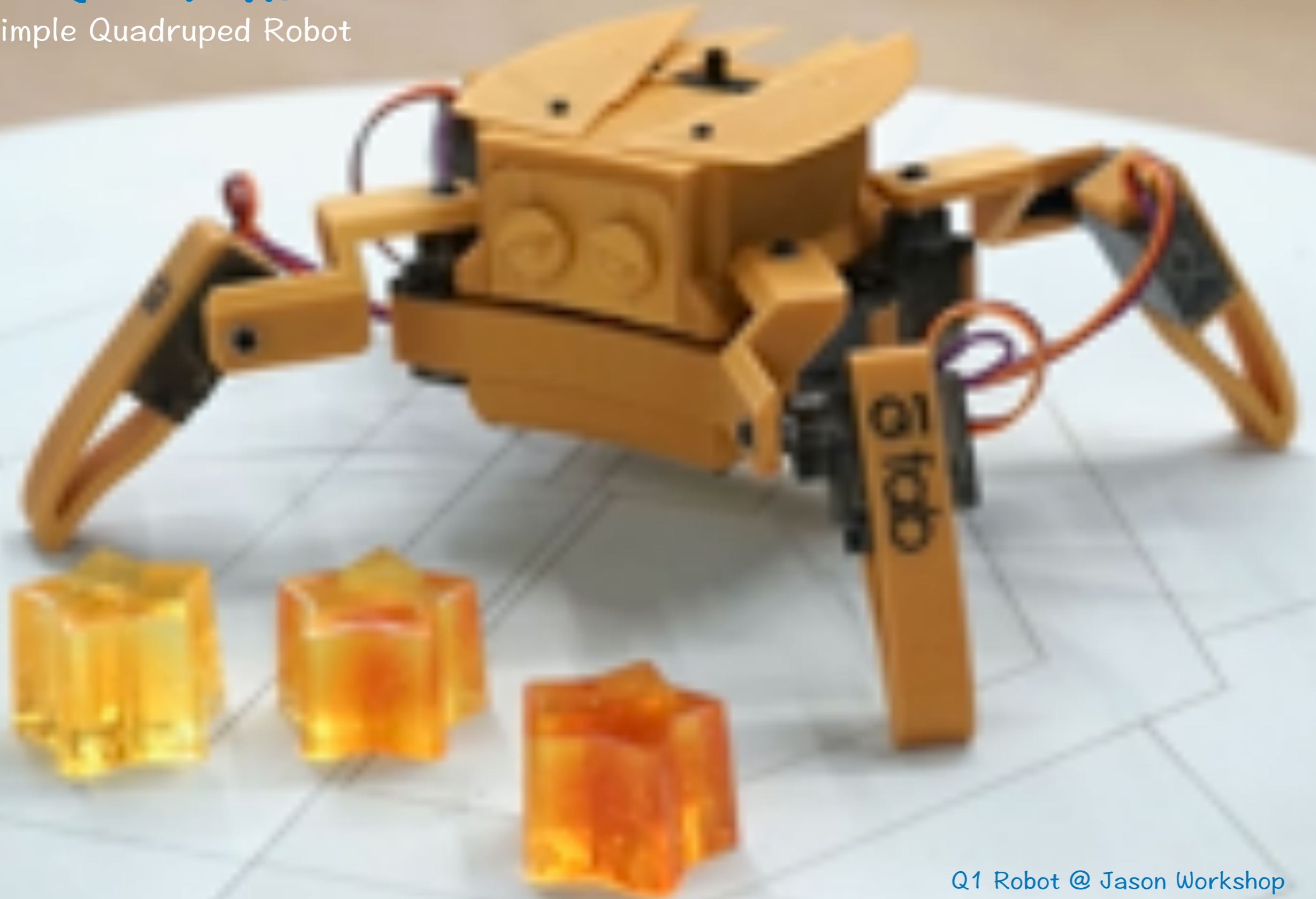


# Q1 fab

Simple Quadruped Robot



# Licensing



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# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



Software



Assemble



Play



Sumo Game

# Start Now!

# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



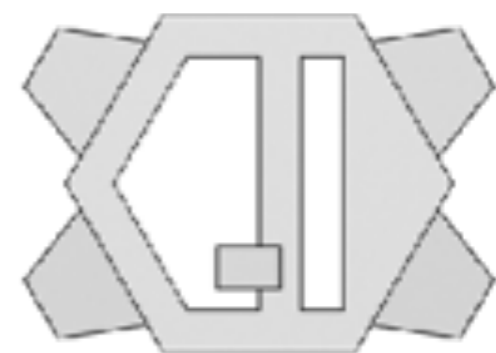
Software



Assemble



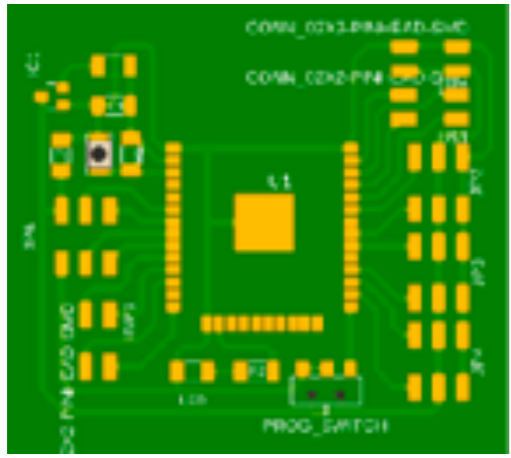
Play



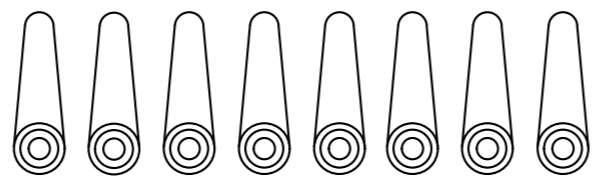
Sumo Game



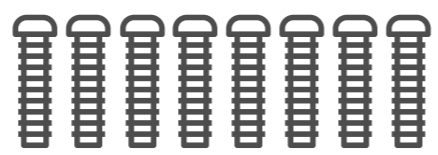
# Prepare Parts \ Parts List



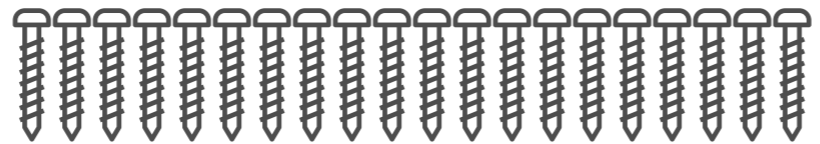
Q1 core ESP32  
Control Board x 1



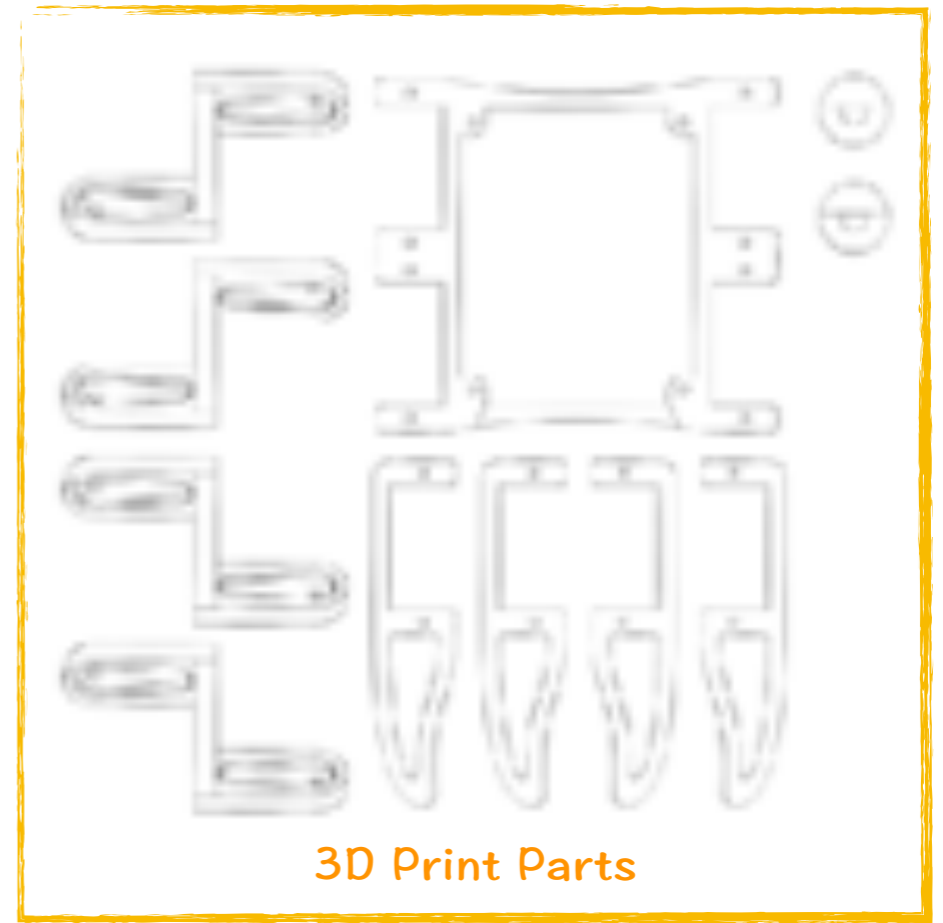
Servo Arm x 8



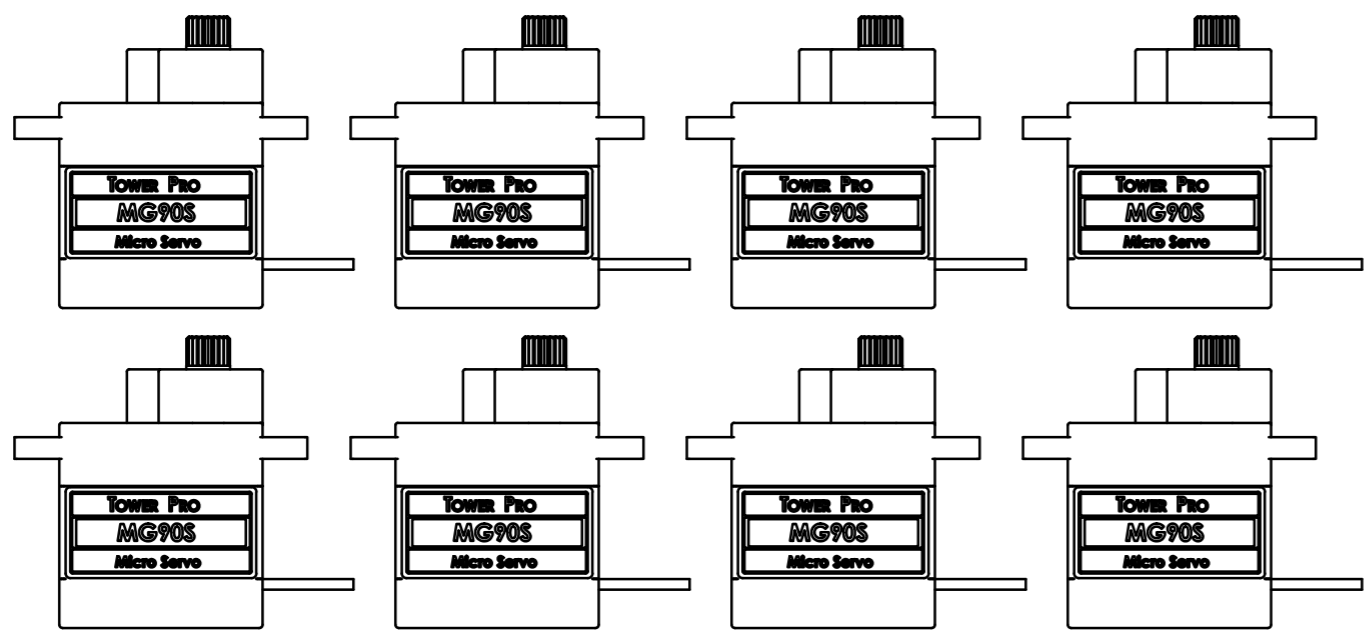
M2.5 x 8mm PM Screw x 8



M2 x 8mm PA Screw x 20



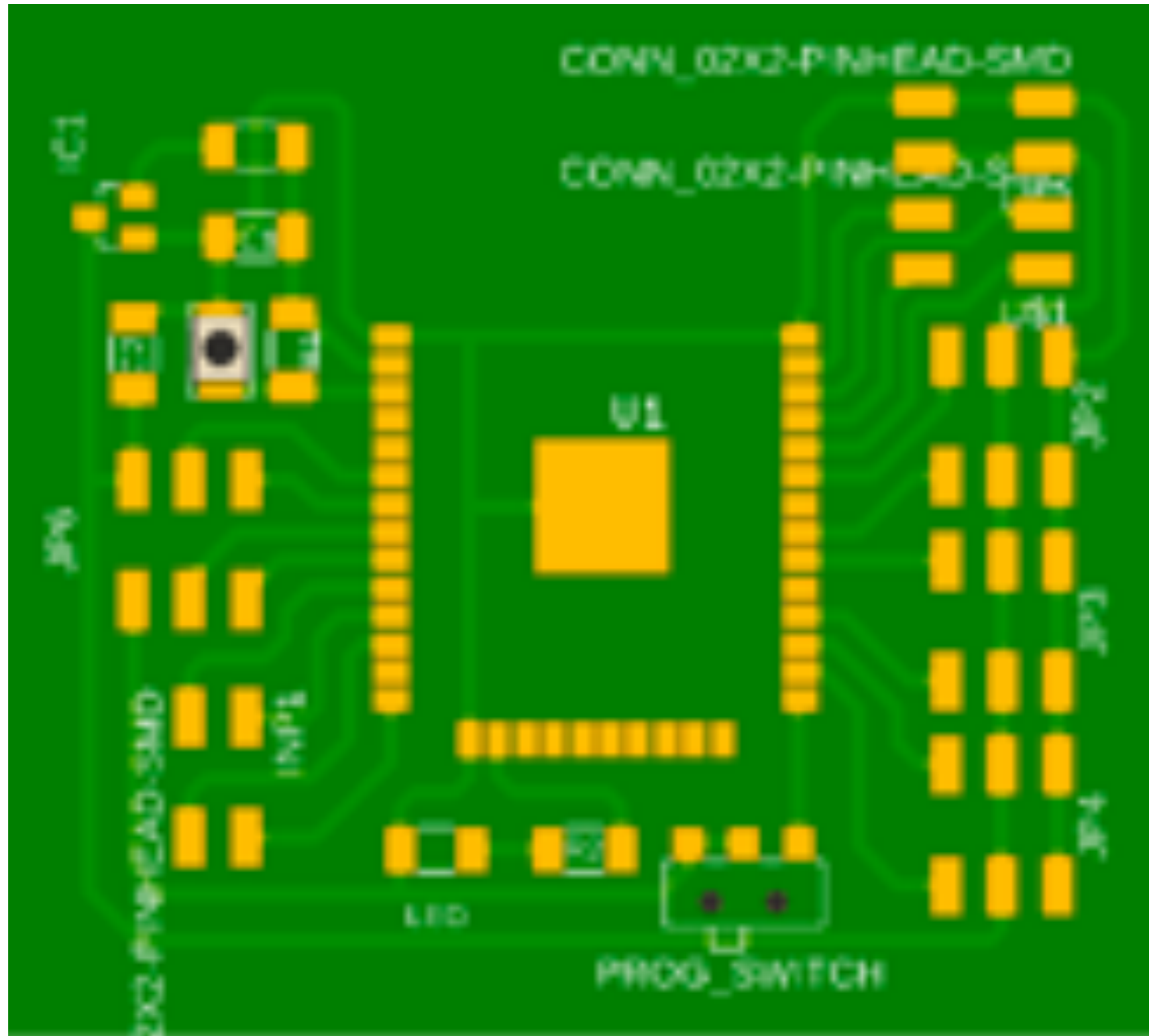
3D Print Parts



Tower Pro MG90d Servo x 8  
(120 Degree)



# Prepare Parts \ Q1 core ESP32 Control Board



# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



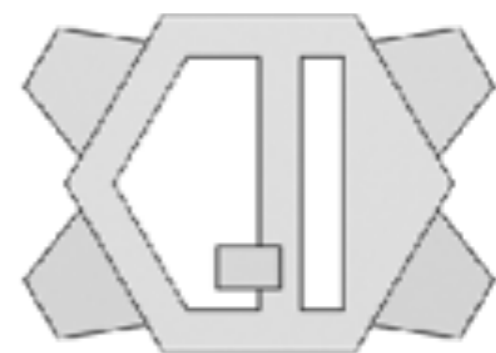
Software



Assemble



Play



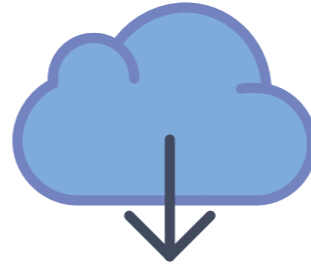
Sumo Game





# 3D Print \ How to Print

1



Download "stl" file from:  
Q1 fab GitHub

2



Use slicing software **convert "stl" to "gcode"**  
[ultimaker.com/software/ultimaker-cura](https://ultimaker.com/software/ultimaker-cura)

Starting Ultimaker Cura for the first time  
[ultimaker.com/en/resources/51945-first-use-ultimaker-cura](https://ultimaker.com/en/resources/51945-first-use-ultimaker-cura)

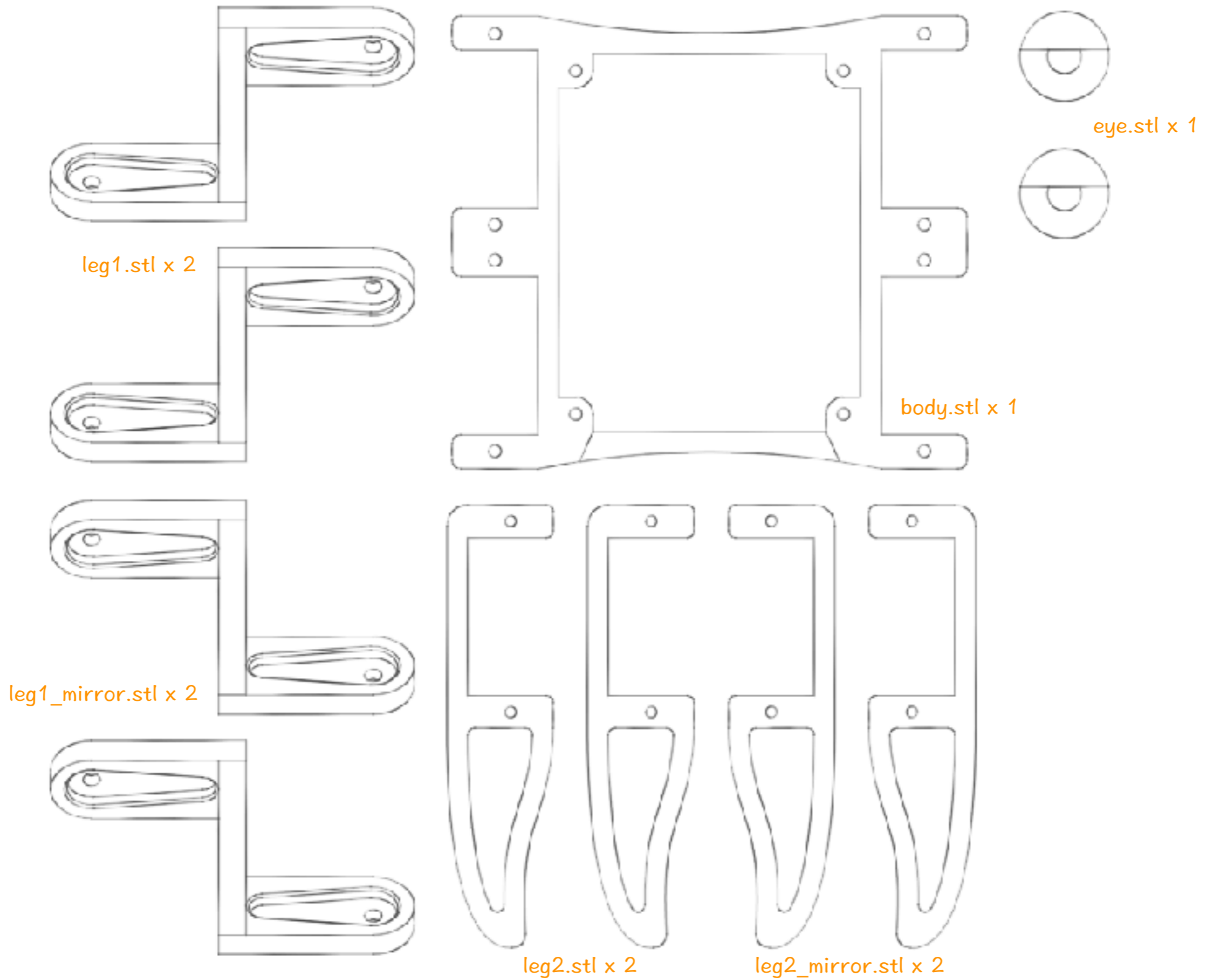
3



Use 3D printer **printout "gcode"**

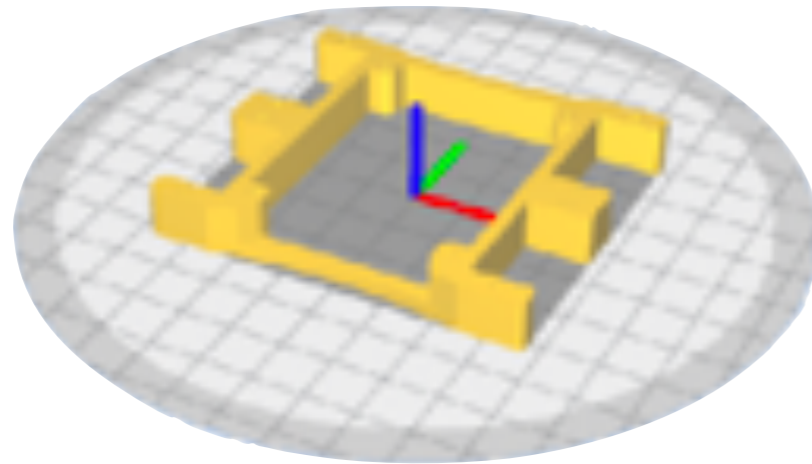


# 3D Print \ 3D Parts List

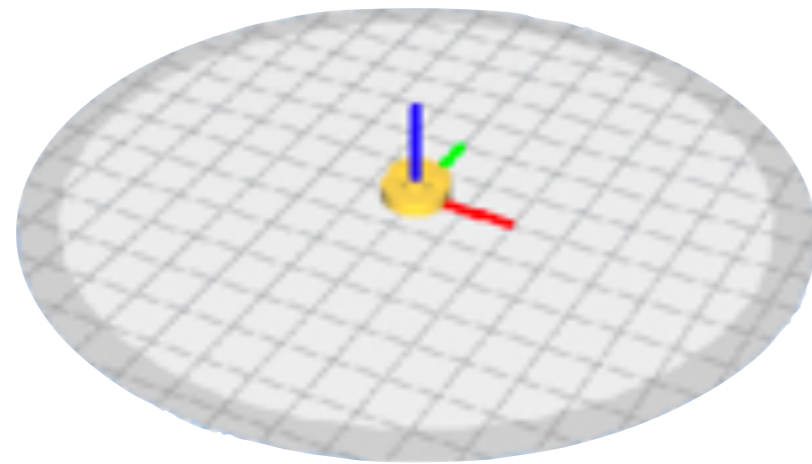




## 3D Print \ Print Suggestion (1/3)



body.stl x 1

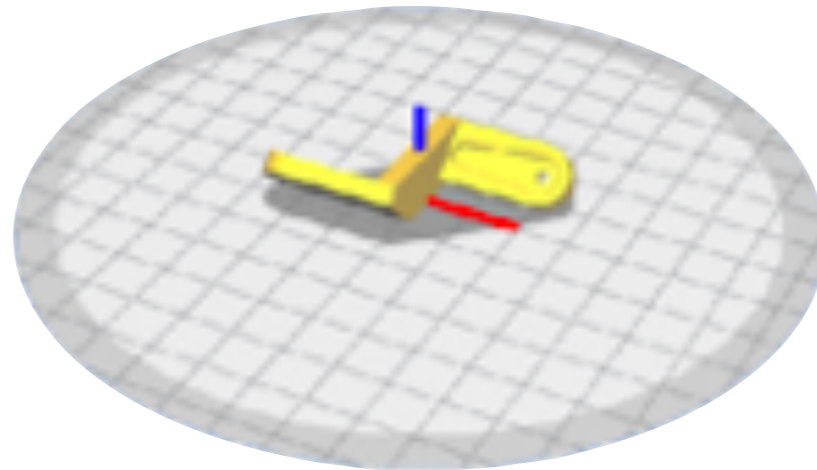


eye.stl x 1

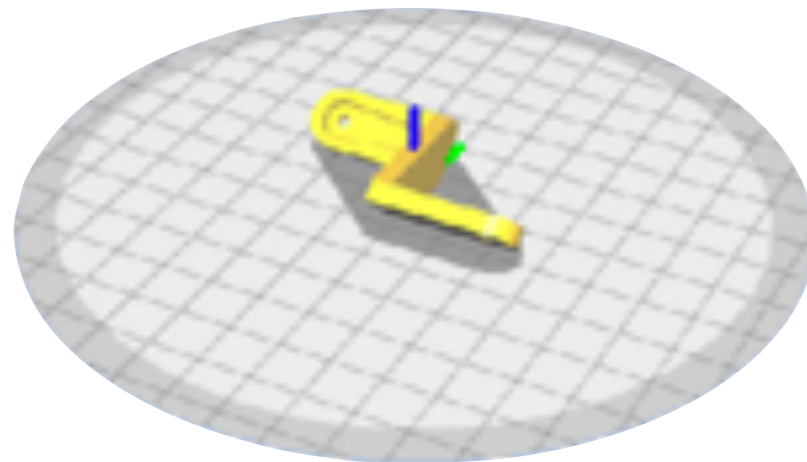
Nozzle size: 0.4mm  
Layer Height: 0.2mm  
Wall Thickness: 0.8mm  
Infill Density: 20%  
No Support



## 3D Print \ Print Suggestion (2/3)



leg1.stl x 2



leg1\_mirror.stl x 2

Nozzle size: 0.4mm

Layer Height: 0.2mm

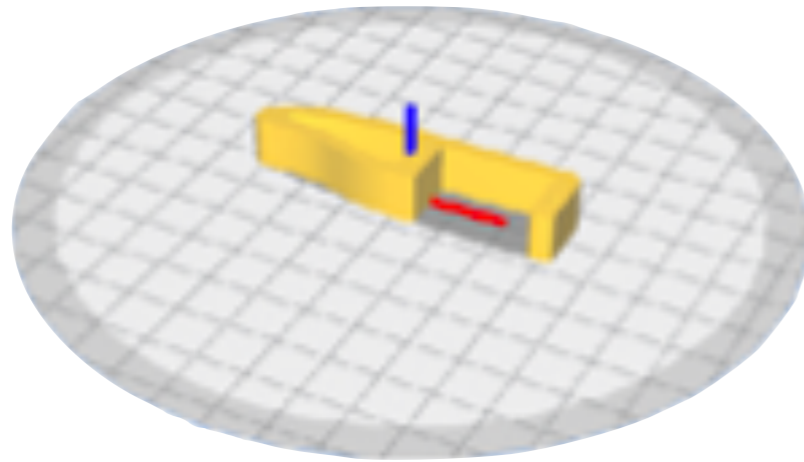
Wall Thickness: 0.8 - 1.2mm

Infill Density: 20%

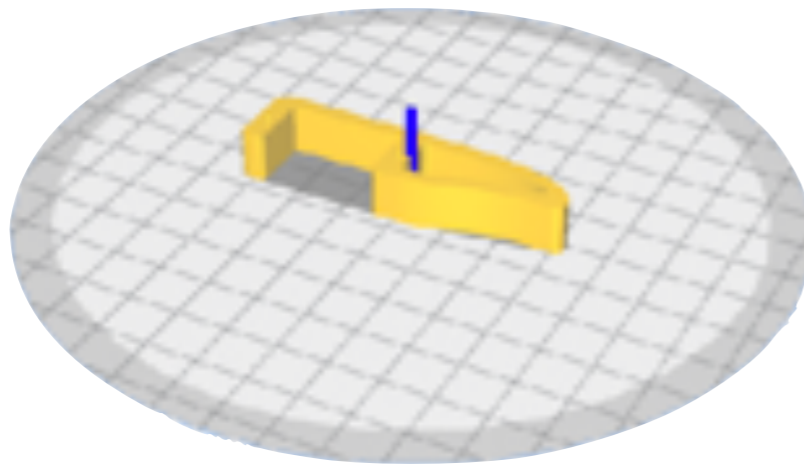
No Support



## 3D Print \ Print Suggestion (3/3)



leg2.stl x 2



leg2\_mirror.stl x 2

Nozzle size: 0.4mm  
Layer Height: 0.2mm  
Wall Thickness: 0.8mm  
Infill Density: 0 - 20%  
No Support

# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



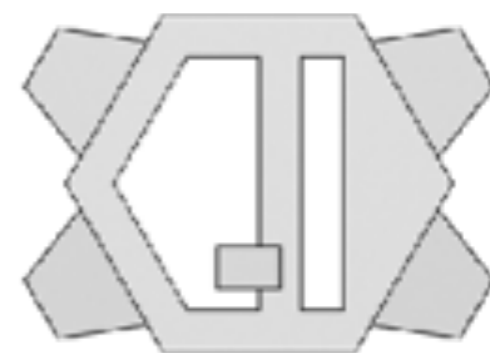
Software



Assemble



Play



Sumo Game

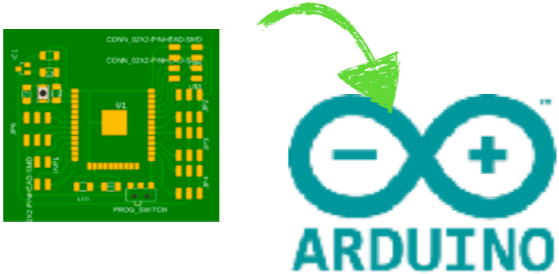


1



Install Arduino IDE

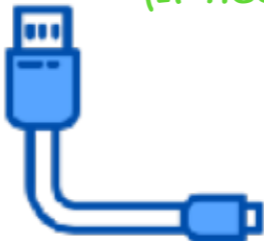
2



Add ESP32 Board to Arduino


3

(If necessary)



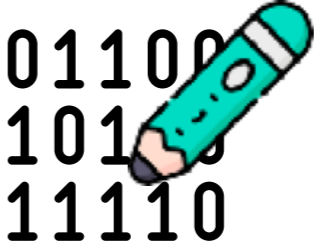
Connect to USB UART

4



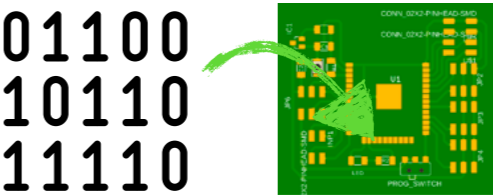
Include Library

5



Download and Custom  
Q1 fab Program

6



Upload Program



## Software \ Install Arduino IDE

Download and Install Arduino IDE to Computer

<https://www.arduino.cc/en/Main/Software>

Step-by-step Instructions for Install the Arduino IDE

<https://www.arduino.cc/en/Guide/HomePage>

**ARDUINO 1.8.10**  
The open-source IDE, the Arduino IDE, makes it easy to write and upload code to your Arduino board. It runs on Windows, Mac OS X, and Linux. The environment is an IDE for writing and uploading code to your Arduino board. This software is available with any Arduino board. For more information, please visit the Arduino website.

Windows (32-bit, for Windows XP and Windows 7)  
Windows 10 (64-bit) (coming soon)

Windows App (Requires Windows 10)

Mac OS X (32-bit and 64-bit)

Linux (32-bit)  
Linux (64-bit)  
Linux (ARM Cortex-M)  
Linux (ARM Cortex-A)

Release Notes  
Source Code  
Downloads (beta)



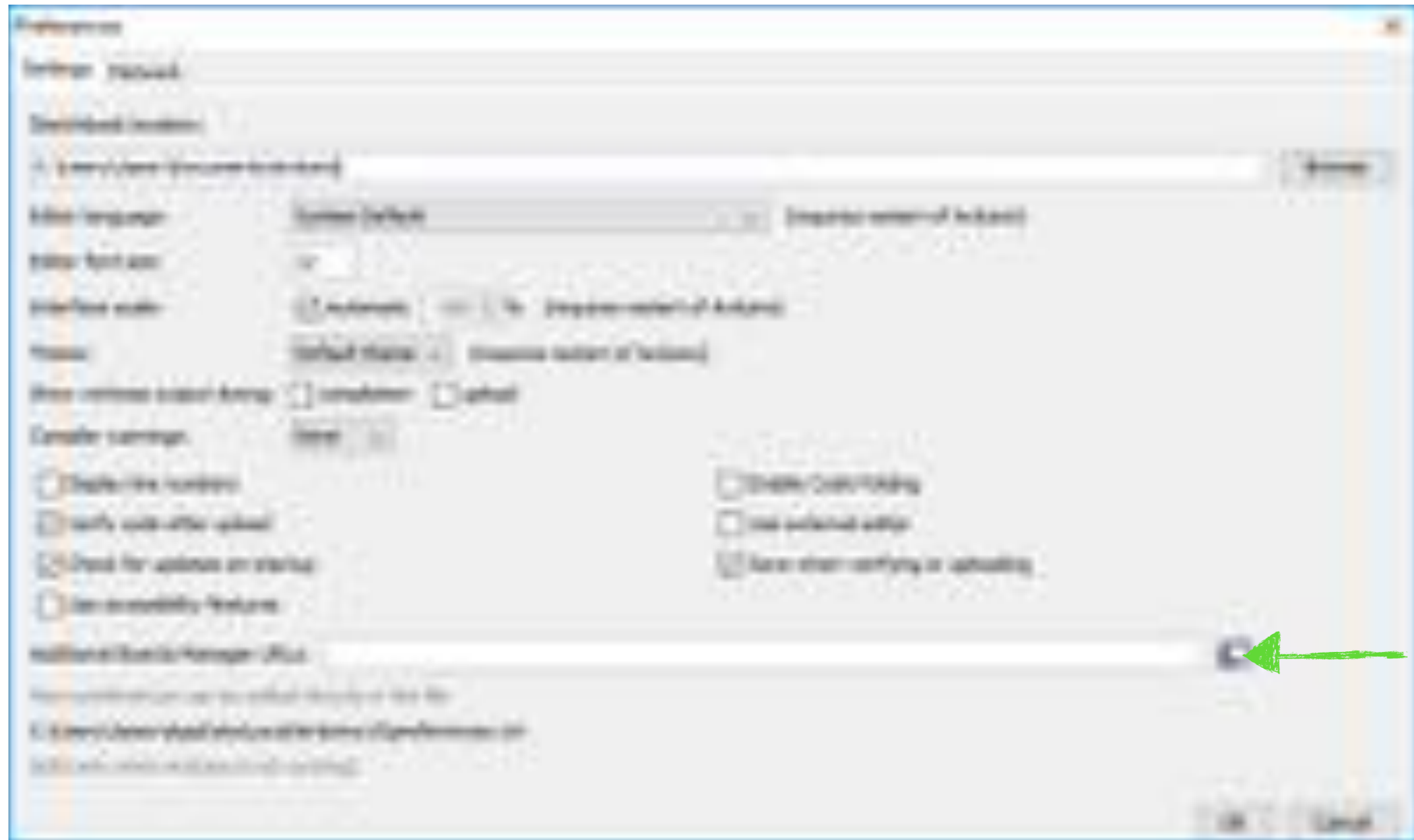


## Software \ Add ESP32 Board to Arduino (1/7)





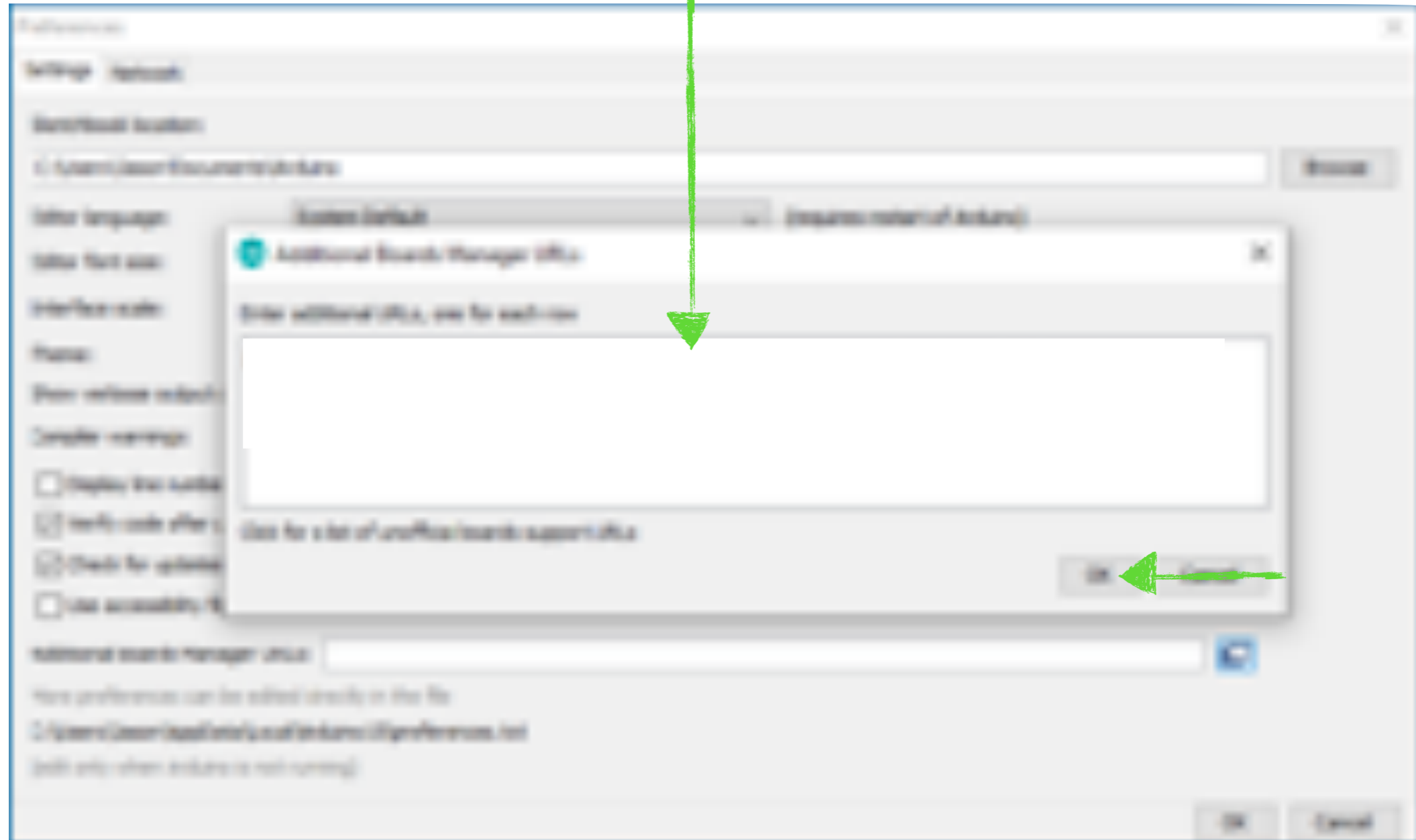
## Software \ Add ESP32 Board to Arduino (2/7)





## Software \ Add ESP32 Board to Arduino (3/7)

[https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package\\_esp32\\_index.json](https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json)



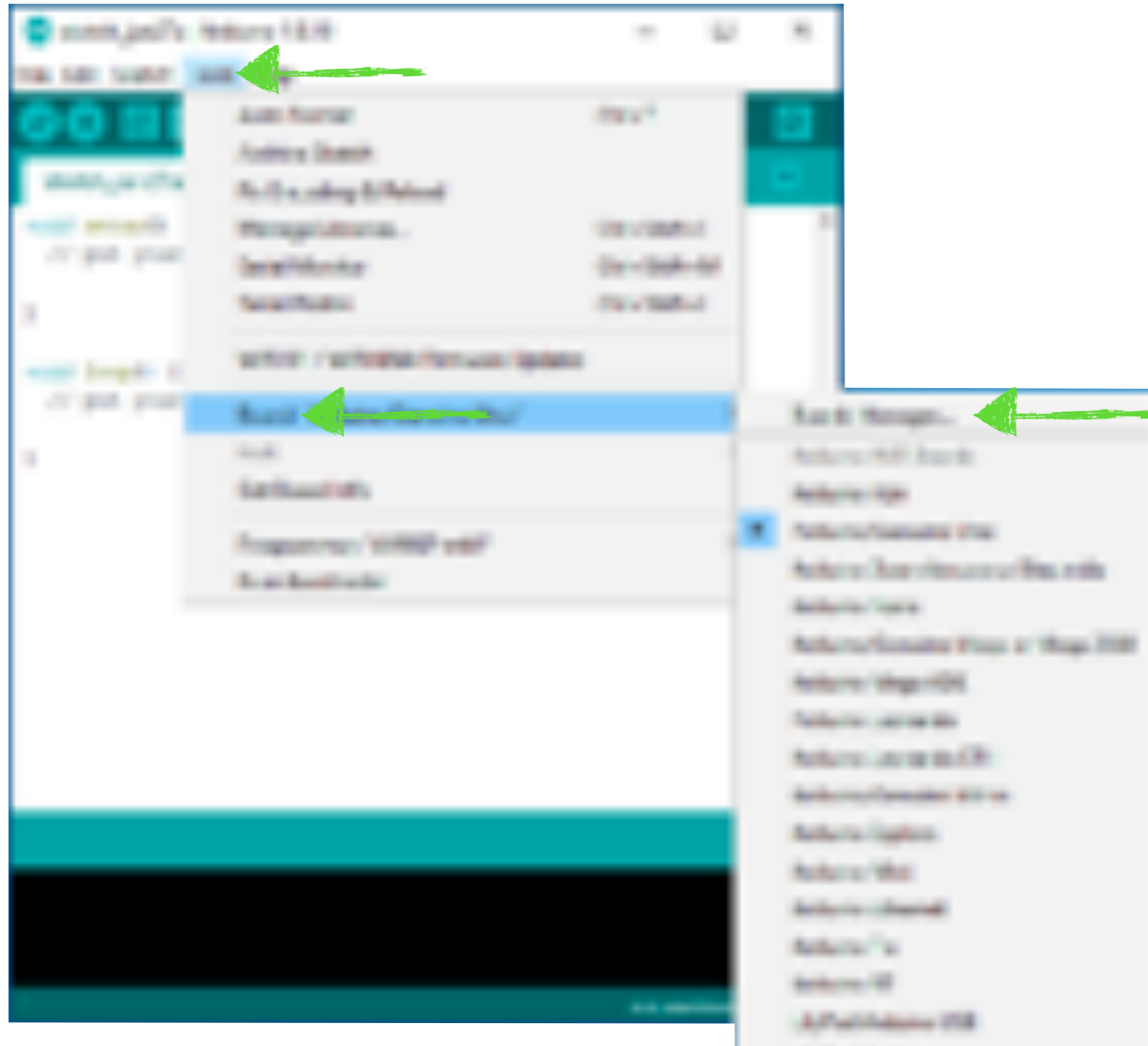


# Software \ Add ESP32 Board to Arduino (4/7)





# Software \ Add ESP32 Board to Arduino (5/7)

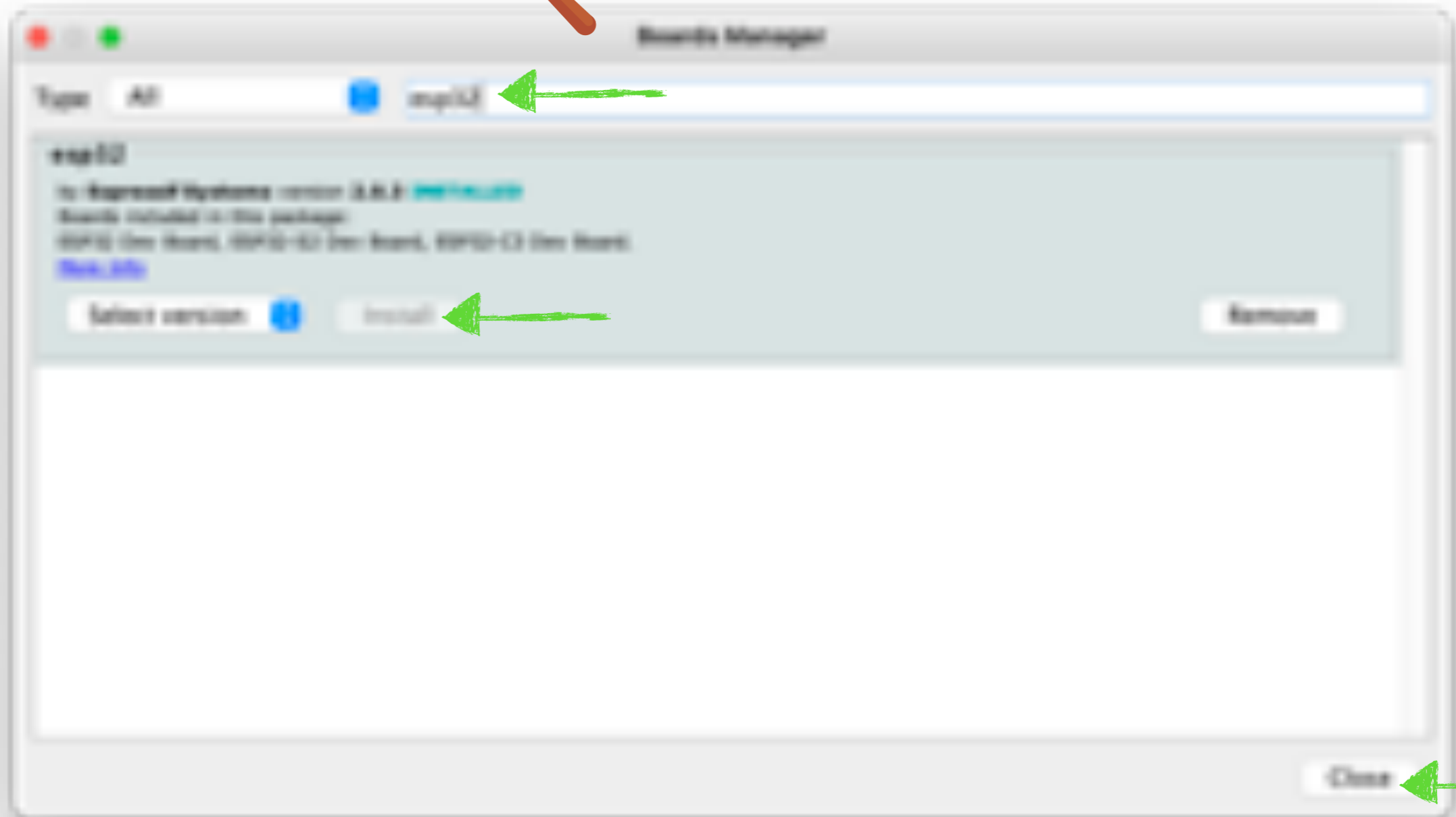




# Software \ Add ESP32 Board to Arduino (6/7)

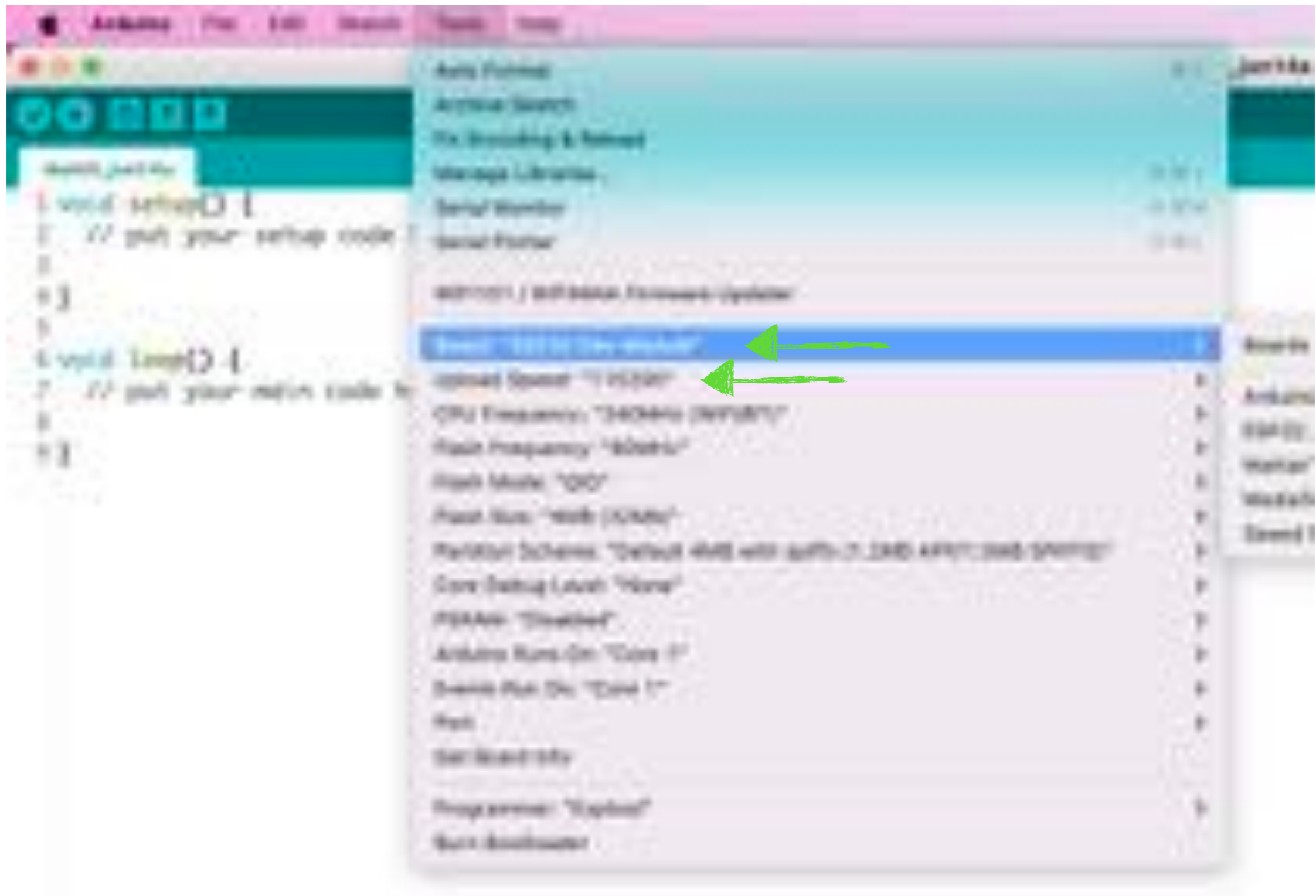


ESP32





## Software \ Add ESP32 Board to Arduino (7/7)

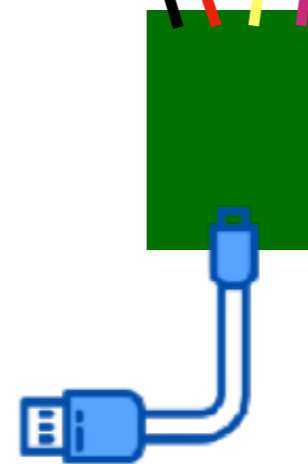
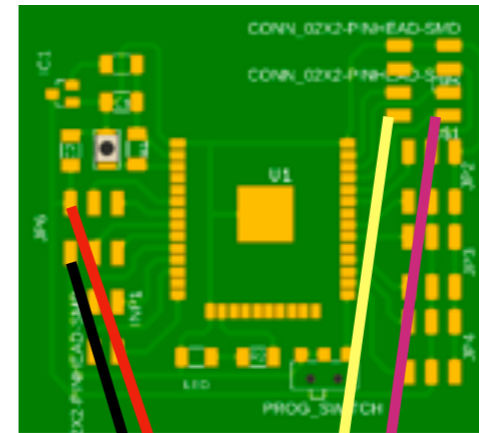




# Software \ Connect to Computer

Connect Q1 core to Computer

USB to UART	Q1 core board
5V+	VCC (5V)
GND	GND
TX	RX
RX	TX

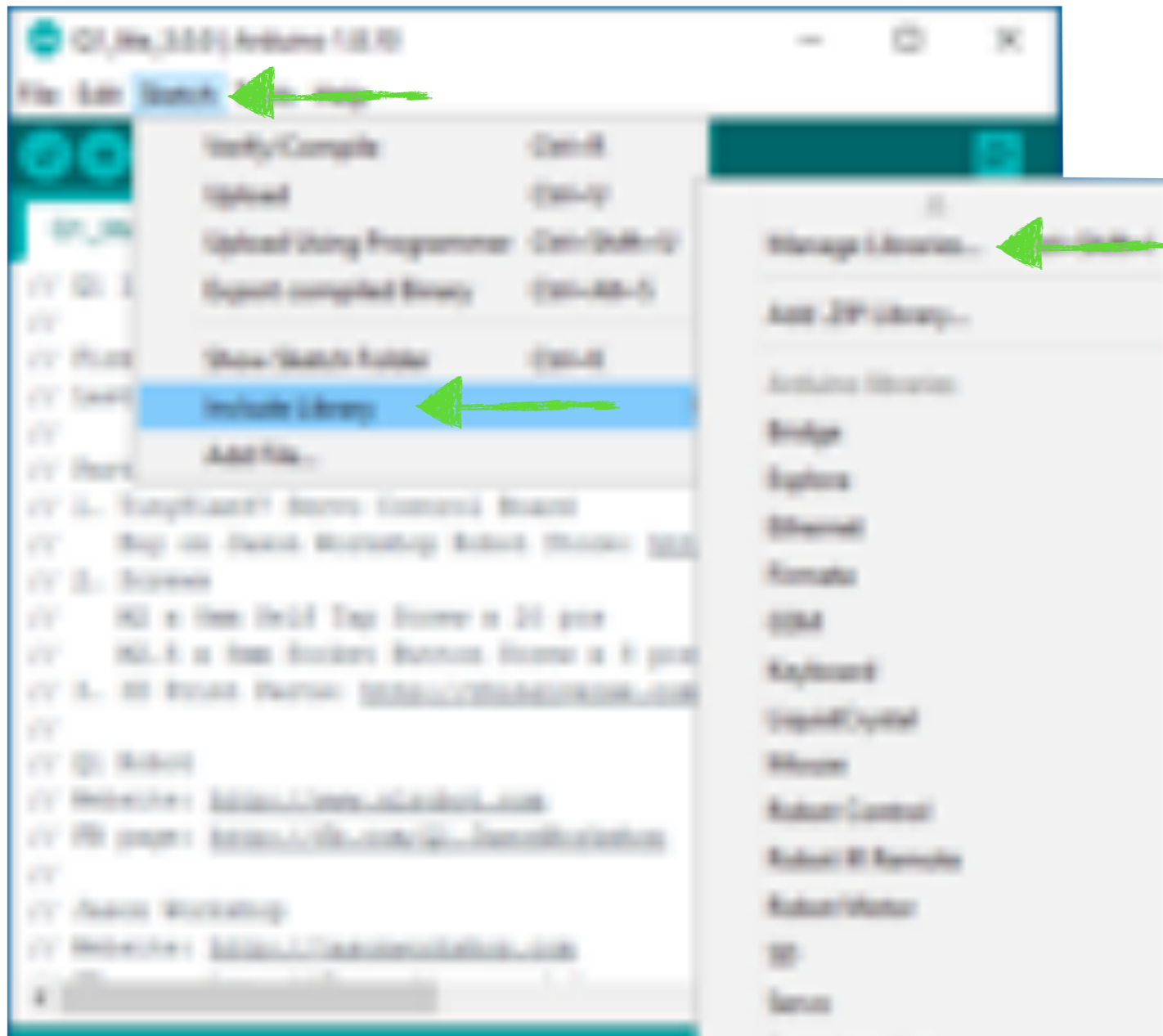


USB to UART





## Software \ Include Library



If need to include library, please go to top menu of Arduino IDE and choose **Sketch** > **Include Library** > **Manage Libraries** and search library you want to install.



# Software \ Include Library





## Software \ Download and Custom Q1 fab Program



Please download **Q1 fab Program** from:  
[www.jasonworkshop.com/q1fab](http://www.jasonworkshop.com/q1fab)



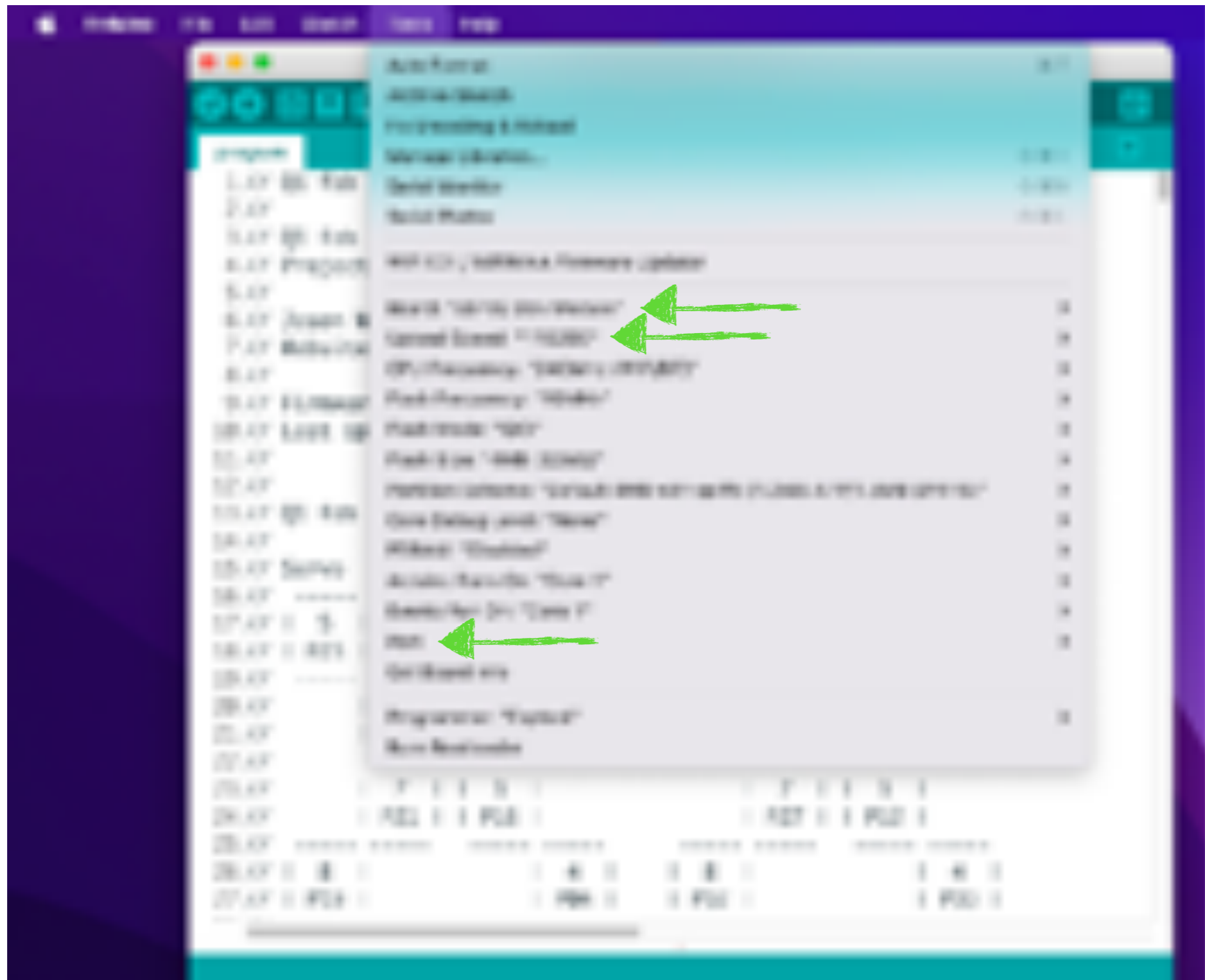
## Software \ Download and Custom Q1 fab Program

```
47
48
49 // User define value
50 // -----
51
52 boolean angle_feed_back_mode = false; // Toggle feed back mode
53 boolean wifi_ap_mode = true; // true = be a WiFi AP; false = connect existing WiFi
54 // Toggle AP mode
55 // WiFi
56 const char* ssid = "Q1fab"; // SSID
57 const char* password = "12345678"; // WiFi password
58 WiFiServer server(80); // Set web server port number to 80
59
60 // -----
61
62
```

Please change your WiFi SSID and Password



# Software \ Upload Program (1/2)





# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



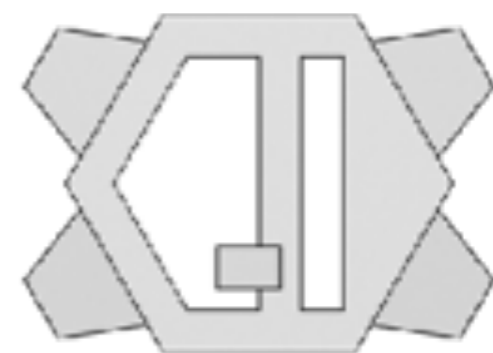
Software



Assemble



Play



Sumo Game



# Assemble \ Connect Servo



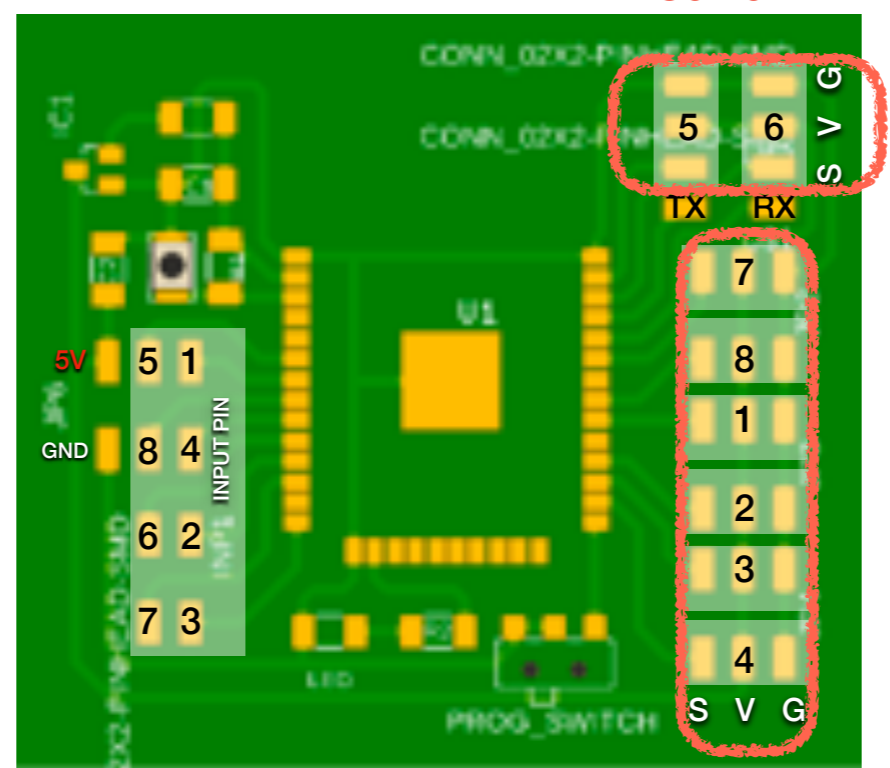
Front

Servo 5

Servo 6

Servo 8

Servo 7



Servo Pin

Servo Pin

Servo 2

Servo 1

Servo 3

Servo 4

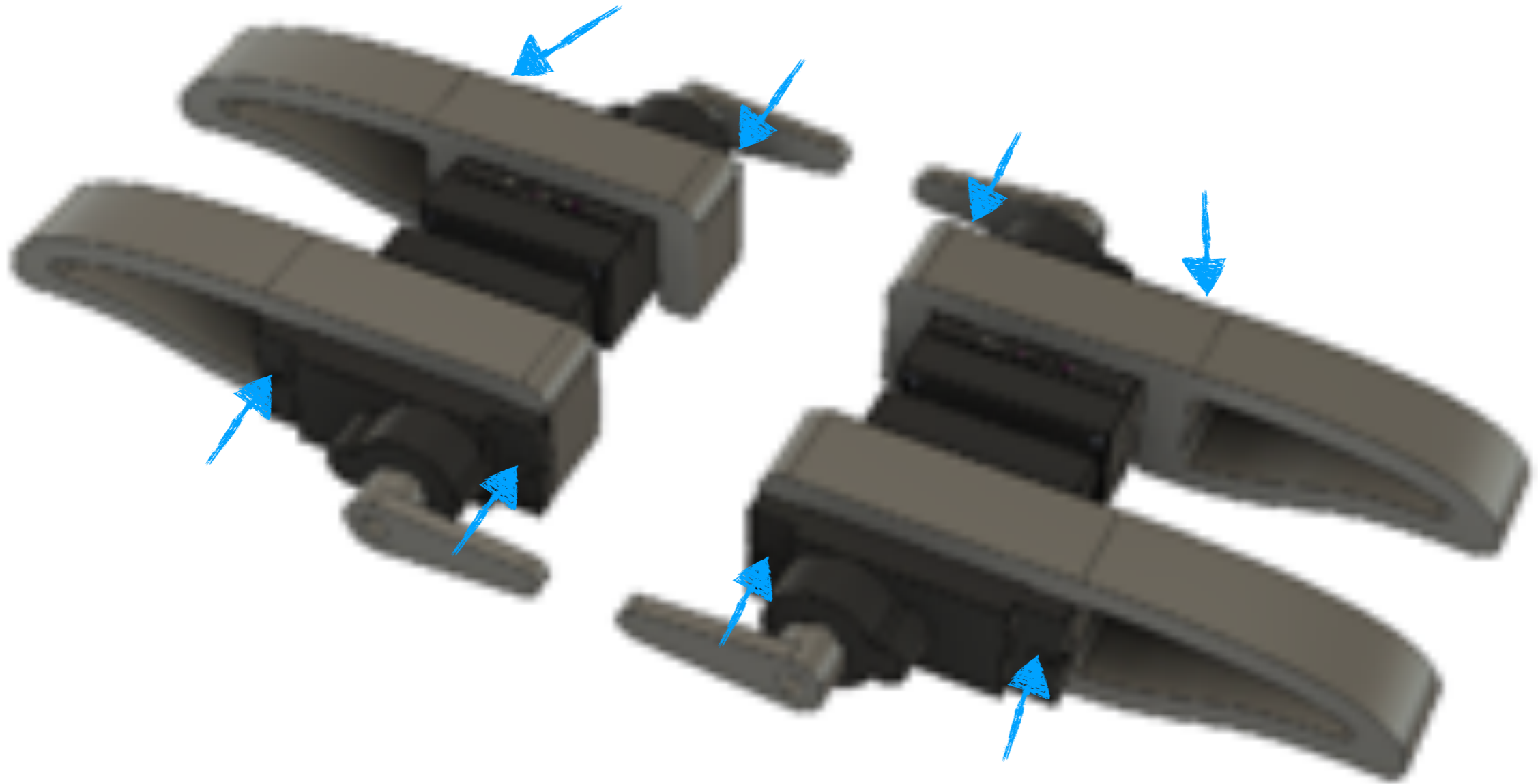




# Assemble \ Leg (1/3)

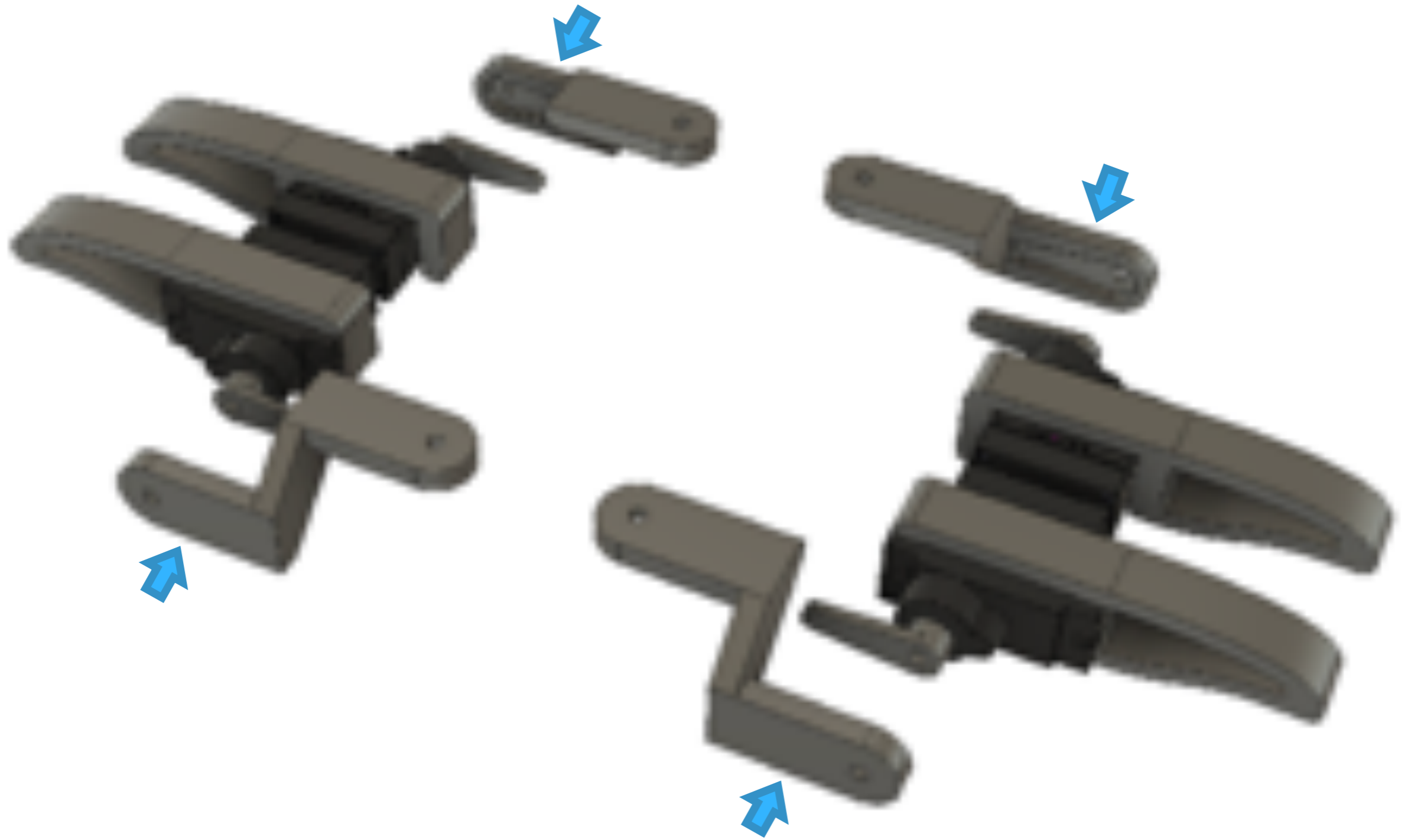


M2 x 8mm PA Screw x 8





# Assemble \ Leg (2/3)

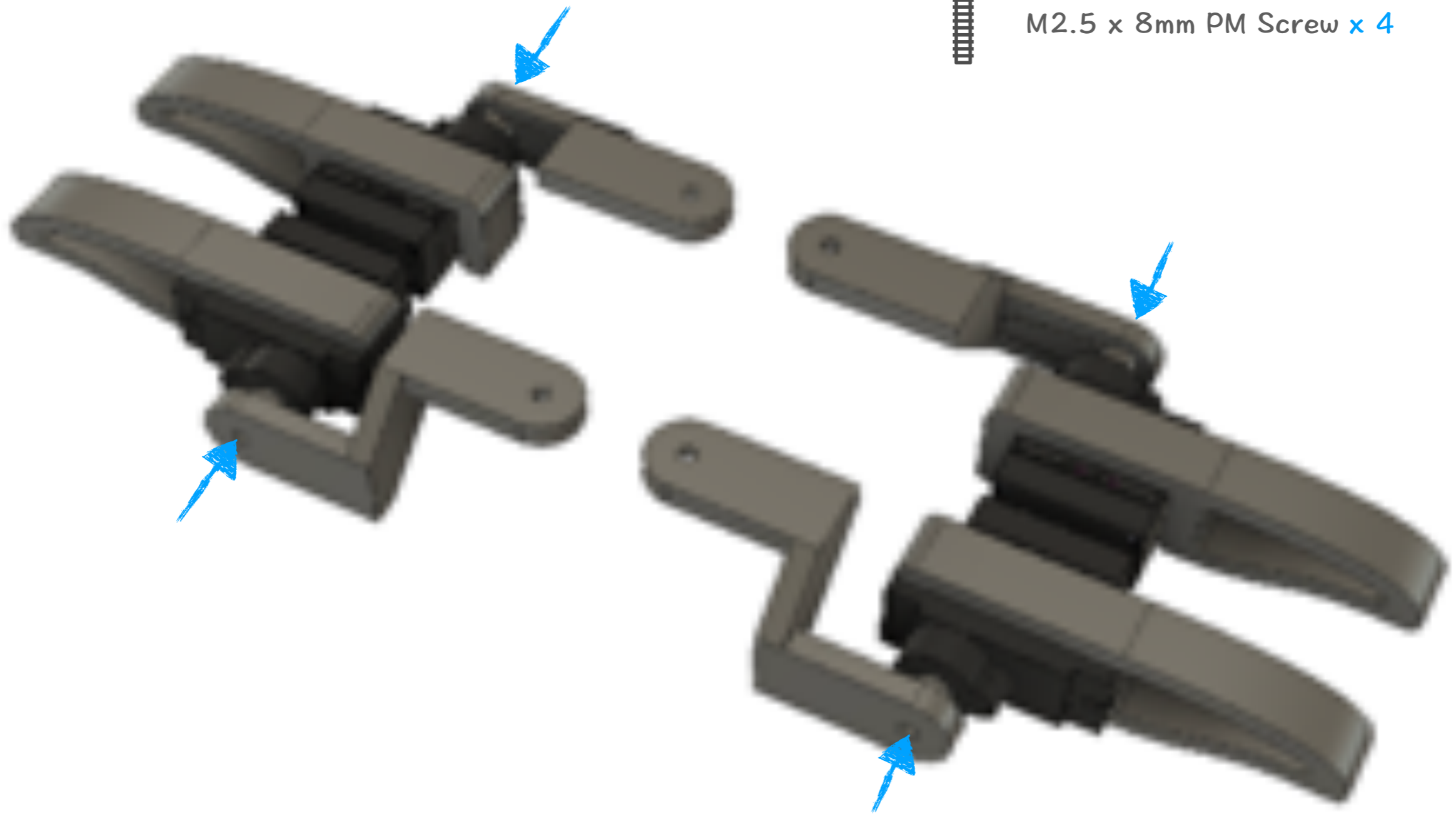




# Assemble \ Leg (3/3)

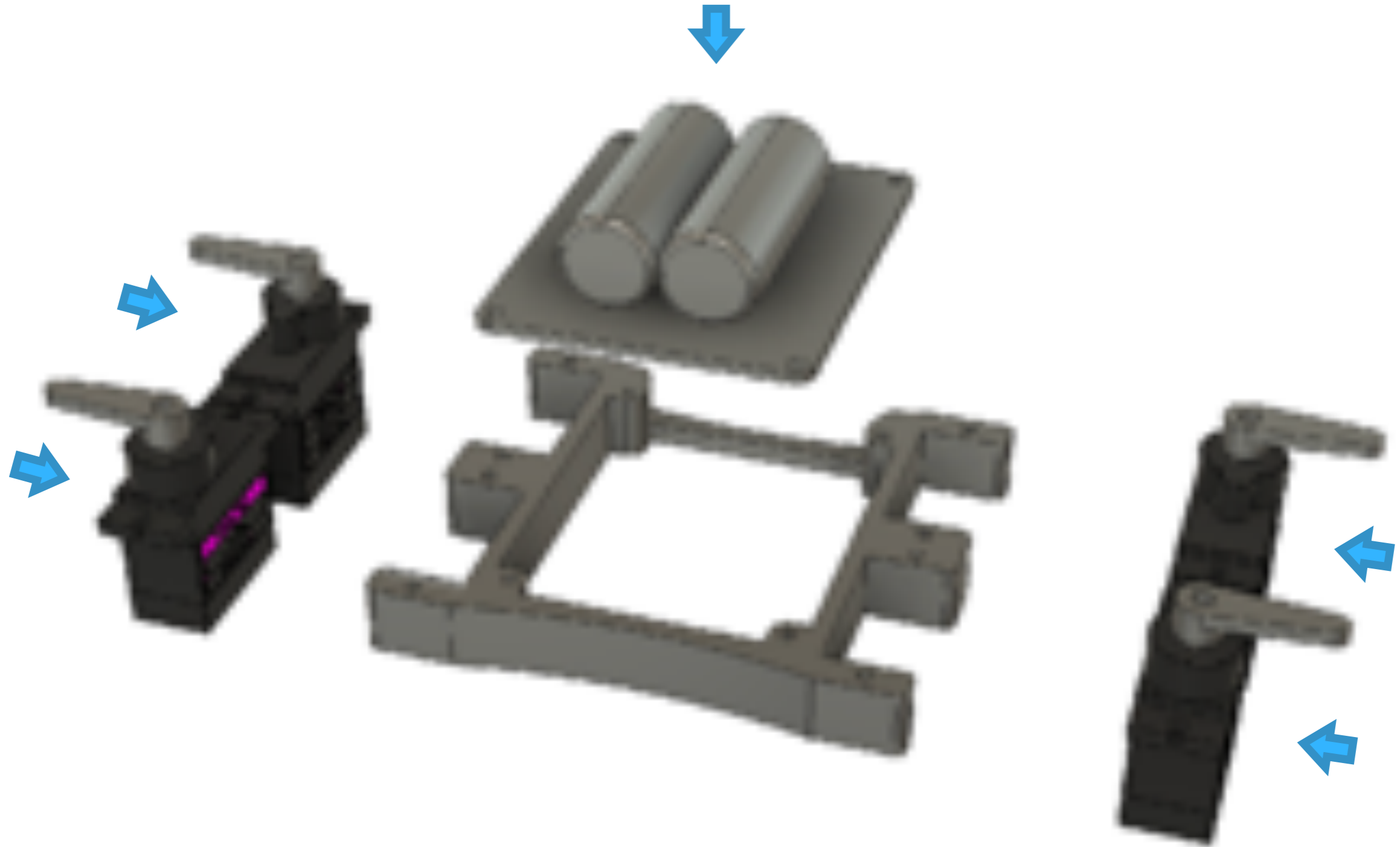


M2.5 x 8mm PM Screw x 4





# Assemble \ Body (1/2)

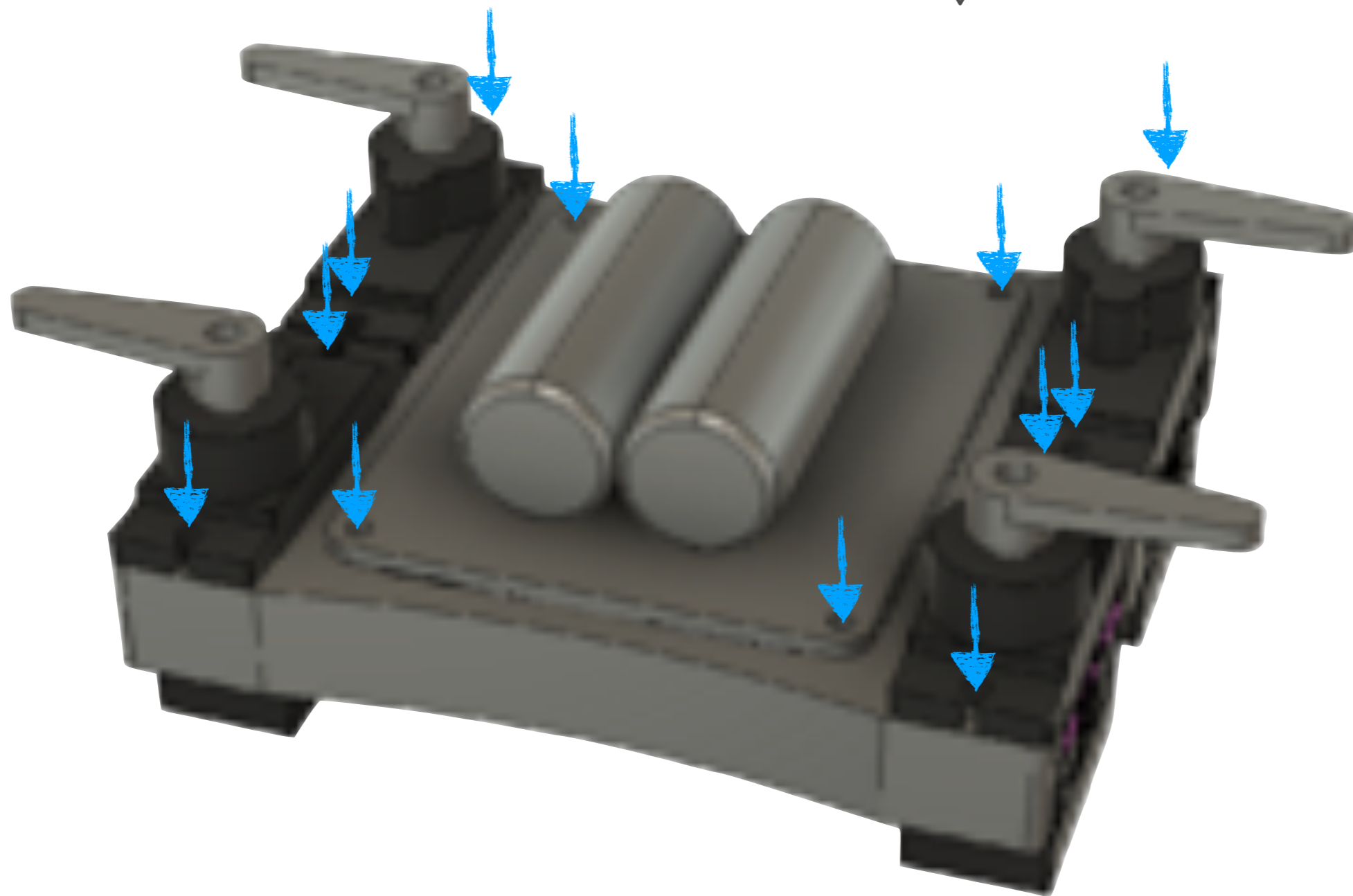




# Assemble \ Body (2/2)

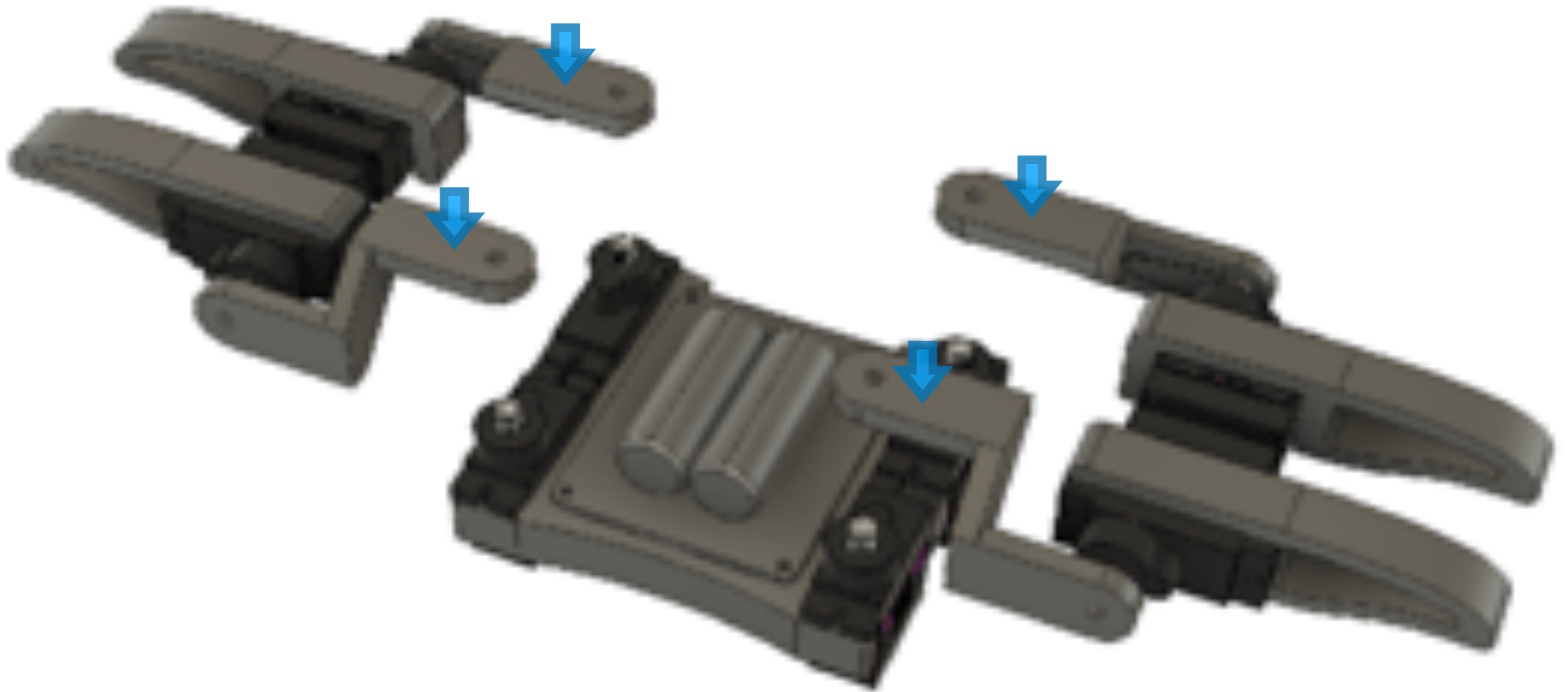


M2 x 8mm PA Screw x 12





# Assemble \ All together (1/3)

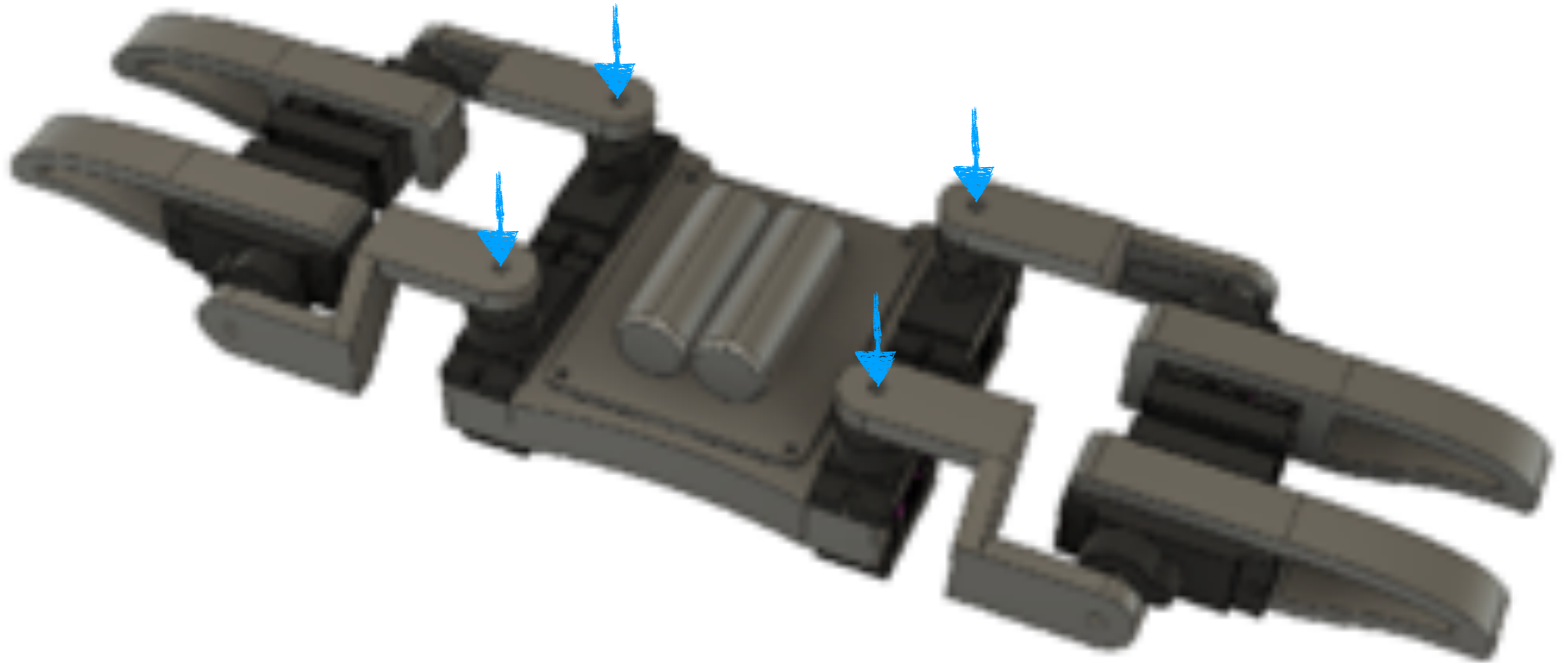




# Assemble \ All together (2/3)

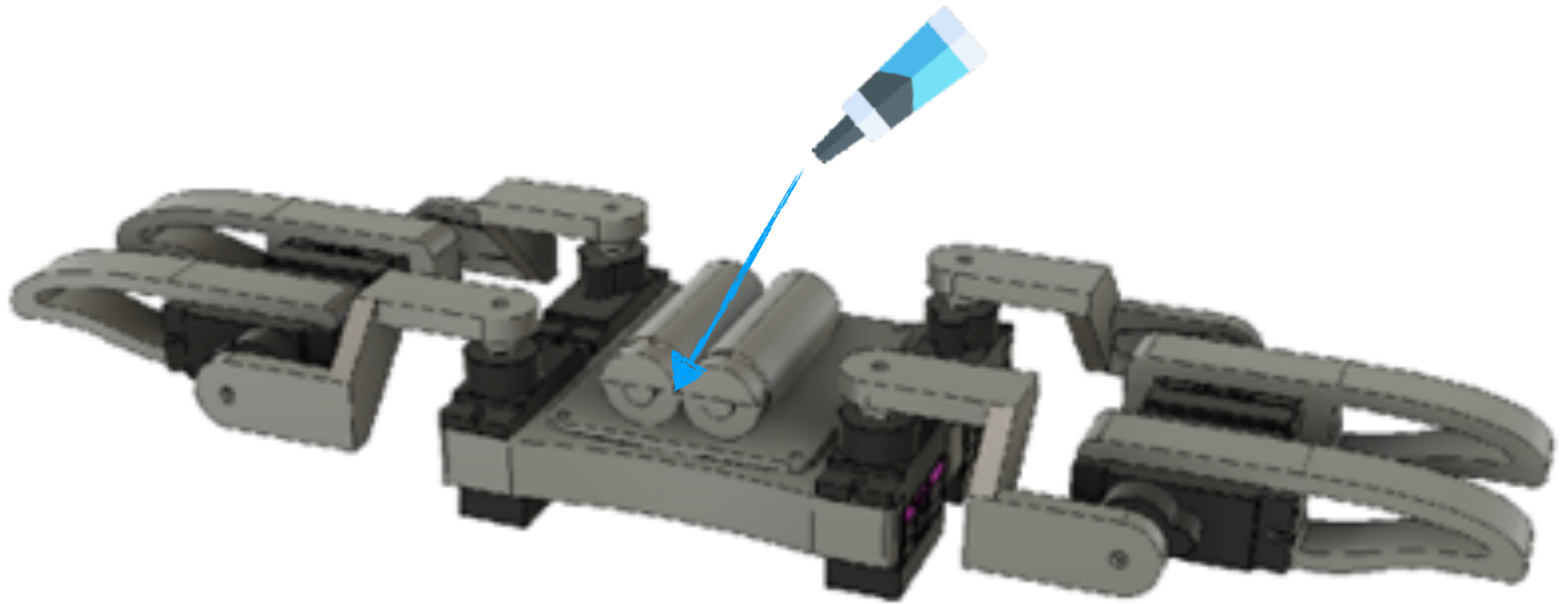


M2.5 x 8mm PM Screw x 4





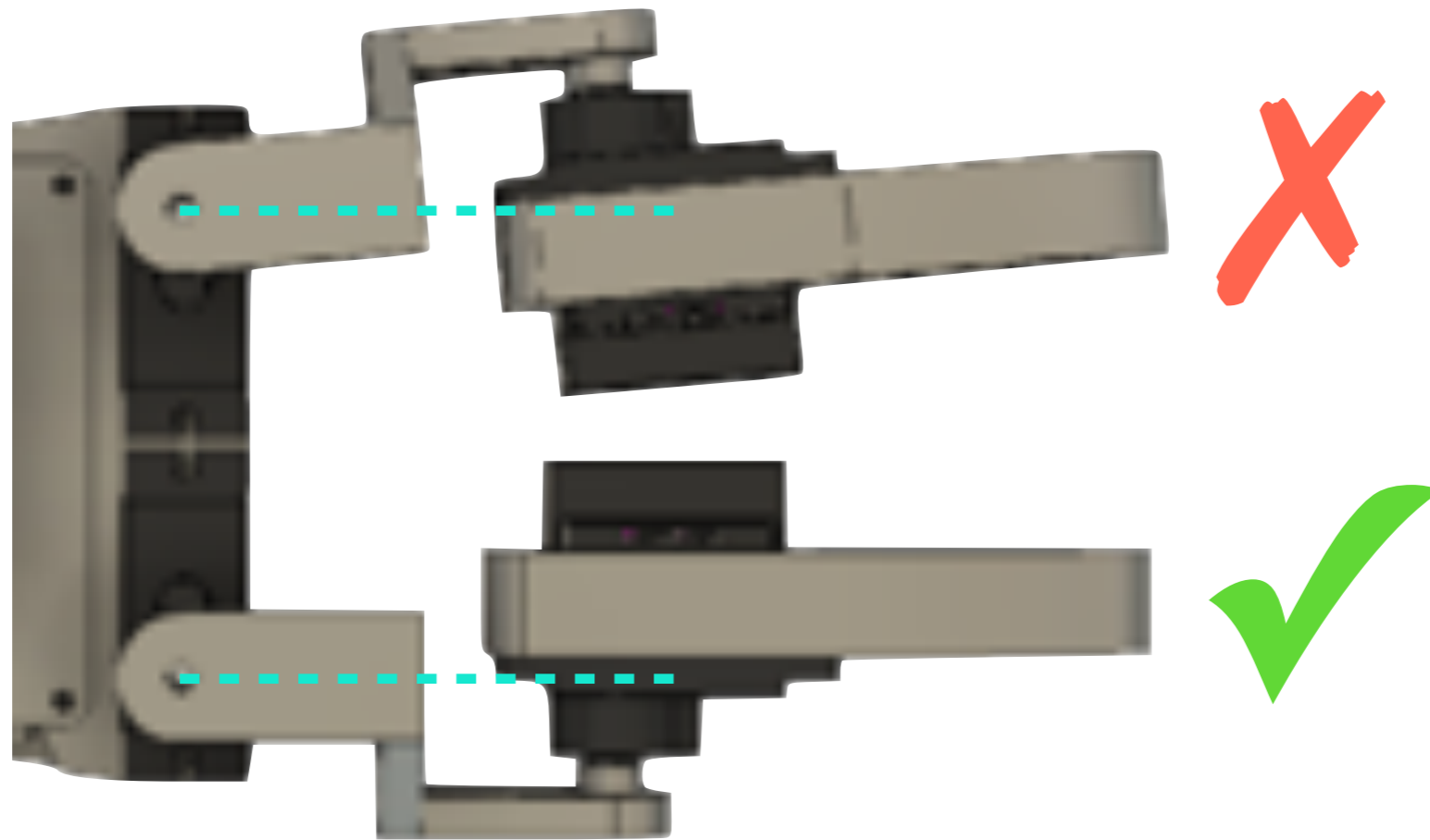
# Assemble \ All together (3/3)





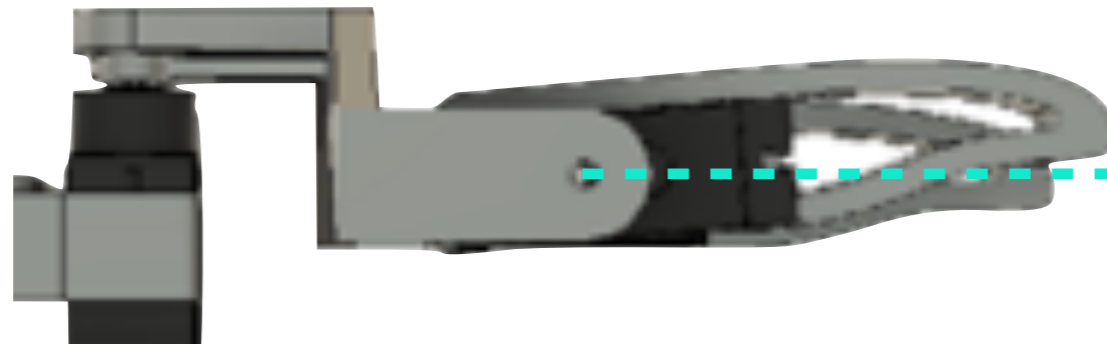


# Assemble \ All together (3/3)



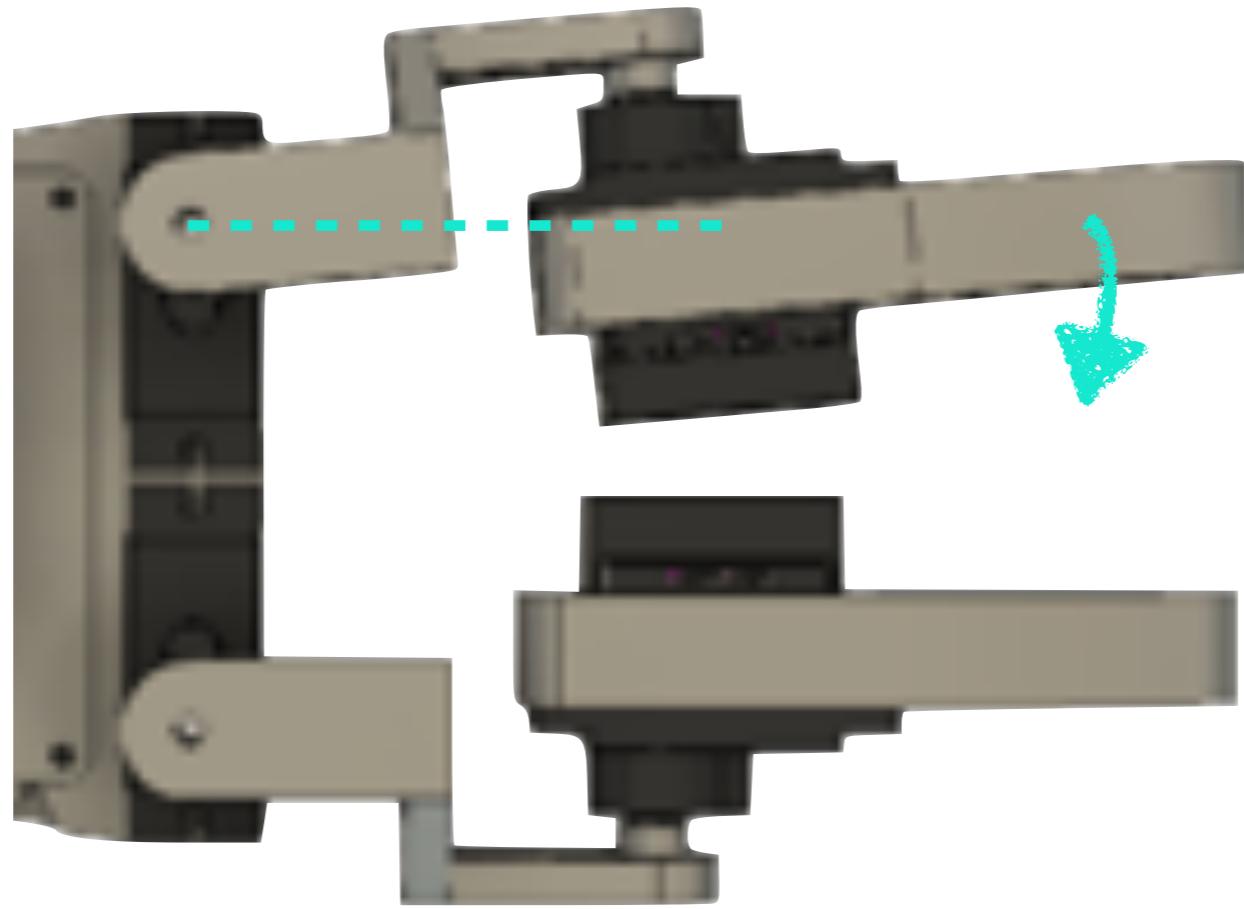


# Assemble \ All together (3/3)





# Assemble \ All together (3/3)



# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



Software



Assemble



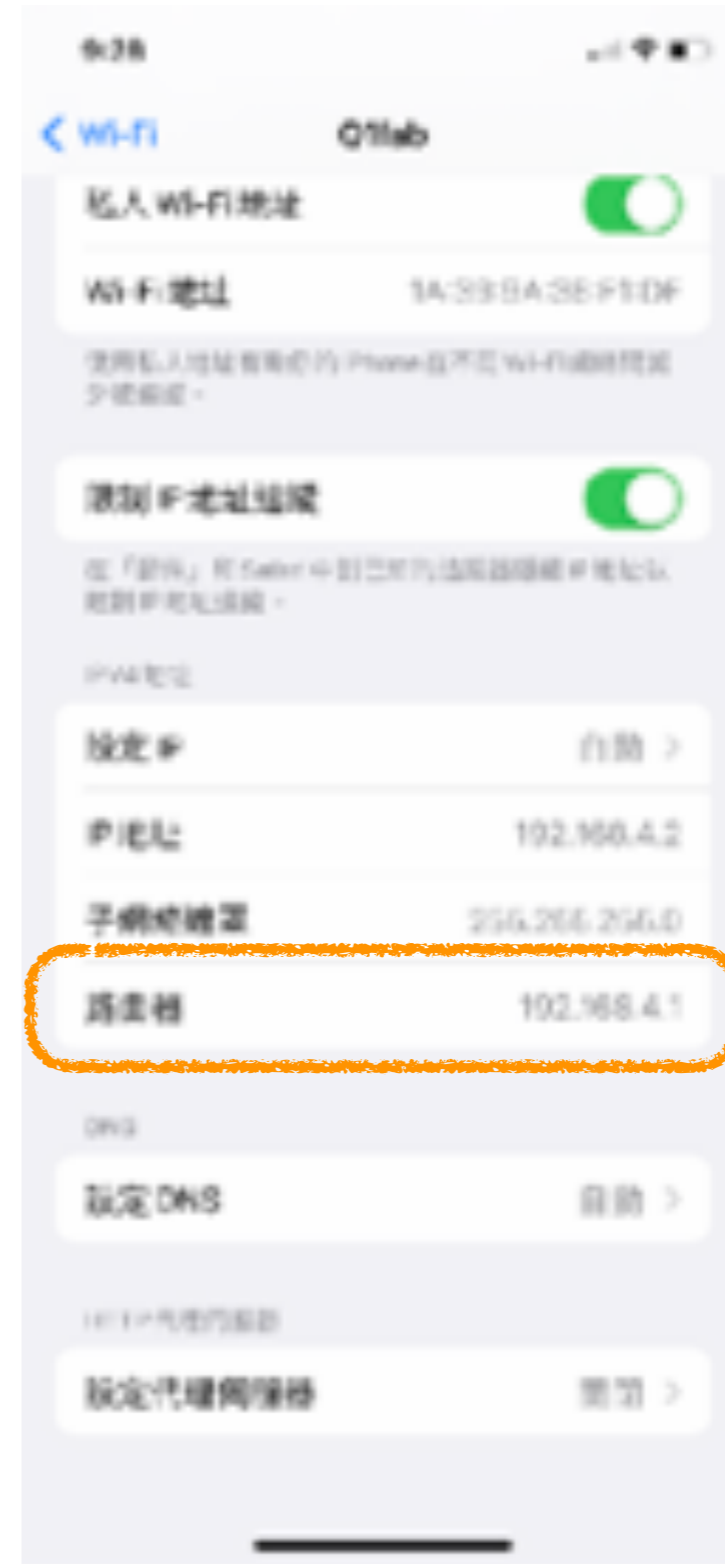
Play



Sumo Game

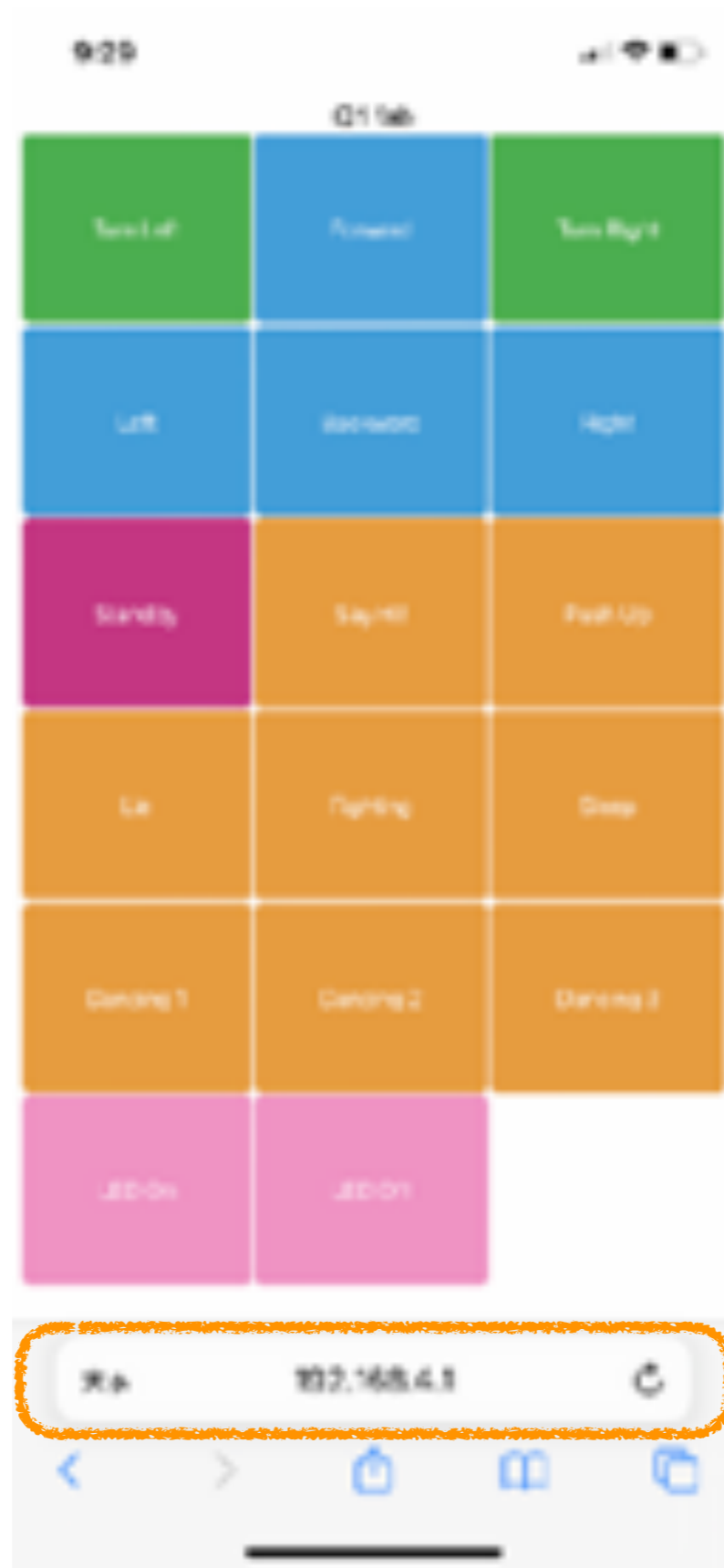


# Play \ Connect to Q1 fab WiFi





# Play \ Browse Q1 fab control interface



# Q1 fab

Simple Quadruped Robot



Prepare Parts



3D Print



Software



Assemble



Play



Sumo Game

 Sumo Game





## Sumo Game

### Scoring in Sumo Game

The objective of sumo game is to force your opponent out of the arena. (10 Point)

Or force bonus point out of the arena. (5 Point)



