpoint is to make sure you can control the motion of DC motors by using PWM with Raspberry Pi and Arduino.

Task:

Construct the basic motion platform of the robot using the chassis.

Demonstrate your robot performing the following actions by giving PWM values to the motor individually.

- Move forward. (25%)
- Move backward. (25%)
- Turn right. (15%)
- Turn left. (15%)
- How straight the robot can move when moving forward. (20%)

```
setting /run_id to 0fc9125a-1011-11e8-9501-b827ebaa4d9b
process[rosout-1]: started with pid [2832]
started core service [/rosout]
process[connect_arduino-2]: started with pid [2835]
process[checkpoint2-3]: started with pid [2836]
user's right is 120
user's left is 120
user's right is -100
user's left is 50
user's right is 100
user's left is 200
user's right is 0
user's left is 0
user's right is 100
user's left is 100
user's right is -50
user's left is 50
user's right is 0
user's left is 0
```

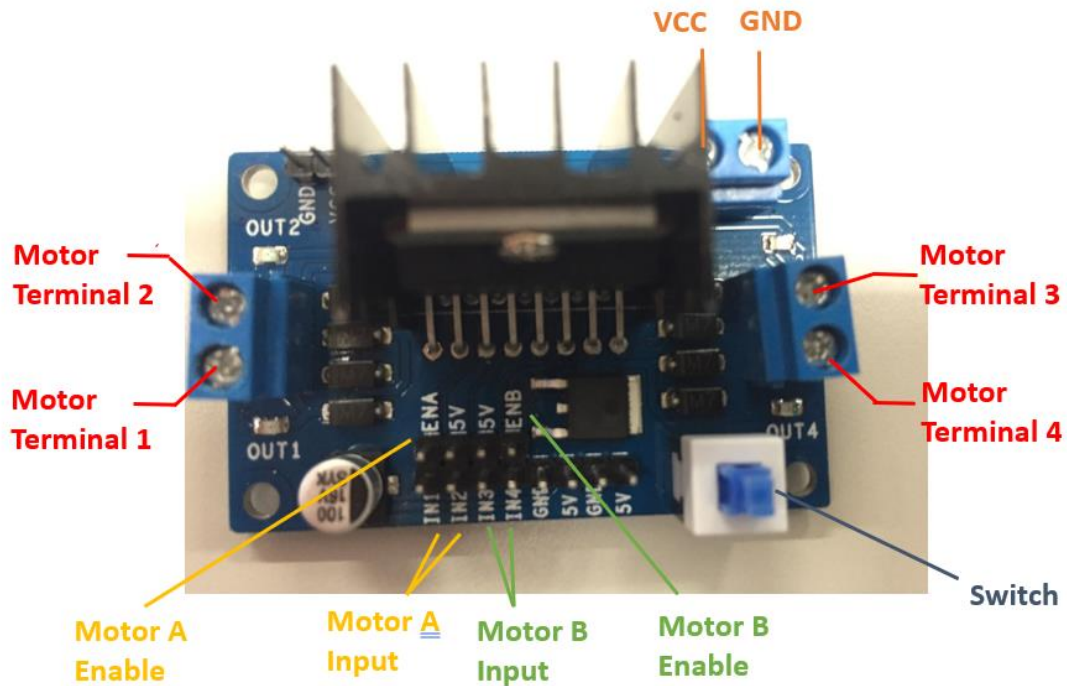
● Materials list:

	Material	Number
1	Chassis	1
2	DC motor	2
3	Wheel	2
4	Support wheel	1
5	L298N motor control module	1
6	Li-po battery	1
7	Low voltage alarm	1
8	Screw driver	2



● L298N

- Double H-bridge driver module
- When the input voltage is given around 7V to 12V, can supply 5V for motors
- IN1, IN2, IN3 and IN4 : High/Low pulse for rotation direction
- ENA, ENB: PWM for speed control



● Motor with Encoder

- The motor with a 120:1 gearbox and an integrated quadrature encoder that provides a resolution of 16 pulse single per round.
- Pin Description

Pin	Name	Description
A	Encoder A phase output	Changes square wave with the output frequency of Motor speed
B	Encoder B phase output	Changes square wave with the output frequency of Motor speed(interrupt port)
C	Encoder supply GND	
D	Encoder supply +	4.5-7.5V

