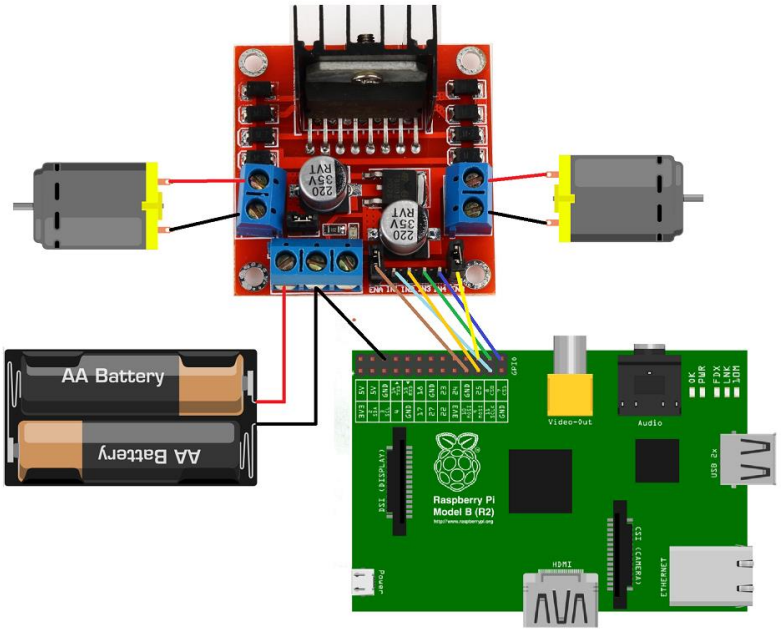
Car

Introduction

This class allows you to control the direction and speed of 2 independent motors by creating 2 Motor objects. Instead of completing an exercises class, this tutorial will have you complete the Car class itself.

Assembly

Parts:



- 6x Female to female jumper cables
- 1x Male to female jumper cable
- H-bridge L298N
- Batteries (with case)
- 2x Motor
- Raspberry Pi
- (Optional) A base
- (Optional) 2x Wheel (for the motors)
- (Optional) Stabilising wheel(s)

Build Instructions:

1. Power off the Pi completely.
2. Connect pins IN1, IN2, IN3, IN4, ENA and ENB on the H-bridge to pins 14, 13, 10, 11, 12 and 6 respectively on the pi with female to female jumper cables.
3. Loosen the OUT 4 and OUT 3 screws (the two screws in the blue plastic on the right side of the board) and connect the motors power and ground wires their connectors respectively and secure them in place by tightening the screws.
4. Do the same for the second motor but with OUT 1 and OUT 2.

5. Loosen the 12V and GND screws (the two left most of the screws in the blue plastic at the bottom of the board) and connect the ground pin on the pi to the GND connector, with a male to female jumper cable.
6. Connect the power wire from the battery pack to the 12V connector and the ground wire to the GND connector and tighten both screws. A red LED on the H-bridge should now light up.
7. (Optional) Attach wheels to the motors and the motors to either side of the base as well as any stabilizing wheels.

Exercises

Exercise 1: Using methods from Motor, fill out method forwards() which should tell both motors to spin forwards.

Exercise 2: Create a method backwards() which will make both motors spin backwards**.**

Exercise 3: Create a method setSpeed() which should take an int and set the speed of both the motors.

Exercise 4: Create 2 more methods left() and right() which should turn the car left and right.

Notes

- Remember, Pi4J using something called WiringPi to manage GPIO pins. This means that the pin numbers do not actually correlate with what is written on the board. Use this website to convert: http://pi4j.com/pins/model-b-plus.html

- Remember to comment your code.

- If the speed of the motor is set to low it may not spin.

- A method stop() is included to allow you to stop the motor while you test out your methods.

- Have a go at writing methods to turn the car faster or slower or a method that takes a boolean to determine which way it should turn.