REX

Immortal Balance Robot Instalation
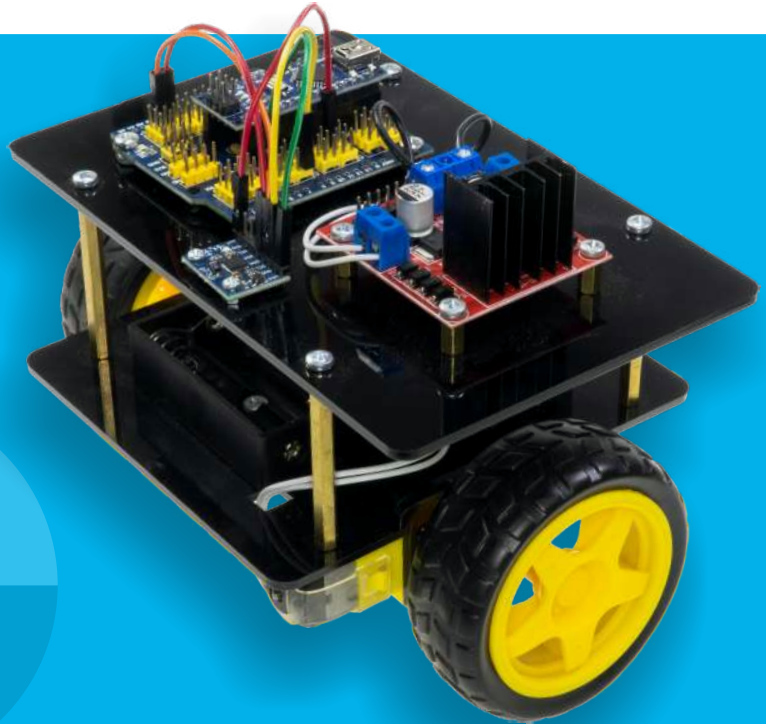
Content:**Mustafa Kemal AVCI**

IMMORTAL SETUP

Immortal is a balance robot that does not topple despite the blows it receives and can recover even if it topples over. Thanks to the MPU 6050 Gyro sensor, it can calculate the amount and speed of the forward or backward tendency and start its engines very quickly.

Surprise those around you with Immortal. You can go a little further and play with its codes, carry something to the immortal, and even improve it and control it with the remote. Like all REXs, Immortal is a robot that will adapt to your every design.

Materials used:

R08	4 x R03
R06	2 wheels

| Assembly Parts	
M3 Nut	50 mm Female-Male Metal Spacer
M3x6 mm Screw	M3x30 mm Screw
M3x10 mm Screw	6 mm Female-Male Metal Spacer
M2 Screw	M2 Nut
Electronic Components	
Arduino Nano or Uno	MPU 6050 Gyro Sensor
Arduino Sensor Shield	2 x 250 Rpm Dc Motors
L298N Motor Driver Board	10 cm Female – Female Jumper Cable
10 cm Female – Male Jumper Cable	10 cm Male – Male Jumper Cable
	6 Battery Holder and 6 x AA Batteries
Tools and Consumables	
Phillips Screwdriver, Electrical Tape, Double-sided foam tape	

Step 1: The motors are fixed to the R06 coded piece. Let's fix it by inserting M3x30 mm screws through the parts numbered R03 and the motor as in the images below and tightening them with the M3 nut. Let's repeat the same work in the other engine. Let's pay attention to the soldered poles of the motors facing inwards.
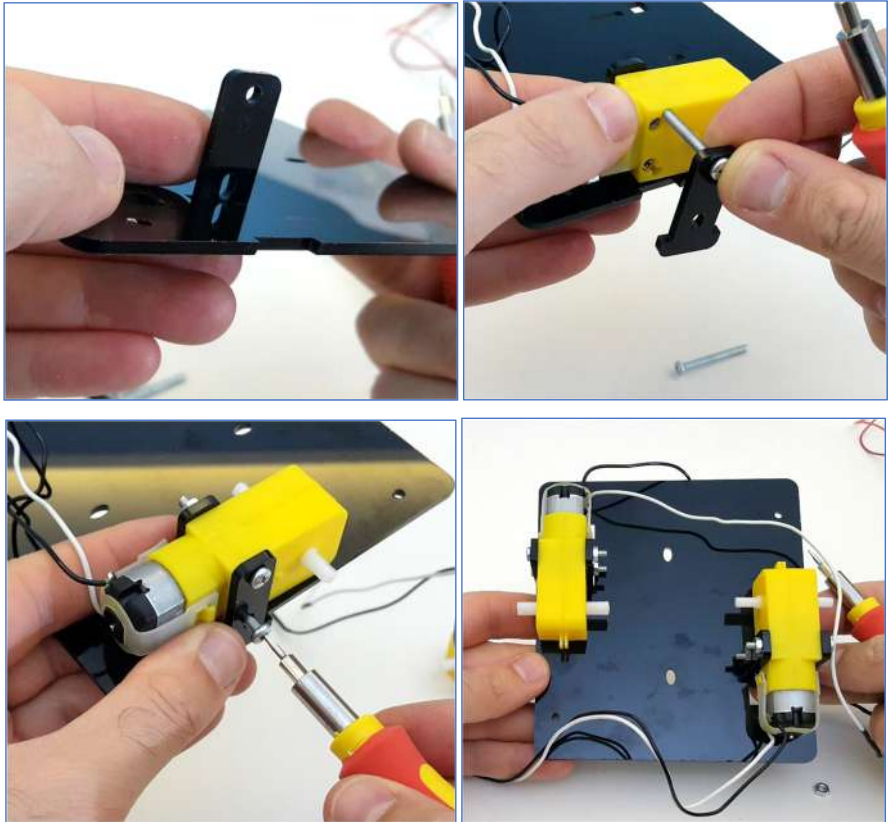

Step 2: Let's attach the 50 mm spacers to the four corners of the R06 piece and fix it with M3 nuts from the bottom.
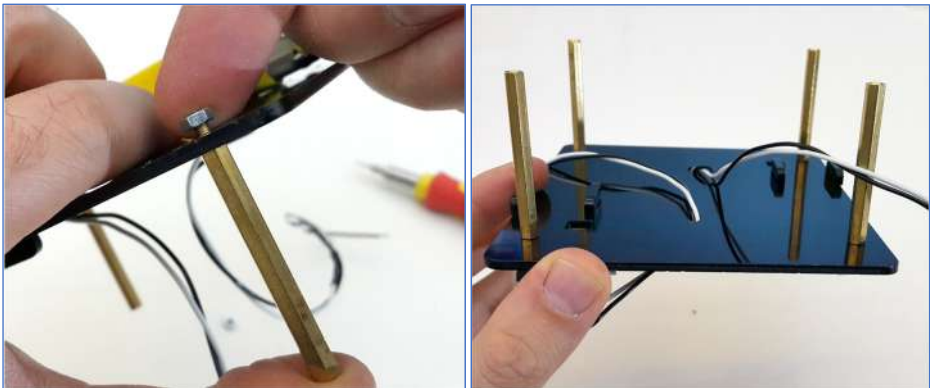
Step 3: After we prepare our electronic modules and assemble them on the R08 coded part, we will place them on the top of our body. Let's place the Arduino Nano on the sensor shield. Then let's pass the M3x10 mm screws through their holes and insert the M3 nuts all the way from the bottom. These nuts will act as spacers between R08 and Shield.
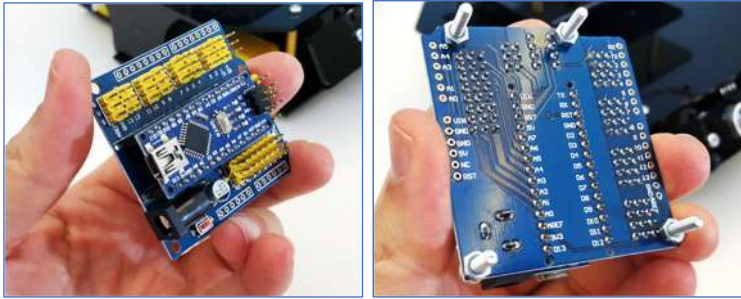

Step 4: Before attaching the L298N motor driver to the R08 part, let's place the 6mm spacers on the R08 part and tighten them with M3 nuts from the bottom.
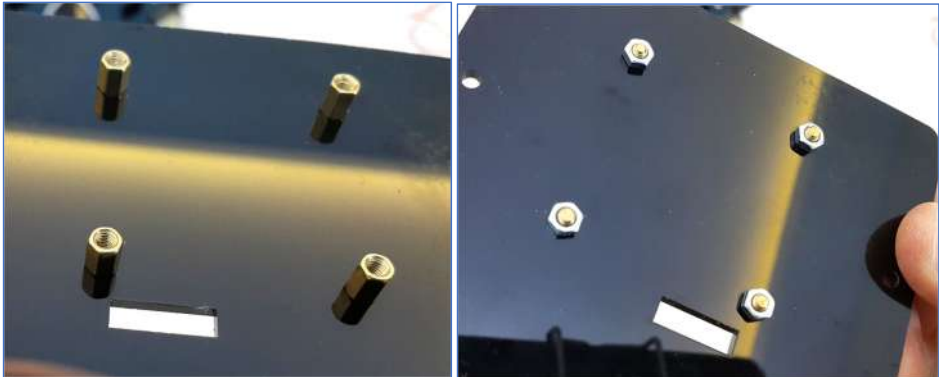

Step 5: Let's place the Arduino Nano Sensor shield on the R08 part and tighten it with M3 nuts from the bottom. Place the L298N motor driver on the 6mm spacers and fix it with M3x6mm screws.


**Step 6:** Let's pass the M2 screw and Nut through the holes of MPU6050 sensor.
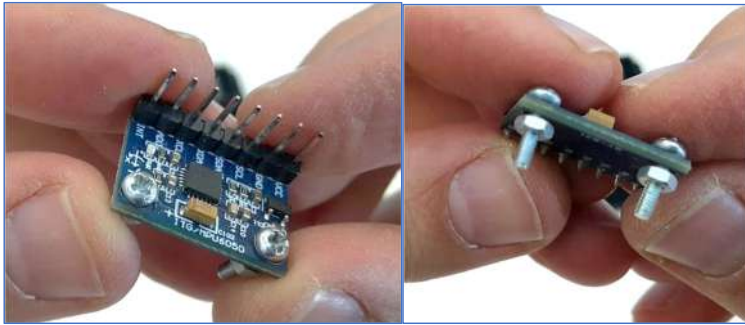
Step 7: Let's fix the MPU 6050 sensor to the R08 coded piece, paying attention to its alignment as in the image below, tightening it with an M2 nut from the bottom and fixing it so that it never moves. Since the slightest movement will cause miscalculation of the equilibrium state, make sure that the screws are aligned properly and that the sensor does not move after tightening.
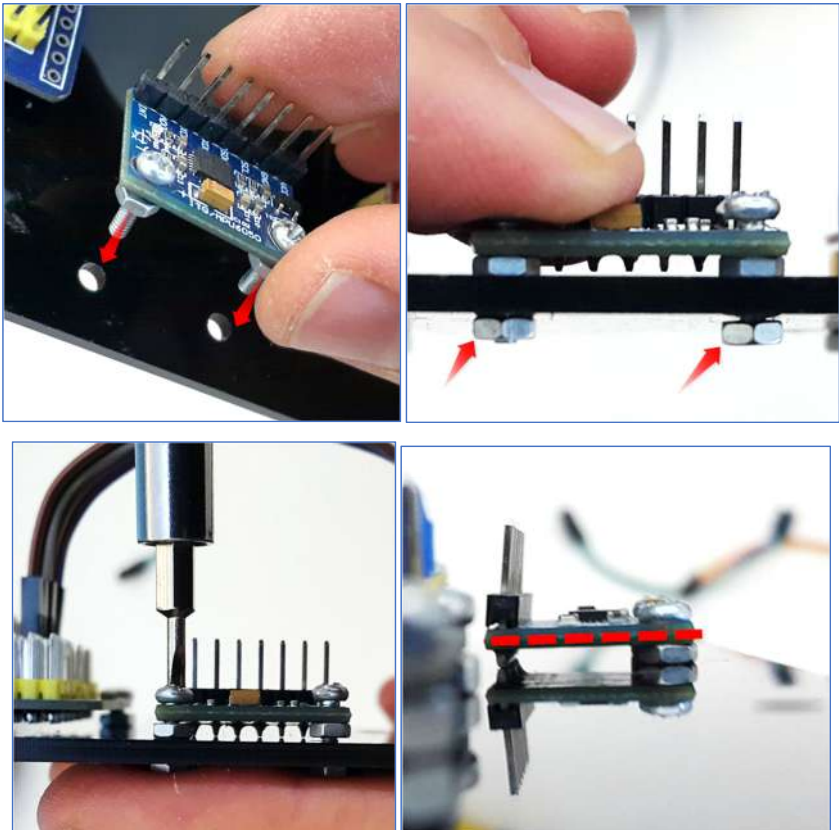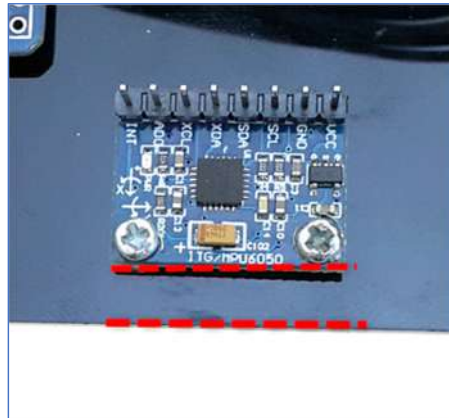
Step 8: Let's connect the ENA,IN1,IN2,IN3,IN4,ENB pins that we will use to control the Right and Left motor to the pins 6,7,8,9,10,11 respectively. Since the MPU 6050 sensor uses I2C pins, let's connect it to the SDA SCL GND and V pins standing next to each other on the sensor shield. Connect the INT pin of the sensor to pin 2 on the Shield.
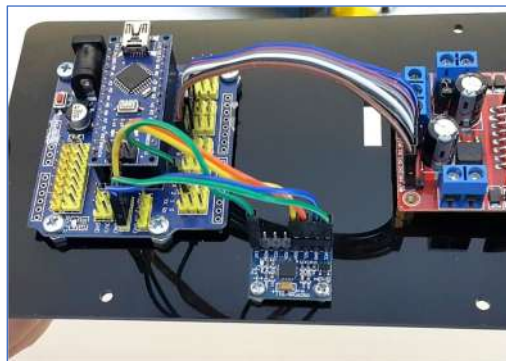

**Step 9:** Let's pass the cables of the motors through the R06 coded piece.
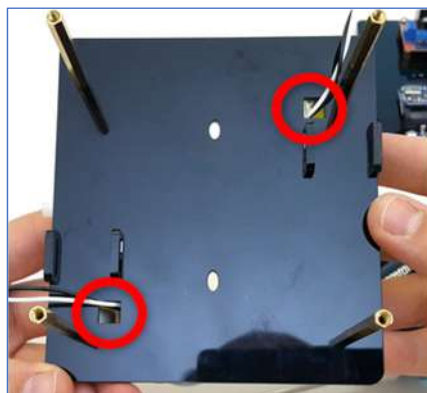
Step 10: We will place the 6-battery box that we keyed before, on the piece with the code R06. Take the batteries out of the battery box or make sure the switch is in the off position. Stick and peel off the double-sided foam tape on the bottom of the battery box and stick it to the center of the R06.
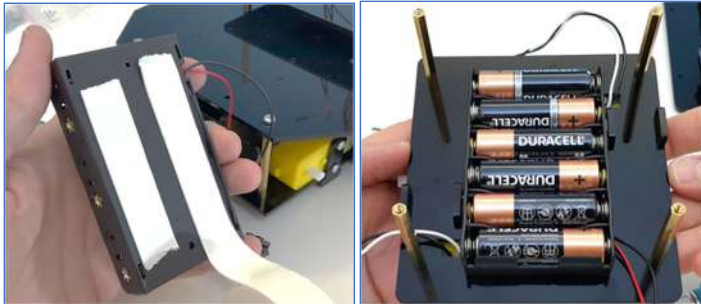

Step 11: Let's attach two 10 cm male-male jumper cables to their ends and secure them with electrical tape, in order to transmit the - end from the battery box and the + end from the Switch to the motor driver. In the final part of the installation, we will attach these leads to the motor driver.
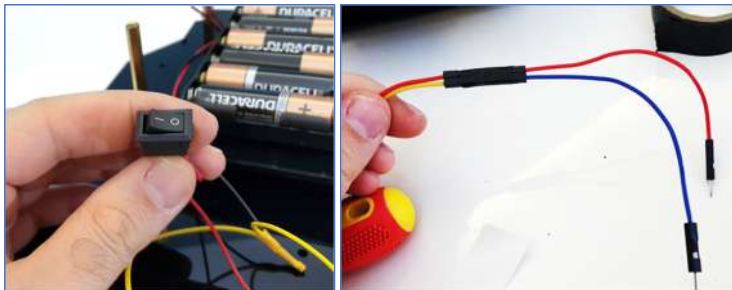

Step 12: Let's pass the cables coming from the motors under the R08 coded piece. Then, let's fix it by placing it on the 50 mm spacers with M3x6 mm screws.
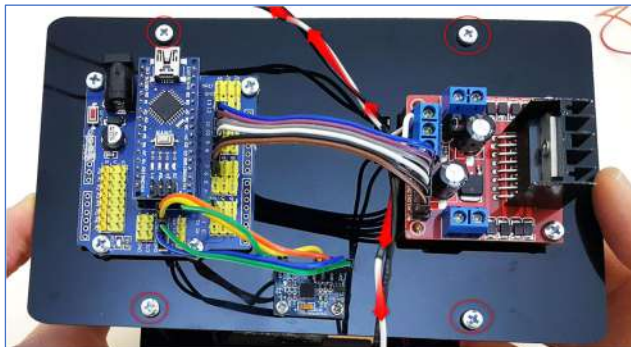
Step 13: Contrary to the motor connections on other REX robots, in the Immortal, insert the left motor's + OUT4 - si OUT 3 into the terminals of the motor driver and tighten the screws. Install the + and – of the right motor to the driver as OUT1 and OUT 2 and tighten the screws.
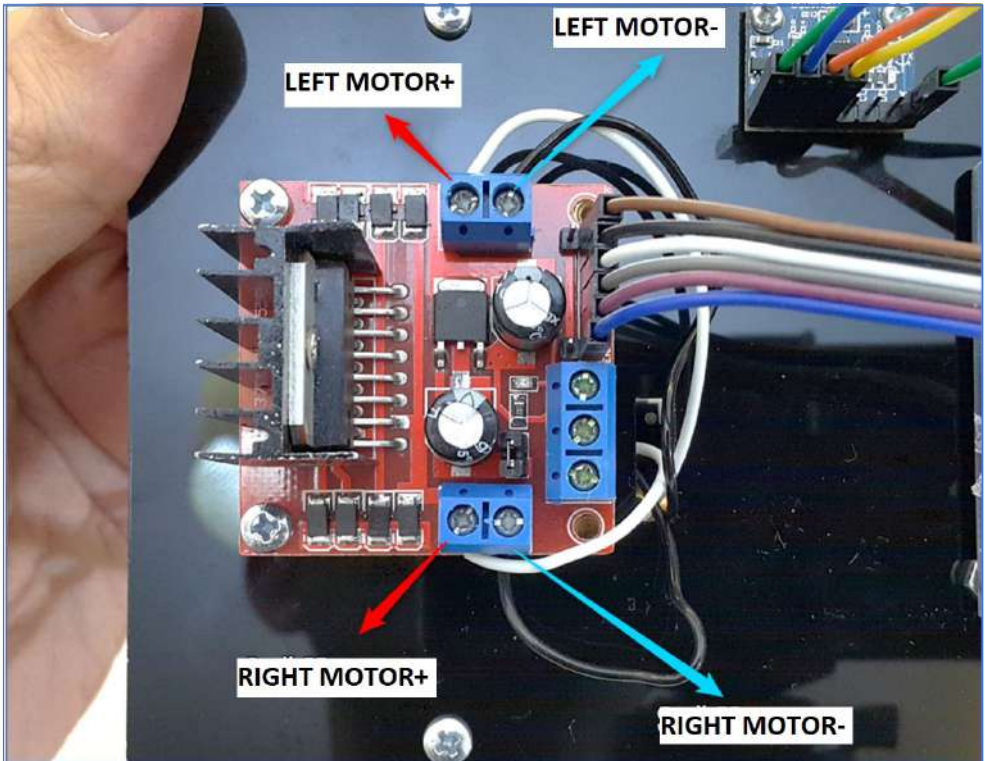
Step 14: Connect a line with a 10 cm female-male cable from any of the G pins on the shield to the middle terminal on the motor driver, that is, the GND port.
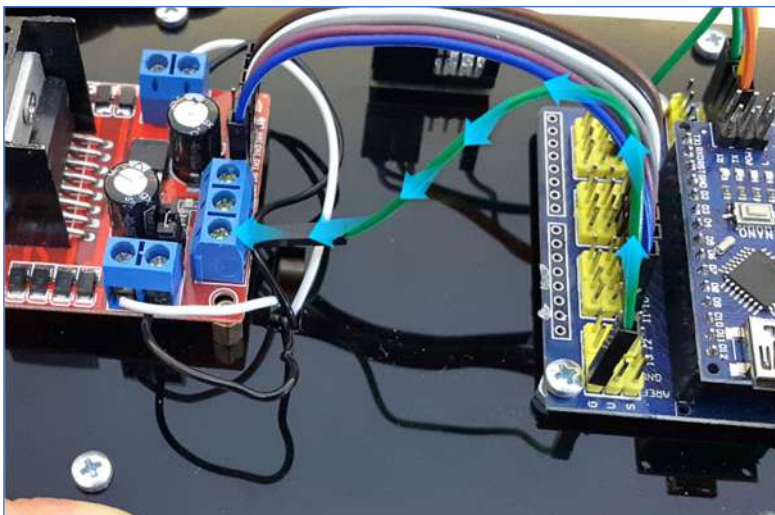
Step 15: Let's put the + pole from the switch to the 5-12 V connection input and the - line from the battery box to the GND terminal of the driver and tighten the screws well. Before doing this, make sure that the switch is turned off.
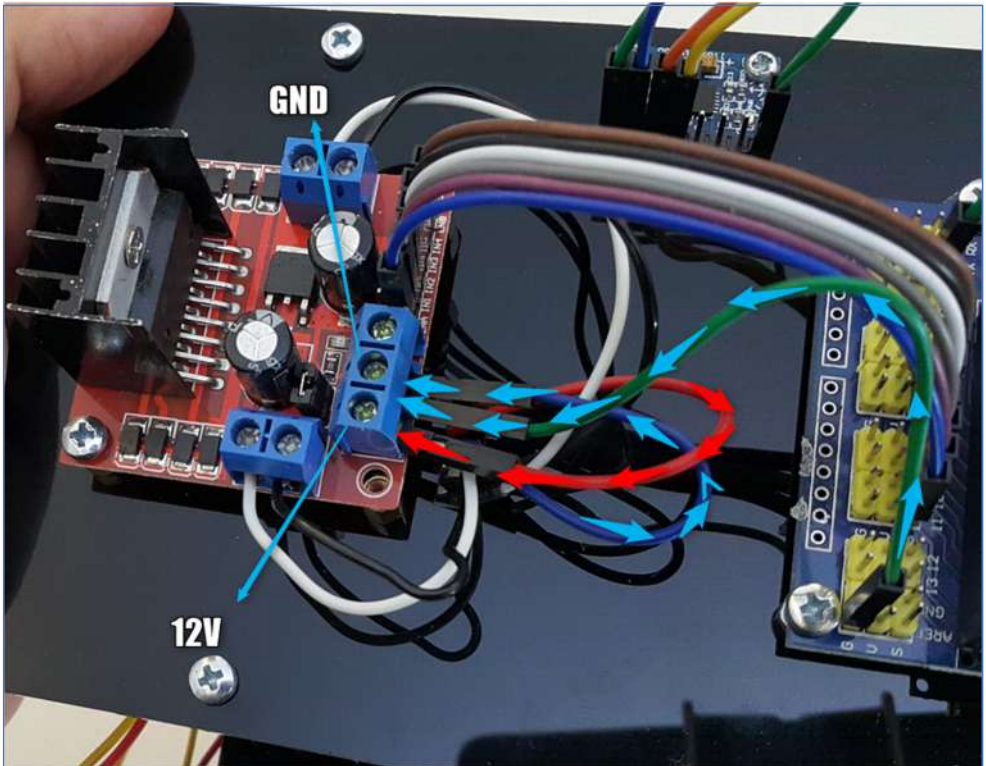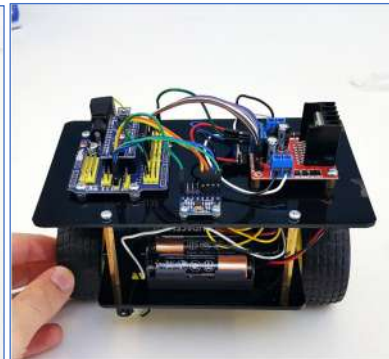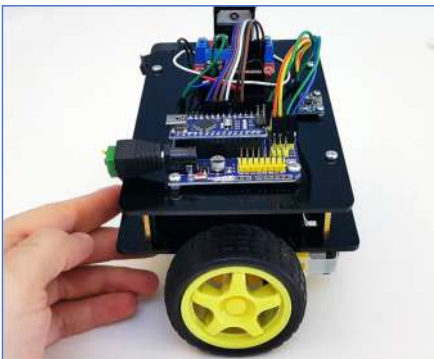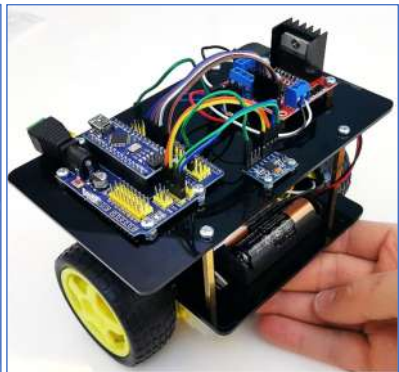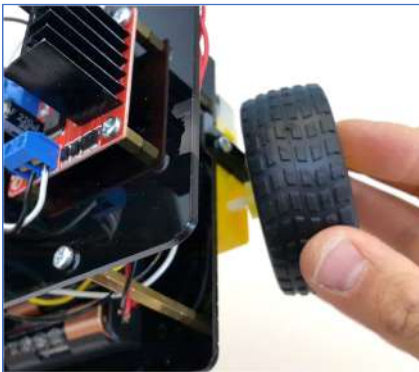

Step 16: You can assemble the switch and the long cables properly so that they do not hang out, and fix them to a suitable place on the chassis with electrical tape.
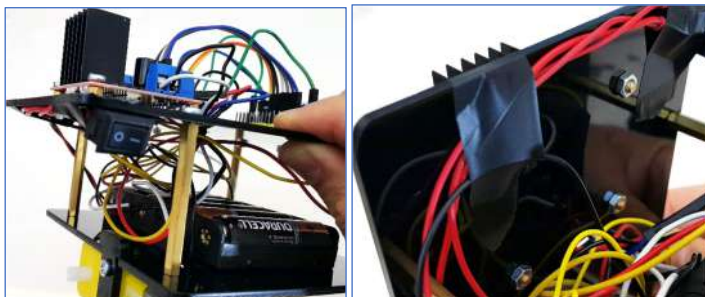
Step 17: Plug the barel jack outlet from the battery box to Sensor shield.
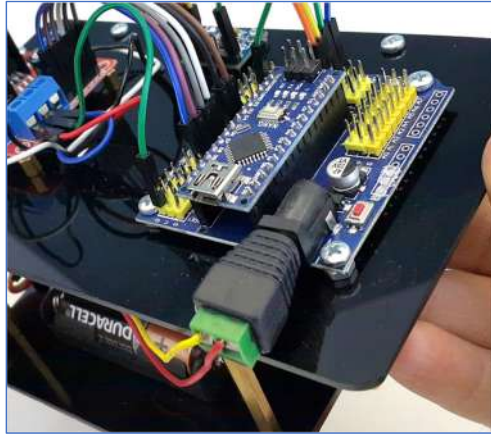
Step 18: Finally, when you put the wheels on the engine, Immortal is ready to be coded.

We're Here to Help
Feel free to
reach out to us at

http://rbt.ist/immortalrobot

+1 628 267 3834

support@robotistan.com