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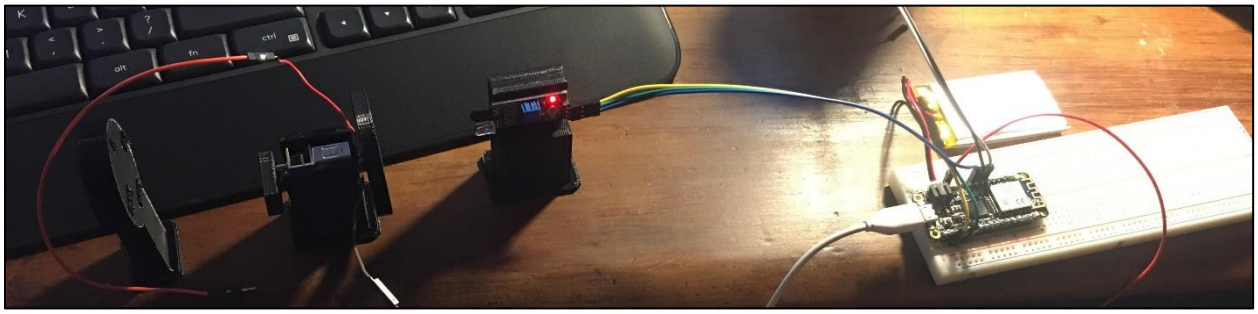
ECE 370

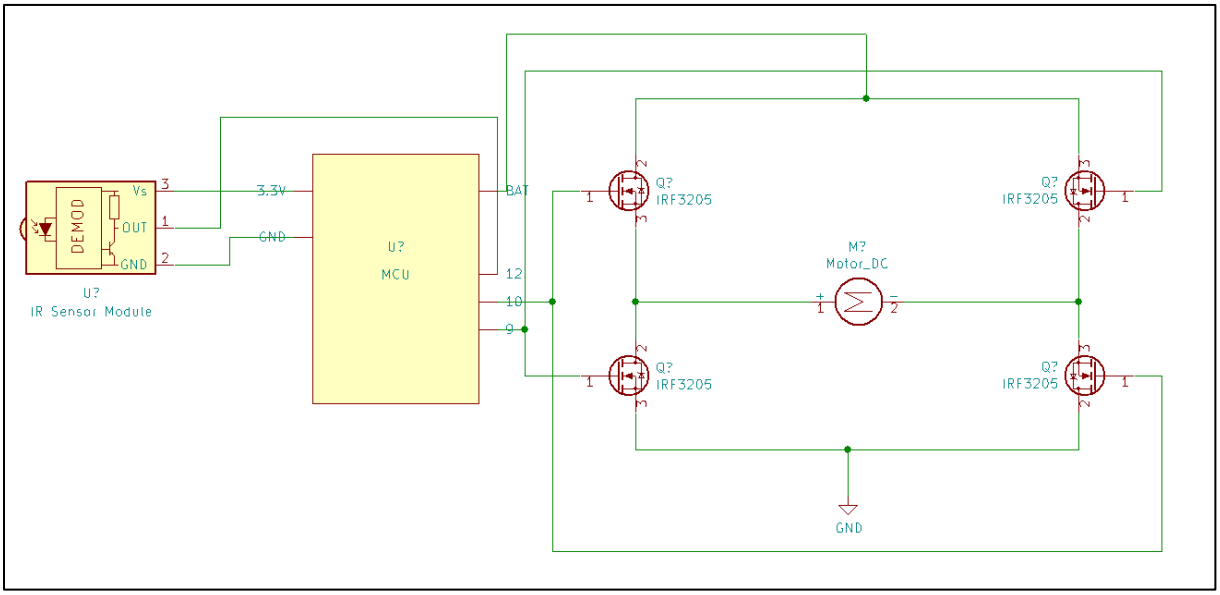
Project 1 – Motor Driver and Servoing

Using the H-Bridge and IR sensor, the purpose of this project is to use a DC motor as if it were a servo that is able to rotate to the desired angle between -720 and 720 degrees. The angle is commanded through hardwire serial from the SBC (Raspberry Pi Zero W).

Test Circuit (No H-Bridge)



Schematic



Pseudo Code

Arduino

```
if (Serial Available)
        parseInt();
        convert given angle to ticks
digitalRead(IRPIN);
if (tickNum != 0)
        if (curTick == abs(tickNum))
                stopMotor();
        else if (tickNum > 0)
                rotateClockwise();
        else if (tickNum < 0)
                rotateCounterClockwise();
        if (ir detects wheel)
                increment detection count
if (detectionCount == 2)
        increment curTick
        reset detectionCount to 0
```

RPi (Python)

```
ser = serial.port…
try:
        while true:
                input = readSerial
                ser.write(input)
except KeyboardInterrupt:
        reset GPIO pins
```

GITHUB LINK