
Embedded System Design

Tracebot Introduction

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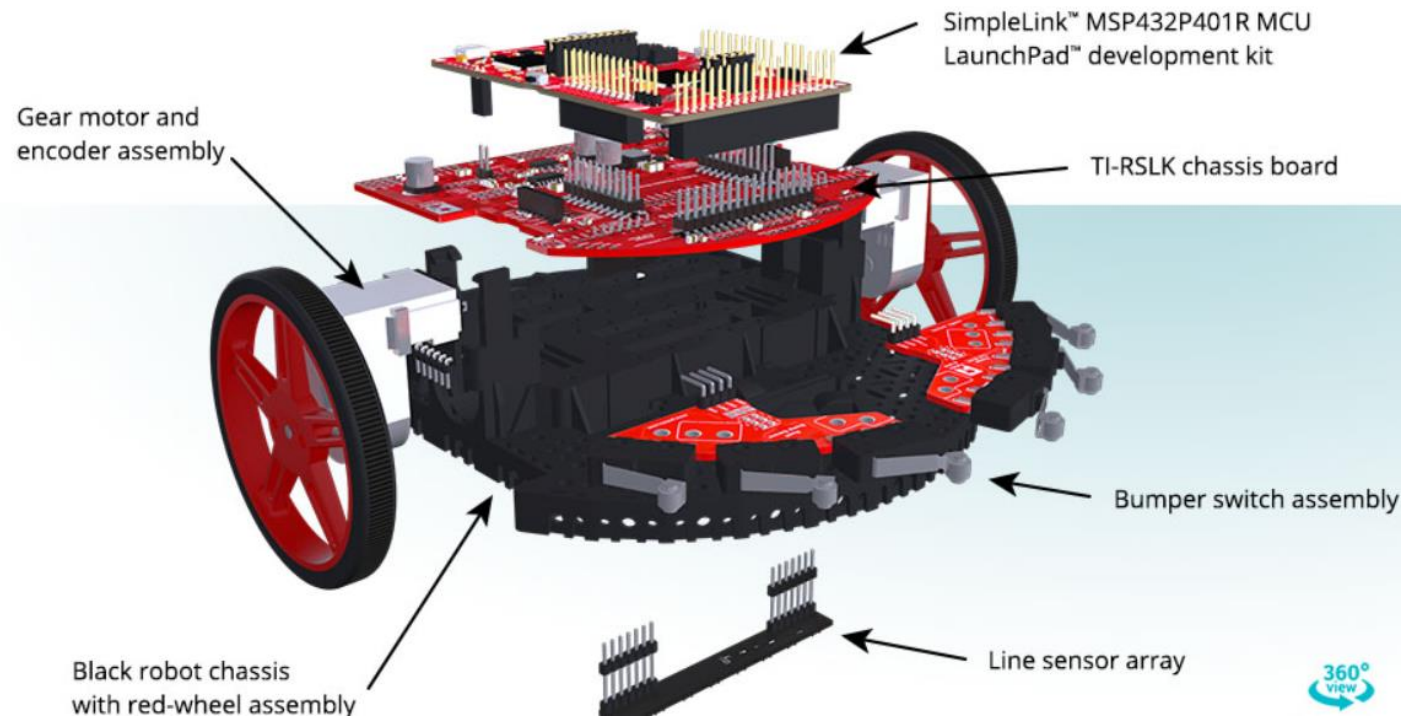
1. Trace-bot Assembly
2. Setup Software Environment
3. Simple Test (optional)



TRACE-BOT ASSEMBLY

Introducing the TI-RSLK

- TI-RSLK MAX
 - Conduct a maze search project with tracing bot
 - Detailed information can be found at the following [link](#)



Construction guide

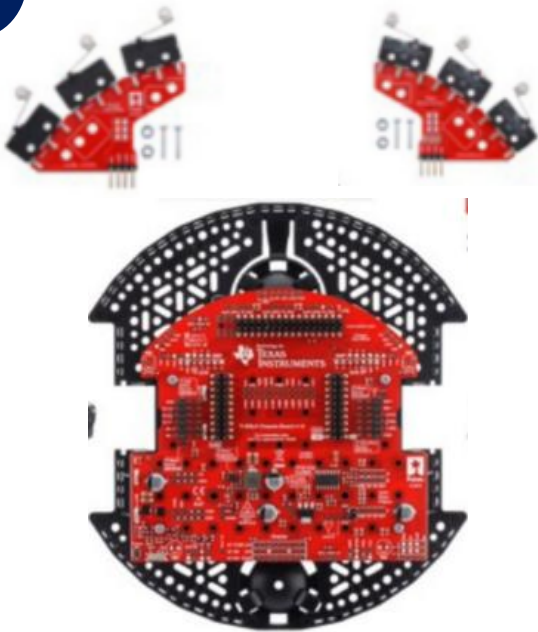
-The following items will be needed to construct the TI-RSLK

- One Romi chassis plastic base plate (black) with the TI-RSLK chassis board and battery installed
- One right and one left bumper assembly, along with four nuts and four 7/16th inch long bolts
- One 8-channel QTR reflectance sensor array
- Two Romi chassis motor clips
- Two Romi gear motors with encoders
- Two Romi wheels with tires
- One Romi ball caster kit
- One TI MSP432P401R LaunchPad development with the required headers (2x19 and 2x1) attached
- You will need a Phillips head screwdriver(not included)

Construction guide

- It is assembled in four steps

1



bumper switch boards

2



Motor clips & Tire wheel

3

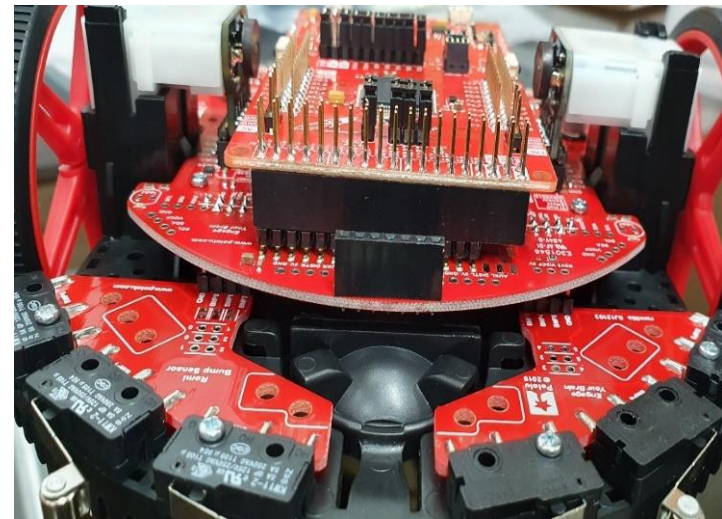
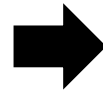
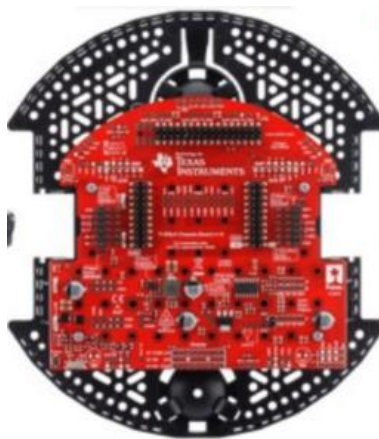


Ballcaster & sensor

Construction guide

- It is assembled in four steps

4

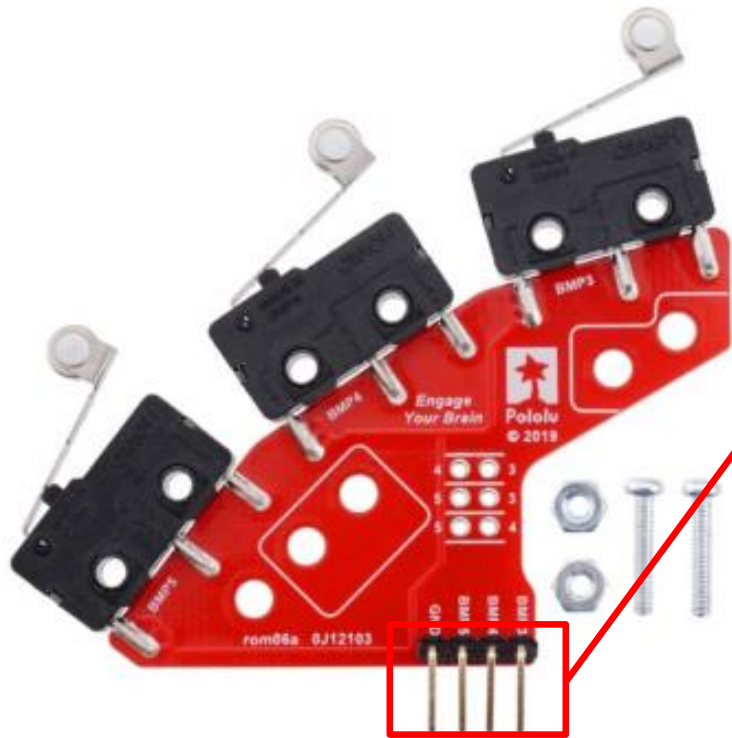


- Connect Launchboard

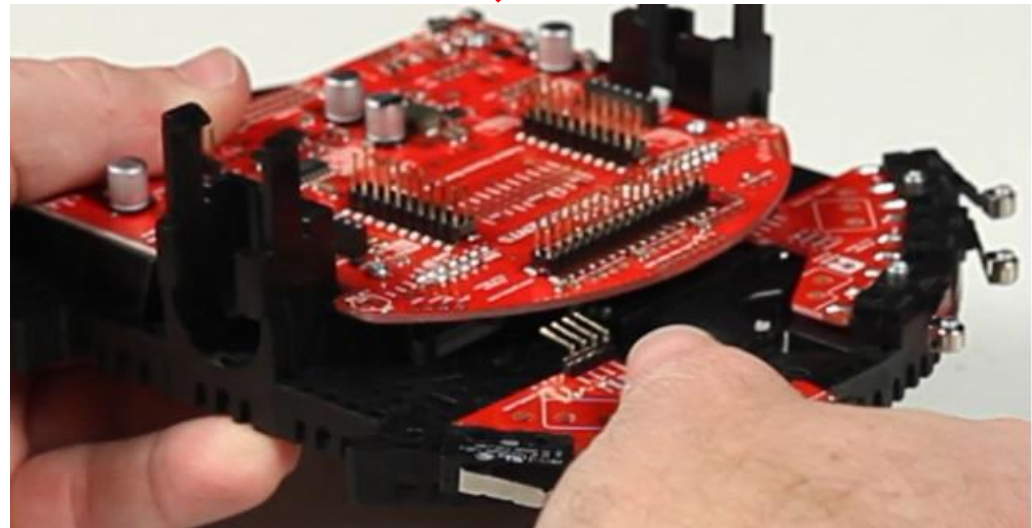
Be careful

- There is a fitting operation for future assemblies.
- Therefore, do not force insertion or installation, the part will be damaged
- If there's a problem, please call the assistant

1. Two bumper & switch board

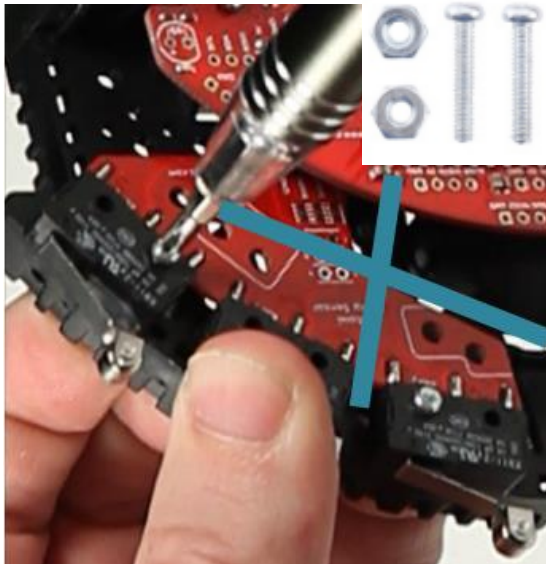


- Required parts to install the left and right bumper

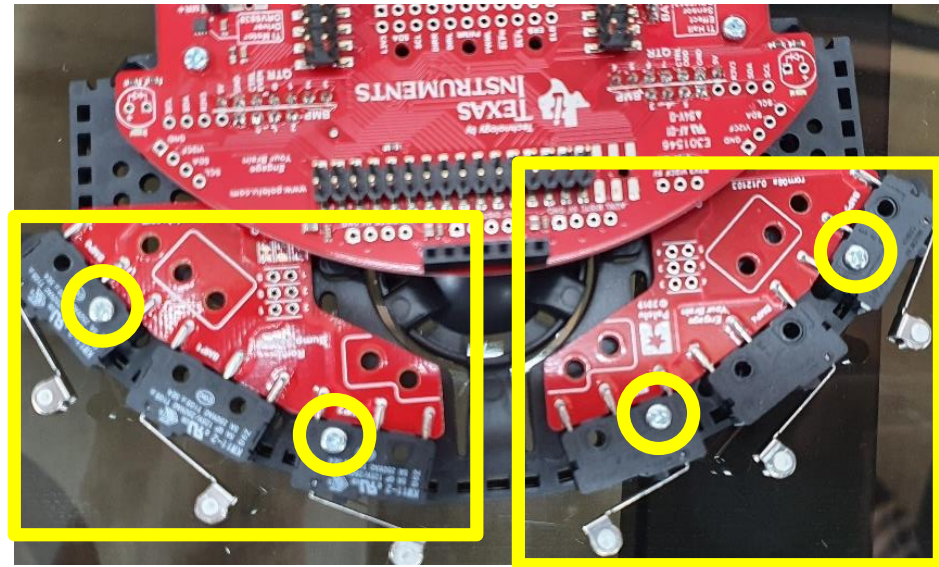


- Insertion of bumper switch board into female header

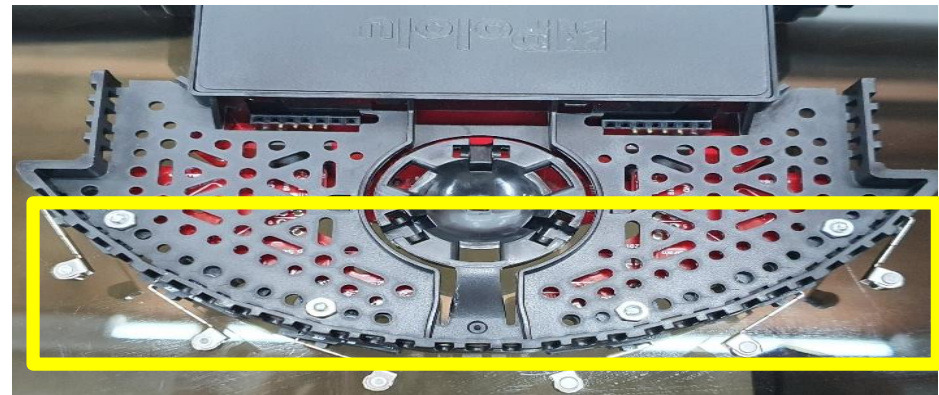
1. Two bumper & switch board



- Location of holes to secure the bumper switch boards

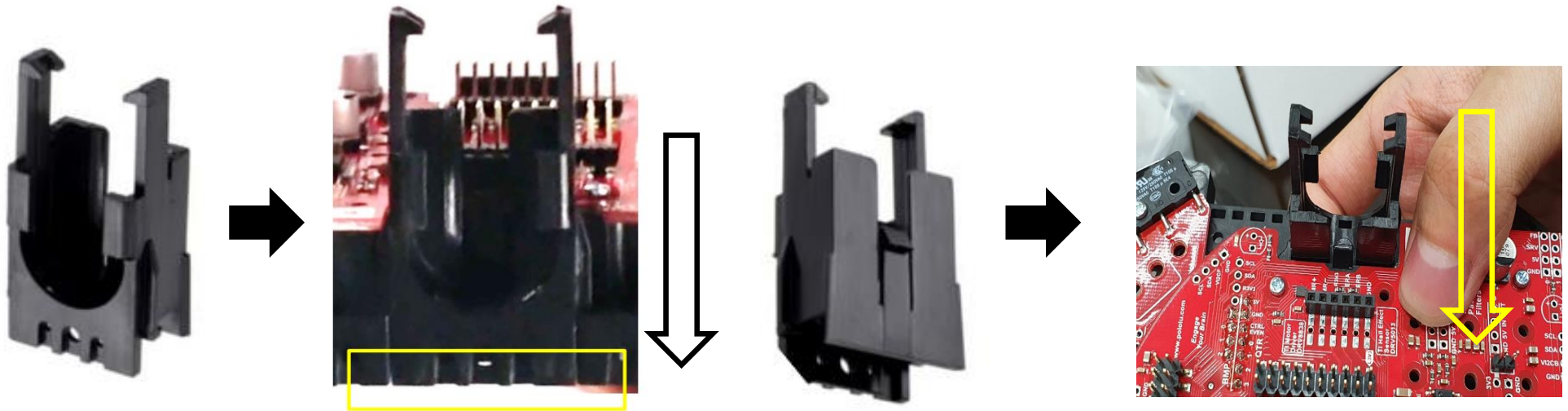


- Front with text
- Back with Blank



- Using the four bolts and nuts

2. Motor clips & Tire wheel

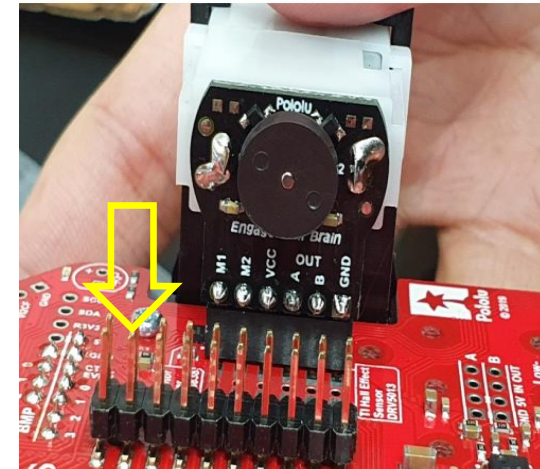
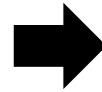
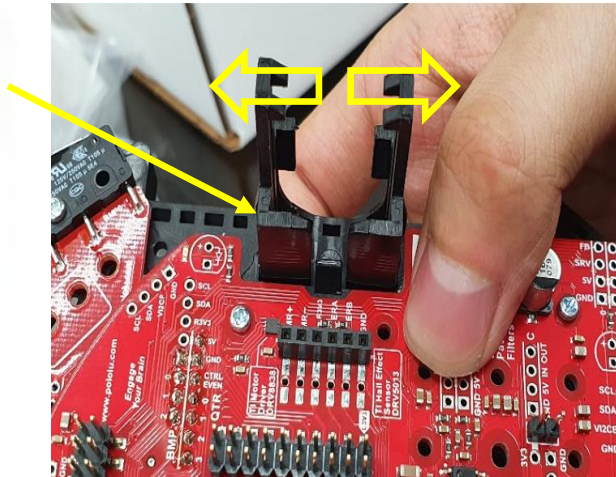


딸각!, click sound

- This step should be done **before inserting motors**
- With the motor clip aligned with the grooves as just instructed, push the motor clip all the way up into the plastic base plate
- **You may hear clicks** along the way, but it is not fully secured and correctly installed until the bottom of the motor clip is flush with the bottom of the plastic chassis plate
- Please **be careful risk breaking** this barb when you insert the motor.

2. Motor clips & Tire wheel

push it on both sides

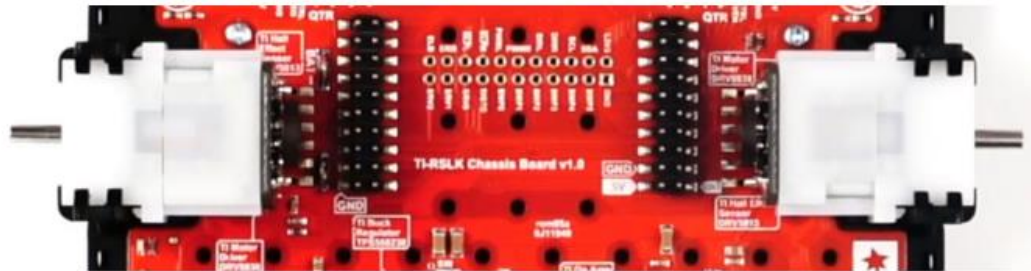


- Ensure the motor is straight and pins are aligned before pressing down firmly



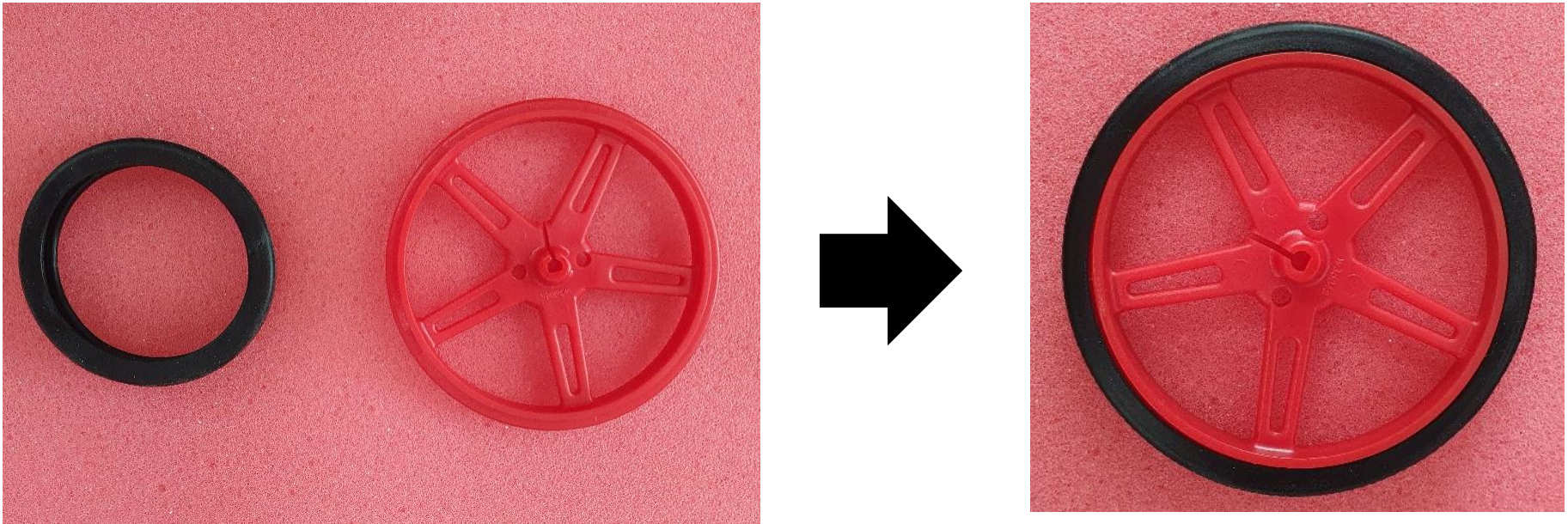
- Picture showing properly motor alignment and black plastic barbs holding the motors in place.

2. Motor clips & Tire wheel



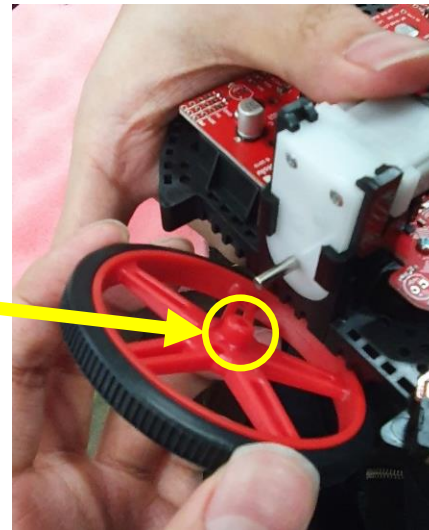
- Picture showing properly motor alignment and black plastic barbs holding the motors in place.

2. Motor clips & Tire wheel



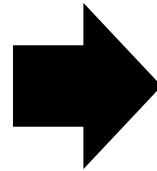
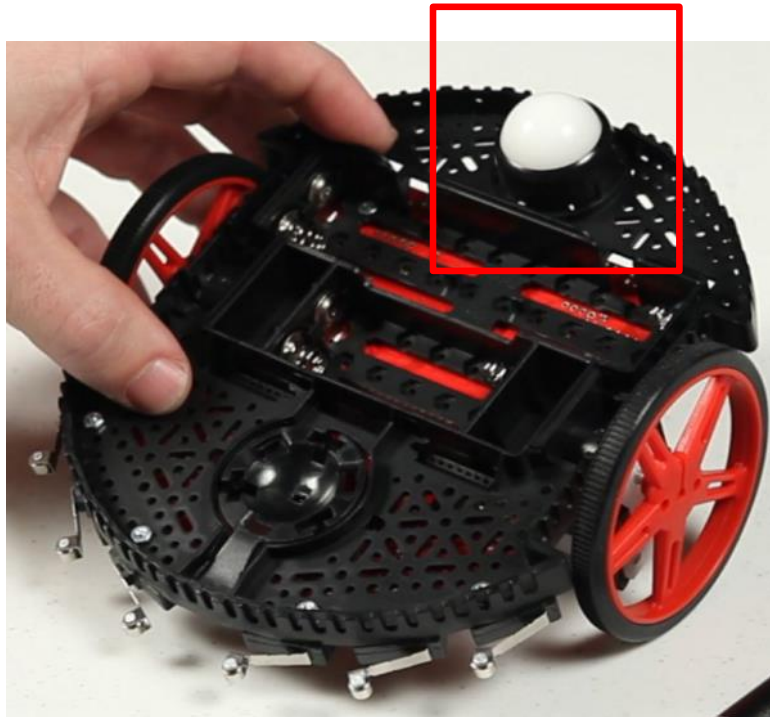
- Fit the round rubber to fit the Tire wheel

2. Motor clips & Tire wheel



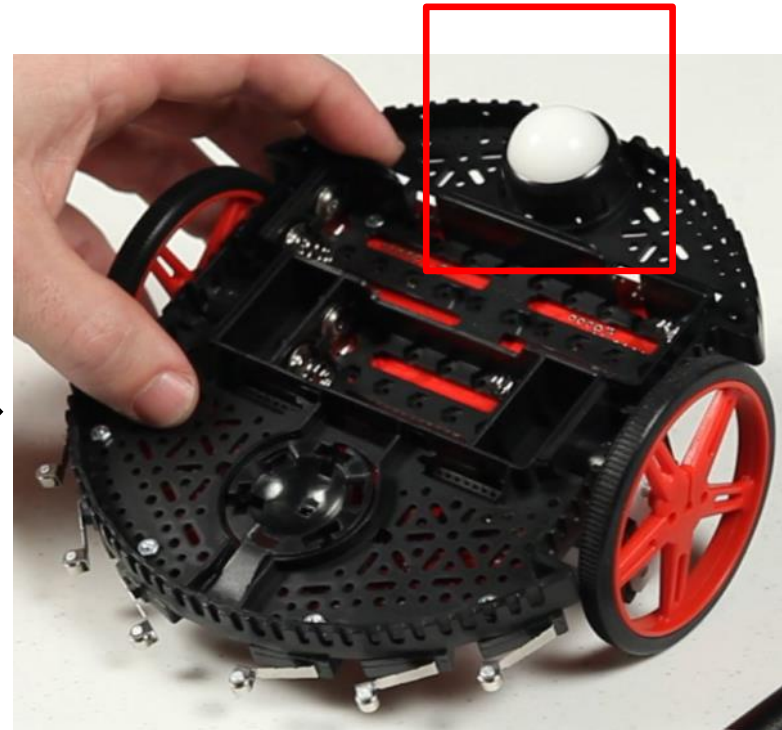
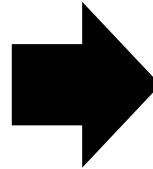
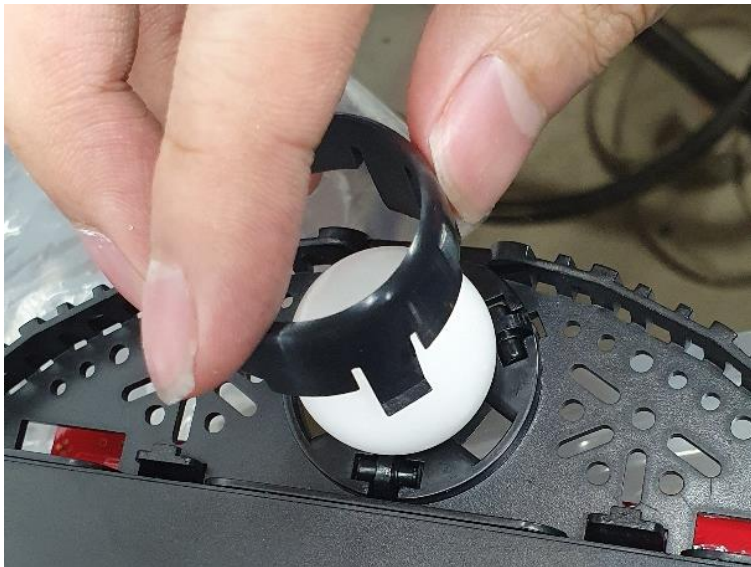
- Tires properly installed onto the wheels. Notice the “D” shaped hole in the center of the wheel
- Applying force to insert the wheel onto the motor shaft

3. Ball caster & Sensor



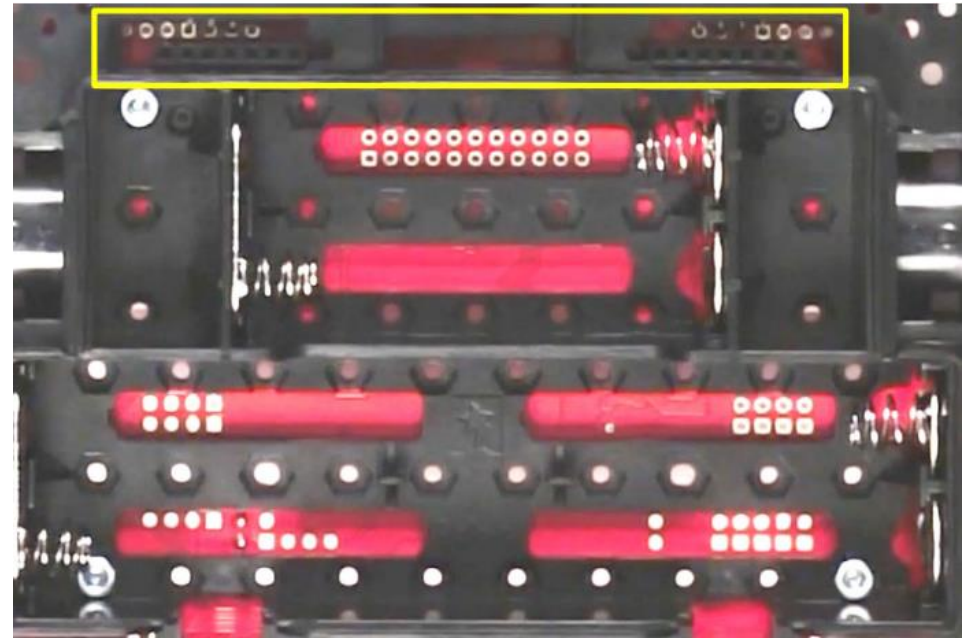
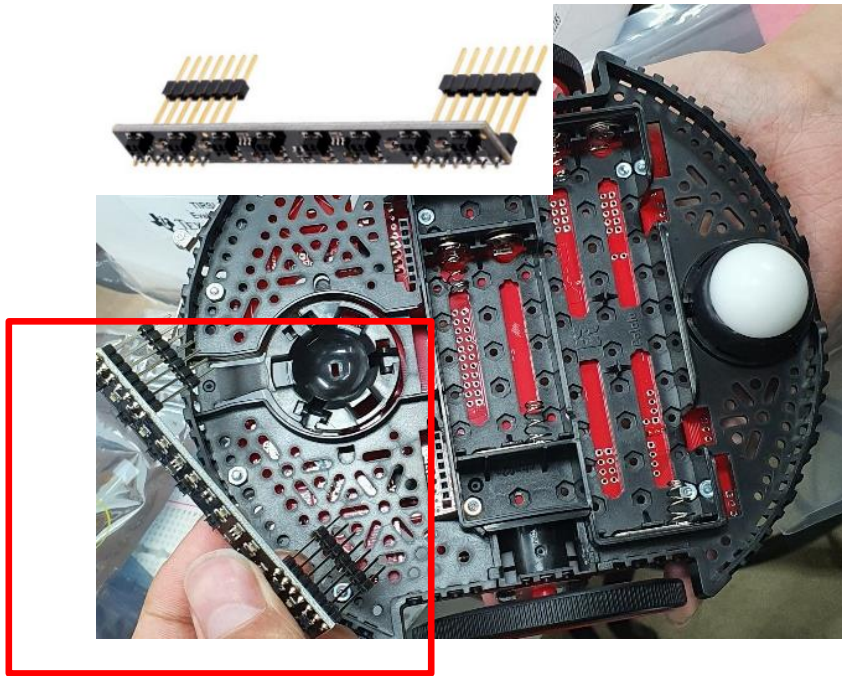
- The three rollers will then be installed so that the shafts rest in the plastic grooves and the larger wheel portion of the rollers are free to spin

3. Ball caster & Sensor



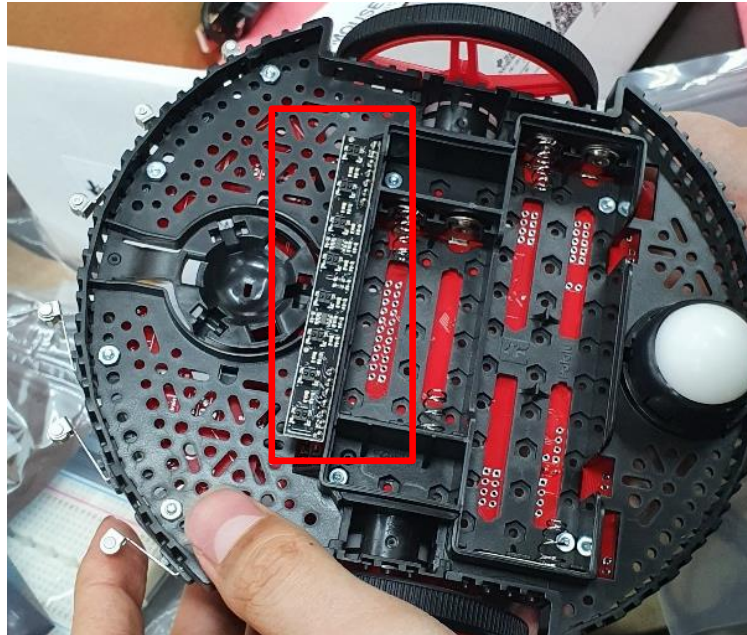
- Proper location of ball caster

3. Ball caster & Sensor



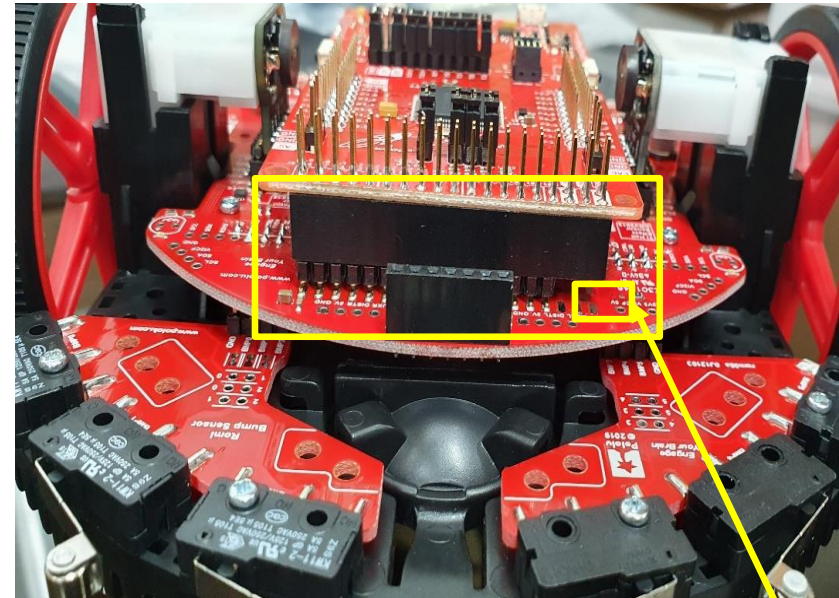
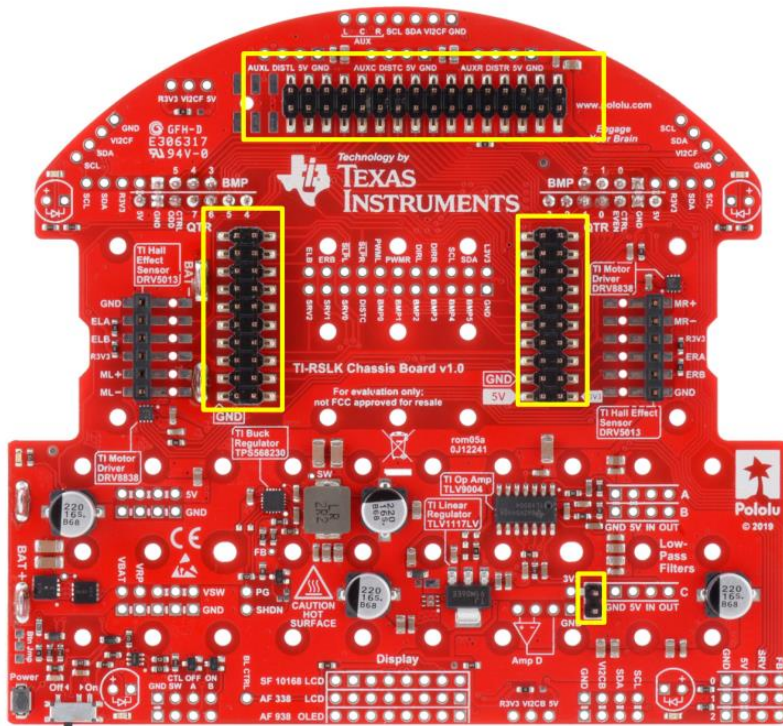
- To install the 8-channel QTRX line following sensor
- Location of two 1x7 female headers for the line following sensor

3. Ball caster & Sensor



- Insert the sensor with the largest part of the board facing the front of the robot

4. Connect LaunchPad



Empty!

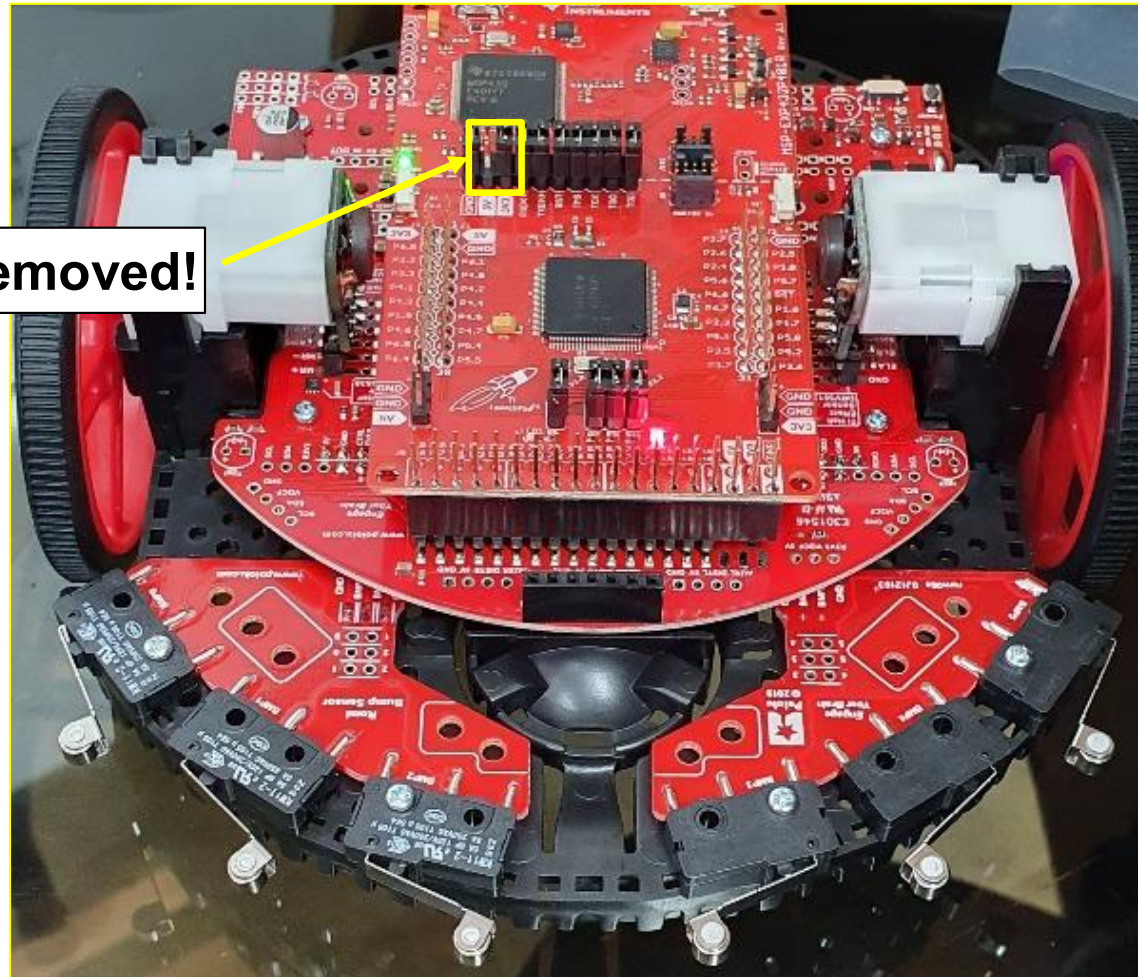
- Carefully place and align the LaunchPad onto these header pins and press down evenly, being careful not to bend or break any of the header pins

4. Connect LaunchPad



- The 5V jumper in the middle of the MSP432P401R LaunchPad must be removed before installing it onto the chassis board
- **You will damage the robot if this 5V jumper isn't removed**

4. Connect LaunchPad



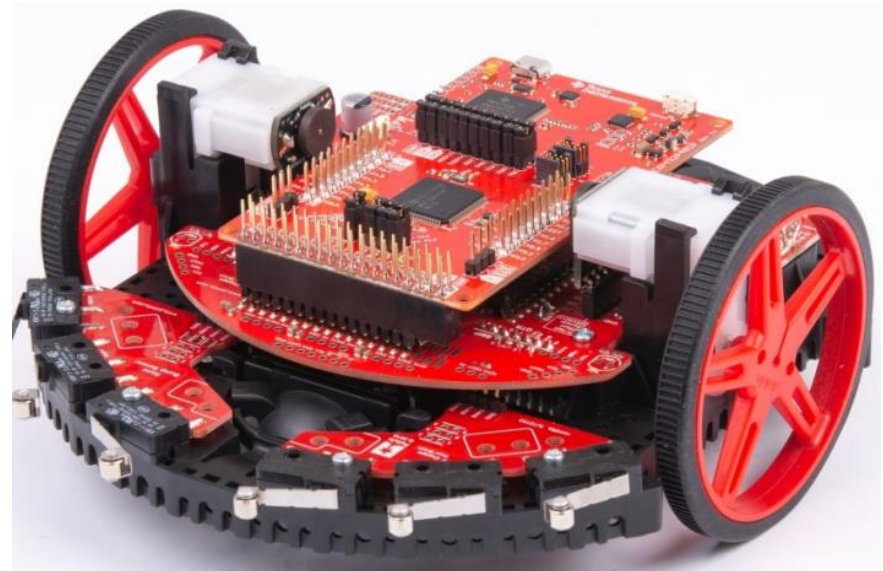
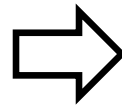
- The LaunchPad is now ready for use with the trace bot

4. LaunchPad installment

- If you want to disassembly guide, [Go to this TI-RSLK Instruction Link](#)
- When you're ready to power up the TI-RSLK Max for the first time, the last step will be to install six AA-sized batteries into the battery compartment



Install six AA-sized batteries



Finished assembling!

SETUP SOFTWARE ENVIRONMENT

SIMPLE TEST



Simple Test (optional)

- You can check if the environment is correctly configured at the following [go to simple test](#)



Thank you

