

Conceptual

You will be wiring the motor controller. We will be using a motor controller called an H-bridge. This controller is comprised of NPN and PNP transistors that allow you to control both the speed and direction your motor is moving.

- Read the [ITP/NYU tutorial/guide](#)
- Copy the pin-out for the H-bridge
- Write down the difference between V_{in} and the +5 V on the Arduino Uno
- Copy the logic table for the H-bridge

Basic Make

- Make the motor controller circuit on your breadboard.
 - Position the chip at one end.
 - You can ignore the switch.
 - Use the *special pre-bent bread board wires* for the wires that stay on the bread board. This will minimize potential shorts and give you a cleaner board.
- Make a program to control your motors.
 - Follow the tutorial

Advanced/Extended Make

- Determine how to change the speed of a motor.
- Duplicate diagrams using Fritzing

Equipment

- Computer with access to Fritzing and Arduino
- Robot Chassis
- Circuit components: Arduino and misc electronic parts

Objective

Physics Concepts

- Engineering Design Process
- Problem solving

Experimental analysis

- Trial and error
- Debugging

Technology Concepts

- Schematic Symbols
- Programming Syntax – analog write
- Directions
- Construction techniques