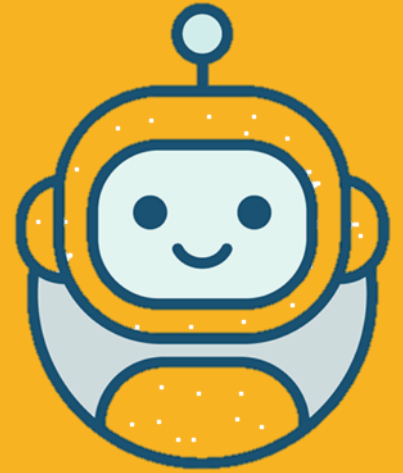


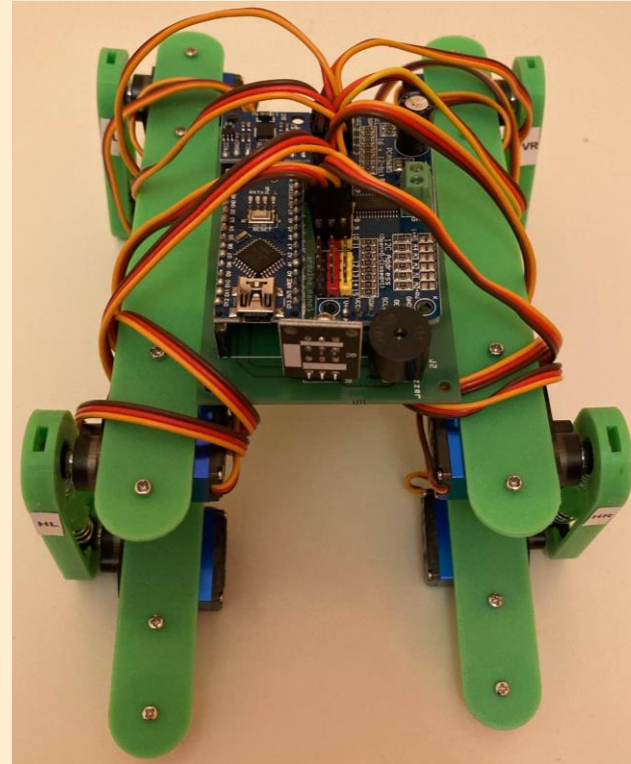
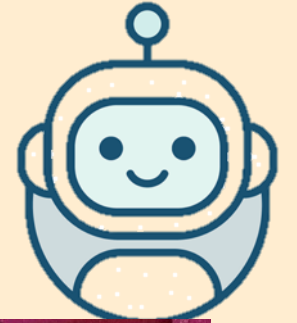
**EASY ROBOTICS  
FORMATION FOR  
MAKERS & KIDS**

# **ROBO FORM**



**ALEXIS VEYNACHTER  
16.11.2021**

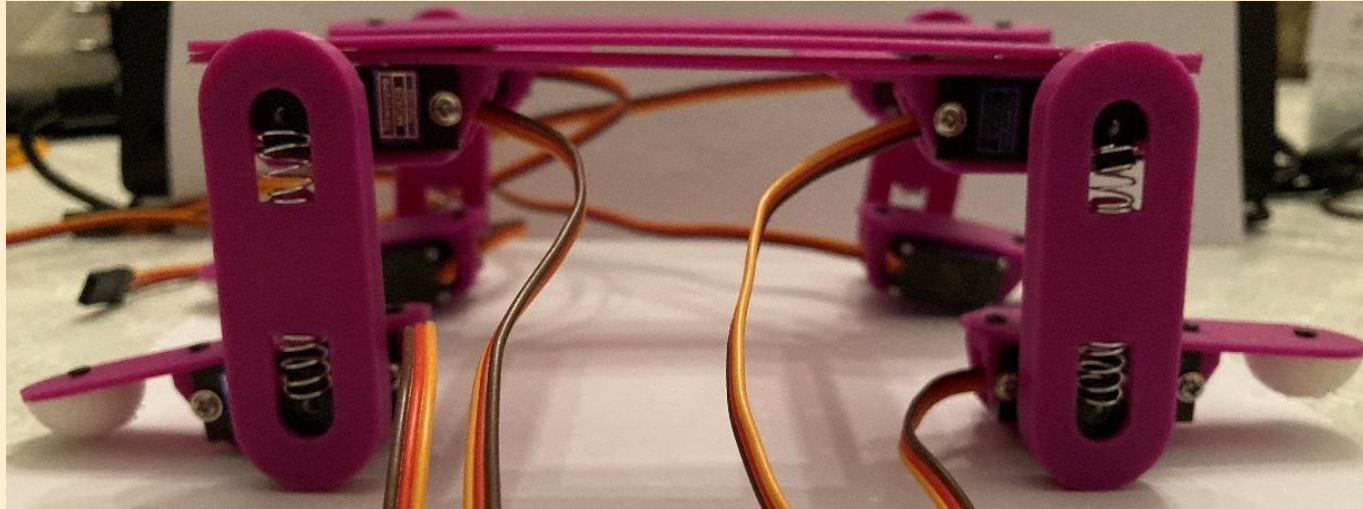
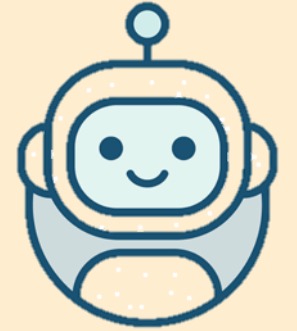
# MINICAT ASSEMBLY OVERVIEW



## Required:

- 3D Parts to order/print: [https://github.com/alex8411/minicat/tree/main/3D\\_printing/STL](https://github.com/alex8411/minicat/tree/main/3D_printing/STL)
- Custom PCB to order/produce: <https://github.com/alex8411/minicat/tree/main/PCB>
- Software: [https://github.com/alex8411/minicat/tree/main/Software/minicat\\_basic](https://github.com/alex8411/minicat/tree/main/Software/minicat_basic)

# MINICAT ASSEMBLY

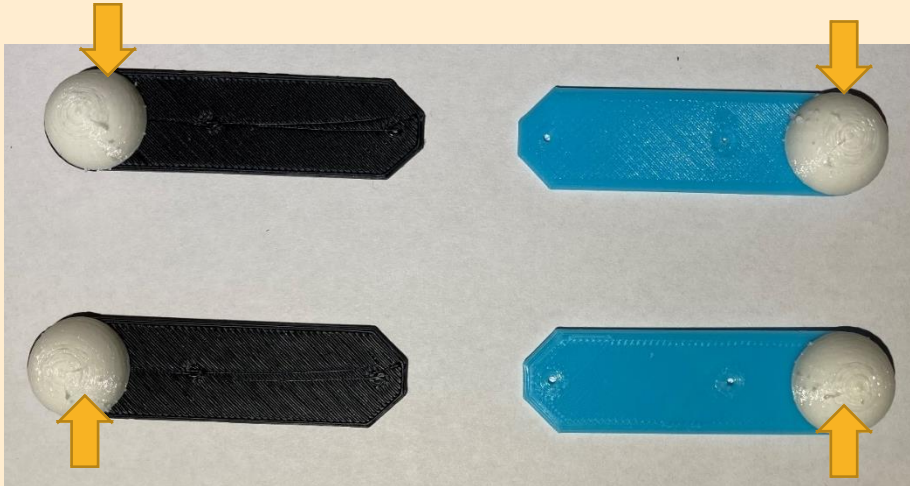
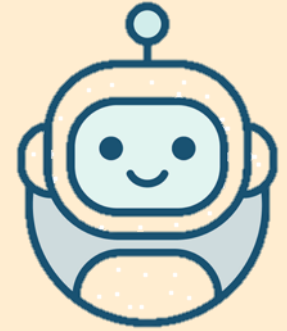


## Prerequisites :

- Flat head and Cross screwdrivers
- 3D printed parts: [STL](#)
- Screws (M2): [800 Stück M2 schwarzer Kohlenstoffstahl mit Senkkopf und flachem Kreuzkopf, selbstschneidende Schrauben](#)
- Springs (8,5x10): [McDrill Jeu de 246 ressorts de compression](#)

# MINICAT ASSEMBLY

## STEP 1.1: FEET



### 3D Parts

- [3\\_all\\_miniToe\\_rubber.stl](#)
- [9\\_1\\_miniShank\\_Batch1.stl](#)
- [9\\_1\\_miniShank\\_Batch2.stl](#)
- [9\\_1\\_miniShank\\_Batch3.stl](#)
- [9\\_1\\_miniShank\\_Batch4.stl](#)

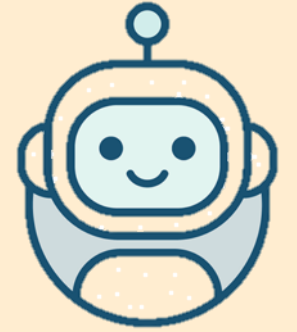
### 4x Screws M2\*5

- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)



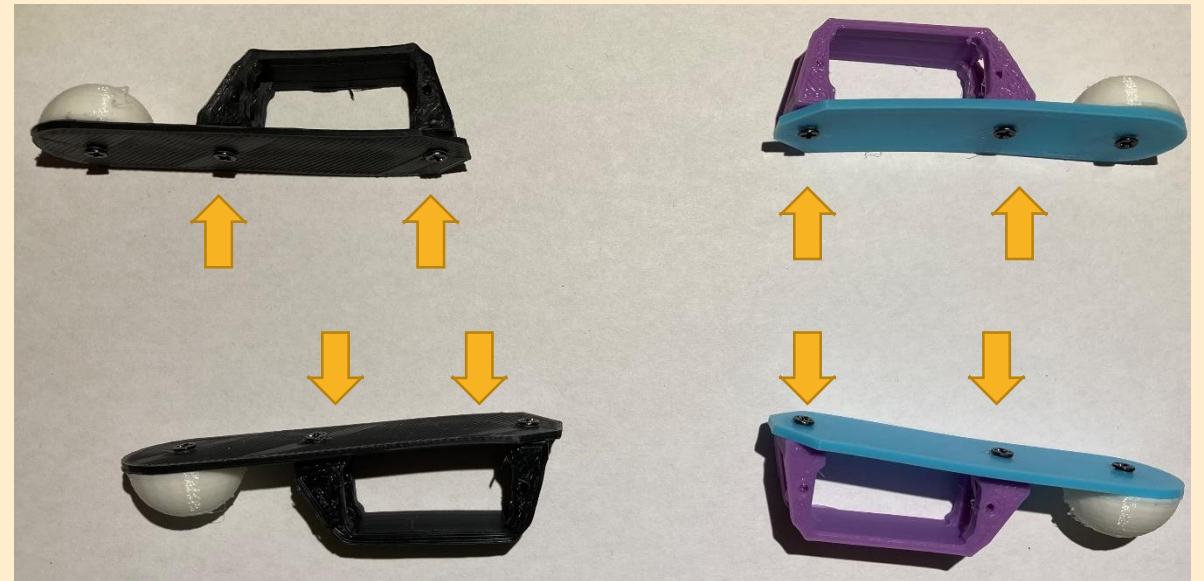
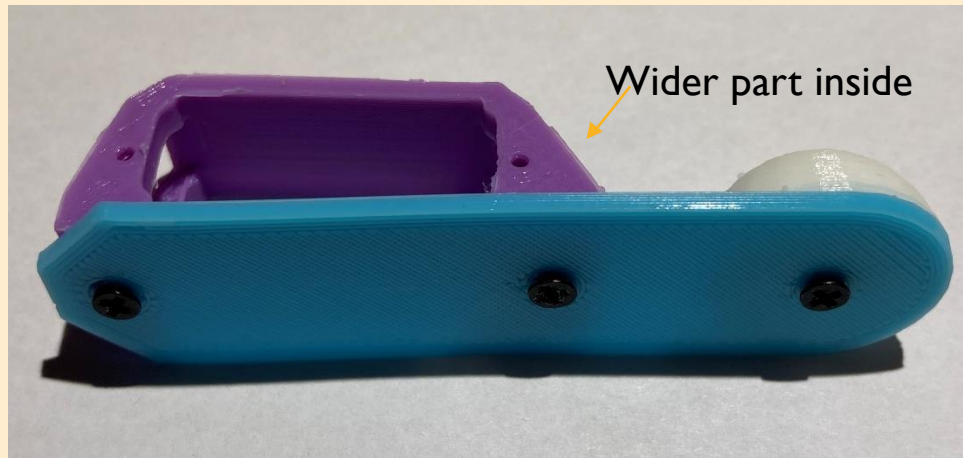
# MINICAT ASSEMBLY

## STEP 1.2: FEET & SERVO-HOLDERS



### Hint:

Pay attention that the wider part of the servo holder is at the inner part



### 3D Parts

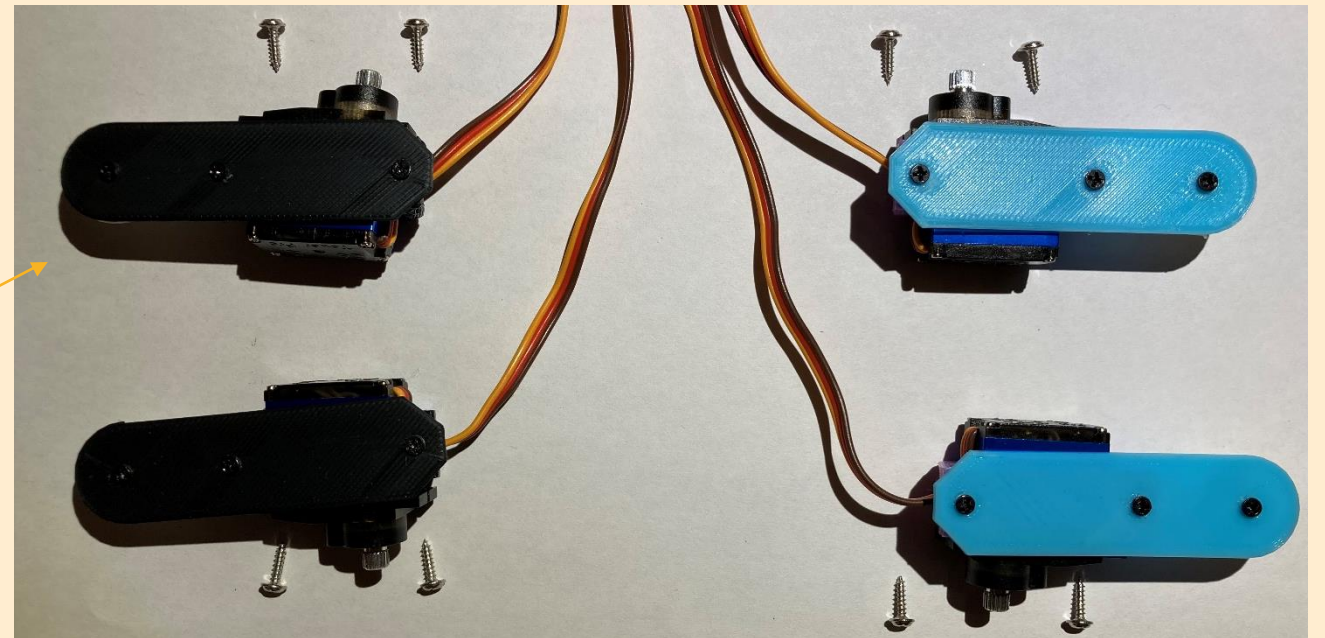
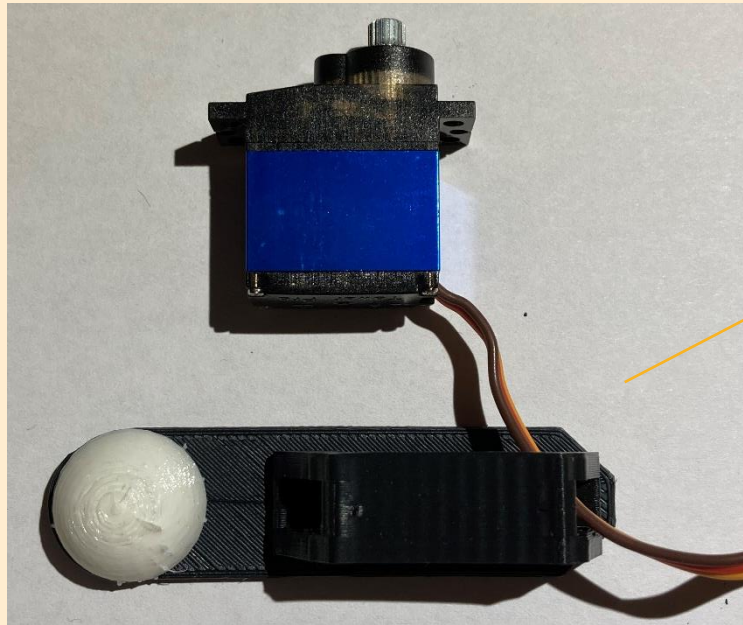
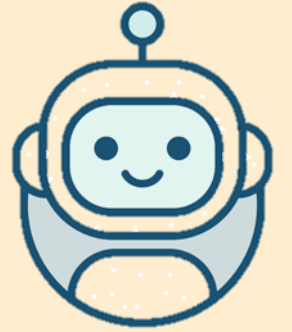
- [2\\_\\_all\\_miniServoHolder\\_BatchI.stl](#)

### 8x Screws M2\*5

- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# MINICAT ASSEMBLY

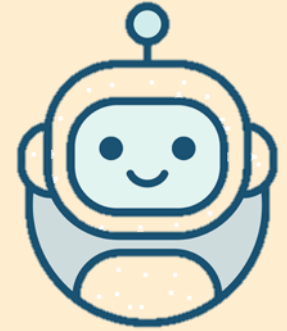
## STEP 1.3: FEET, SERVO-HOLDERS & SERVOS



- 8x Screws provided with the servomotors
- 4x Servomotors
- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# MINICAT ASSEMBLY

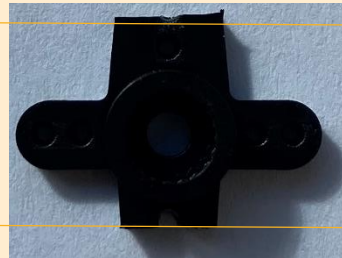
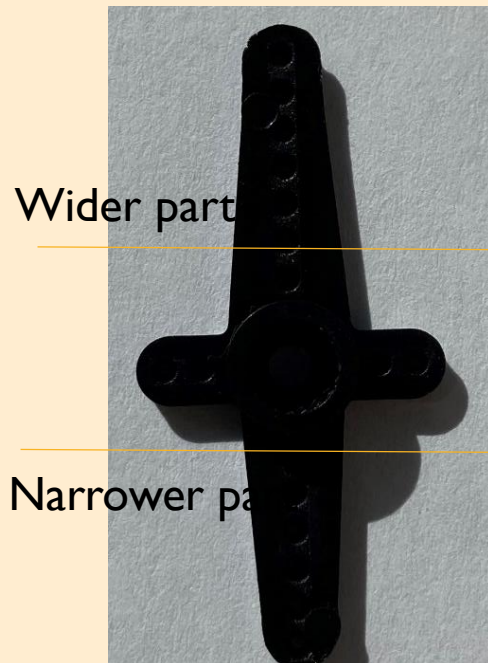
## STEP 2.1: THIGHS, SERVO-ARMS, SPRINGS



### Hint:

Cut the servo arm as following:

- upper wider part : cut in the middle of 2d hole
- narrow part : cut in the middle of 1st hole
- Insert the spring



### 3D Parts

- [I\\_\\_all\\_miniThigh.stl](#)

8x Servo arms provided w/ the servomotors

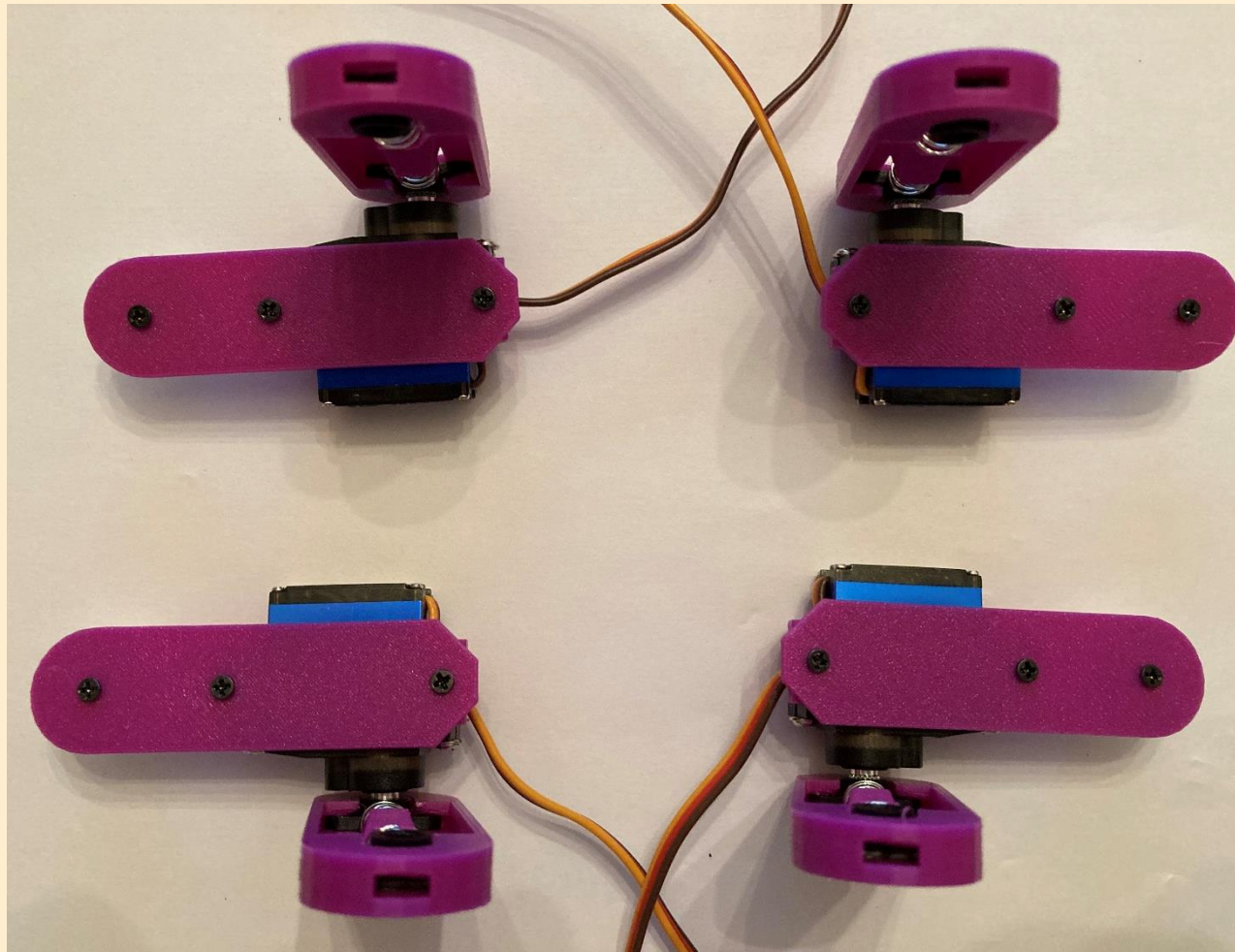
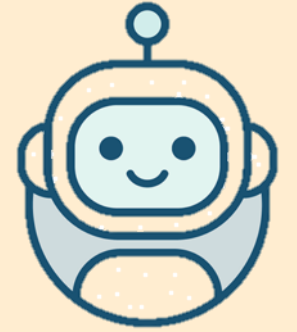
8x Springs 6,5x10mm

- „McDrill“ [https://www.amazon.fr/gp/product/B00GN3BJT4/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_image?ie=UTF8&psc=1](https://www.amazon.fr/gp/product/B00GN3BJT4/ref=ppx_yo_dt_b_search_asin_image?ie=UTF8&psc=1)



# MINICAT ASSEMBLY

## STEP 2.2: THIGHS & FEET



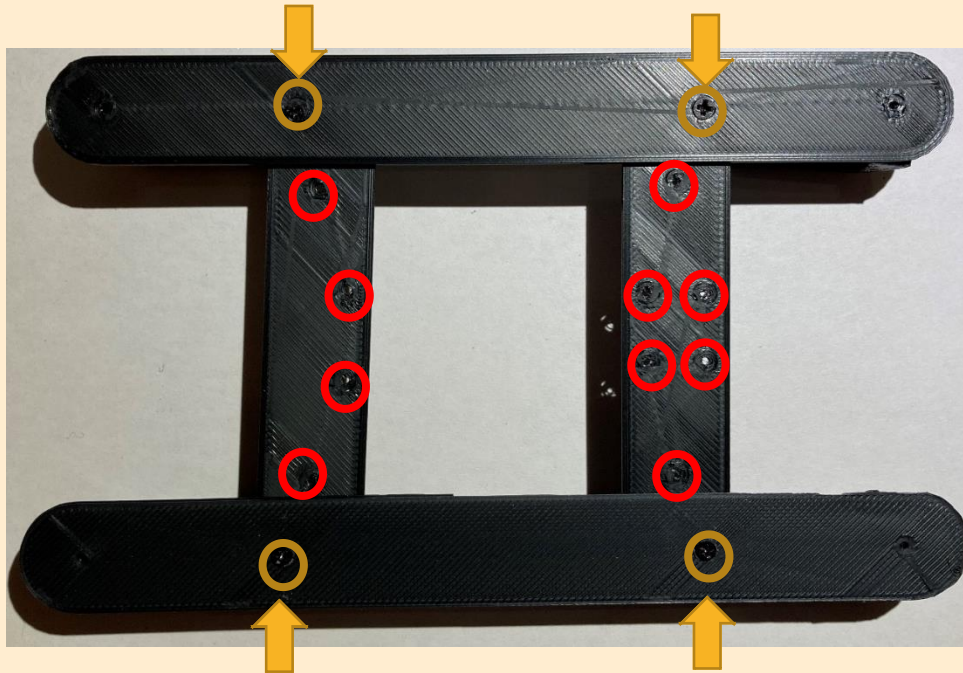
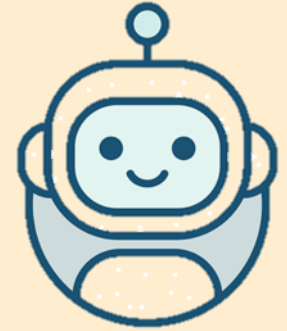
### Hint:

Connect the thighs to the feet  
as shown on the picture  
without screwing them



# MINICAT ASSEMBLY

## STEP 3.1: BODY STRUCTURE



### Hint:

Prepare the M2\*6 screws but only screw them a bit in preparation for Step 2.2 (Servo holder assembly)

### 3D Parts

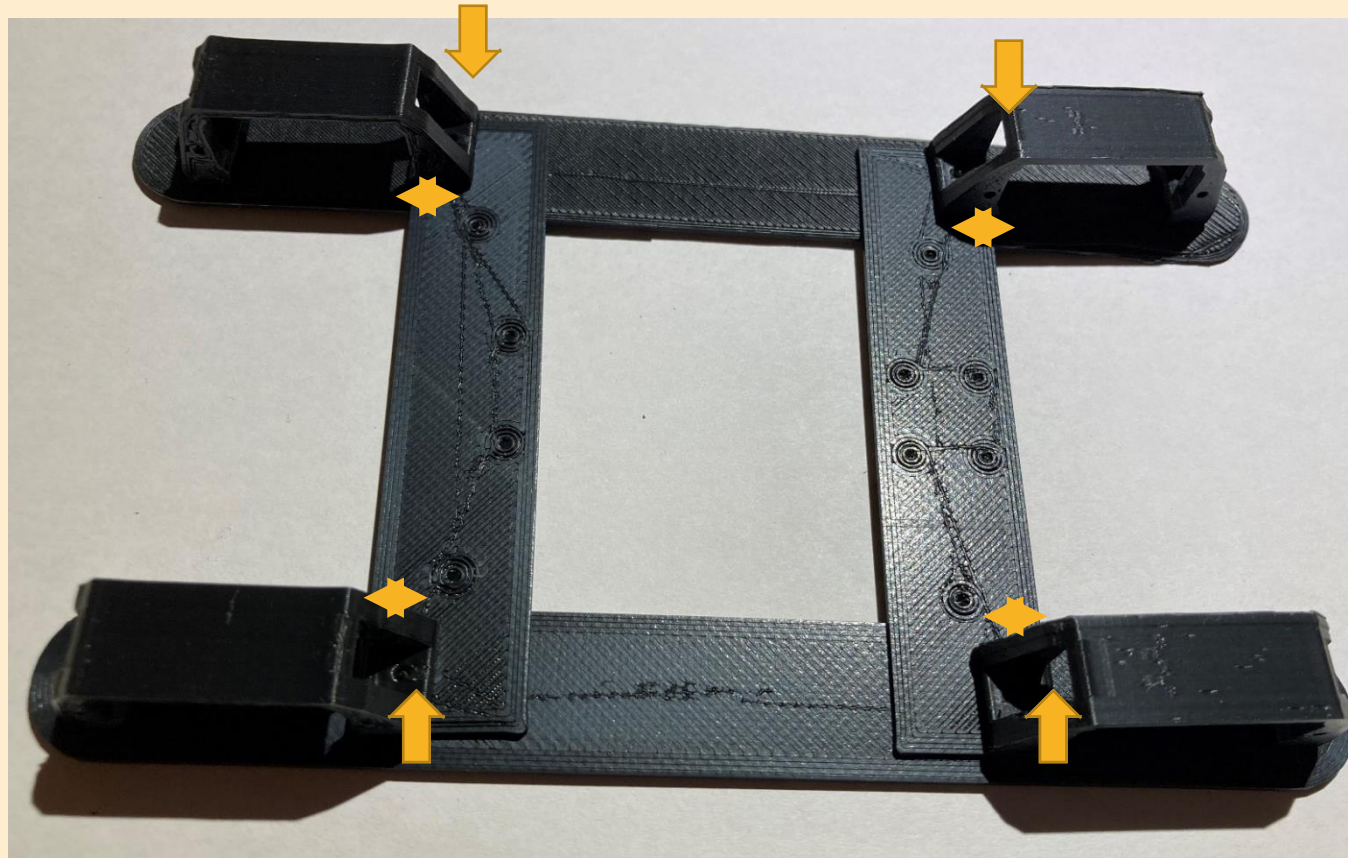
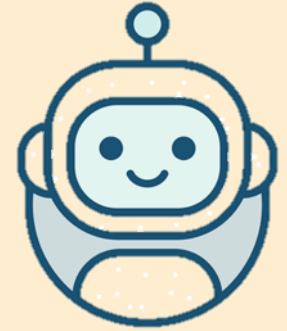
- [8\\_\\_I\\_miniBodyA\\_Batch1.stl](#)
- [8\\_\\_I\\_miniBodyA\\_Batch2.stl](#)
- [10\\_\\_Body\\_B\\_Back.stl](#)
- [11\\_\\_Body\\_B\\_Front.stl](#)

### 4x Screws M2\*6

- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# MINICAT ASSEMBLY

## STEP 3.2: BODY & SERVO-HOLDERS



### Hint:

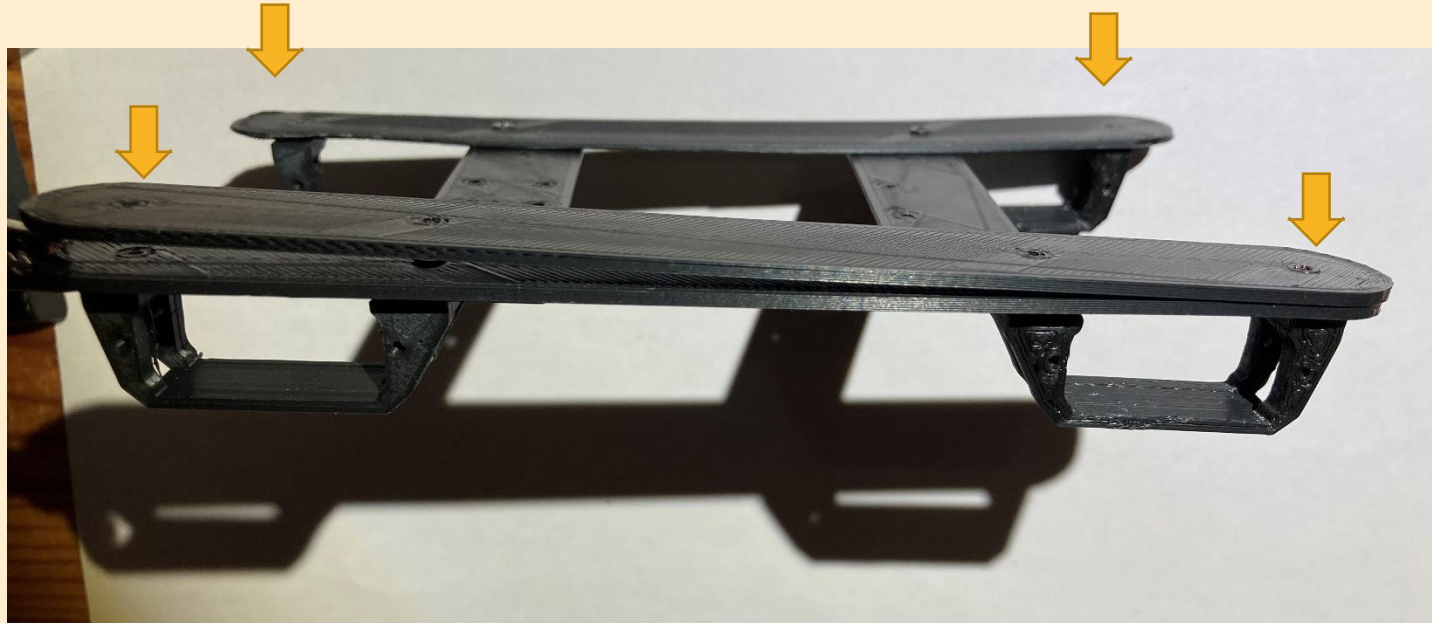
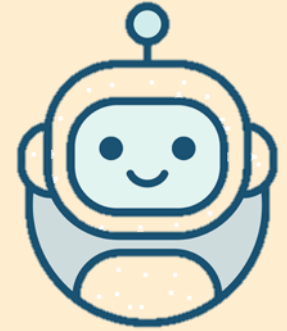
- Now screw completely the M2\*6 screws to make sure the 4x Servo holders are fixed at their internal side
- Pay attention that the wider part of the servo holder is at the inner part

### 3D Parts

- [2\\_\\_all\\_miniServoHolder\\_Batch2.stl](#)

# MINICAT ASSEMBLY

## STEP 3.3: BODY TOP & SERVO-HOLDERS



### Hint:

Now you can screw at the outer side of the 4x servo holders by adding the 2x additional BodyA structures on top of the 2x existing ones

### 3D Parts

- [8\\_\\_I\\_\\_miniBodyA\\_Batch3.stl](#)
- [8\\_\\_I\\_\\_miniBodyA\\_Batch4.stl](#)

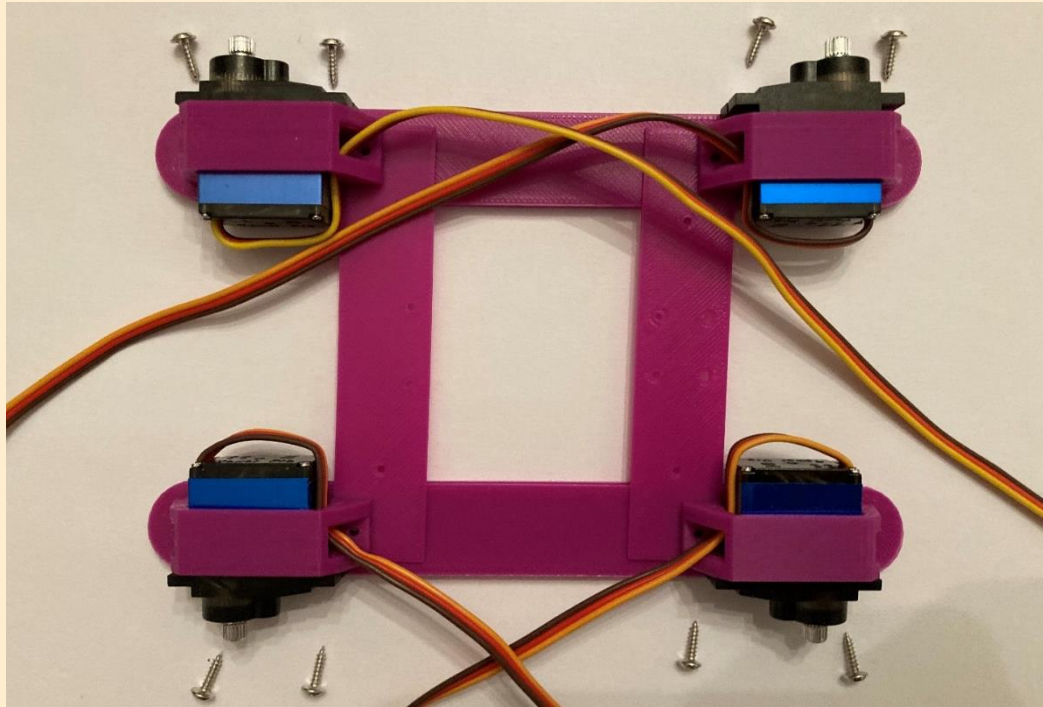
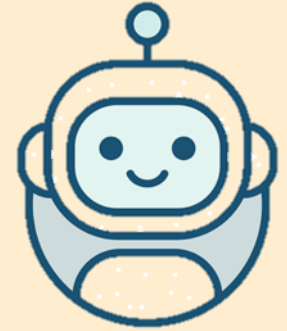
### 4x Screws M2\*7

- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)



# MINICAT ASSEMBLY

## STEP 3.4: BODY & SERVO-MOTORS



### Hint:

Pay attention to put the servomotors axis at the outside

### - 4x Servomotors

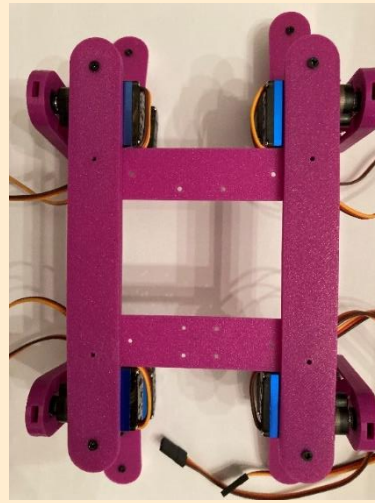
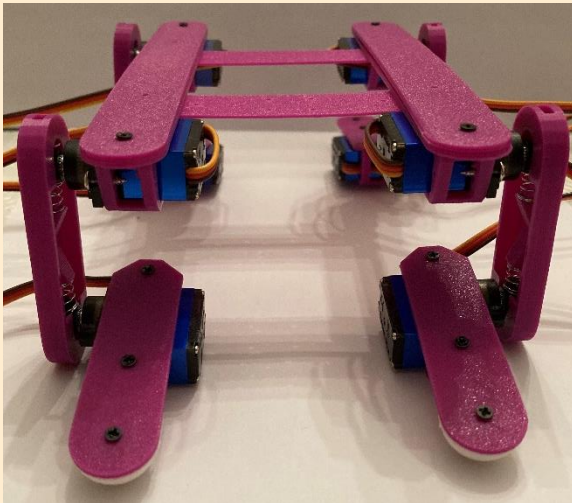
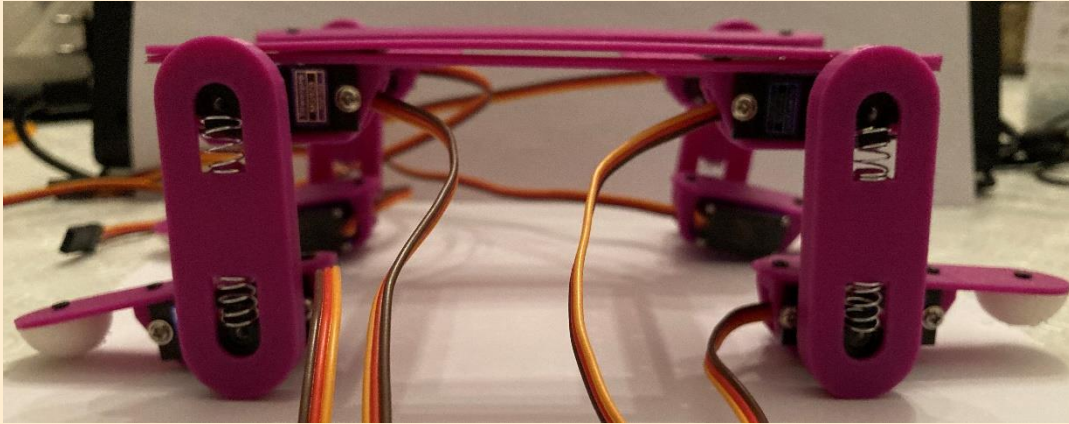
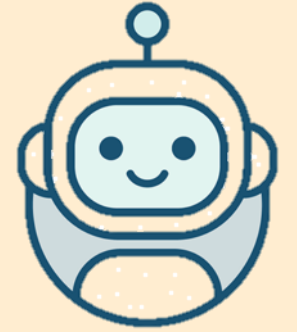
[https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

### - 8x Screws provided with the servomotors

[https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# MINICAT ASSEMBLY

## STEP 3.5: BODY & LEGS

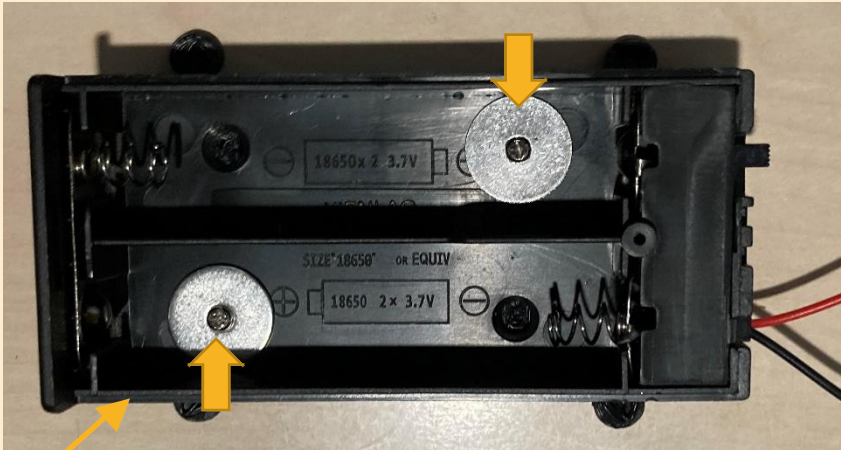
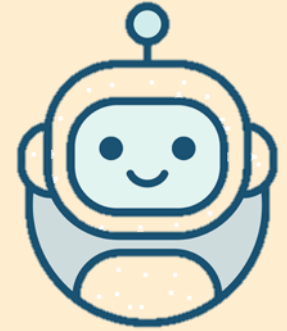


### Hint:

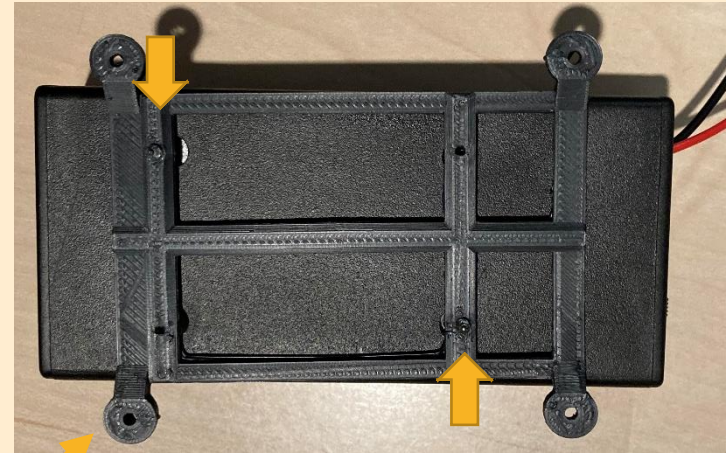
connect only the Legs to the body  
servomotors axis **without screwing them**  
(as calibration still needed later, esp. you do not  
know yet where the servo +/- 0 angle is)

# MINICAT ASSEMBLY

## STEP4.1: BATTERIES HOLDER & SUPPORT



Batteries holder



Batteries holder support

### 3D Parts

- [4\\_\\_Battery\\_holder\\_FINAL\\_STL.stl](#)

1x 18650 batteries holder with case :

- <https://www.aliexpress.com/item/32901150833.html?spm=a2g0s.9042311.0.0.27424c4dfSUBPq>

2x Screws M2\*8

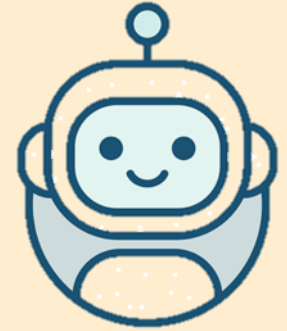
- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

2x Gasket M3 (13 outside diameter)



# MINICAT ASSEMBLY

## STEP 4.2: BATTERIES HOLDER & BODY



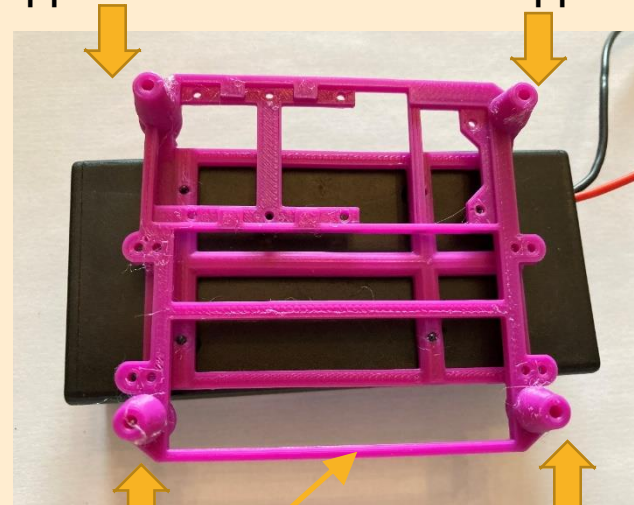
### Hint:

1- Screw the 4x M2\*7 screws first in the batteries holder support



### Hint:

2- Screw the 4x M2\*7 screws through the batteries holder support and intermediate support



Intermediate support

### 4x Screws M2\*7

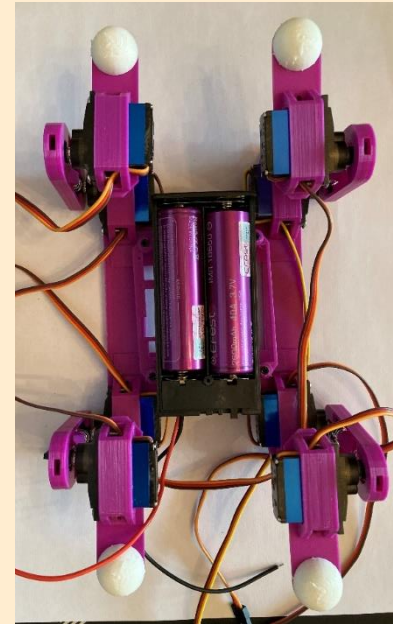
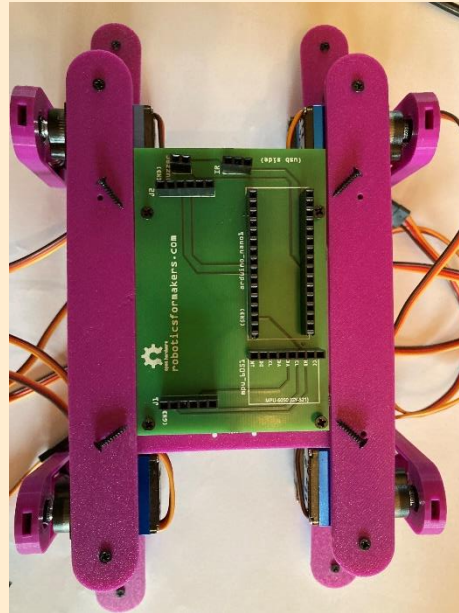
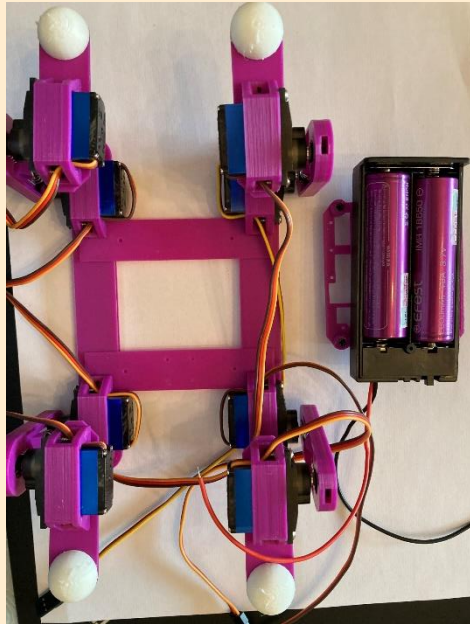
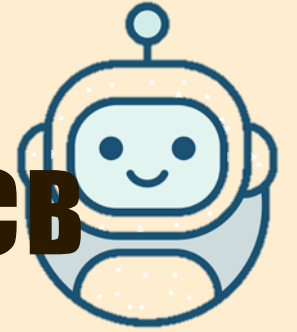
- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

Support between battery holder support and body structure

- [5\\_\\_miniCircuit.stl](#)

# MINICAT ASSEMBLY

## STEP4.3: BATTERIES HOLDER & BODY & PCB



### Hint:

- the 4x M2x10 go through the **PCB** first **AND** then through the intermediate support part

### Electronic Parts

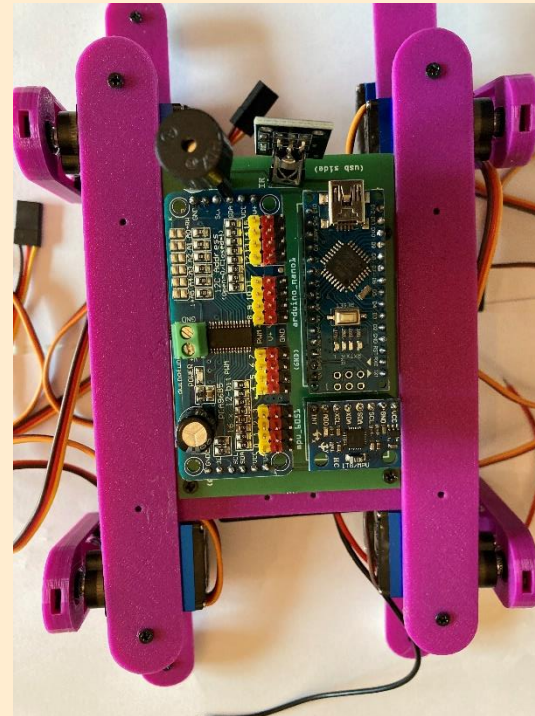
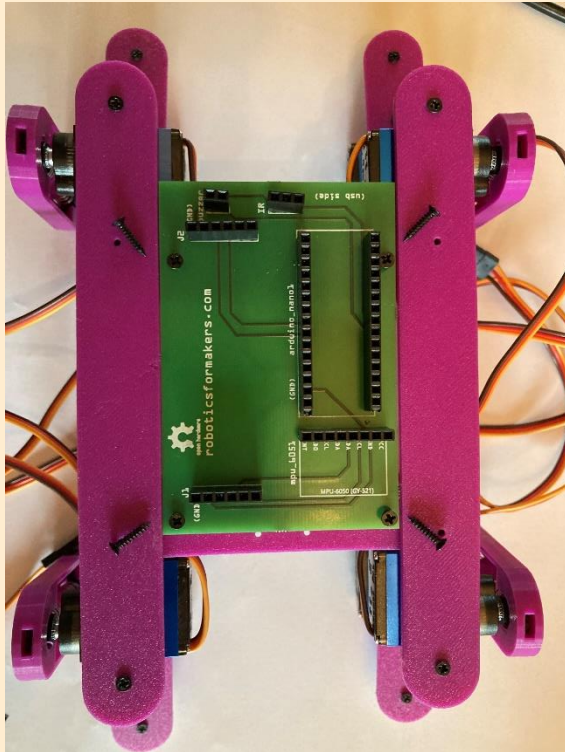
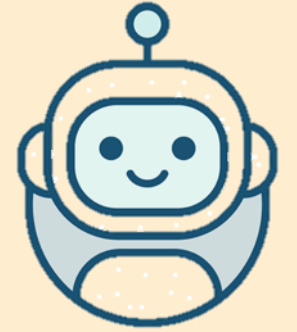
- [MiniCat\\_2.0\\_PCB\\_1\\_0.fzz](#)

### 4x Screws M2\*10

- [https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.de/gp/product/B07RYLM9N2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# MINICAT ASSEMBLY

## STEP5: PCB & ELECTRONIC MODULES



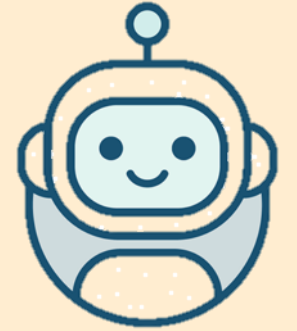
### Electronic Parts

- [MiniCat\\_2.0\\_PCB\\_I\\_0.fzz](#)



# SOFTWARE INTEGRATION

## STEP 6: FLASH SOFTWARE & PLAY !



Software:

- [minicat\\_basic](#)

