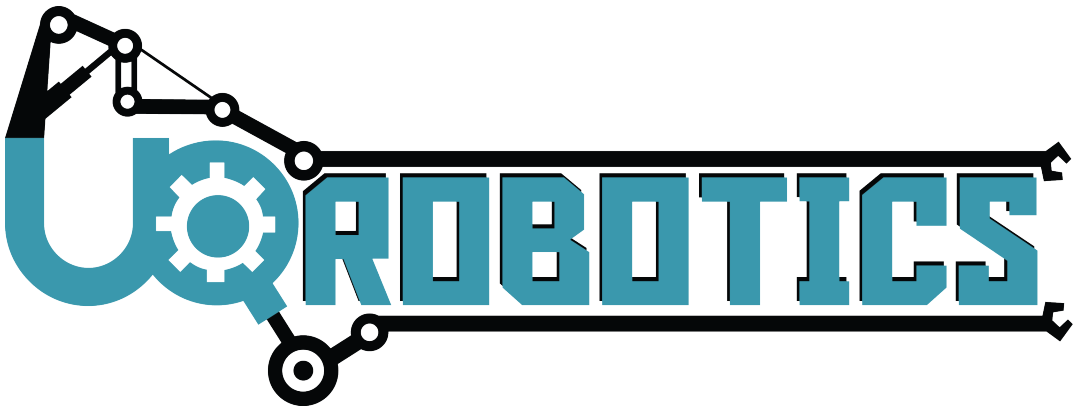

Arduino Robotics Workshop

Motor Control and Sensing

Learn the basics of Arduino, controlling a small robot car. During this workshop you will learn how to control the cars motors, read in sensors and avoid obstacles.

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1 Introduction

Micro-controllers are a device that allow your code to deal with things in the real world. In this workshop we will use an Arduino Micro-controller, an easy to use device that simplifies this process for us. You may have seen them before and they are used in ENGG1100 and some ENGG1200 projects.

2 Workshop

2.1 Getting Started

So that we can make sure the Arduino is working properly with your computer we are going to do something really simple. Lets make it blink!

2.2 Motors

Our rovers have 4 weeks, each side is connected to a single output so the rover drives more like a tank than a car. To drive the motors we can't just connect the Arduino directly as those pins can only provide low currents (up to 20mA) where as the motors may draw quite high currents (1 Amp or more). In order to overcome this issue we are using a H-Bridge chip, which allows us to control each pair of motors in both direction and speed. If you are doing this yourself you can use a Motor Driver Shield, which incorporates a H-Bridge with some additional circuitry to provide power.

With this we have a few inputs we can control for each pair of motors. They are listed below:

- Motor Enable - Enables the motors (We can also pulse this pin to control speed)
- Motor Direction A - Enables the A part of the H-Bridge
- Motor Direction B - Enables the B part of the H-Bridge