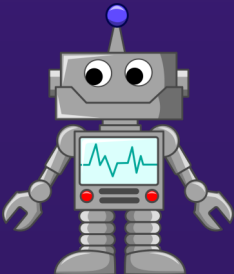
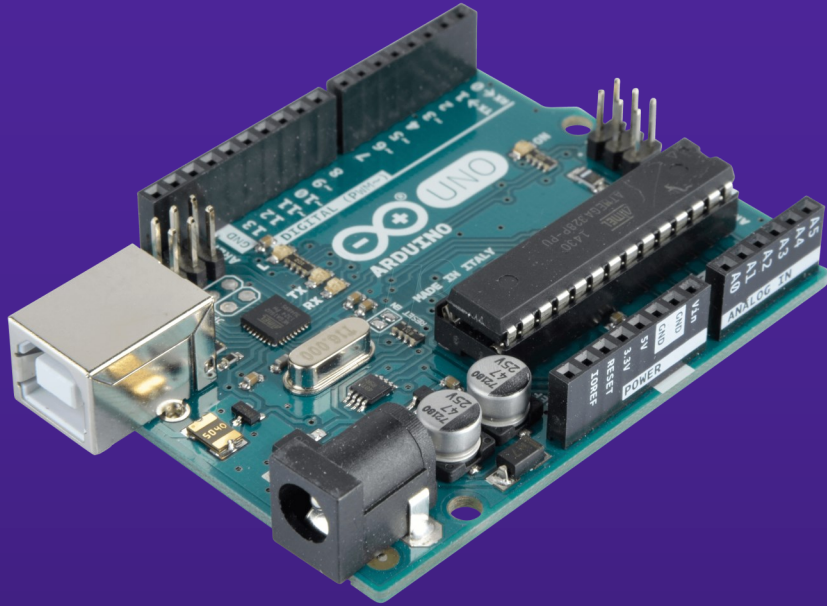


A ROBOTICS JOURNEY ...ON THE RASPBERRY PI

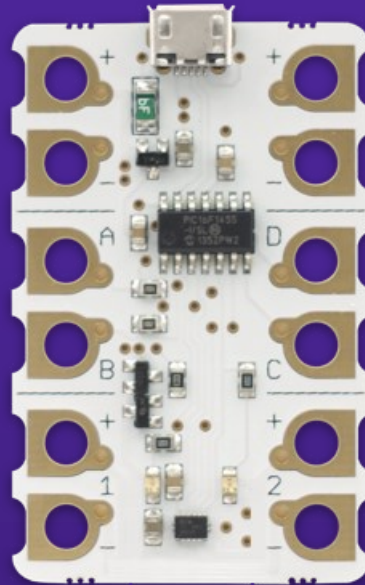


Michael Horne - @recantha

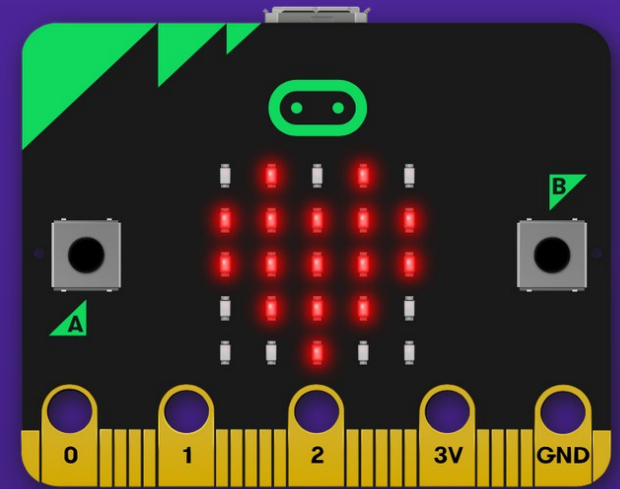
Δ ROBOTICS JOURNEY - PICK YOUR BOARD!



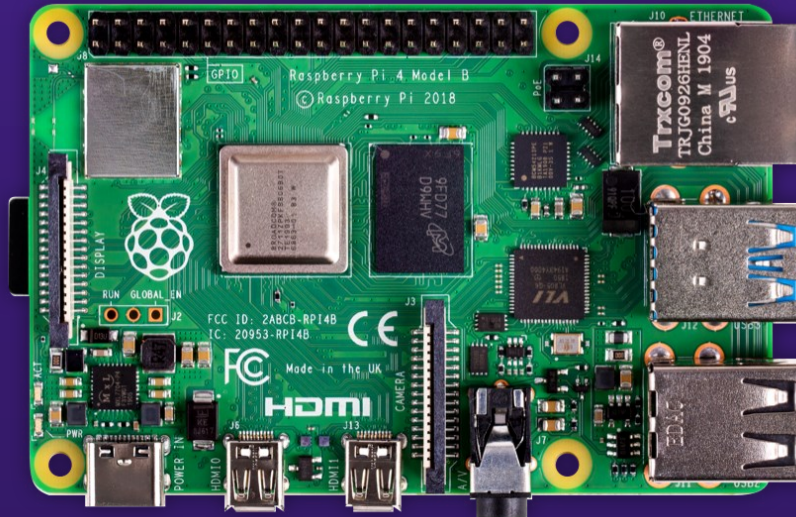
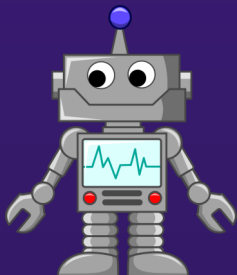
Arduino



Crumble



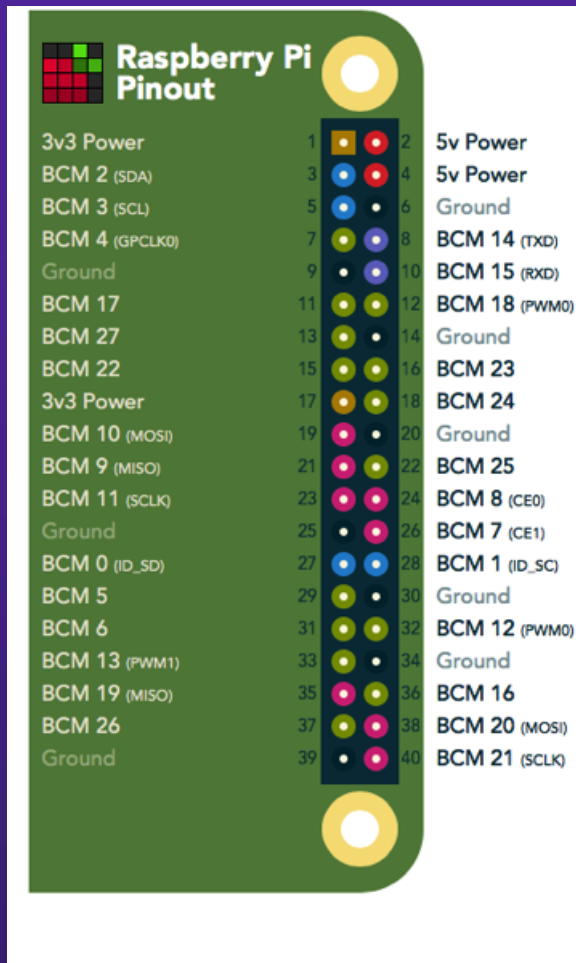
micro:bit



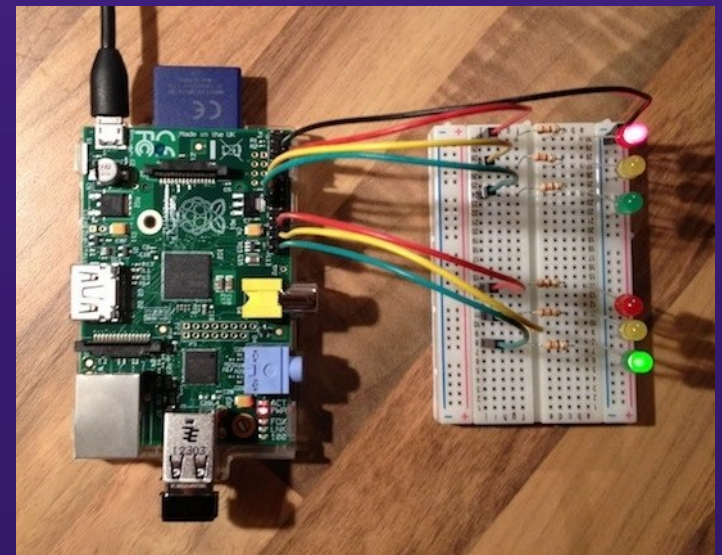
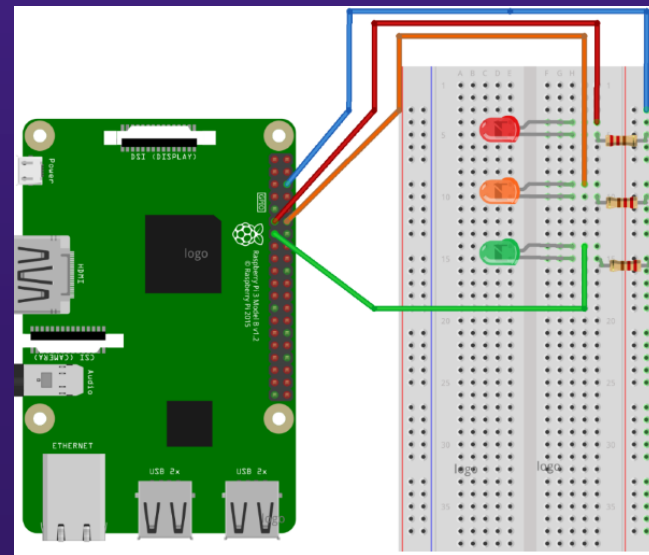
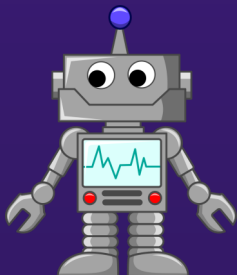
Raspberry Pi



Δ ROBOTICS JOURNEY - RASPBERRY PI GPIO / PHYSICAL COMPUTING



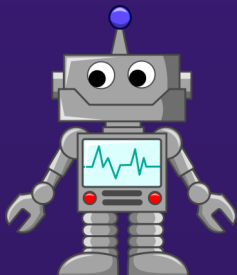
Thanks to
pinout.xyz



Δ ROBOTICS JOURNEY - ELECTRONICS WITH THE CAMJAM EDUKITS

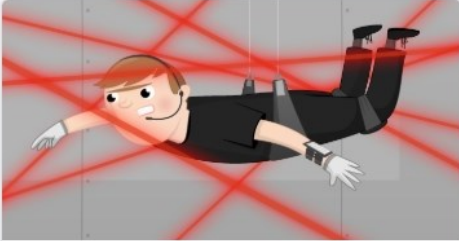


camjam.me/edukit



* Other kits are available :-)

Δ ROBOTICS JOURNEY – ELECTRONICS WITH RASPBERRYPI.ORG



A Raspberry Pi laser tripwire

Build a laser tripwire with Python and a Raspberry Pi

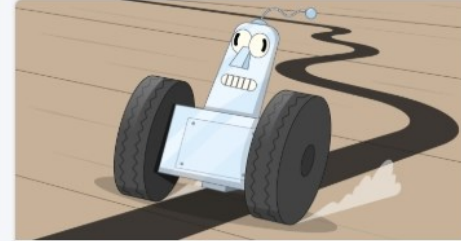
Electronic components, Raspberry Pi, Python



Balloon Pi-tay Popper

Pop balloons using a different type of pin – a GPIO pin!

Electronic components, Python



Build a line-following robot

Make your robot buggy follow a track by itself

Electronic components, Raspberry Pi, Python



Build a robot buggy

Build and control a robot buggy

Electronic components, Raspberry Pi, Python



Build your own weather station

Create a weather station to collect meteorological data

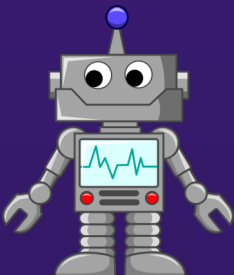
Electronic components, Raspberry Pi, Python



Burping Jelly Baby

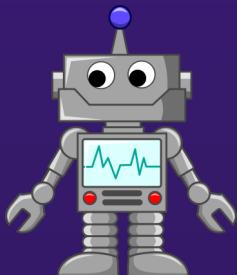
Make a jelly baby burp when you squeeze it!

Electronic components, Raspberry Pi, Python



projects.raspberrypi.org

Δ ROBOTICS JOURNEY - CAMJAM EDUKIT WORKSHEET



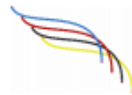
CamJam EduKit Worksheet Two
LEDs (GPIO Zero)
camjam.me/edukit



the Raspberry Pi. Therefore, putting the resistors in the circuit will ensure that only this small current will flow and the Pi will not be damaged.

It does not matter which way round you connect the resistors. Current flows in both ways through them.

The Jumper Wires



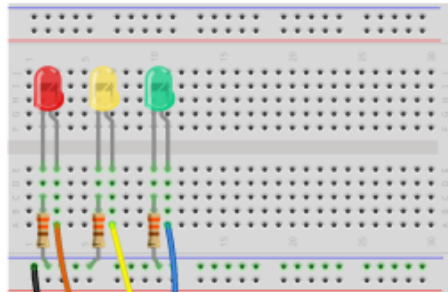
Jumper wires are used on breadboards to 'jump' from one connection to another. The ones you will be using in this circuit have different connectors on each end. The end with the 'pin' will go into the breadboard, and is known as the 'male' end. The end with the piece of plastic with a hole in it will go onto the Raspberry Pi's GPIO pins. This is the 'female' end.

The jumper wires supplied in the EduKit will vary in colour and are unlikely to match the colours used in the diagrams.

Building the Circuit

While you can build the circuit with the Pi turned on, it is best to turn it off at this stage.

You will be using one of the 'ground' (GND) pins to act like the 'negative' or 0 volt end of a battery.



The 'positive' ends of the battery will be provided by three of the other GPIO pins, one for each of the three LEDs. You will be using the pins marked 18, 23 and 24 for the Red, Yellow and Green LEDs respectively.

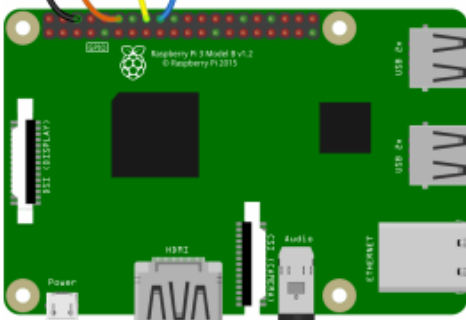
When they are 'taken high', which means they output 3.3 volts, the LEDs will light.

Now take a look at the circuit diagram on the left.

The power for each LED will be provided by the Pi, from GPIO pins 18, 23 and 24. You can control them from Python, meaning you can make the GPIO pins supply either 0 volts (off) or 3.3 volts (on).

There are in fact three separate circuits in the diagram. Each one consists of the power supply (the Pi), an LED that lights when the power is applied, and a resistor to limit the current that can flow through the circuit.

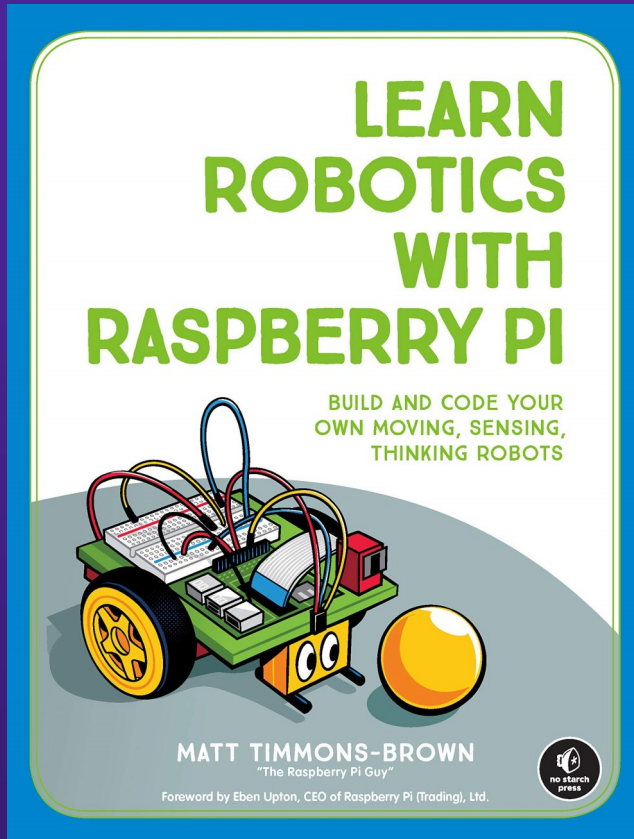
Each circuit is going to share a 'common ground rail'. In other words, you will be connecting all of the circuits to the same 'ground' (0 volts) pin of the Raspberry Pi. You are going to use the second row up from the bottom of the breadboard. Remember that the holes on the two top and two bottom rows are all connected together? So,



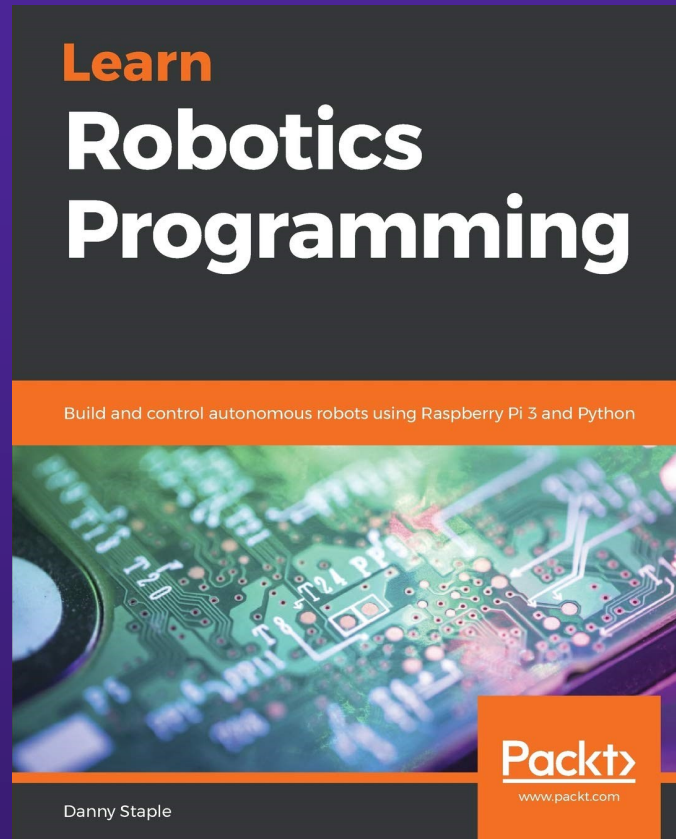
fritzing

connect one of the Jumper wires from the third pin from the left on the top row of the Pi to the second row up of the breadboard, as shown in the diagram (the black wire).

Δ ROBOTICS JOURNEY – RASPBERRY PI ROBOTICS BOOKS



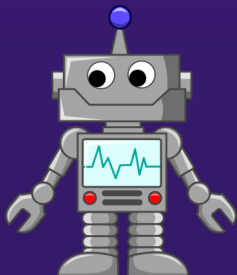
NoStarch Press



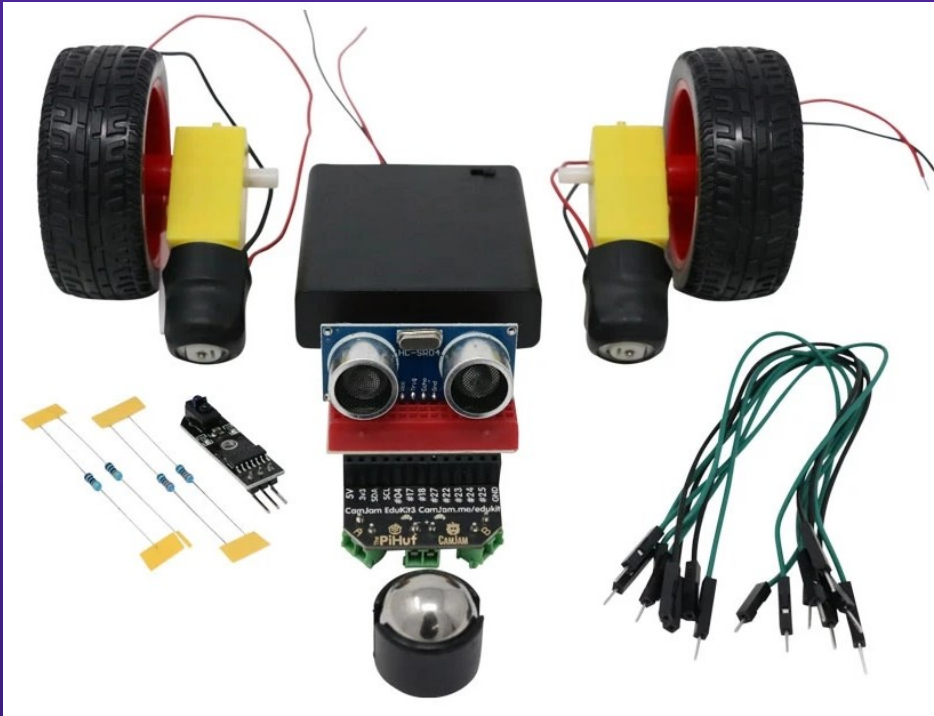
Packt Publishing



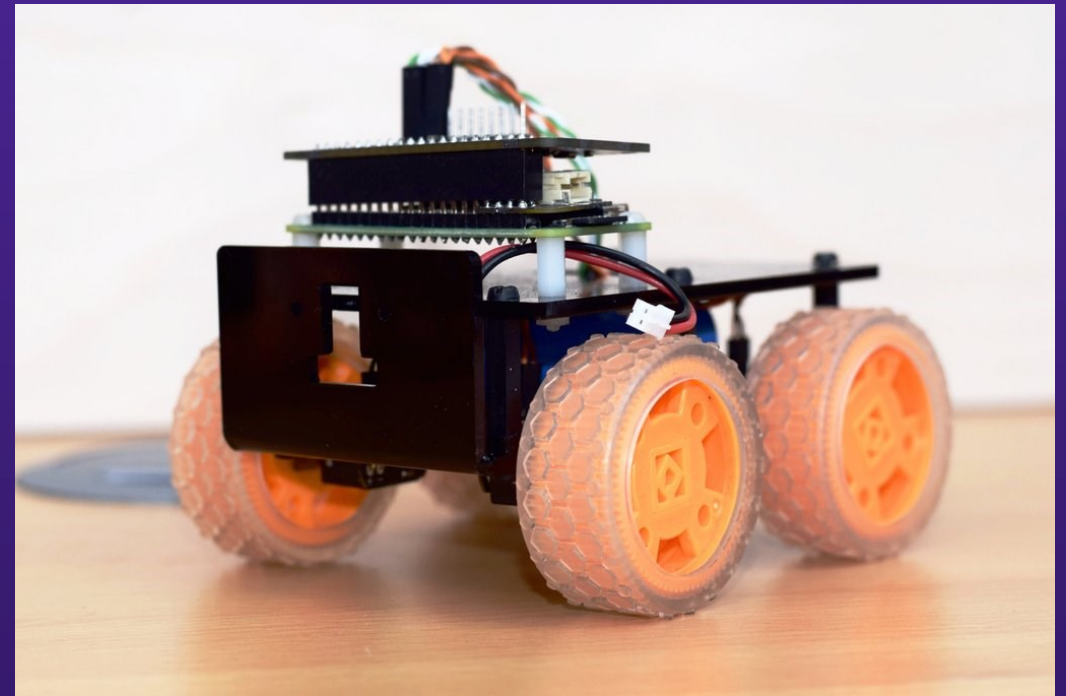
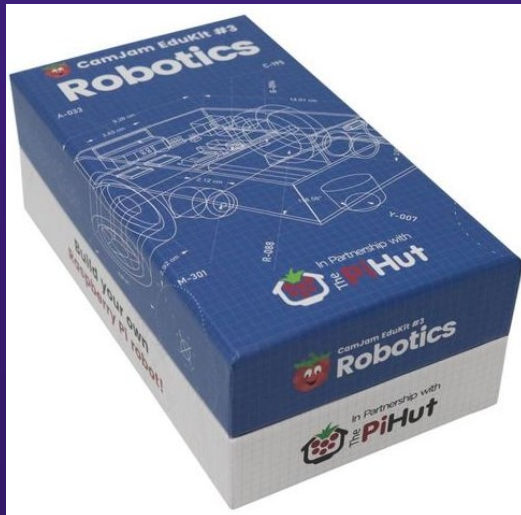
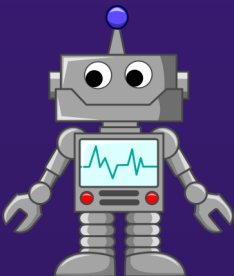
Raspberry Pi Press



Δ ROBOTICS JOURNEY - READY-MADE KITS

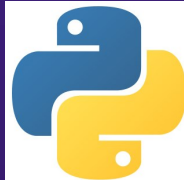
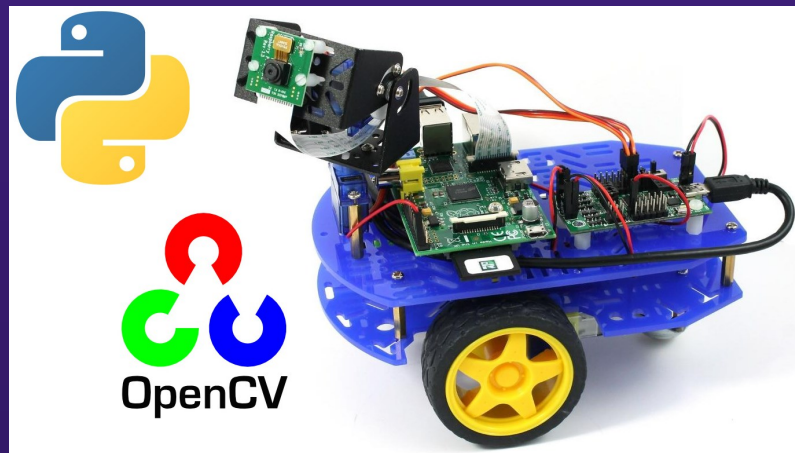
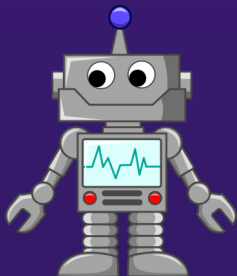
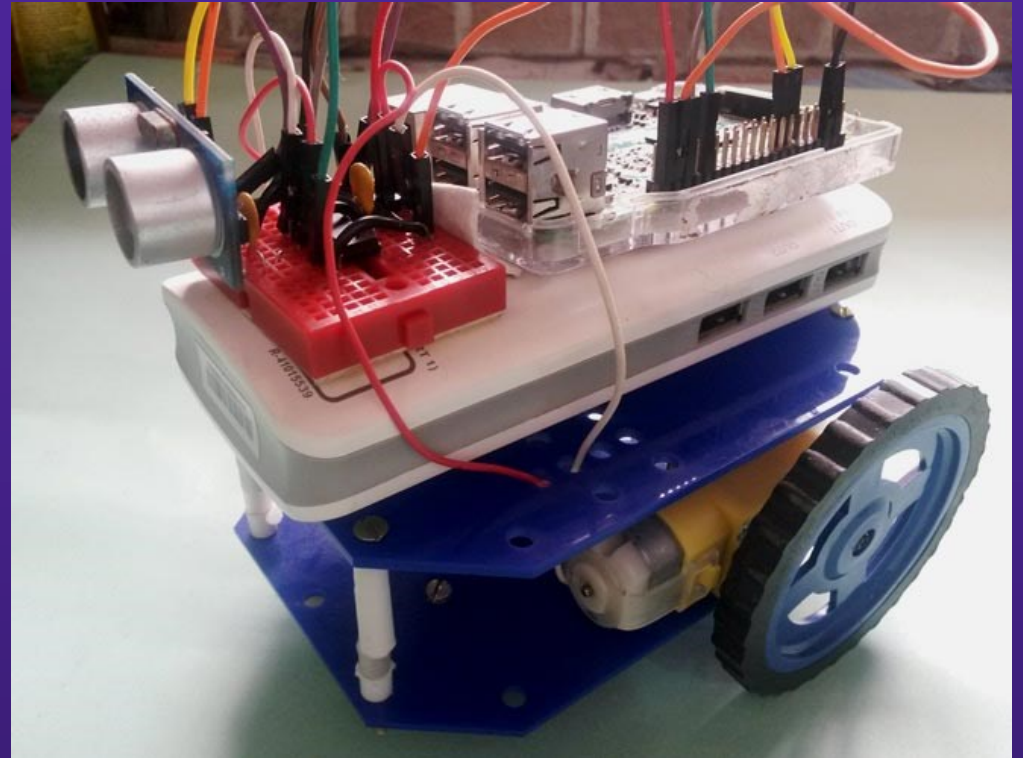
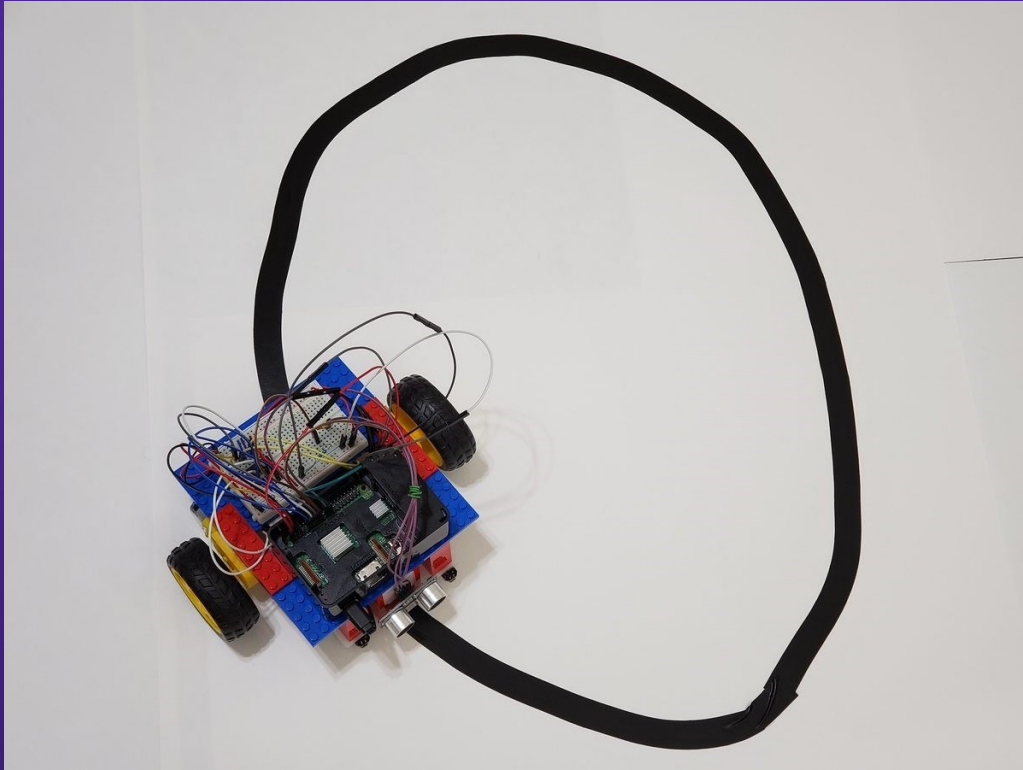


CamJam
EduKit 3



Coretec Tiny 4WD

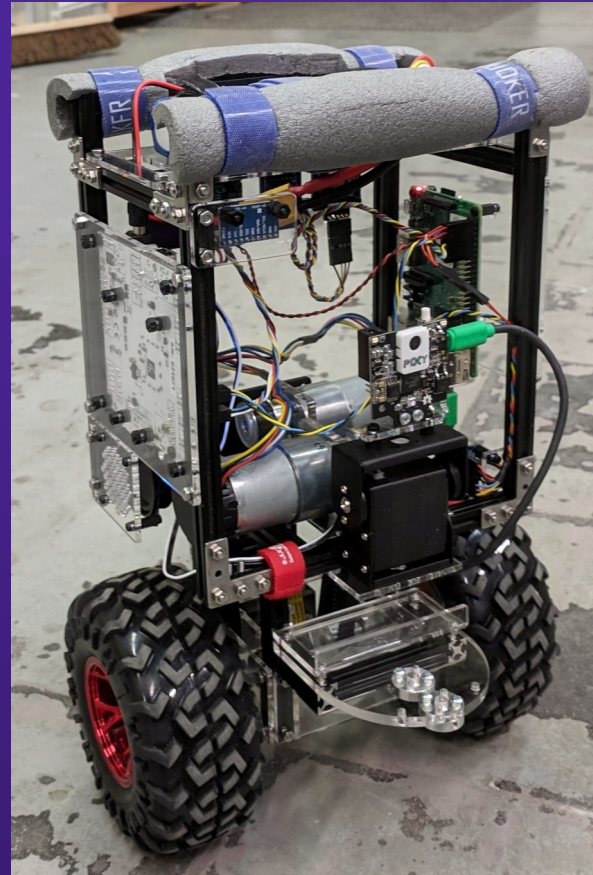
Δ ROBOTICS JOURNEY - ΔUTONOMY



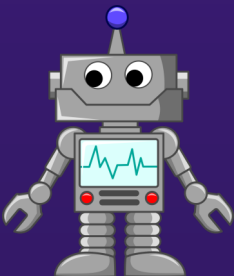
Δ ROBOTICS JOURNEY - CUSTOM ROBOT TYPES



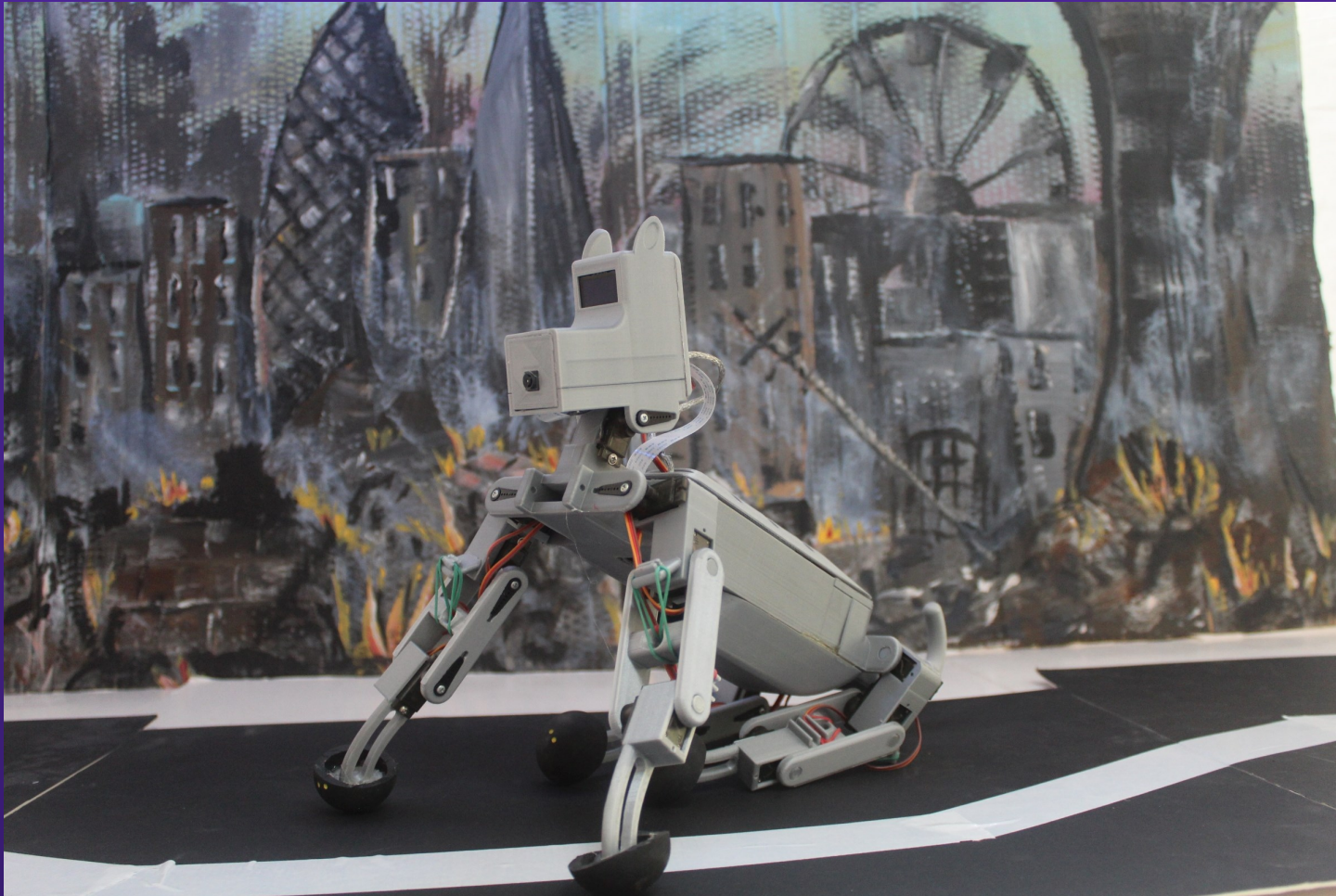
PiDrogen 20
4-wheeler



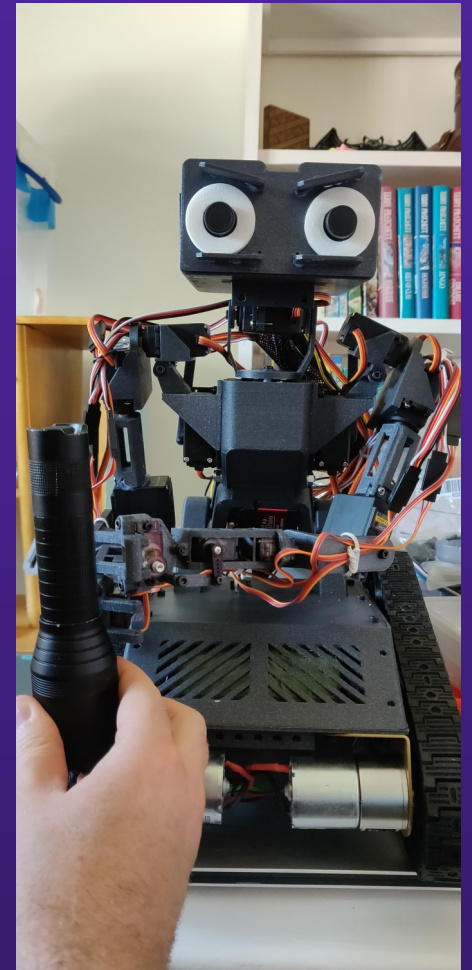
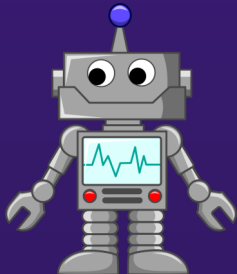
Faceplant
Self-balancer



Δ ROBOTICS JOURNEY - CUSTOM ROBOT TYPES



Spot Puppy
Walker

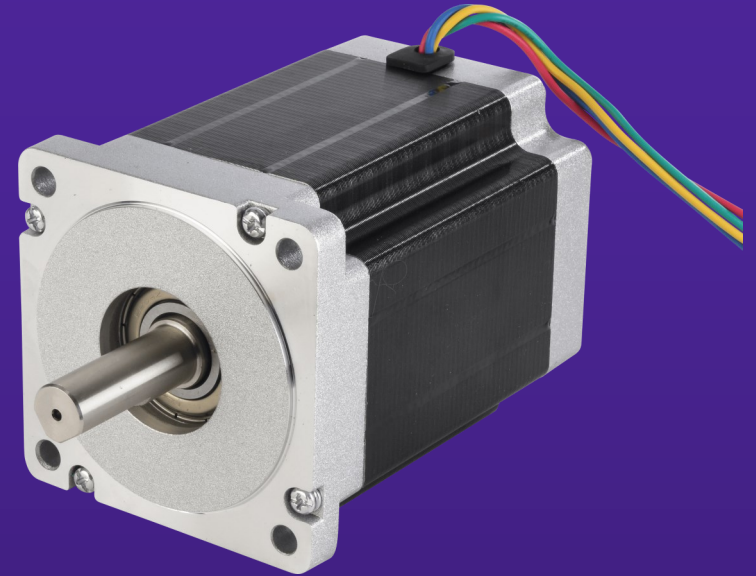


MacFeele Prime
Tracked with character!

△ ROBOTICS JOURNEY - MOTORS



Servo



Stepper motor



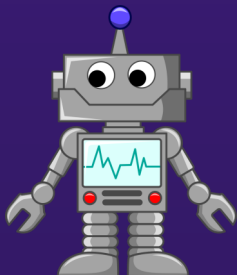
"Yellow" DC motor



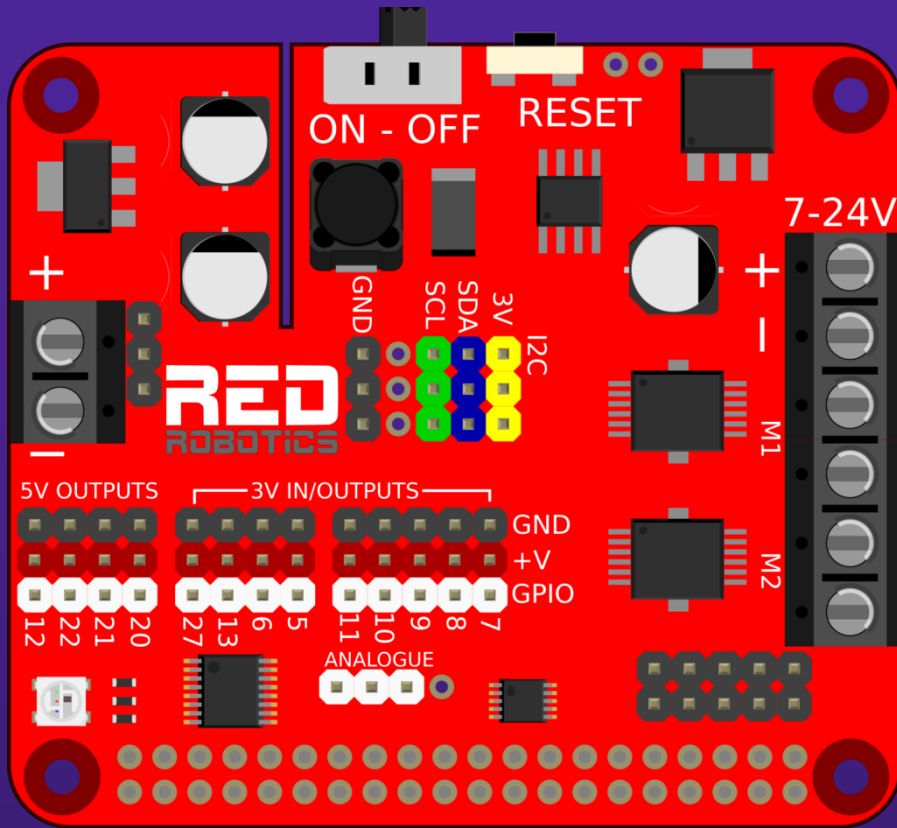
DC motor



Micro Metal Gear
DC motor



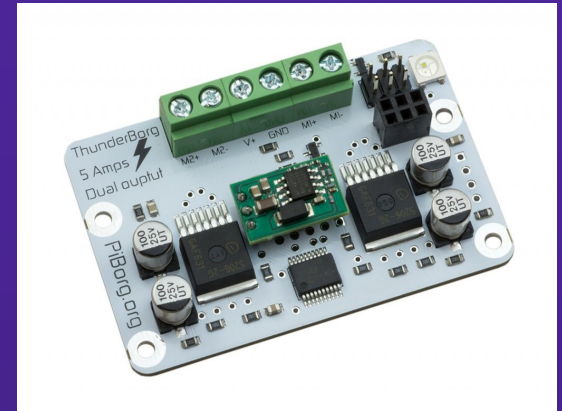
△ ROBOTICS JOURNEY - MOTOR CONTROLLER BOARDS



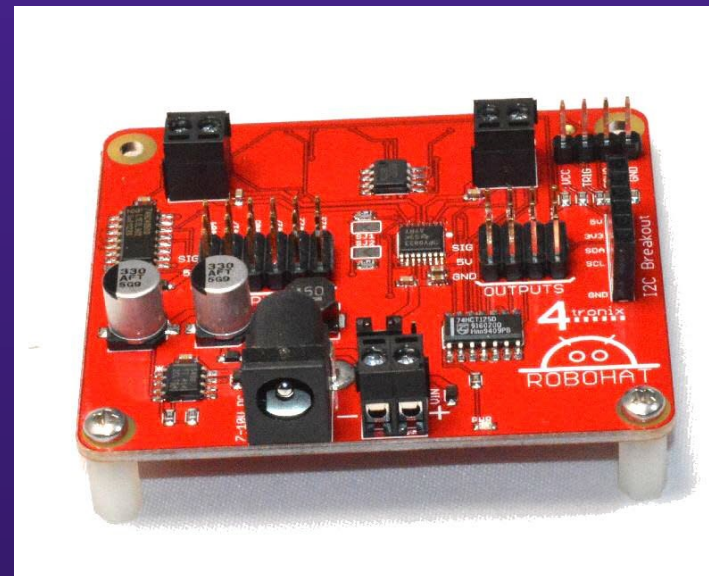
Red Robotics RedBoard+



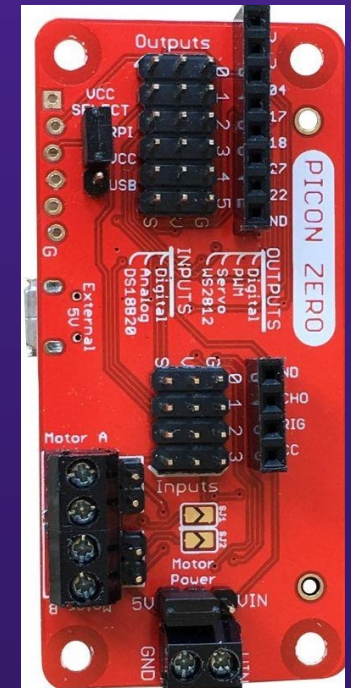
Explorer pHAT



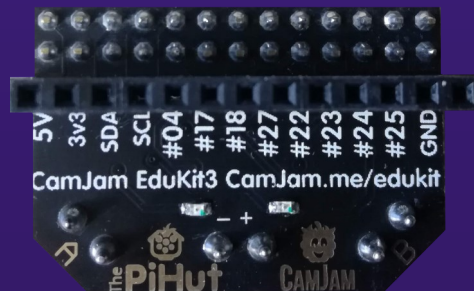
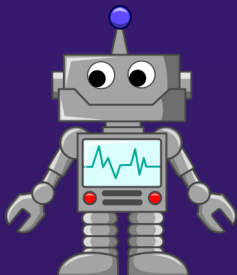
ThunderBorg



RoboHAT

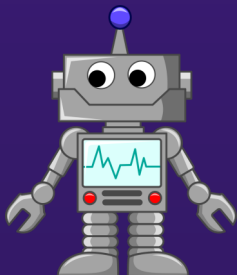
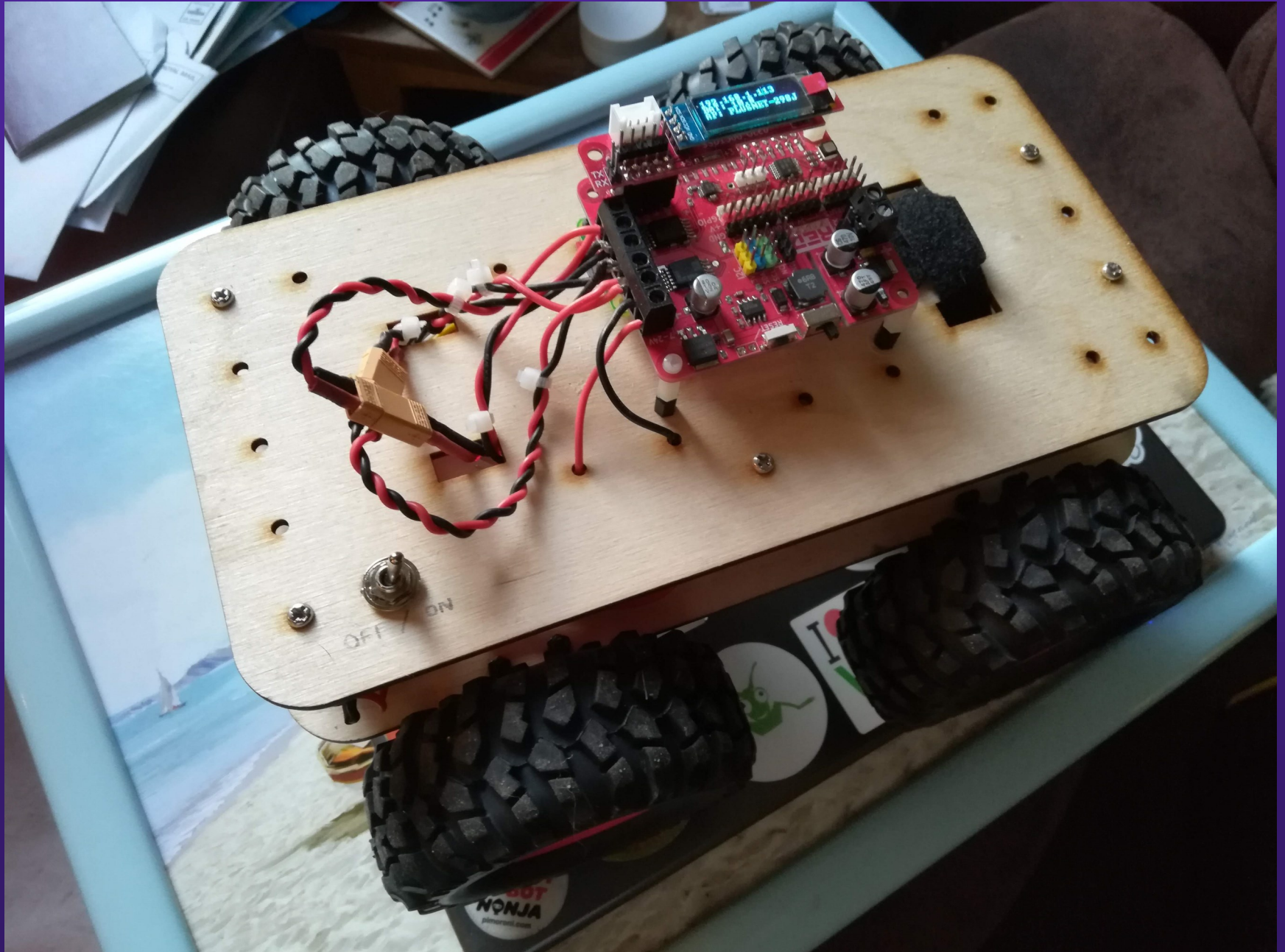
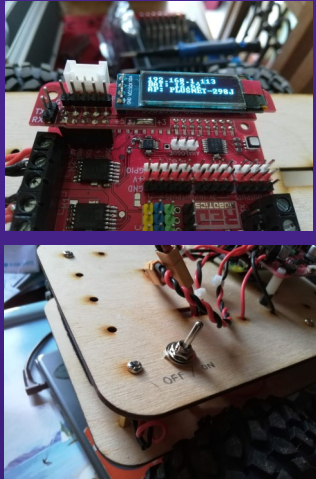


Picon Zero



CamJam EduKit

Δ ROBOTICS JOURNEY - MY ROBOT



Δ ROBOTICS JOURNEY – CONTACT DETAILS

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Facebook: Never mind!!!

