

Assembly Guide

Mini Rover with Joystick Control

Introduction

Welcome to the mini rover assembly guide! This is a rover that is controlled via wifi through the app Blynk. Make sure that you modify the program to reflect whichever wifi network your phone is on.

Part 1: Assembling the Rover

Required Parts

1 x L298N Motor Driver

2 x Motor

1 x Rover Chassis

2 x Motor Mounting Bracket

2 x Yellow Wheel

1 x Caster Wheel

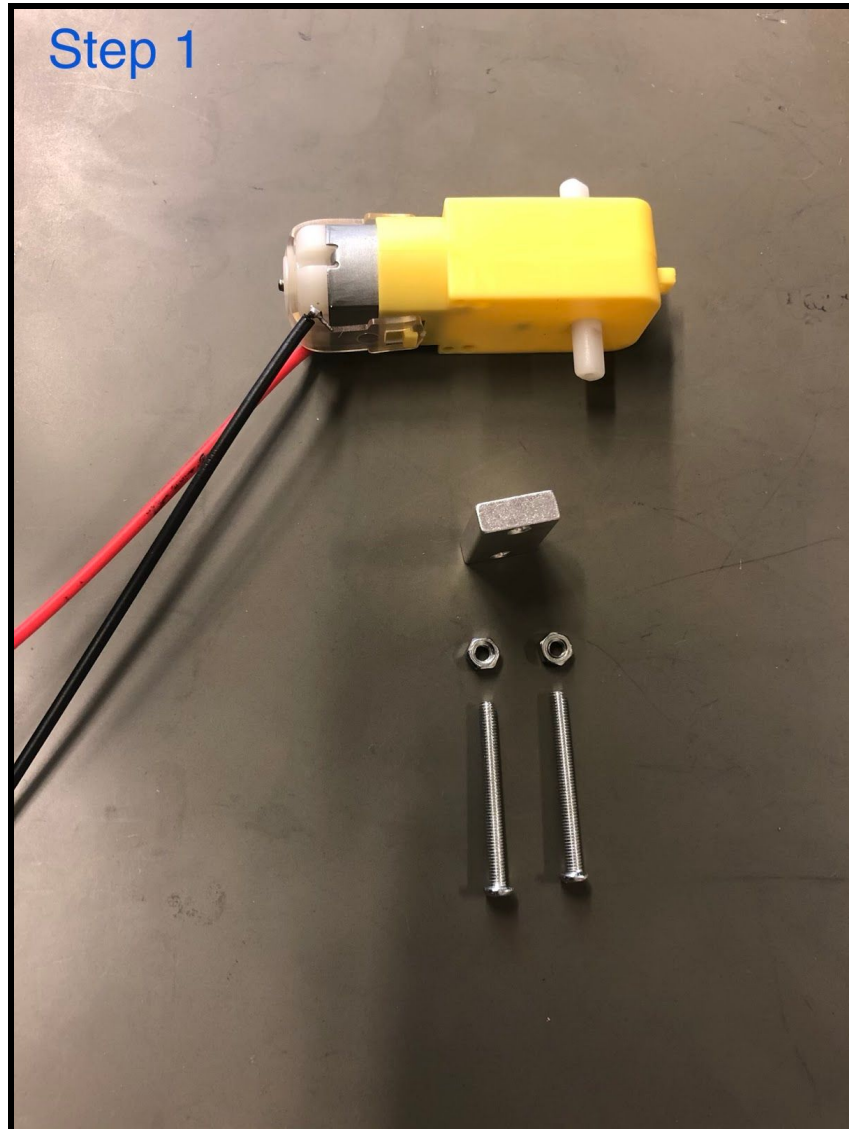
10 x M3 x 4mm Screws

4 x M3x30mm Screws

10 x M3 Nuts

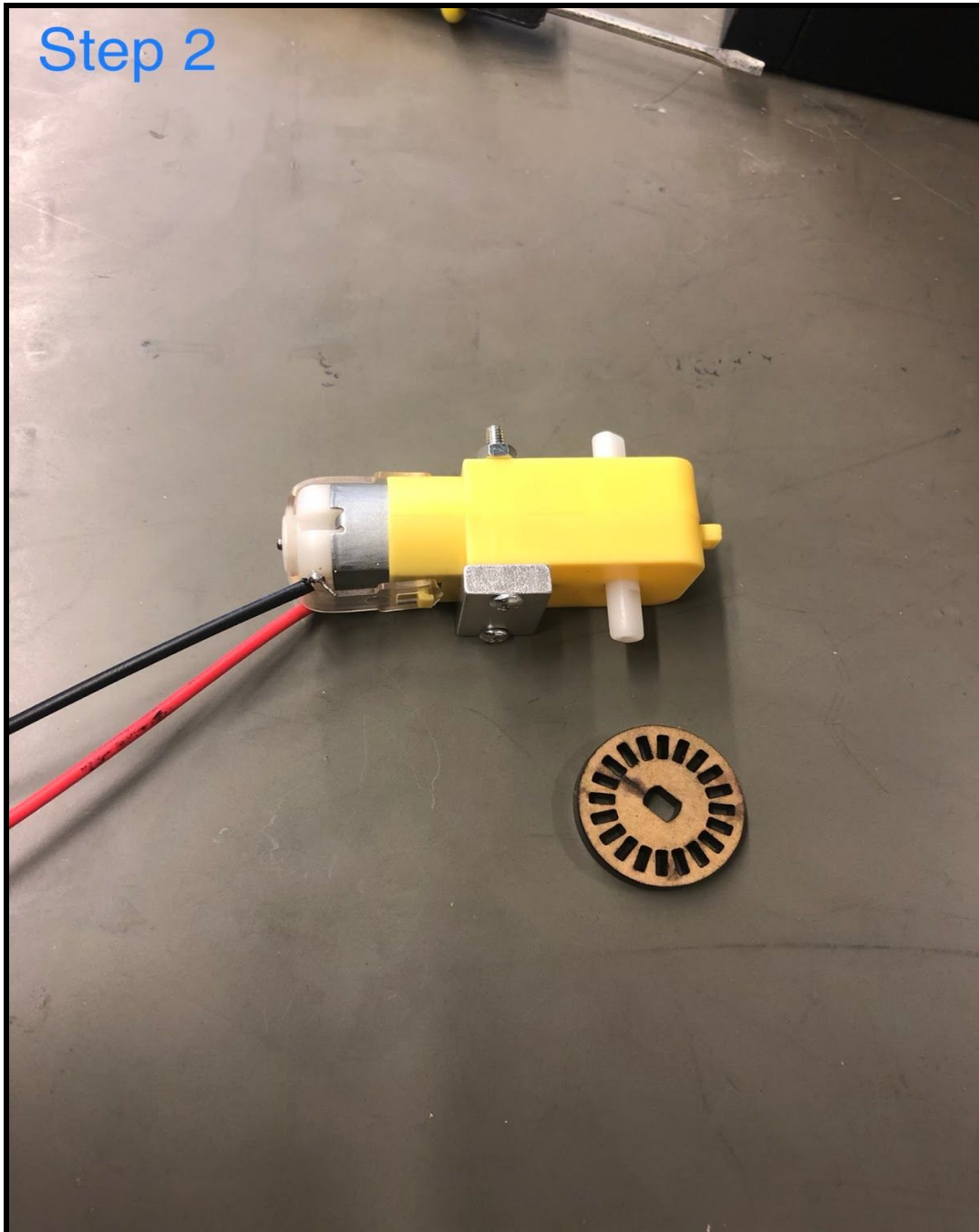
Step 1

Install the mount to the motor using two M3x30mm Screws. Place the motor mounting bracket PARALLEL to the ground and power wires. Slip the screws through the brace holes and then into the yellow motor chassis. Secure the screws with nuts on the backside of the yellow chassis, opposite of the ground on power wires.



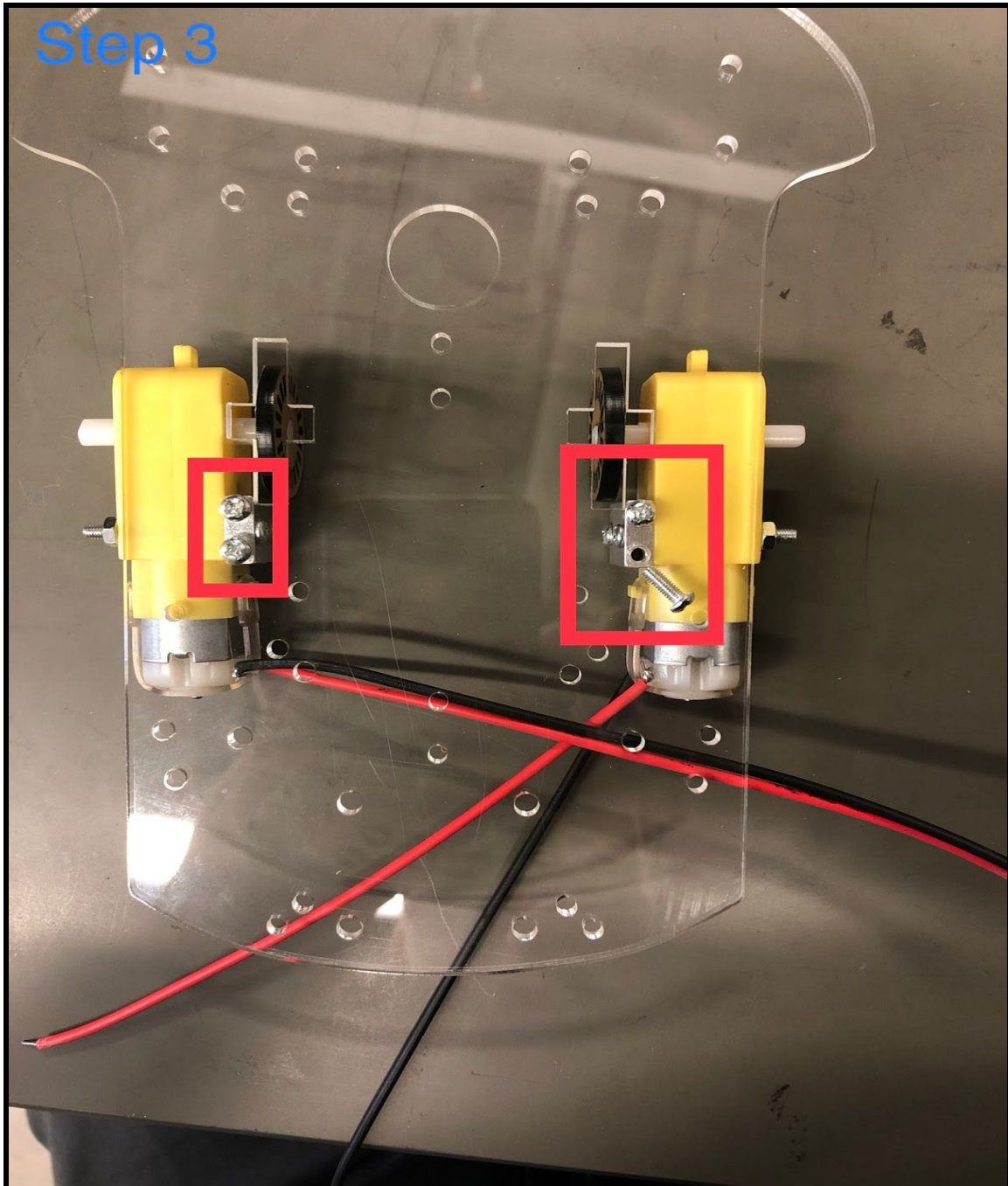
Step 2

Fit the wooden encoder wheel to the motor. The wooden encoder's hole should match the shape of the motor's axel. Fix the encoder alongside the metal brace, and on the same side of the chassis as the ground and power wires.



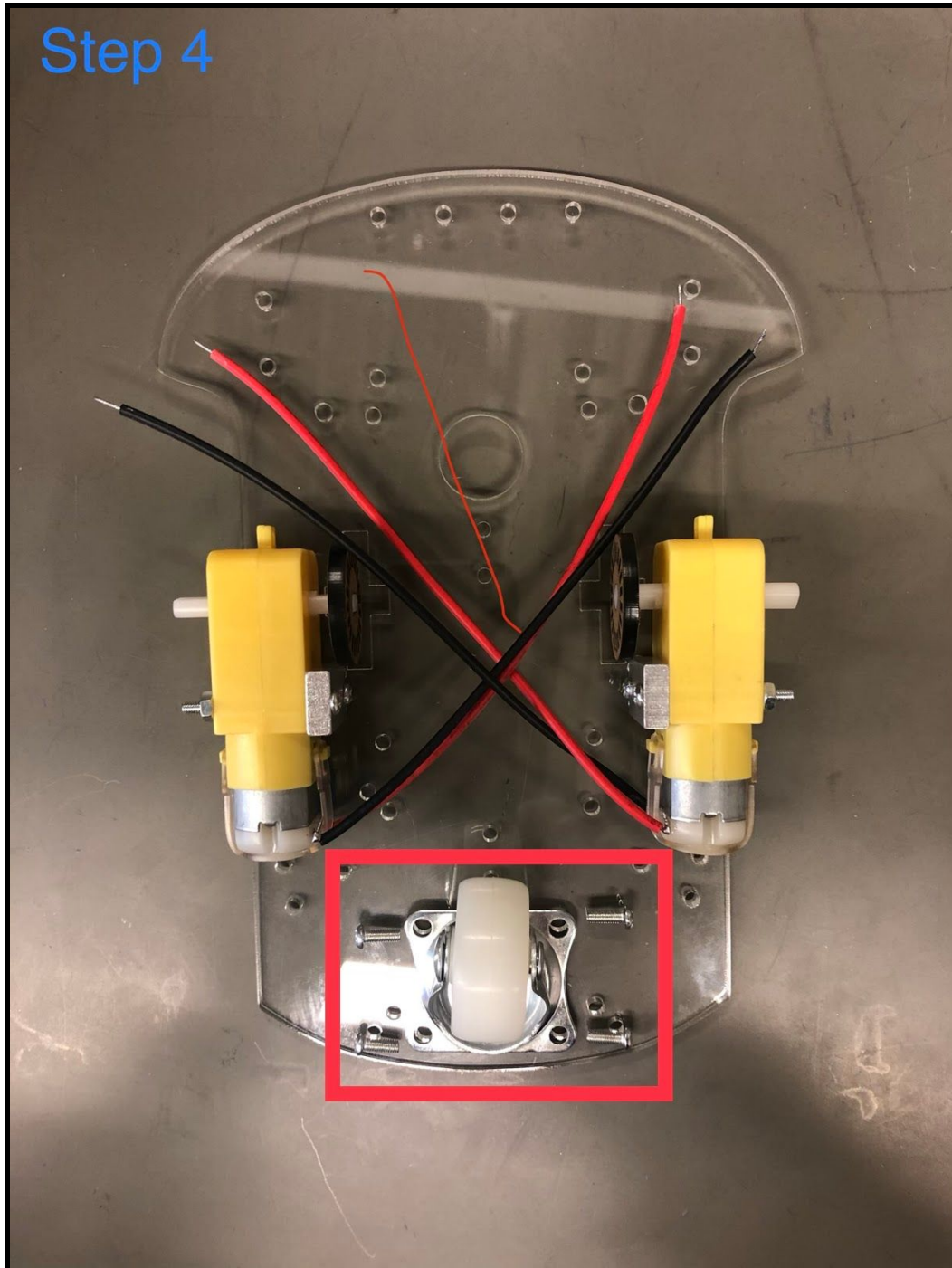
Step 3

Mount the motors to the underside of the plastic body. The cylindrical, white and metallic features, should face opposite of the large hole in the plastic body, (as seen in the image). Insert the short screws through the plastic body, to the brace that you installed in step one. The wooden encoders should fit nicely into the plus shaped slot.



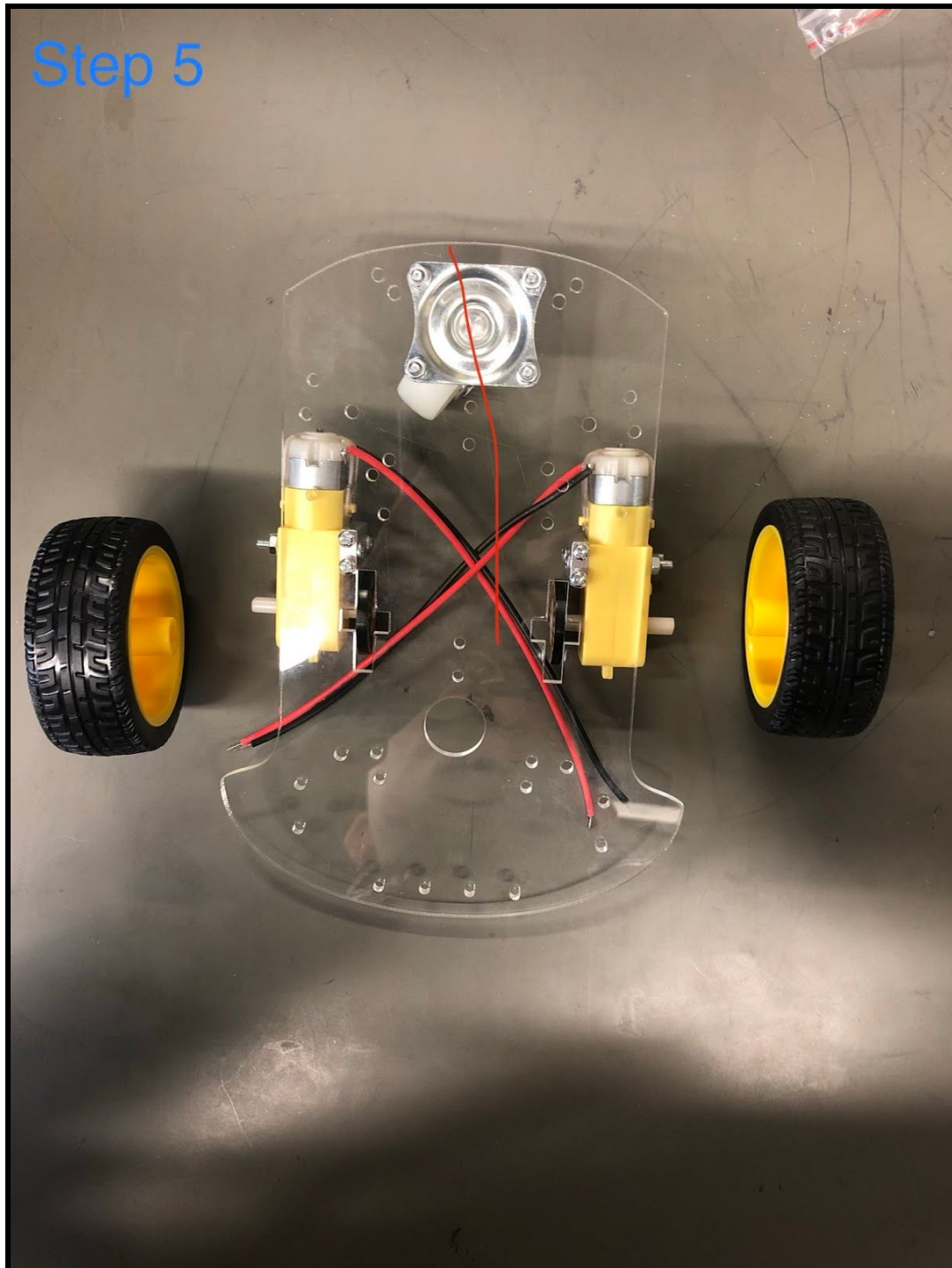
Step 4

Install the caster wheel to the base with 4 short screws and nuts. At the far end of the plastic body is a set of holes that align into the shape of a square. Place the caster wheel on the same side as the motors, and mount it properly with the 4 short screws and nuts.



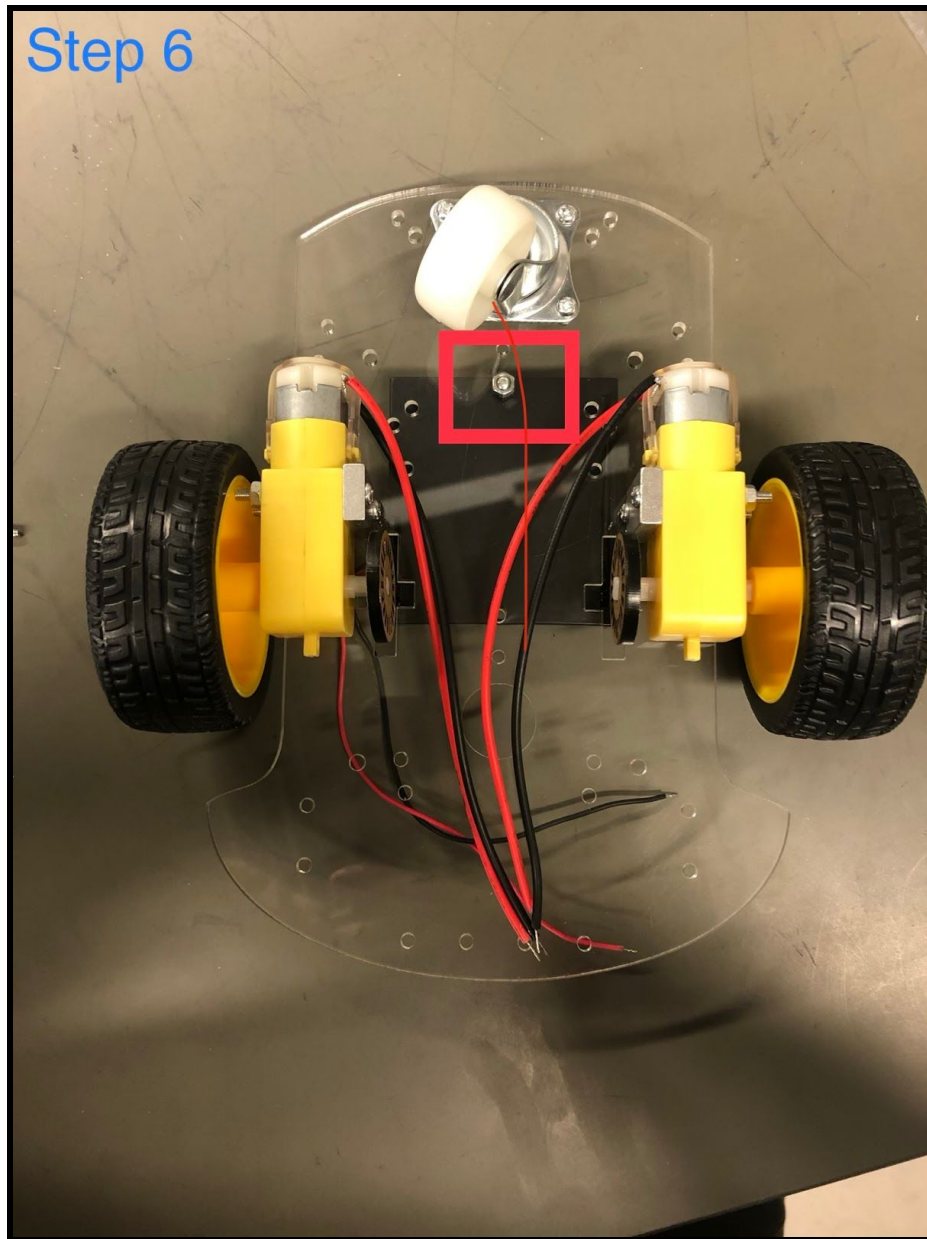
Step 5

Fit two yellow wheels to each of the motor axles. Simply press them onto the axles.



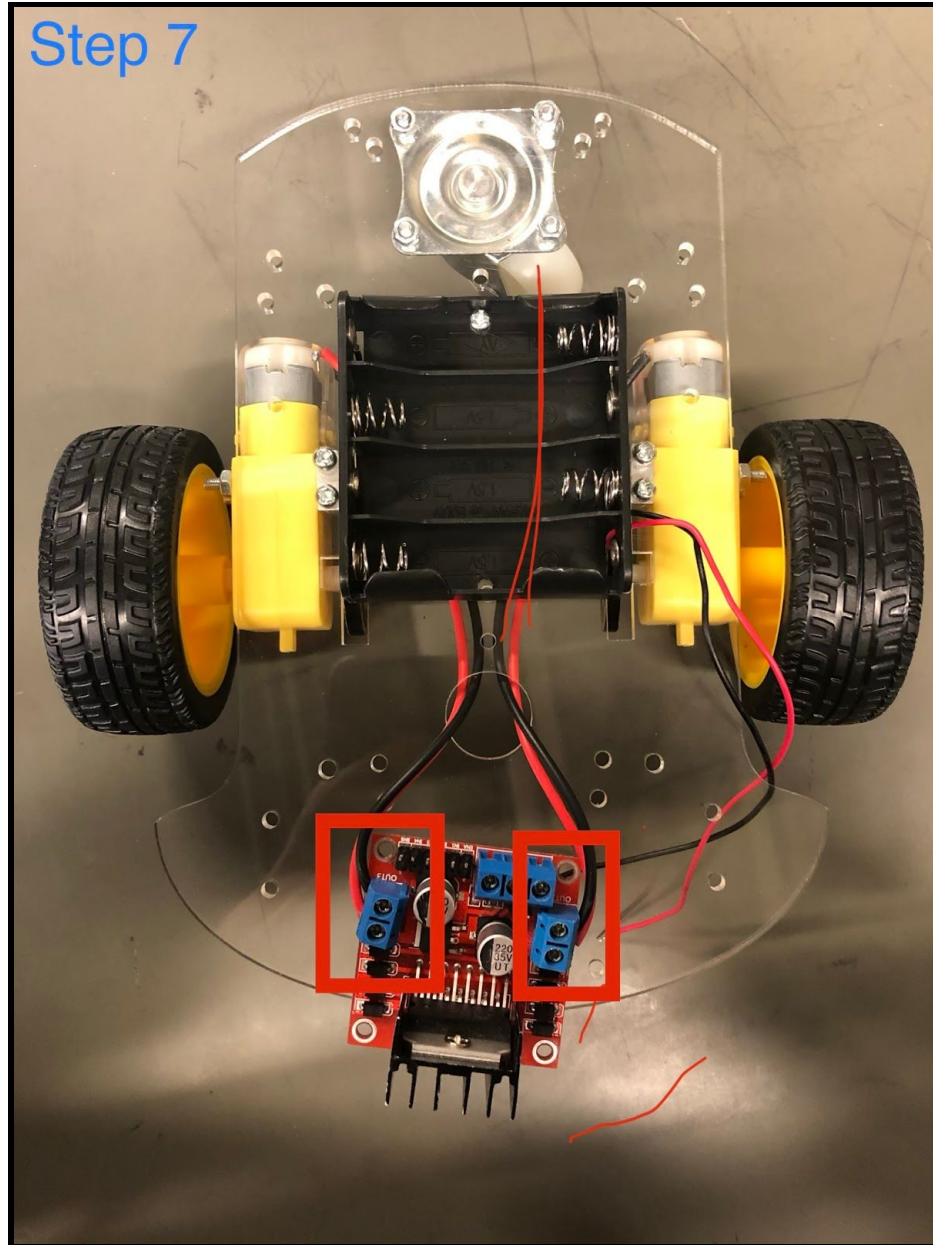
Step 6

Install the battery holder to the base by a short screw and nut. Ensure the battery holder is on the OPPOSITE SIDE of the motors. In order for the batteries to fit into the holder, the screw must pass through the battery holder, and be secured with a nut on the opposite side.



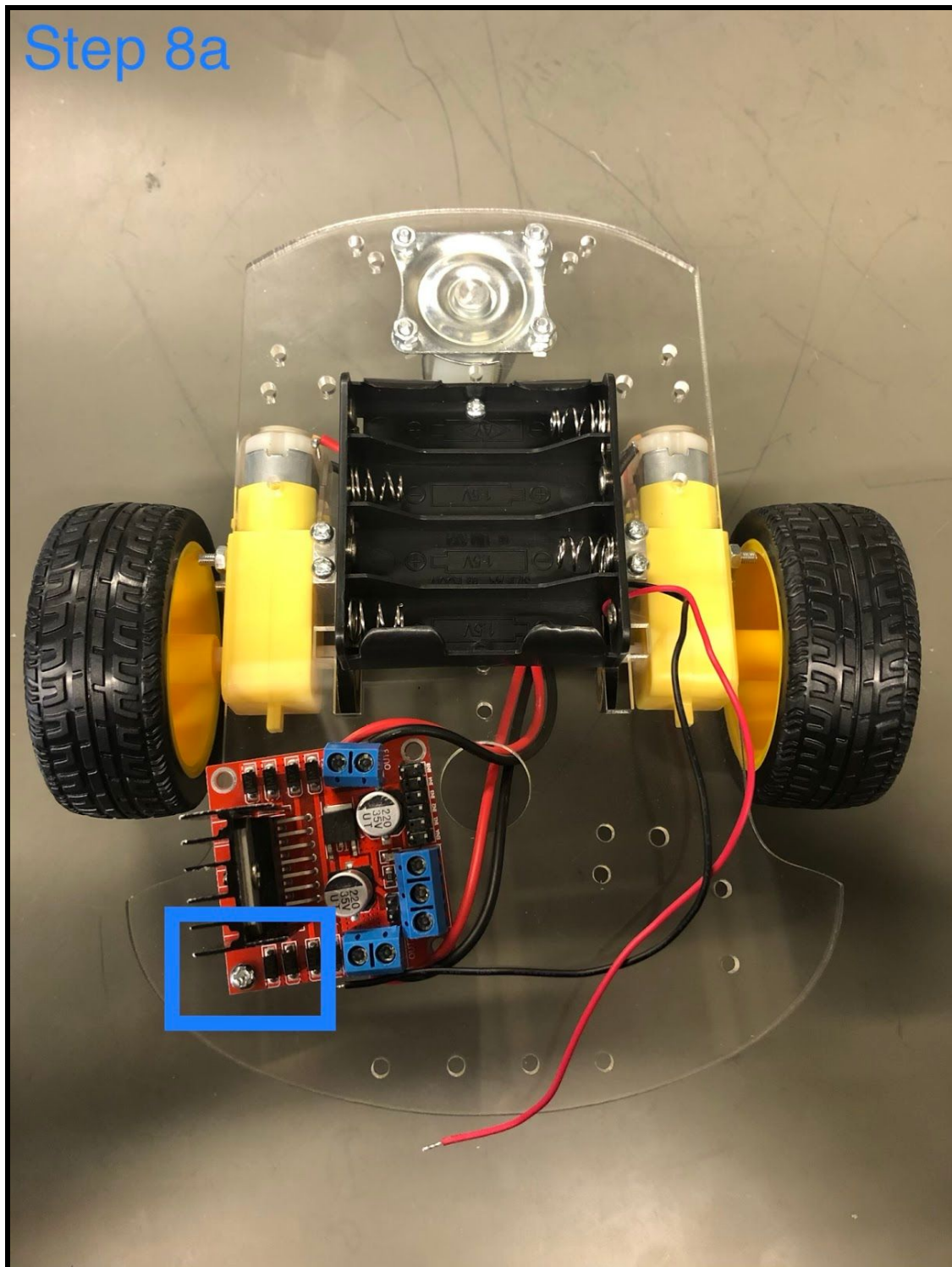
Step 7

Connect wires of motors to the red circuit board, (motor control module). On the sides of the motor control module are two, length two, screw terminals, and a length three screw terminal, (seen in blue). Screw terminals have functionality similar to a wall outlet. Affix the wires from the motor into the **length-two** screw terminals as seen in the diagram. The red wire should be on the far side, (closest to the protruding black fins), and the black wire should be on the side closest to the battery holder.

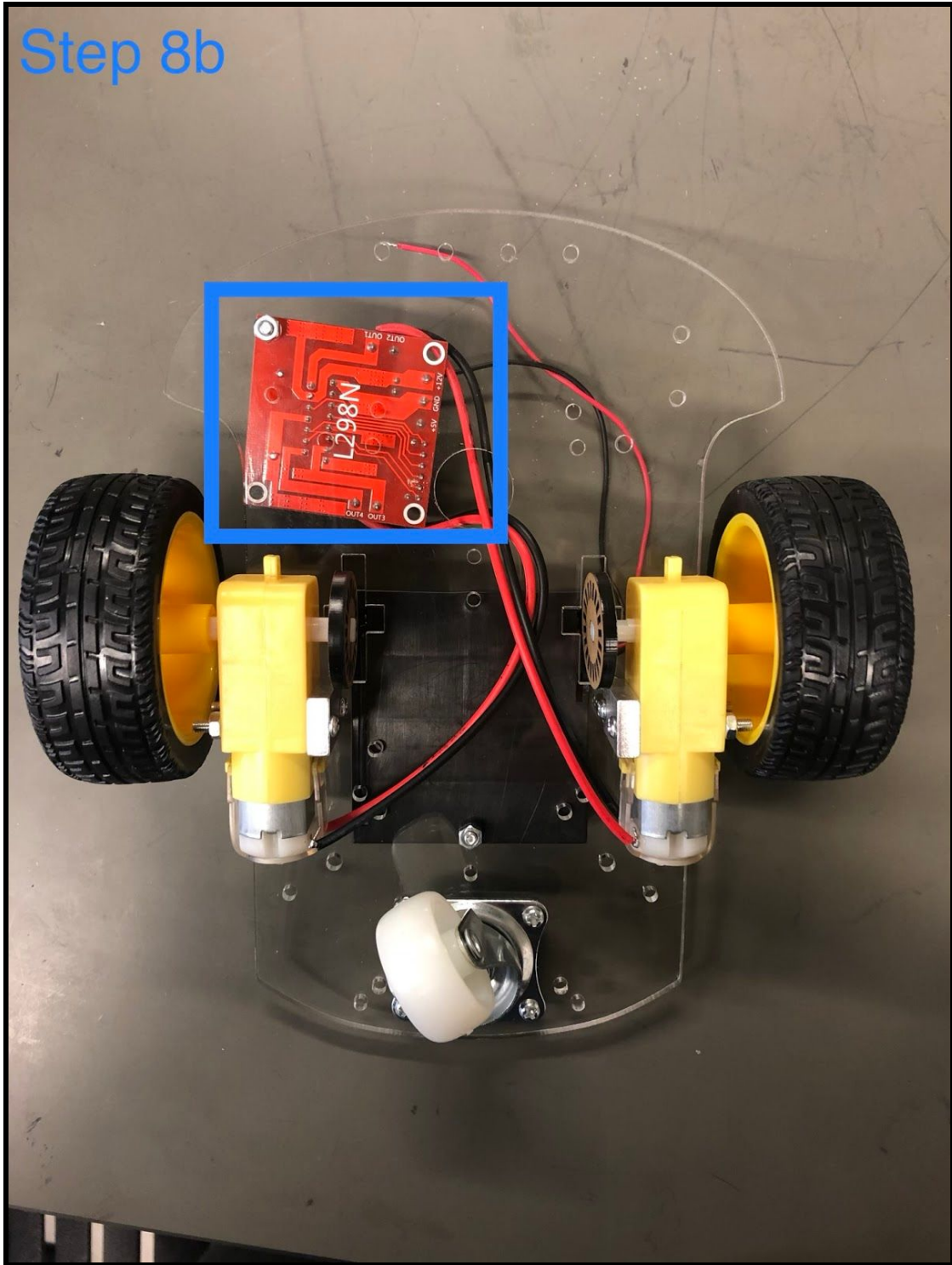


Step 8a-b

Secure the motor controller module to the base by a short screw and nut.



Step 8b

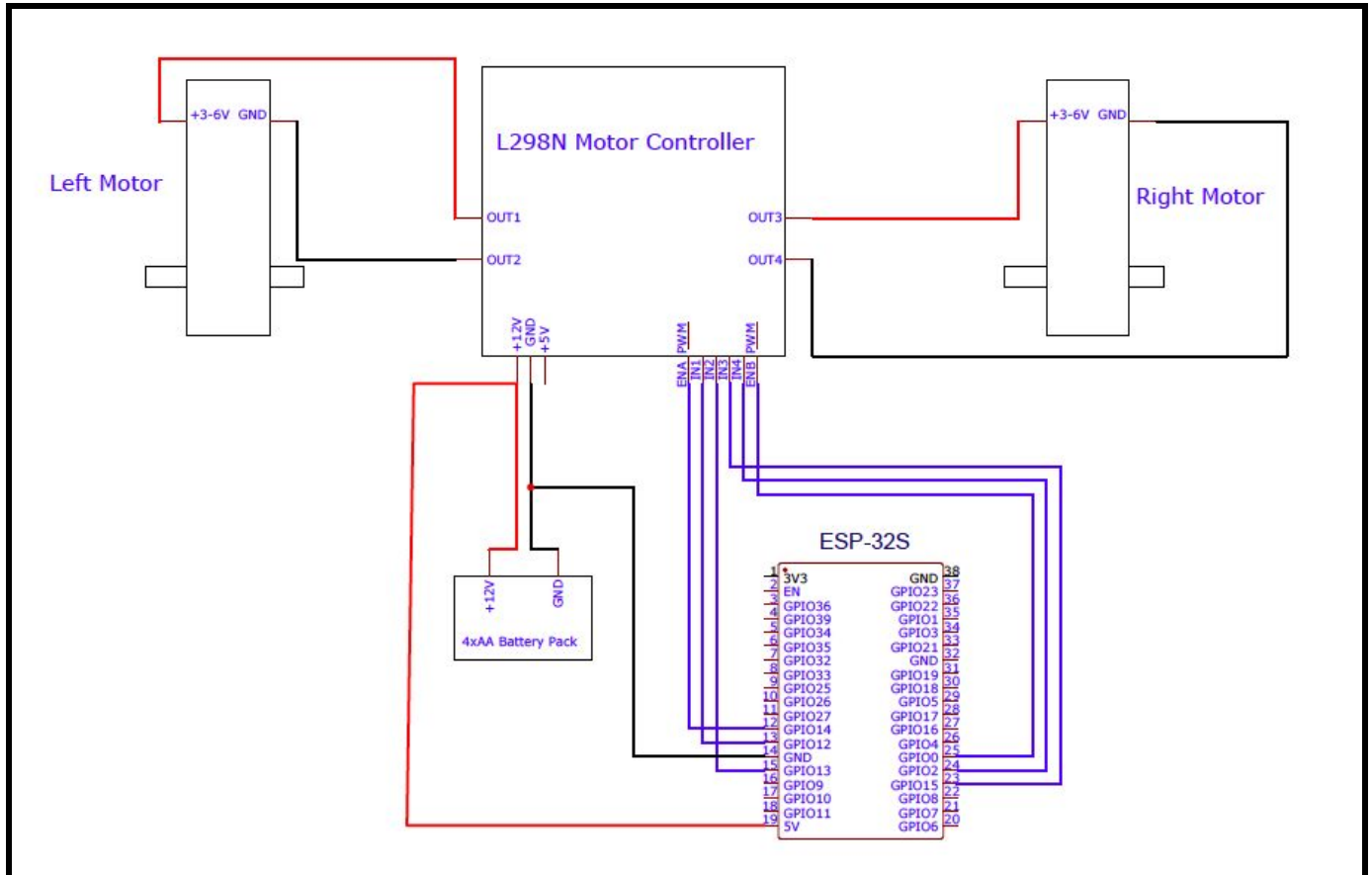


Step 9

Connect the battery holder, (and batteries), to the **length-three** screw terminal. Assuming your motor controller module is secured exactly as in the diagram in Step 8, the red wire should be in the screw terminal CLOSEST to the battery pack, and the black wire should be in the screw terminal at the center.

Step 10

Wire the ESP32 according to the following wiring diagram:



Part 2: Programming the interface

Required Parts:

Android or iPhone with Blynk app installed

1 x ESP-32 Microcontroller

6 x Male-to-Female Wires

2 x Male-to-Male Wires

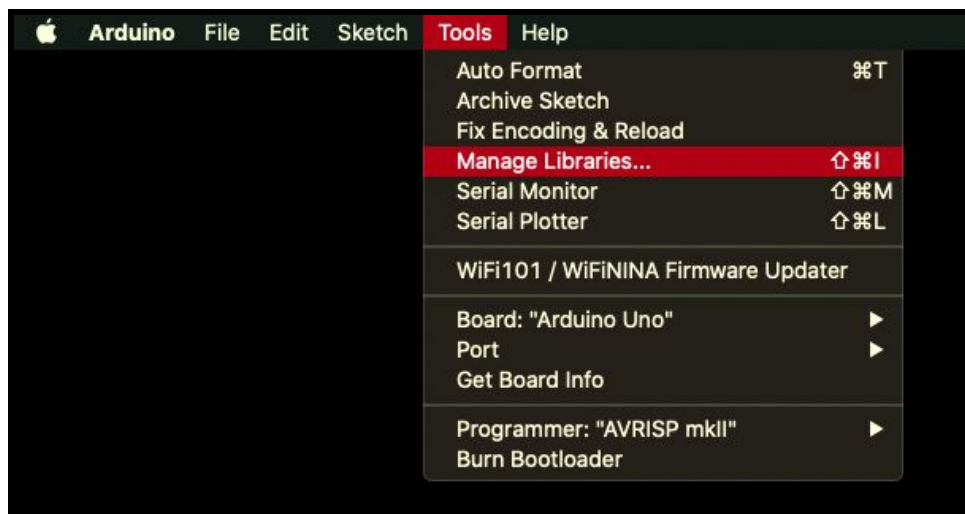
Step 1

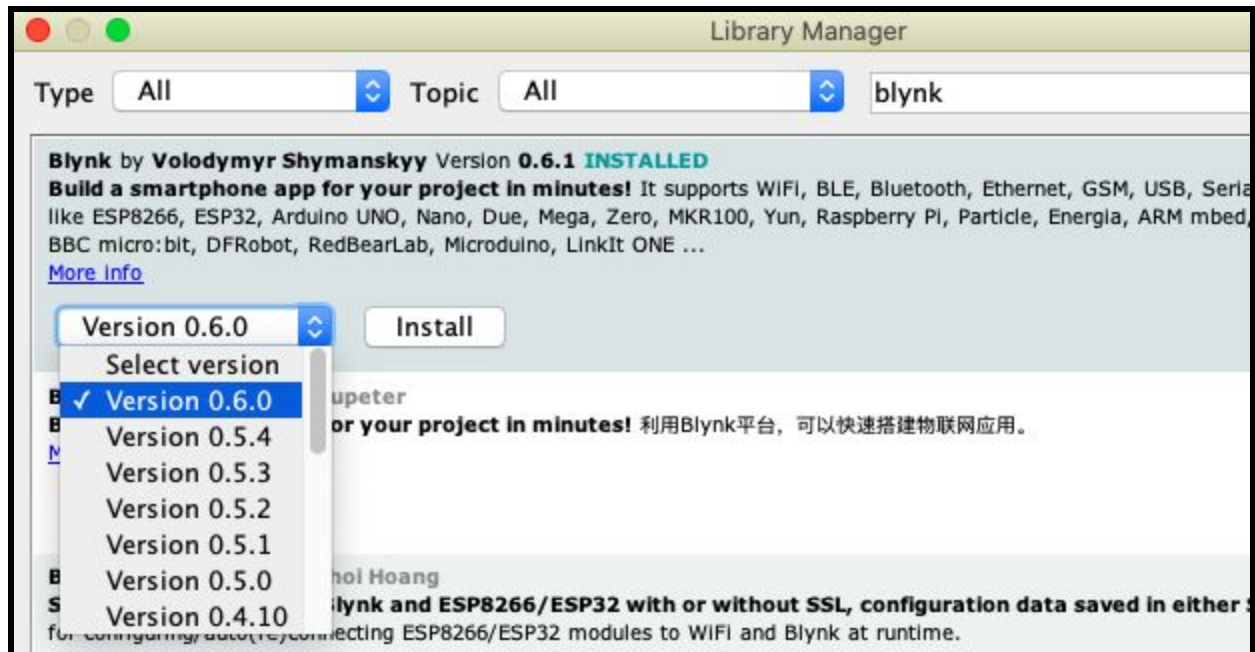
Download the most recent Arduino IDE or update if you have it

Step 2

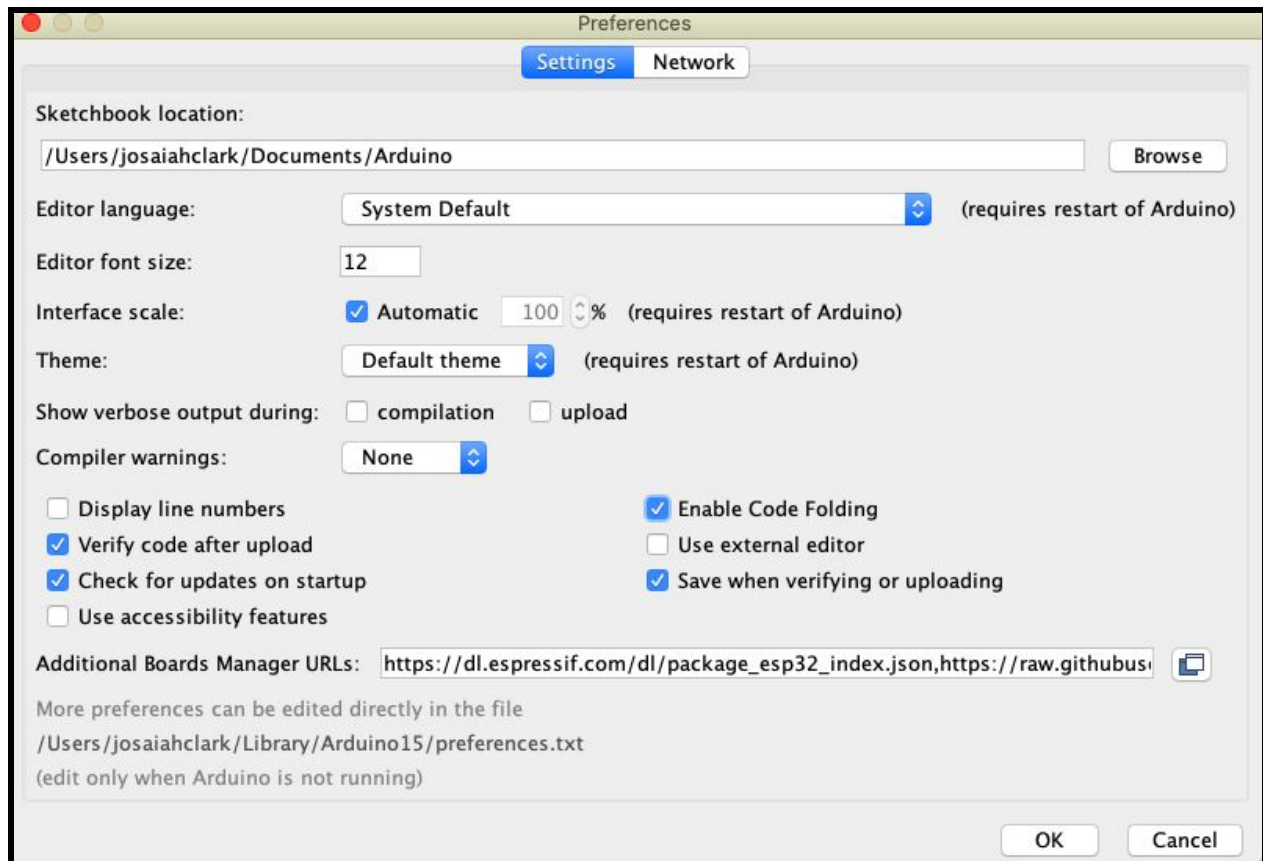
Open the Arduino IDE and download the ESP32 library along with Blynk

1. Tools→ Manage Libraries→ search “Blynk”





2. Arduino→ Preferences→ Paste “<https://github.com/espressif/arduino-esp32>” in Additional Boards Manager URLs

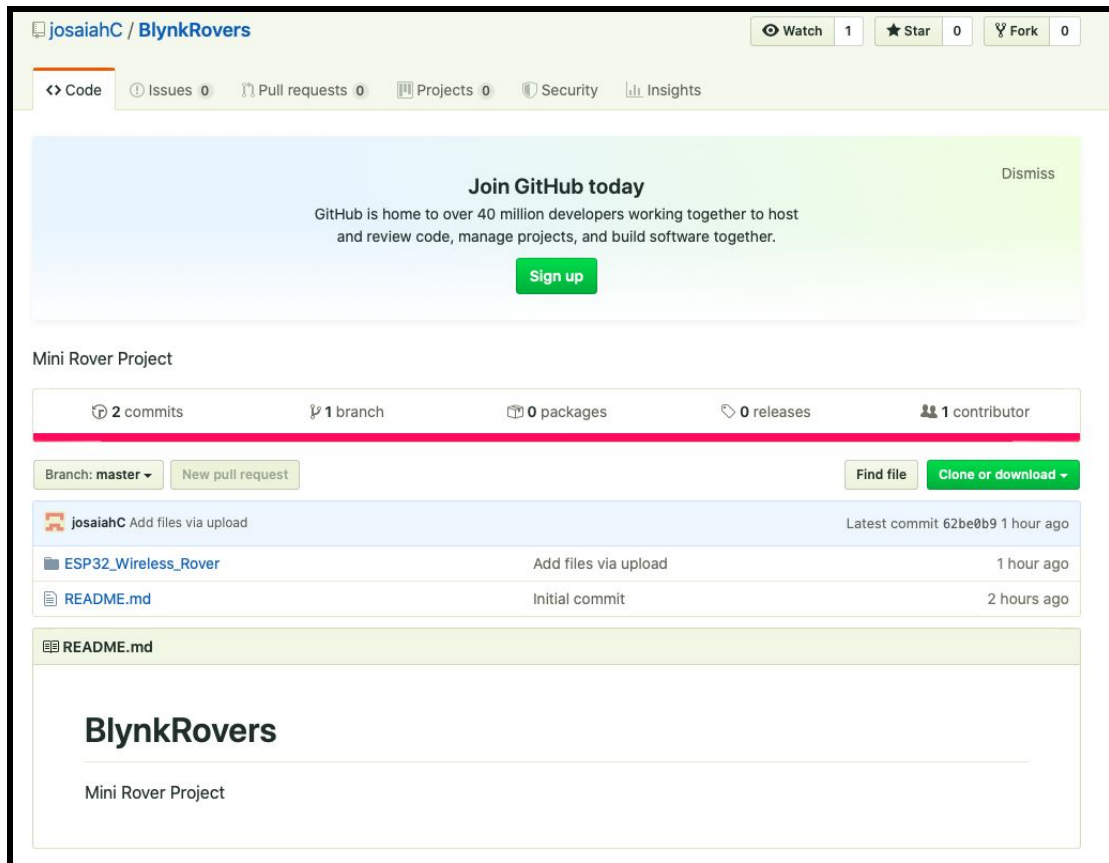


Step 3

Download the Blynk app at <https://blynk.io/en/getting-started> and create a free account

Step 4

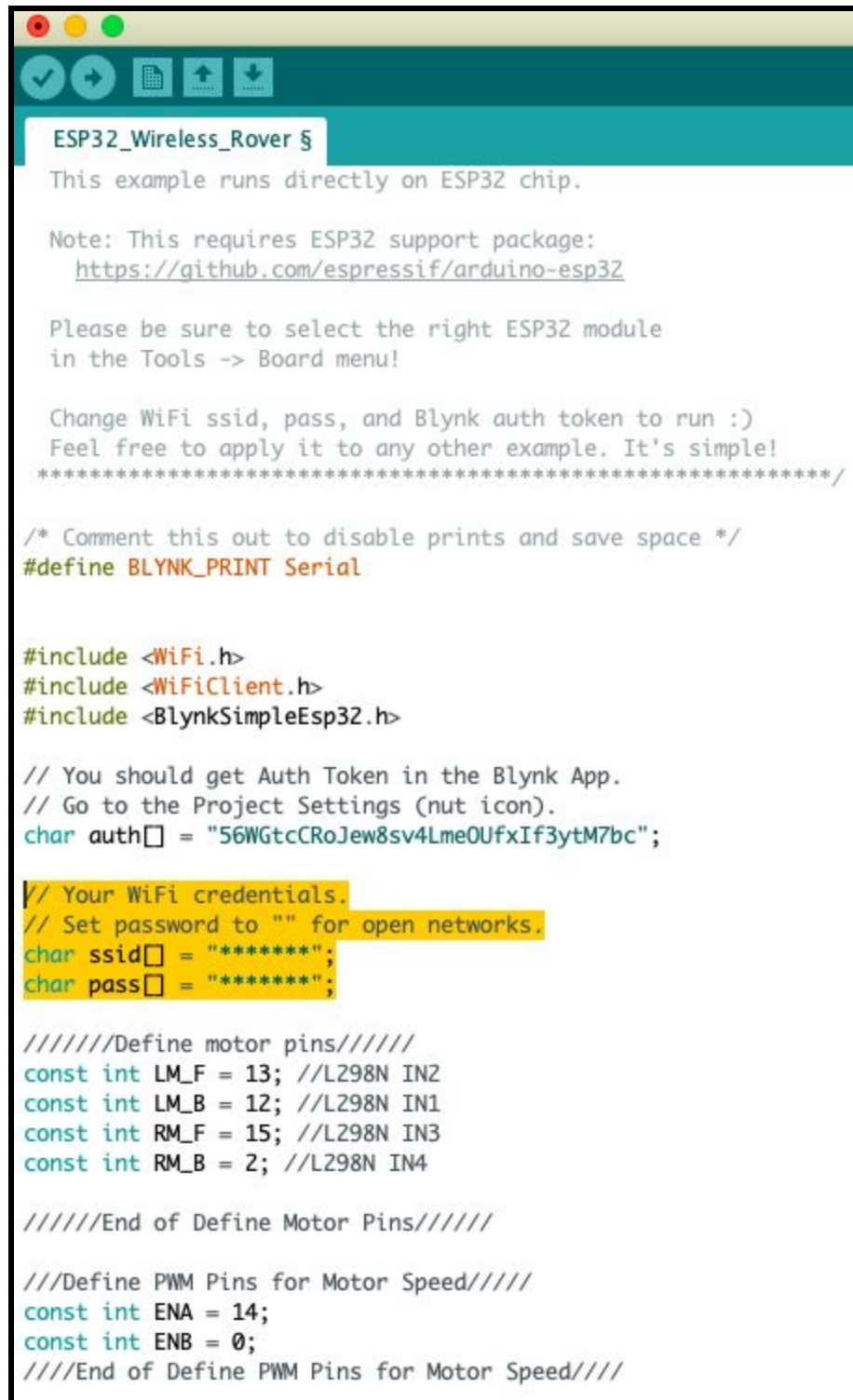
1. Go to <https://github.com/josaiahC/BlynkRovers> and download the file containing the Wireless rover program



Step 5

Open the program, and enter the wifi credentials

- ssid = "TP-Link_1014"
- pass = "63116298"



```
ESP32_Wireless_Rover §
This example runs directly on ESP32 chip.

Note: This requires ESP32 support package:
https://github.com/espressif/arduino-esp32

Please be sure to select the right ESP32 module
in the Tools -> Board menu!

Change WiFi ssid, pass, and Blynk auth token to run :)
Feel free to apply it to any other example. It's simple!
*****/

/* Comment this out to disable prints and save space */
#define BLYNK_PRINT Serial

#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "56WGtcCRoJew8sv4LmeOUfxIf3ytM7bc";

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "*****";
char pass[] = "*****";

////////Define motor pins////////
const int LM_F = 13; //L298N IN2
const int LM_B = 12; //L298N IN1
const int RM_F = 15; //L298N IN3
const int RM_B = 2; //L298N IN4

////////End of Define Motor Pins////////

///Define PWM Pins for Motor Speed/////
const int ENA = 14;
const int ENB = 0;
///End of Define PWM Pins for Motor Speed///
```

Step 6

Connect and upload program to ESP-32

1. Tools→ Board→ Node32s



2. Click upload arrow (top left) while holding down the ESP32's boot button.

Step 7

Scan the QR code below to download the rover joystick Blynk project



Step 8

Press "Play" to begin rover control.