ByteRider

Version

Table of Contents

ByteRider documentation

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INTRODUCTION

HOW DOES IT WORK?

The BitByteRider RC car is powered by ESP32-C3 Breadboard & Power adapter developmemt board.

Reserved Pins & GPIOs

The following table summarizes GPIOs and pins reserved for operations purposes.

The GPIO numbers correspond to those on the ESP32-C3 WROOM microcontroller. The Pin number corresponds to the pin on the Breadboard and Power adapter development board.

x- and y- axis

The **GPIO0** and **GPIO1** assigned to measuring the voltage of x- and y- axis of the Joystick. Lastly, there is a group of GPIO pairs responsible for PWM for DC motors.

Direction and Speed

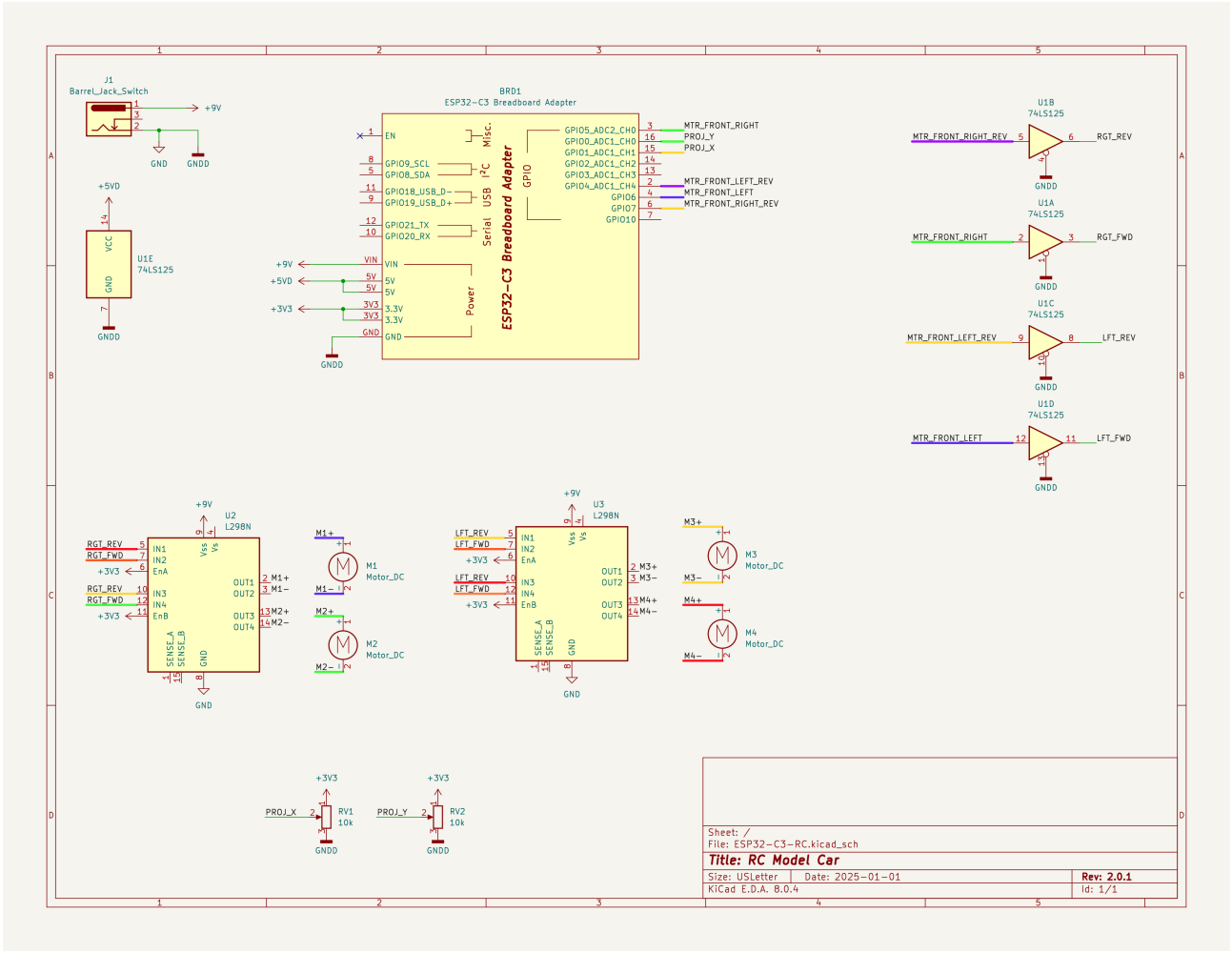
The two DC motors on the left side are wired to the dedicated PWM channels in pairs. This means that PWM channels can control rotation speed and direction of DC motors in pairs (i.e. left and right side). Consequently, only four PWM channels are required for controlling the direction of the RC car. Based on this constraint, the RC car can only move front, back, and rotate left and right. Any other movements are not possible (i.e. diagonal).

A pair of PWM channels are required for defining rotation speed and direction of the DC motors on each side. In particular, **GPIO6** and **GPIO5** provide PWM to the left- and right- side DC motors to rotate in a **clockwise** direction. Similarly, **GPIO4** and **GPIO7** provide PWM to the left- and right- side DC motors to rotate in a **counter-clockwise** direction. Changing PWM on each channel determines the speed and direction of the RC car.

GPIO	Pin	Function	Notes
0	16	Joystick x-axis	ADC1_CH0
1	15	Joystick y-axis	ADC1_CH1
8	5	Joystick push button	
6	4	PWM for clockwise rotation of left-side motors	LEDC_CHANNEL_1
5	3	PWM for clockwise rotation of right-side motors	LEDC_CHANNEL_0
4	2	PWM for counter-clockwise rotation of right-side motors	LEDC_CHANNEL_2
7	6	PWM for counter-clockwise rotation of left-side motors	LEDC_CHANNEL_3

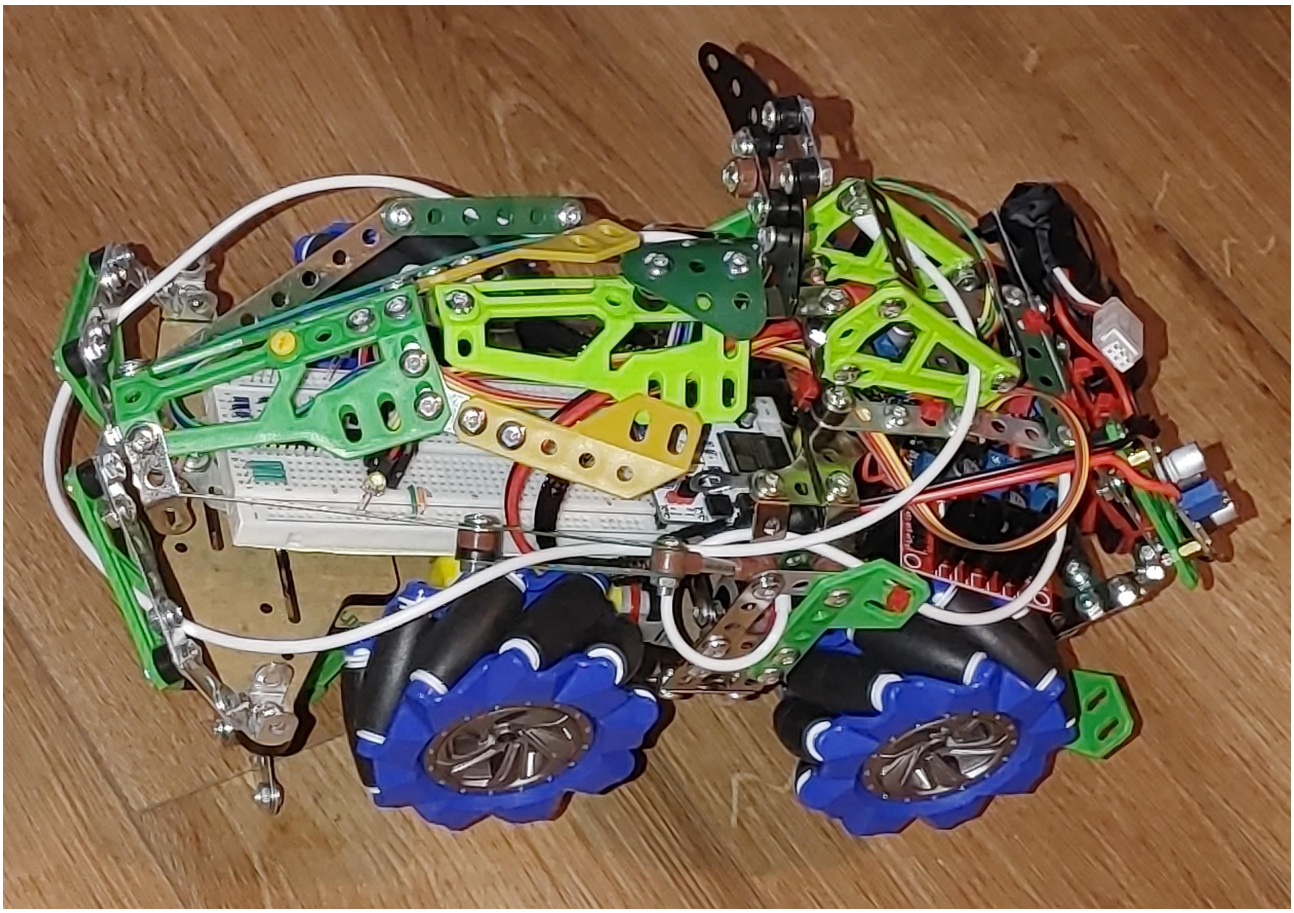
Fusion of Software & Hardware

Schematic

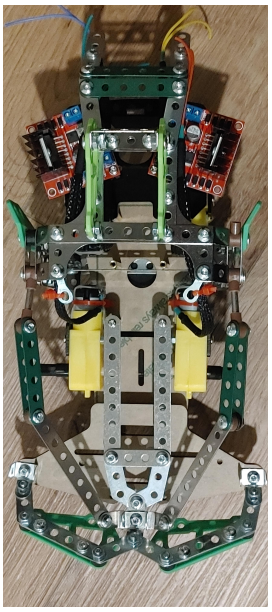


WORK-IN-PROGRESS WALK THROUGH

Finished Work

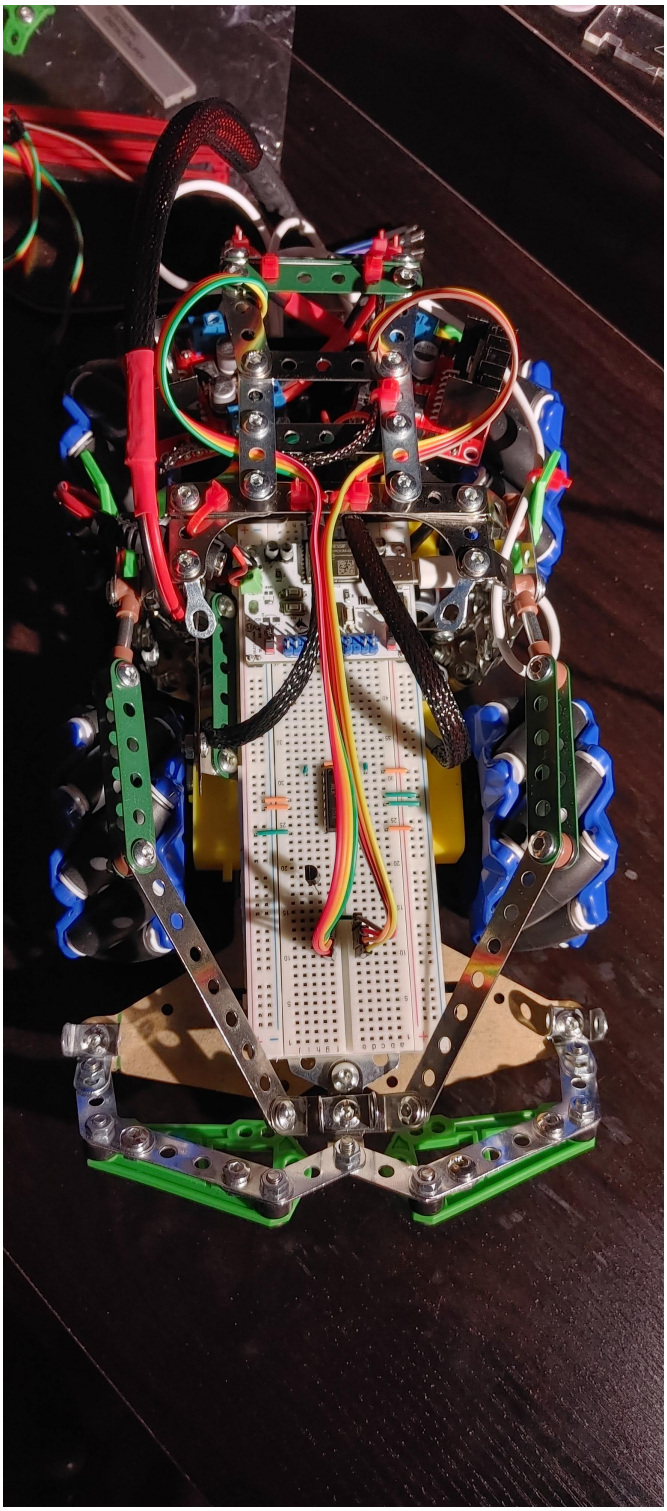


Chassis



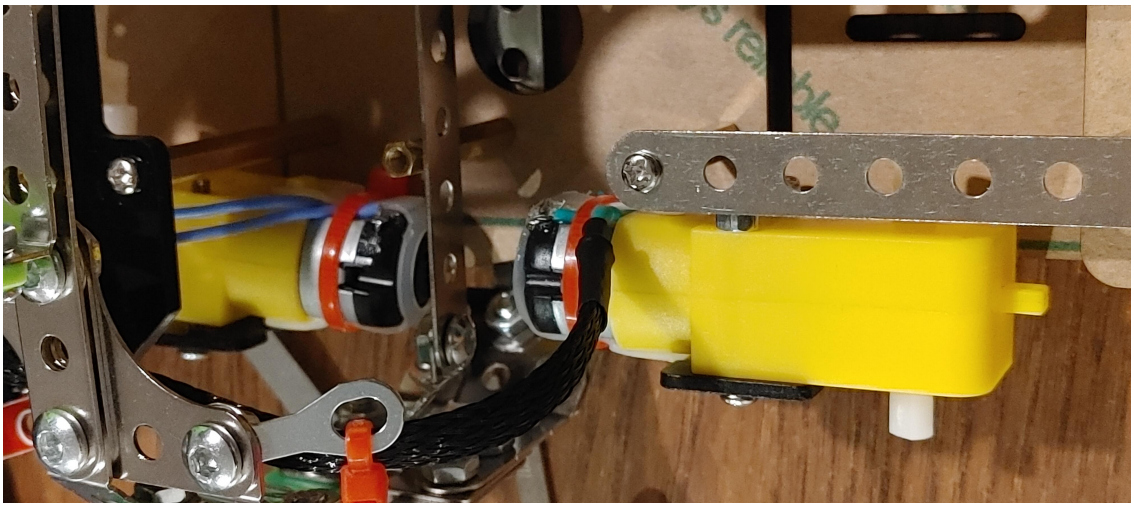
Completed chassis with only DC motor controllers installed.

Wiring



Completed wiring.

Motor Wires Harness



DC Motors wires secured inside harnes.