

UP

SB



**ERWHI Hedgehog**  
*assembly manual*  
v1.0

Sau

# Introduction by the designer.

Following are steps used by me to build an Erwhi Hedgehog robot unit.  
You need to build some parts before proceed to the robot assembly.  
Take care to proceed carefully, lots of fragile parts are used.

If you need plastic parts, please check [erwhi-hedgehog-mechanics](#) repository and [wiki](#).

Enjoy your Erwhi Hedgehog building!

Erwhi designer  
*Giovanni di Dio Bruno*

# Required tools

- **Philips screwdriver**
- **Tork T6 screwdriver**
- Wire cutter\*
- Iron Solder\*
- **Pliers**
- Original Prusa i3 mk3 (or equivalent)\*\*

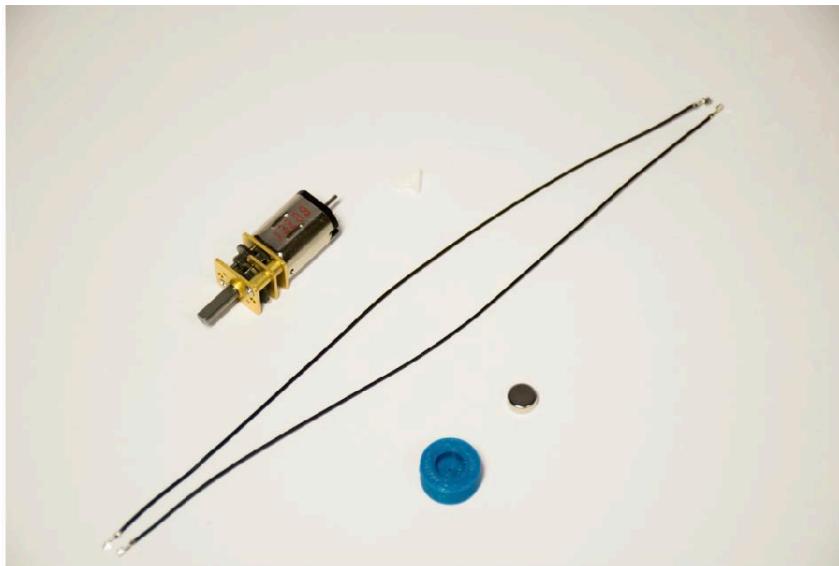
\* Only needed if you are building the robot from scratch

\*\* Only if you need to print 3d plastic parts.

# Parts preparation

- **Motor assembly**
  - UP Squared assembly
  - Encoder cable assembly
  - USBs cable assembly
  - External power supply connector
  - Power switch
  - Power cable
  - Power jack
  - Wheels

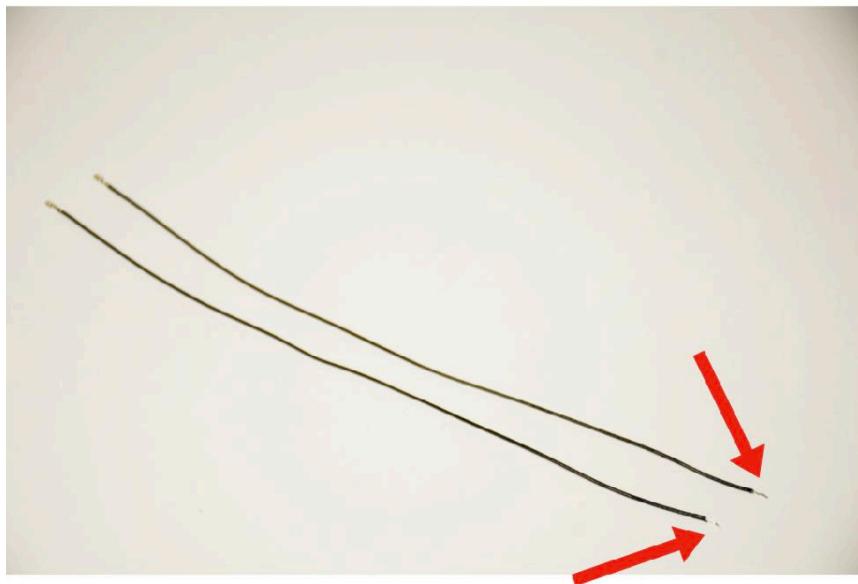
## Motor assembly



In following steps you need:

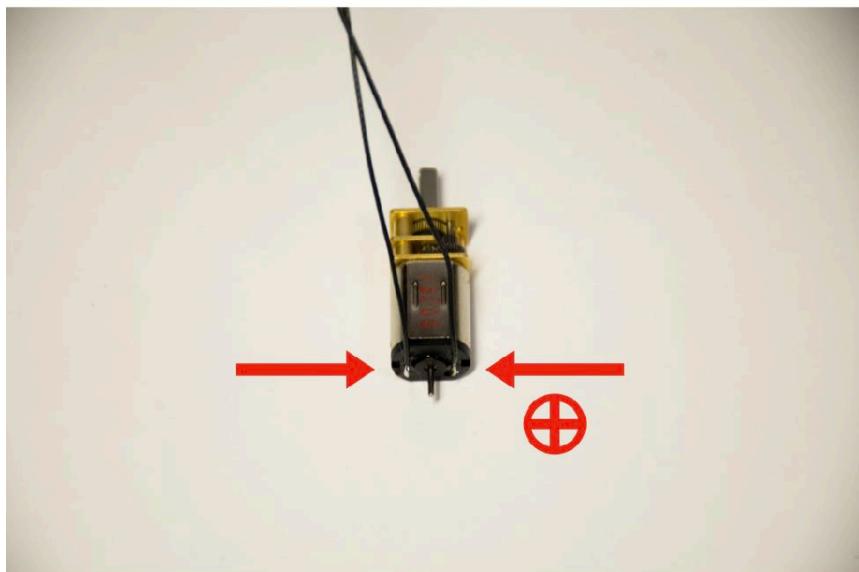
- 1x motor (**BOM ID T6#3**);
- 2x wires with JST SH crimps (**BOM ID T6#1**);
- 1x JST SH (2 position) connector (**BOM ID T6#2**);
- 1x magnet bracket (**BOM ID T1#10**);
- 1x magnet (**BOM ID T1#11**).

## Motor assembly



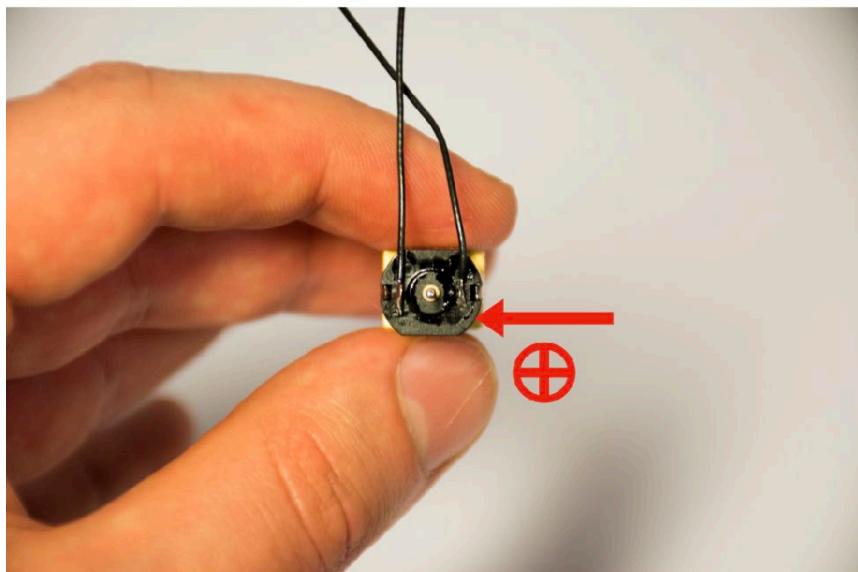
1. Cut crimps on one side.
2. Peel off 5mm of wires.

## Motor assembly



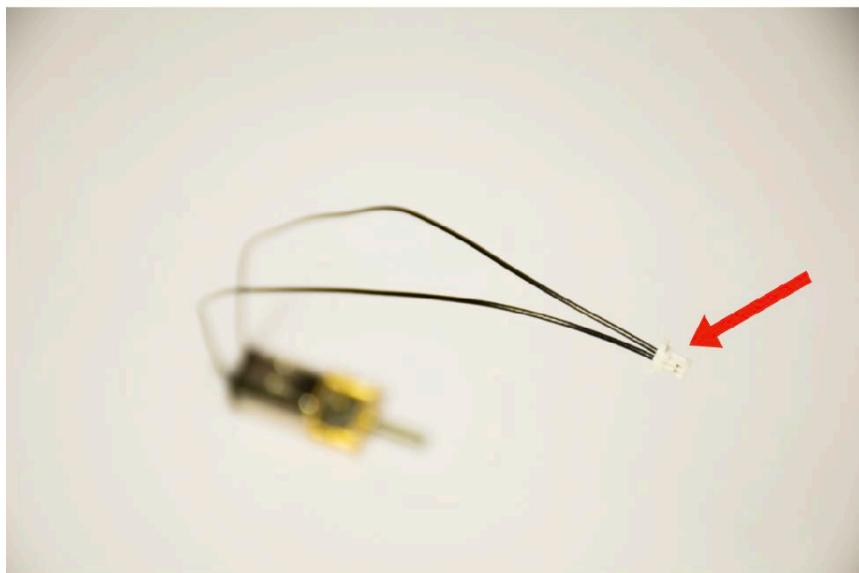
3. Solder wires to the motor. Wire need to go up and  $\oplus$  (positive) should be on right.

## Motor assembly



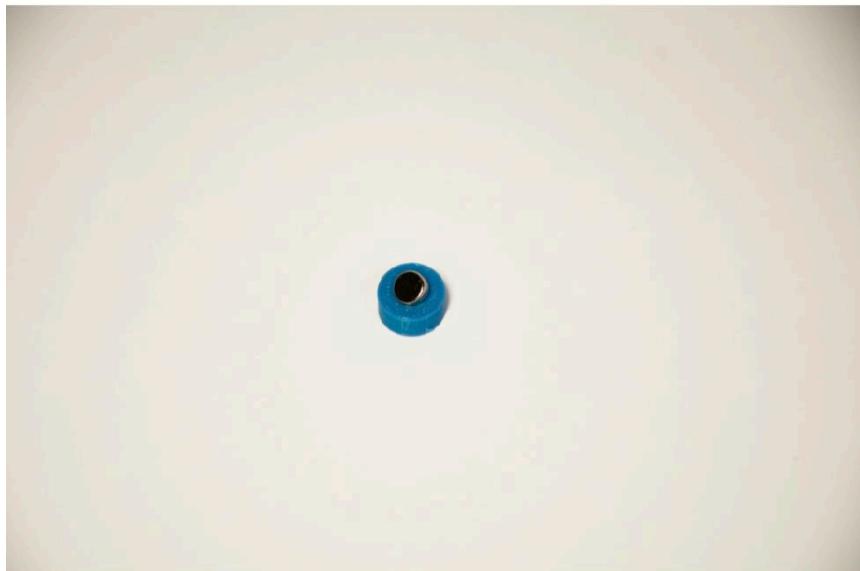
4. Check if polarity is correct. If you do this step wrong, robot will not work correctly.

## Motor assembly



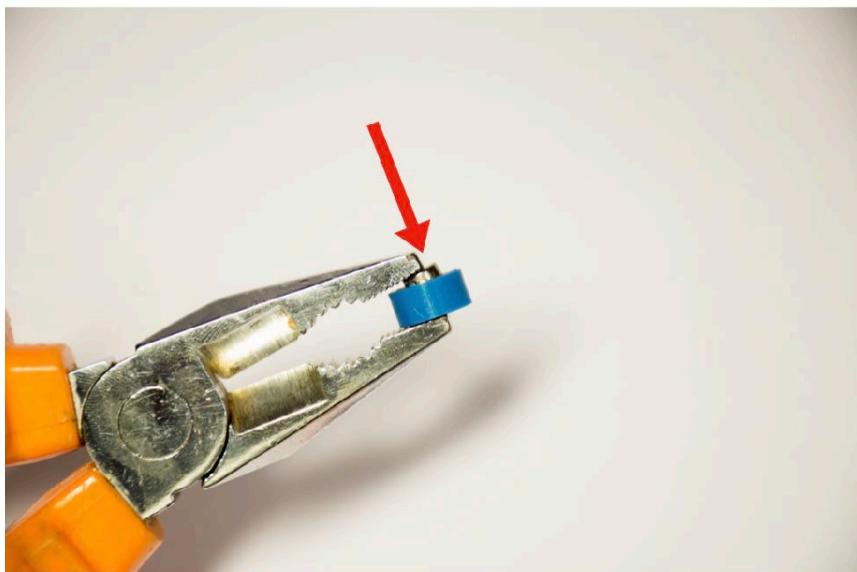
5. Plug JST SH connector. Take care of use correct positioning.

## Motor assembly



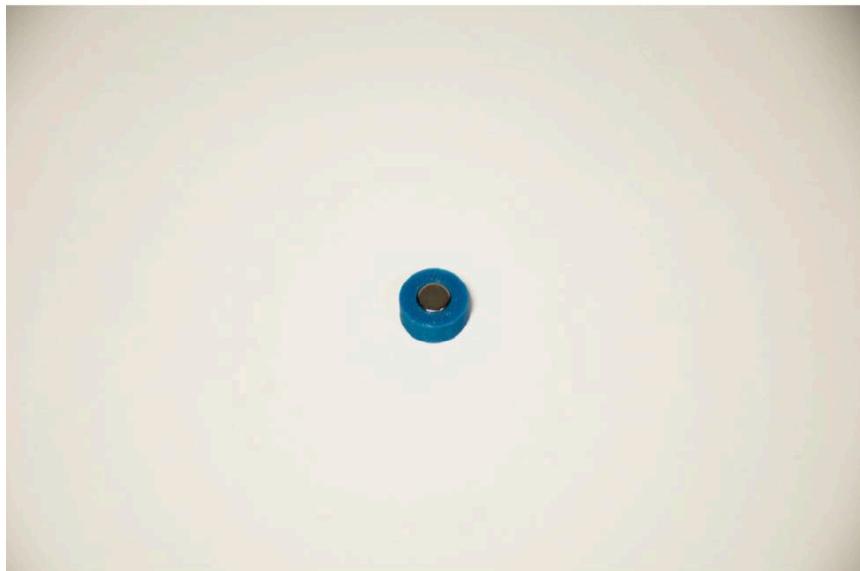
6. Now you need magnet bracket and magnet.

## Motor assembly



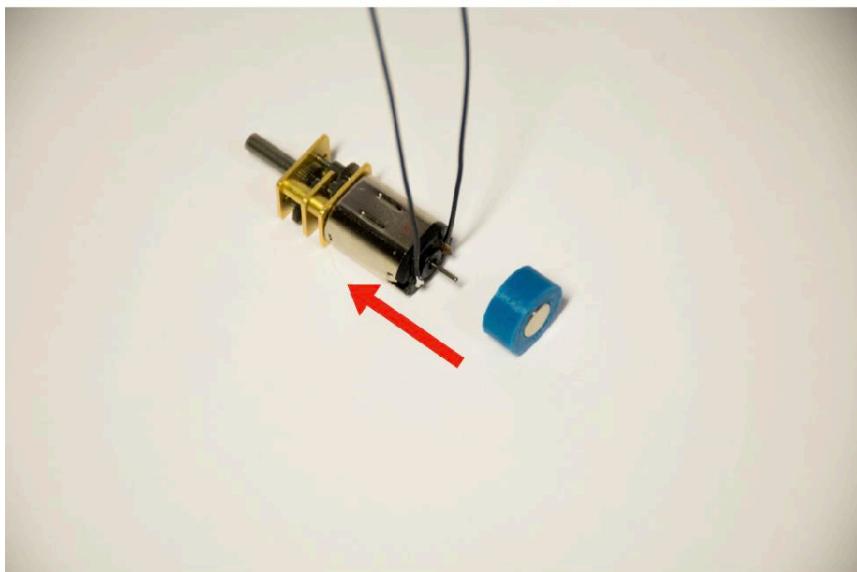
7. Insert magnet. You can use pliers if you found difficulties to insert magnet into bracket. If you notice that magnet go off the bracket use superglue to attach it.

## Motor assembly



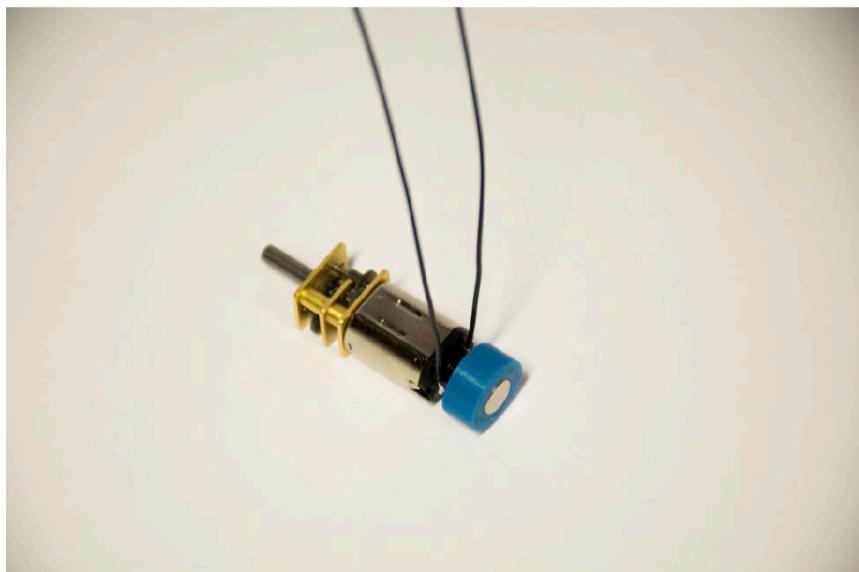
8. Check if your magnet assembly is like the one in photo.

## Motor assembly



9. Mount magnet assembly on motor rear shaft. If you notice that it is a loose assembly, use a little drop of superglue.

## Motor assembly



10. Your motor is ready! You need 2 of this to assemble your ERWHi Hedgehog.

# Parts preparation

- Motor assembly
- **UP Squared assembly**
- Encoder cable assembly
- USBs cable assembly
- External power supply connector
- Power switch
- Power cable
- Power jack
- Wheels

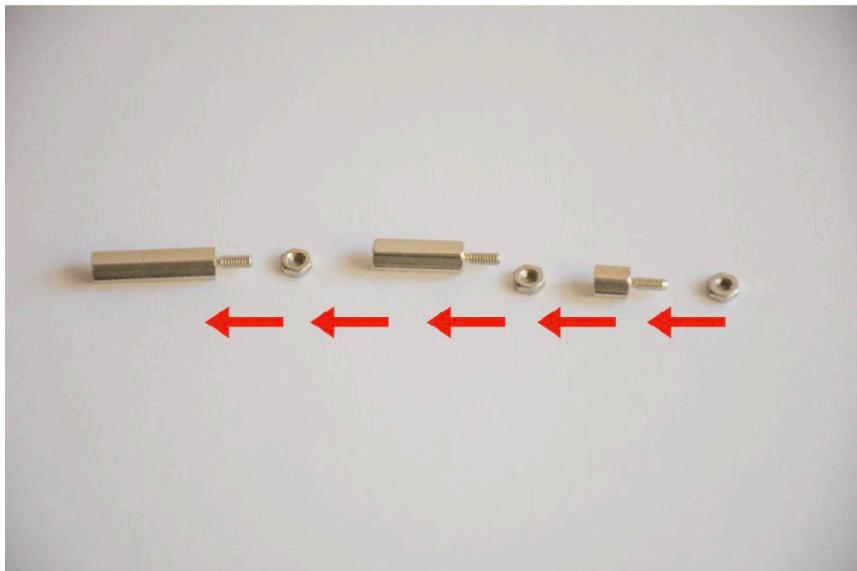
## UP Squared assembly



In following steps you need:

- 5x M2.5x6mm standoffs (**BOM ID T1#26**);
- 5x M2.5x15mm standoffs (**BOM ID T1#27**);
- 5x M2.5x20mm standoffs (**BOM ID T1#28**);
- 15x M2.5 nuts (**BOM ID T1#29**).

## UP Squared assembly



1. Mount standoffs alternating nuts, as shown in figure.

## UP Squared assembly



2. You will obtain 5 standoffs assemblies. You need for future steps.

## UP Squared assembly



In following steps you need:

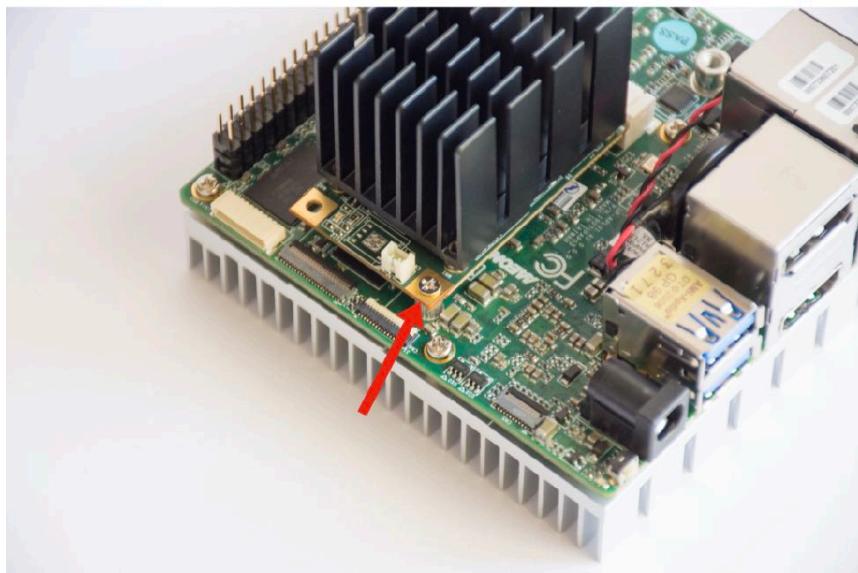
- 1x UP Squared (**BOM ID T1#1**);
- 1x AI Core X with screw (**BOM ID T1#2**);
- 1x WiFi module with screw (**BOM ID T1#3**).

## UP Squared assembly



3. Insert AI Core X into miniPCIe socket.

## UP Squared assembly



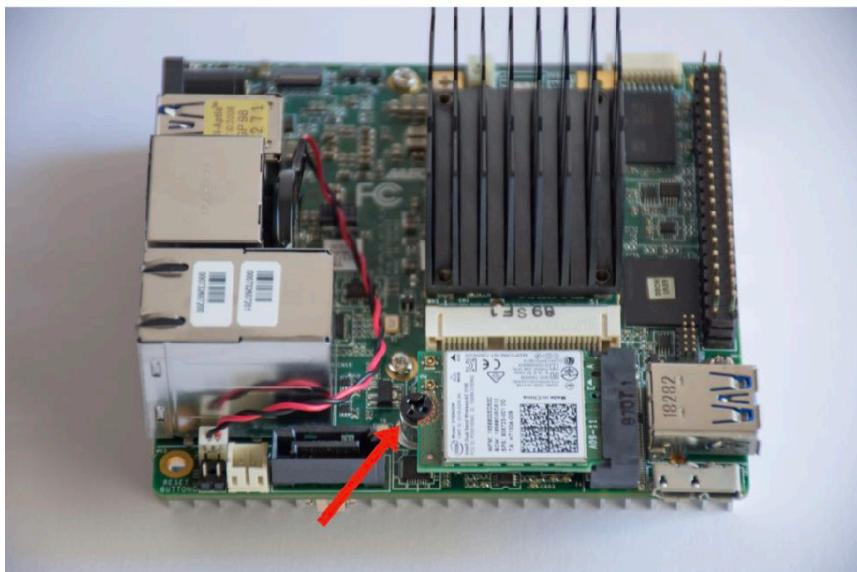
4. Fix using the screw. Ai Core X is now mounted.

## UP Squared assembly



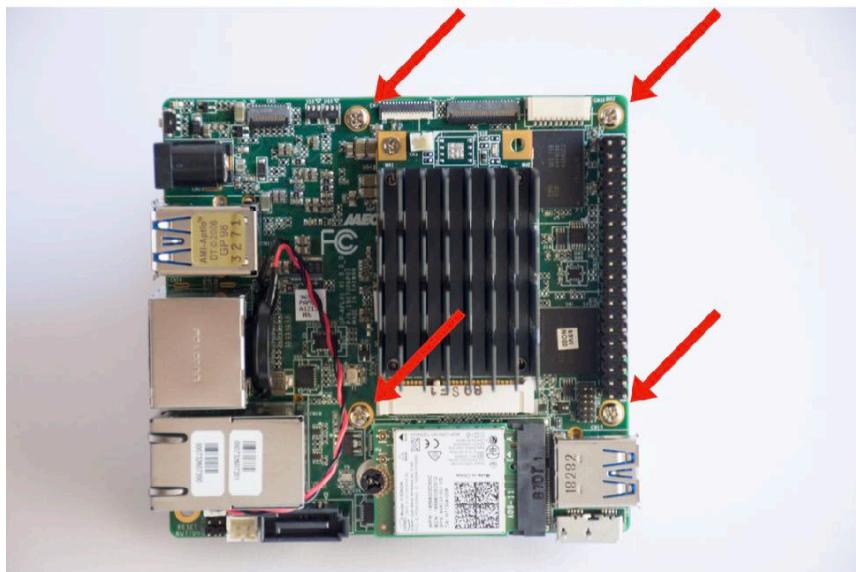
5. Insert WiFi module in M.2 slot.

## UP Squared assembly



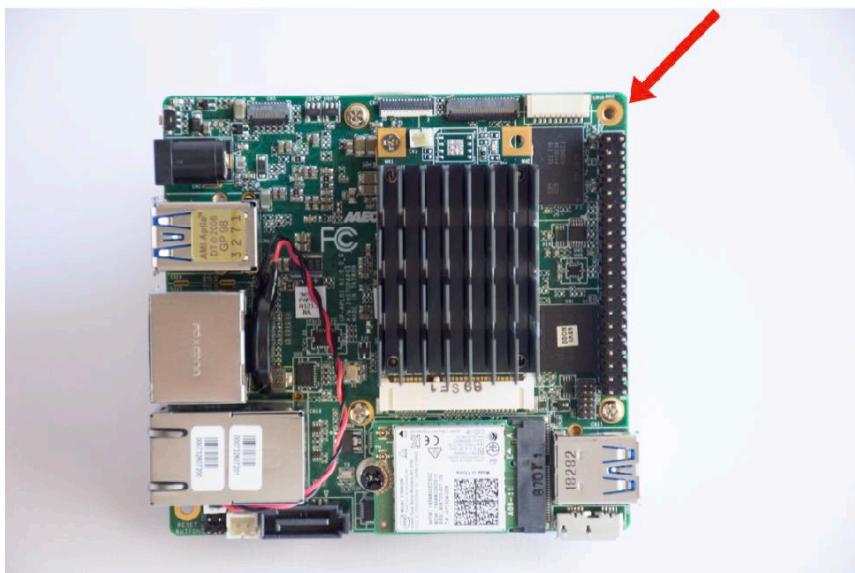
6. Fix WiFi module using the screw.

## UP Squared assembly



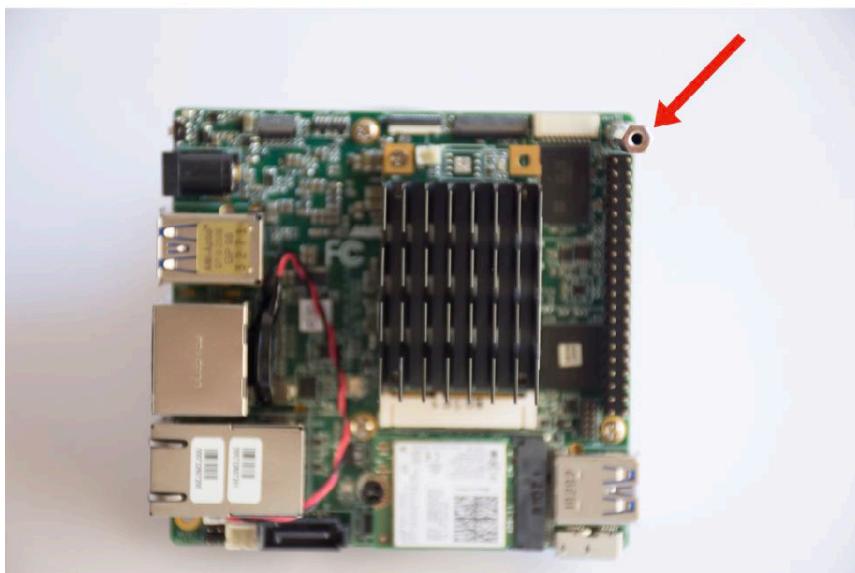
7. You need to remove this 4 screws. In next steps there is explained how to.

## UP Squared assembly



8. Remove screw.

## UP Squared assembly



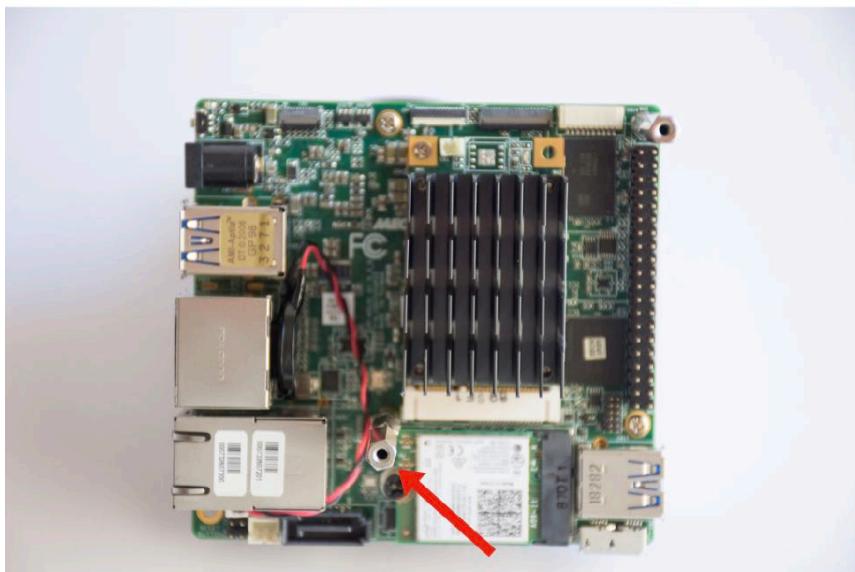
9. Mount the preassembled standoff.

## UP Squared assembly



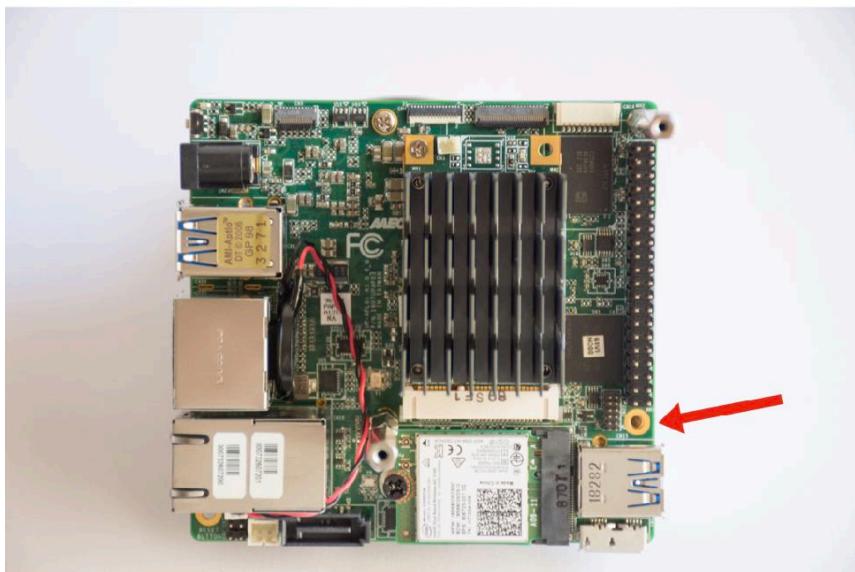
10. Proceed in cross. Remove screw.

## UP Squared assembly



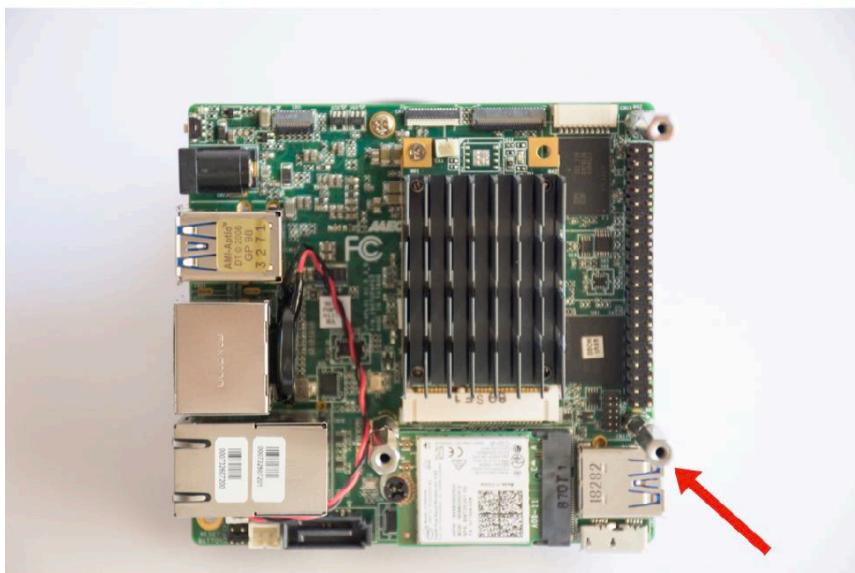
11. Mount the preassembled standoff.

## UP Squared assembly



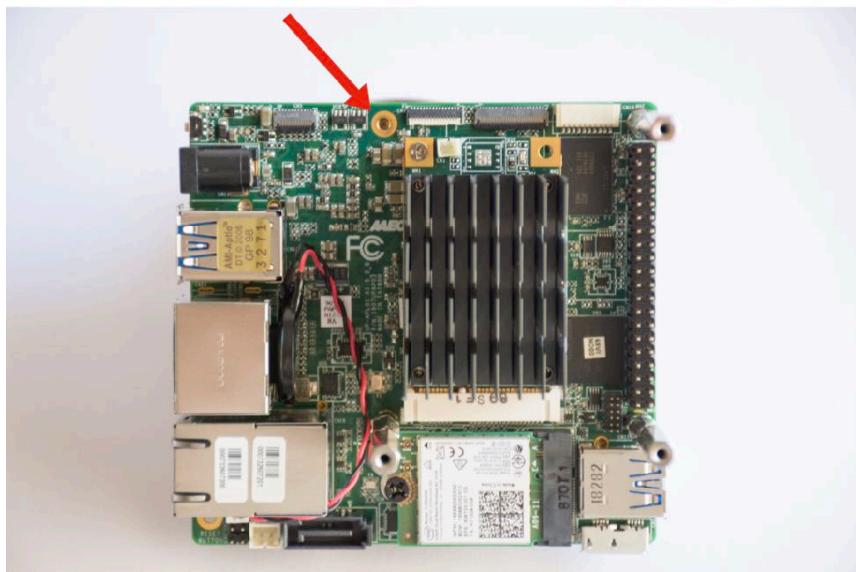
12. Remove the screw.

## UP Squared assembly



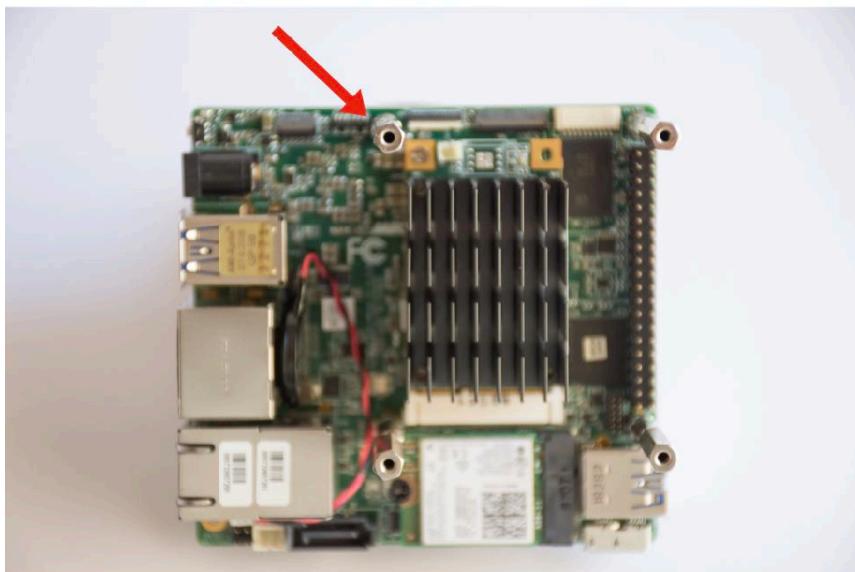
13. Mount the preassembled standoff.

## UP Squared assembly



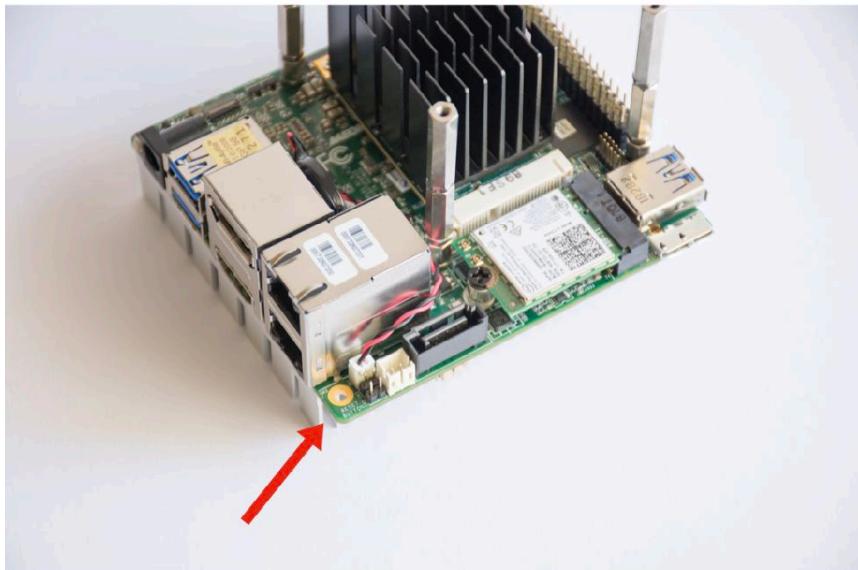
14. Remove the screw.

## UP Squared assembly



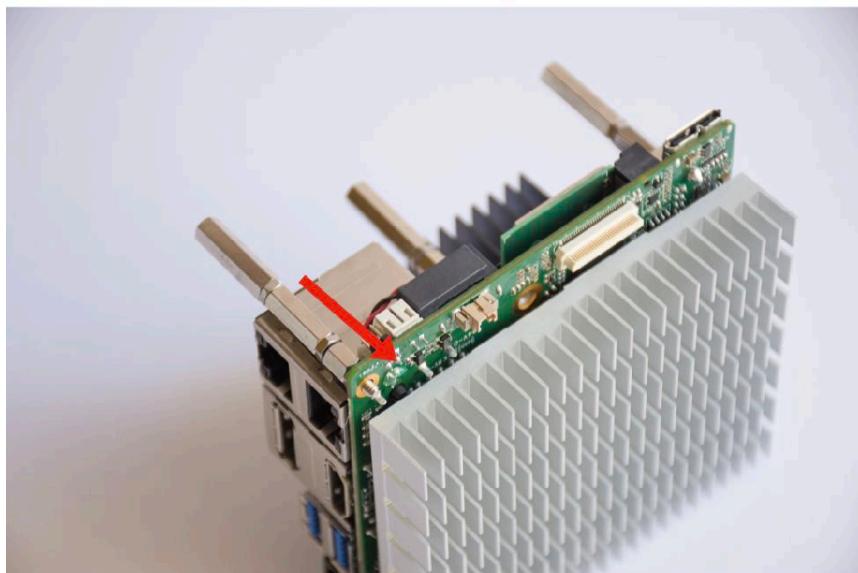
15. Mount the preassembled standoff. You fixed correctly heatsink using standoffs.

## UP Squared assembly



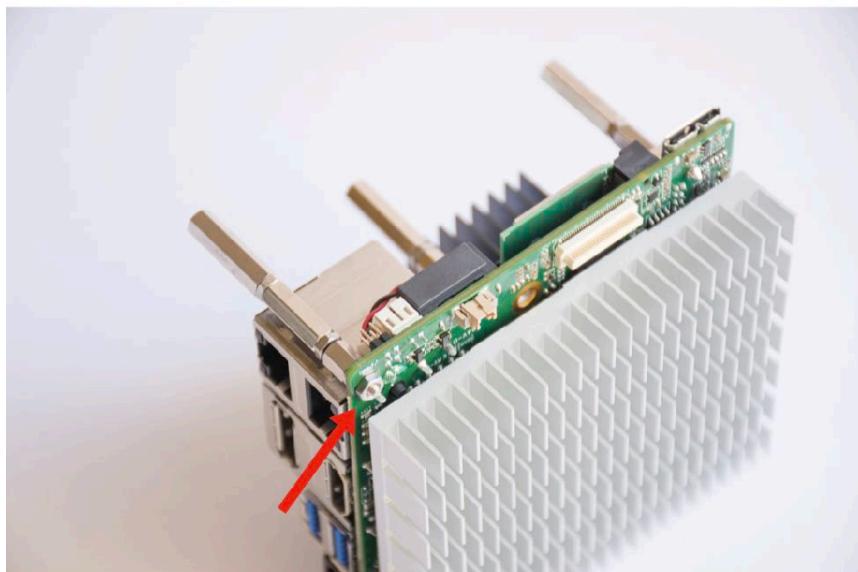
16. Now you mount last of one.

## UP Squared assembly



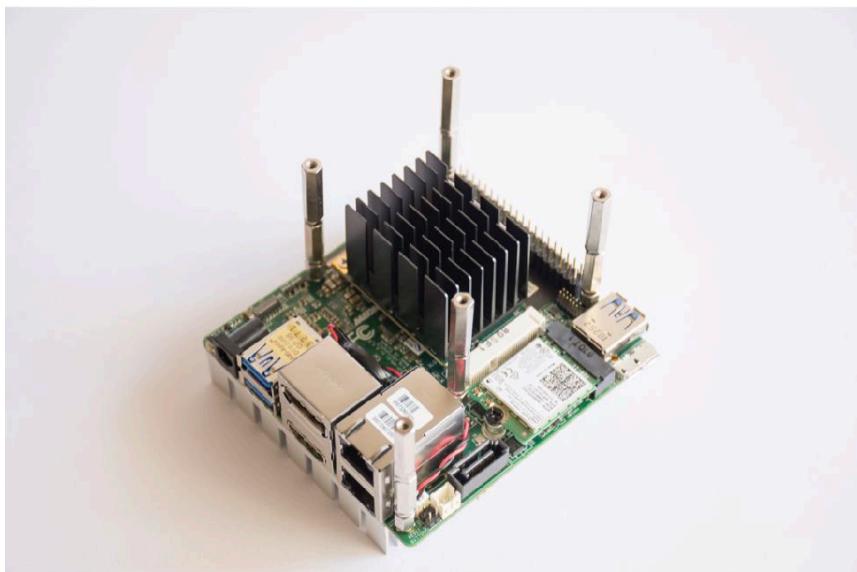
17. Insert the preassembled standoff.

## UP Squared assembly



18. Fix using a M2.5 nut.

## UP Squared assembly



19. UP Squared is ready to be used in Erwhi Hedgehog assembly.

# Parts preparation

- Motor assembly
- UP Squared assembly
- **Encoder cable assembly**
- USBs cable assembly
- External power supply connector
- Power switch
- Power cable
- Power jack
- Wheels

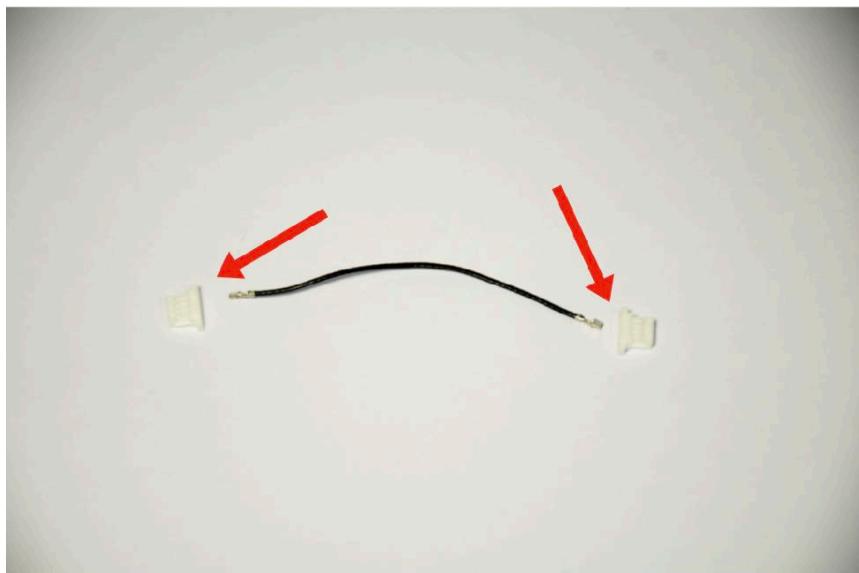
## Encoder cable assembly



In following steps you need:

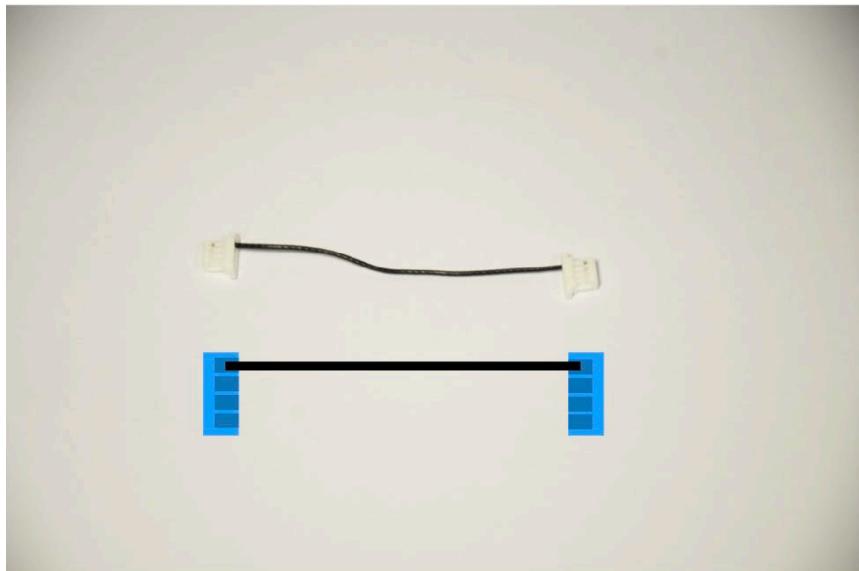
- 4x wires with JST SH crimps of 2 inches length (**BOM ID T7#1**);
- 2x JST SH (2 positions) connectors (**BOM ID T7#2**).

## Encoder cable assembly



1. Insert wire's crimps in connectors.

## Encoder cable assembly



2. Check connection assembly.

## Encoder cable assembly



3. Insert other wires.
4. Check if connections are correct as shown in figure.
5. Encoder cable is ready. You need 2 of these to assembly your Erwhi Hedgehog.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- **USBs cable assembly**
- External power supply connector
- Power switch
- Power cable
- Power jack
- Wheels

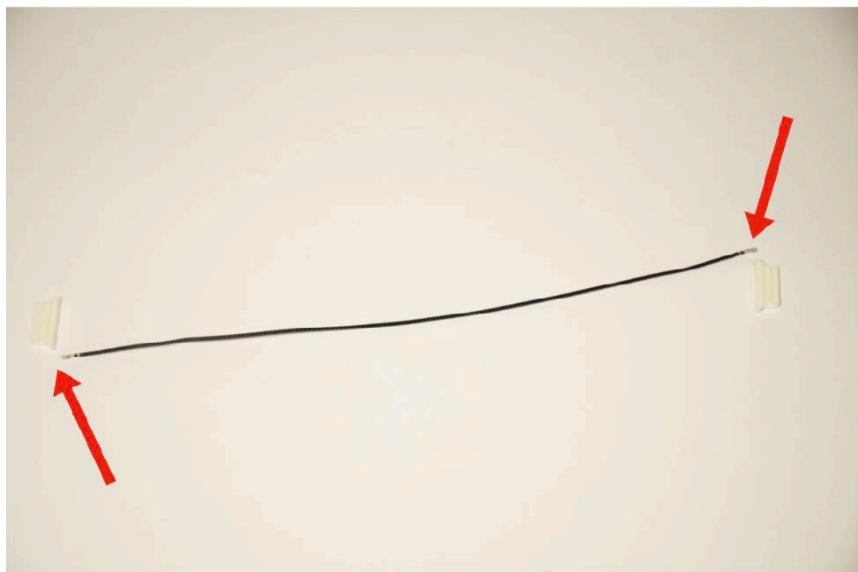
## USBs cable assembly



In following steps you need:

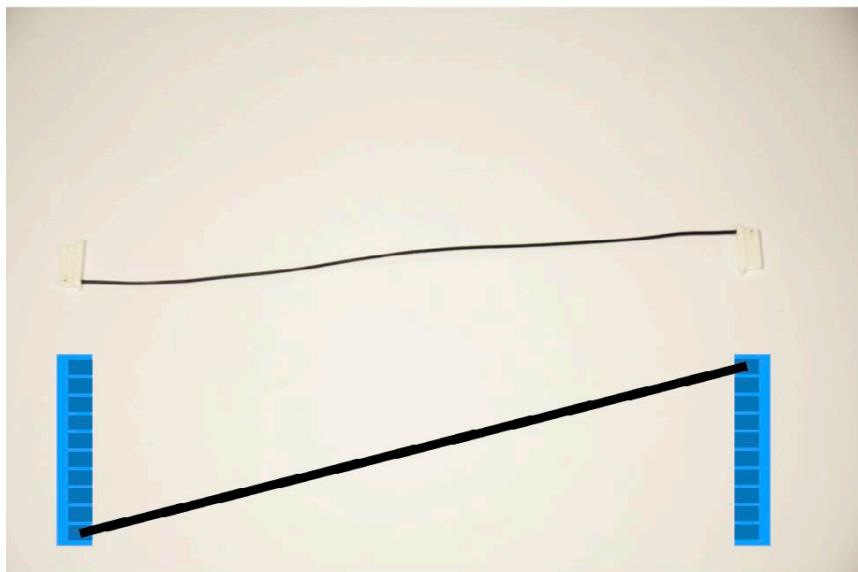
- 8x wire with JST SH crimps of 6 inches length (**BOM ID T8#1**);
- 2x JST SH (10 positions) connectors (**BOM ID T8#2**).

## USBs cable assembly



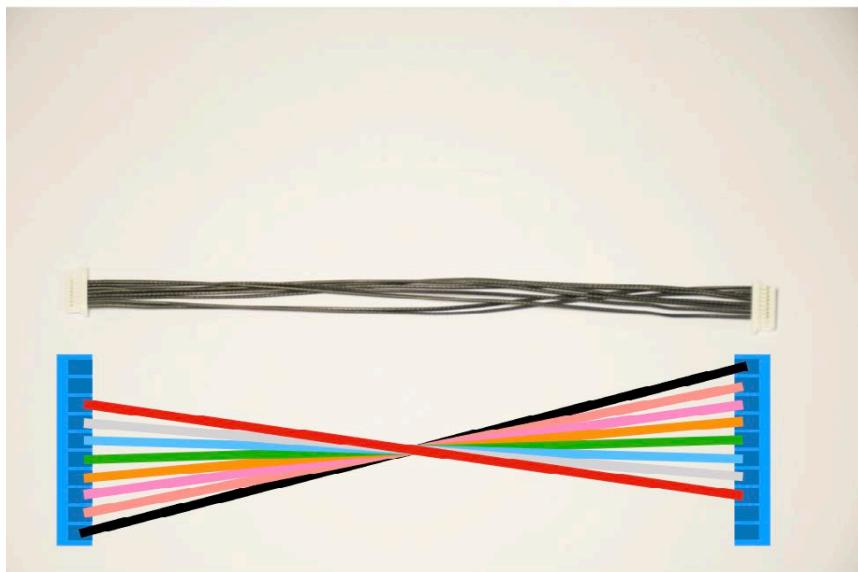
1. Insert wire crimps in connectors.

## USBs cable assembly



2. Check if connections are correct.

## USBs cable assembly

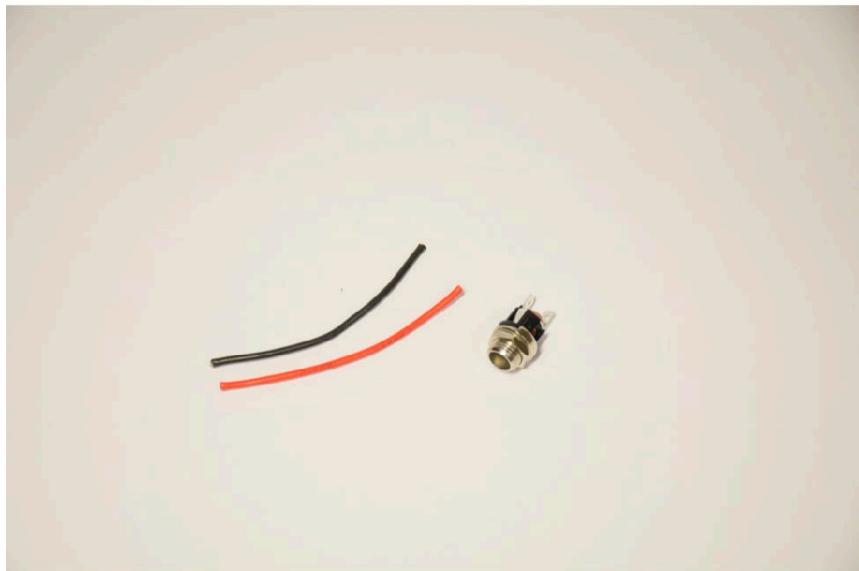


3. Insert other wires.
4. Check if your connections are correct as shown in figure.
5. USBs cable is ready. You need 1 of these to assembly your Erwhi Hedgehog.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- USBs cable assembly
- **External power supply connector**
- Power switch
- Power cable
- Power jack
- Wheels

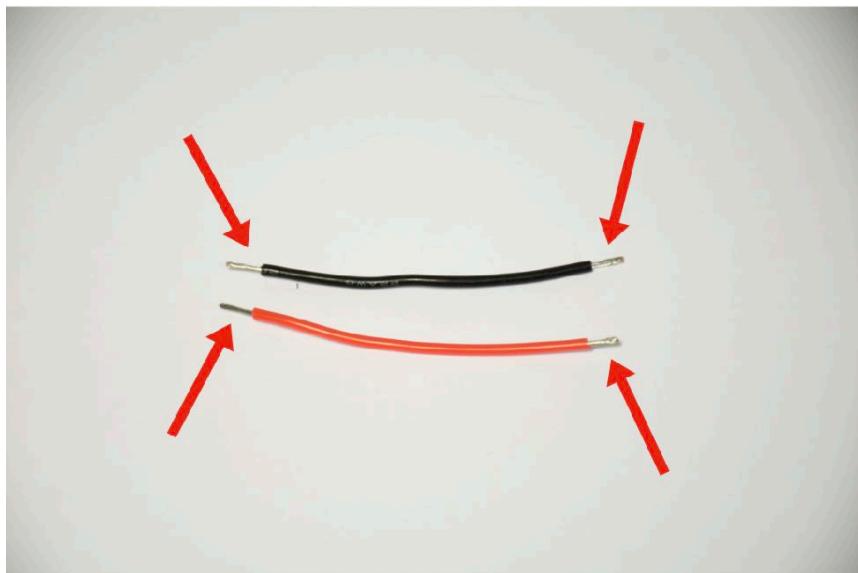
## External power supply connector



In following steps you need:

- 2x 60mm 22AWG wires (**BOM ID T5#2**);
- 1x Power supply connector (ext 8mm, 5.5-2.1) (**BOM ID T5#1**).

## External power supply connector



1. Peel off 5mm on each side of wires.

## External power supply connector



2. Solder red wire to power connector central pin.

## External power supply connector

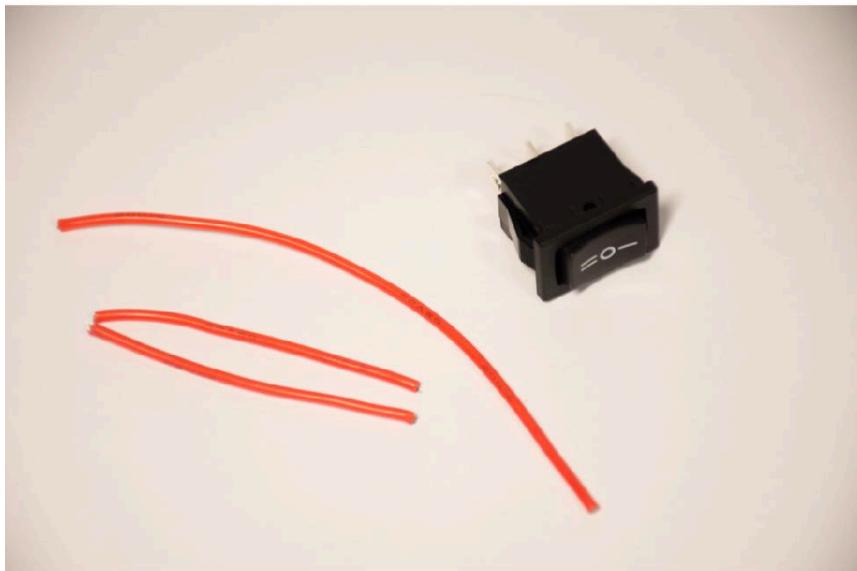


3. Solder black wire to power connector external pin.
4. External power supply connector is ready to be used in Erwhi assembly.  
You need only 1 of this.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- USBs cable assembly
- External power supply connector
- **Power switch**
- Power cable
- Power jack
- Wheels

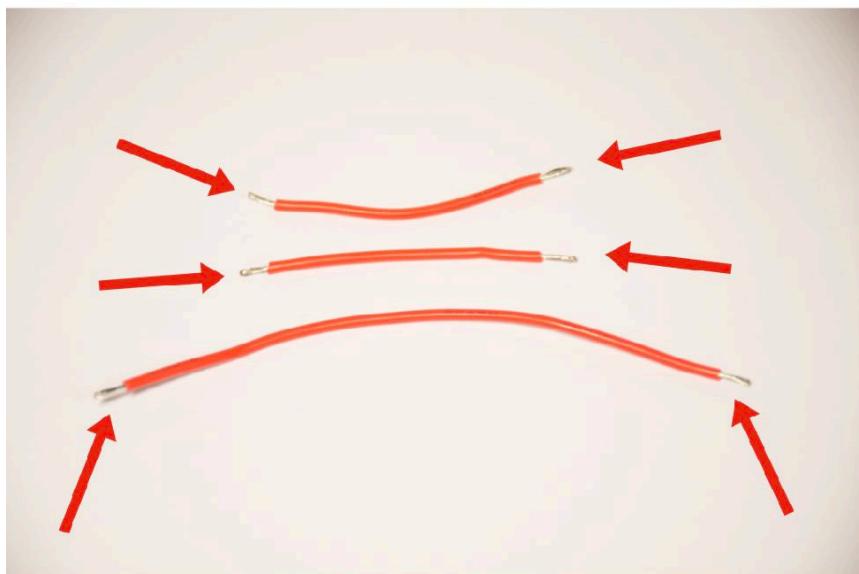
## Power switch



In following steps you need:

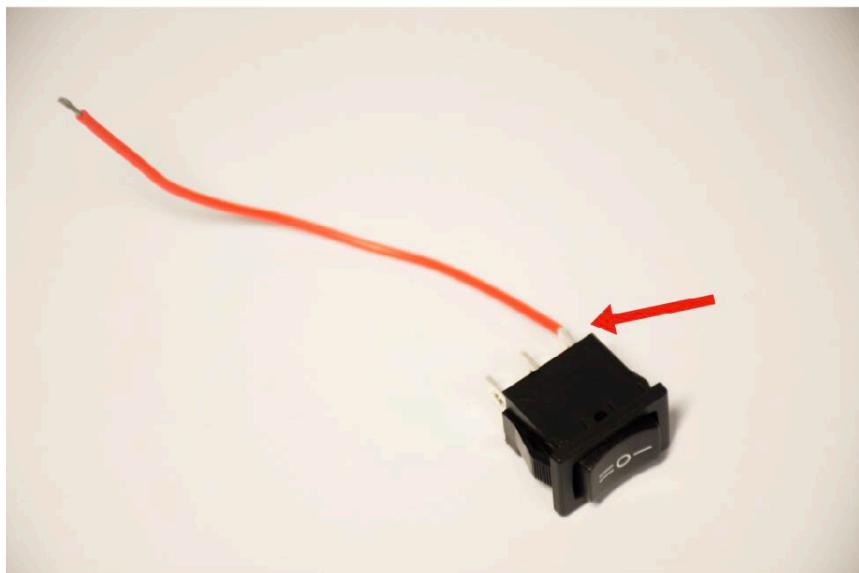
- 2x 60mm 22AWG wires (**BOM ID T4#2**);
- 1x 120mm 22AWG wire (**BOM ID T4#2**);
- 1x rocker power switch with 3 positions (**BOM ID T4#1**).

## Power switch



1. Peel off 5mm on each side of wires.

## Power switch



2. Solder long wire to button in nearest pin to “I” symbol.

## Power switch



3. Solder other 2 wires.
4. Power switch is ready to be used in Erwhi assembly. You need only 1 of this.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- USBs cable assembly
- External power supply connector
- Power switch
- **Power cable**
- Power jack
- Wheels

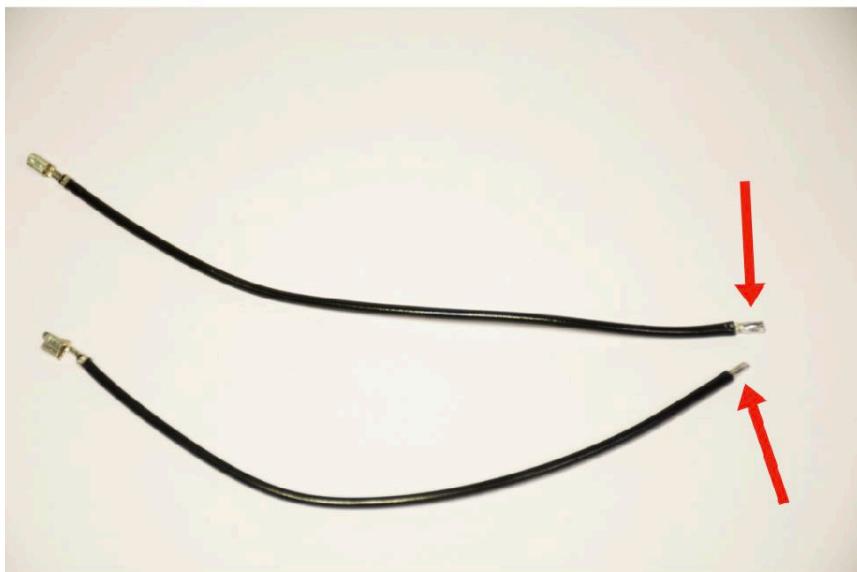
## Power cable



In following steps you need:

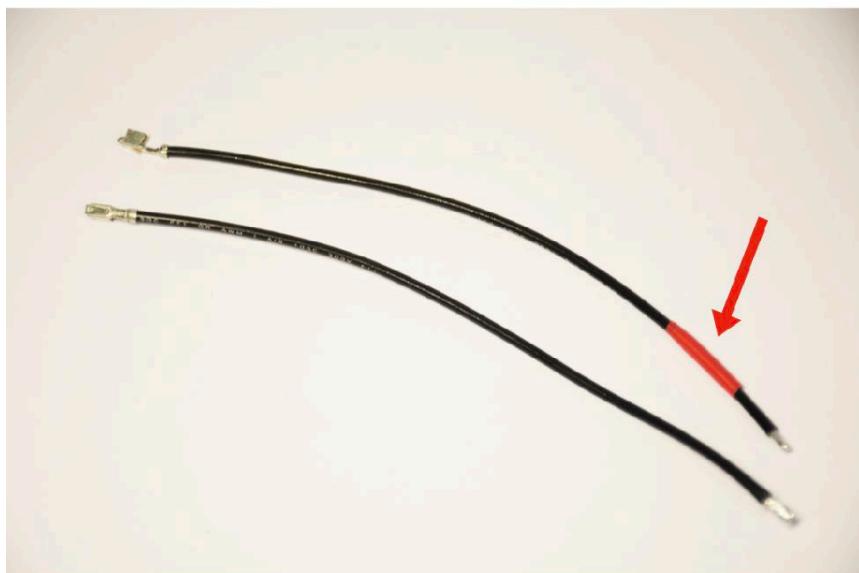
- 2x wires with JST VH crimps of 6 inches length (**BOM ID T3#2**);
- 1x JST VH (2 positions) connector (**BOM ID T3#1**).

## Power cable



1. Cut crimps on one side.
2. Peel off 5mm of wires.

## Power cable

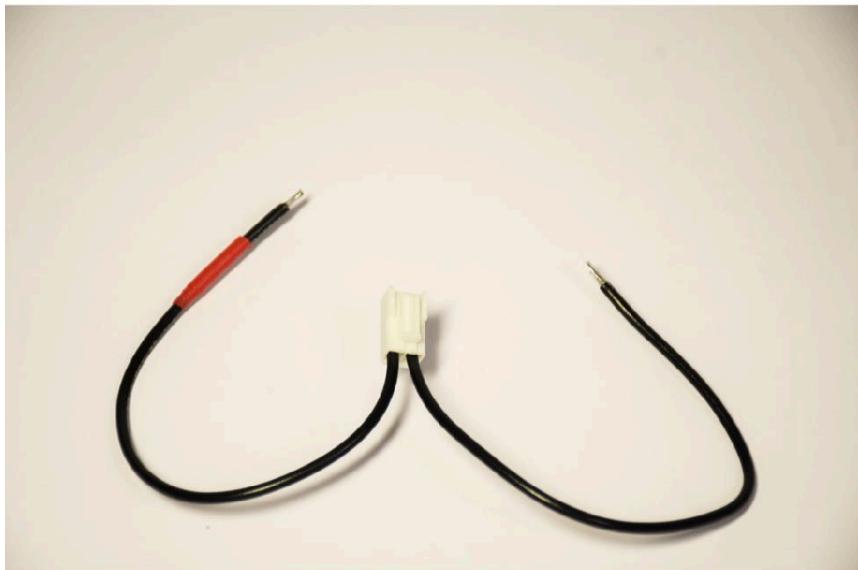


3. Mark one wire. It will be useful to identify the + polarity.

**Power cable**

4. Insert wires as shown in photo.

## Power cable



5. Check connections.
6. Power cable is ready to be used. You need 1 of this.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- USBs cable assembly
- External power supply connector
- Power switch
- Power cable
- **Power jack**
- Wheels

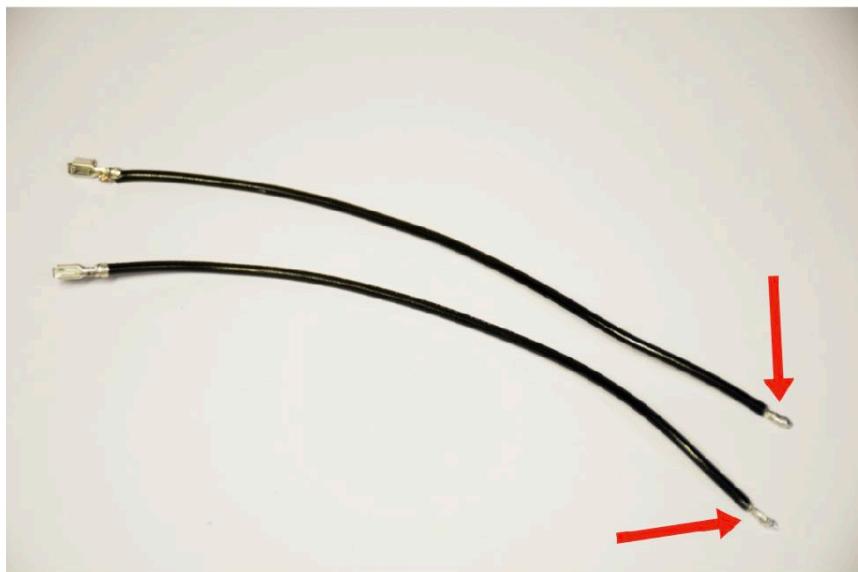
## Power jack



In following steps you need:

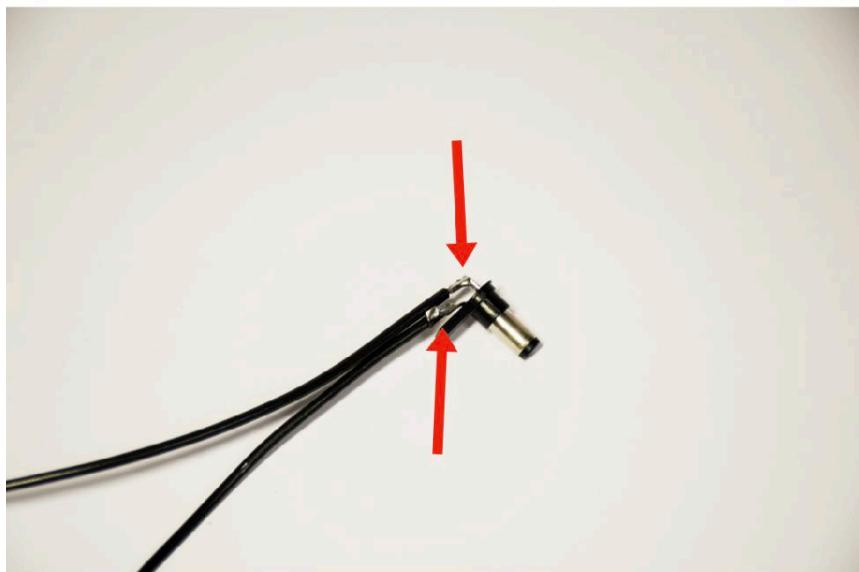
- 2x wires with JST VH crimps of 6 inches length (**BOM ID T2#2**);
- 1x JST VH (2 positions) connector (**BOM ID T2#1**);
- 1x DC power jack (5.5-2.1) (**BOM ID T2#3**).

## Power jack



1. Cut crimps on one side.
2. Peel off 5mm of wires.

## Power jack



3. Solder wires to power jack.

## Power jack



4. Insert central wire into connector.

## Power jack



5. Insert the other wire into connector.
6. Power cable is ready. You need only 1 of this.

# Parts preparation

- Motor assembly
- UP Squared assembly
- Encoder cable assembly
- USBs cable assembly
- External power supply connector
- Power switch
- Power cable
- Power jack
- **Wheels**

## Wheels



In following steps you need:

- Pololu 70mm wheels with tyres (**BOM ID T1#15**).

## Wheels



1. Fit tyres on wheels.
2. You need 2 wheels for your robot.

# **Erwhi Hedgehog**

## assembly

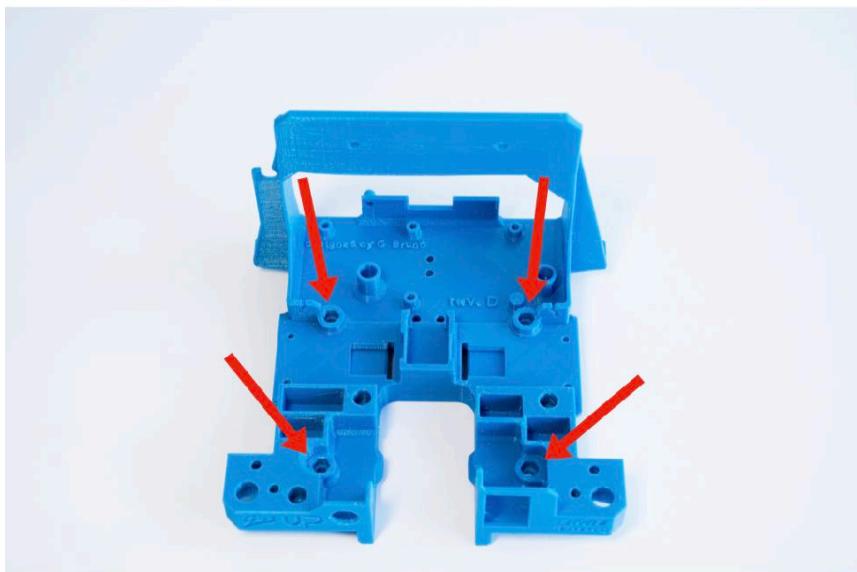
## Erwhi Hedgehog



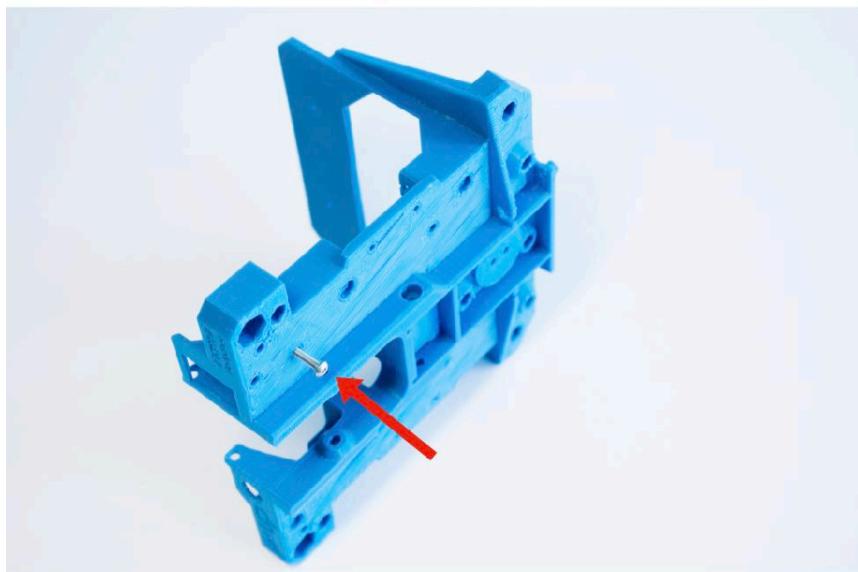
In following steps you need:

- 1x Erwhi Hedgehog chassis (**BOM ID T1#6**);
- 8x M2.5 nuts (**BOM ID T1#29**).

## Erwhi Hedgehog

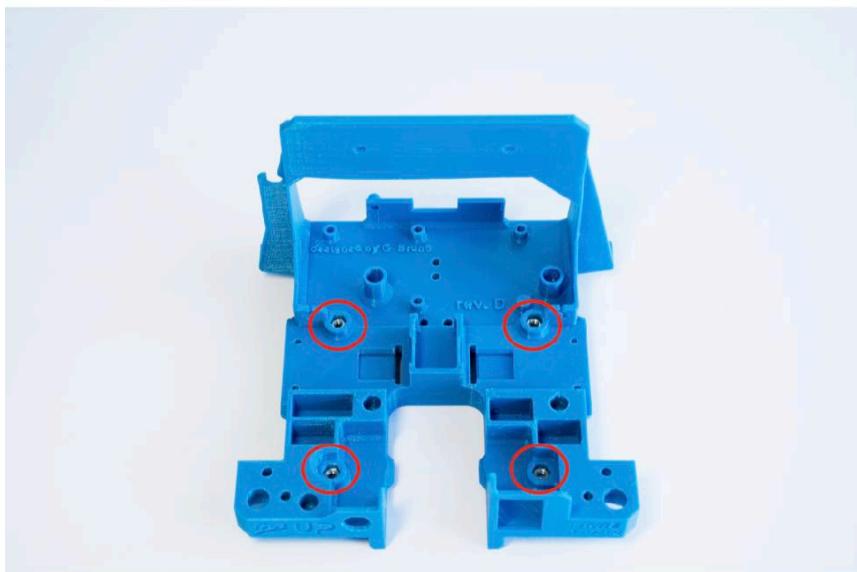


1. Insert a nut in each hexagonal hole.

**Erwhi Hedgehog**

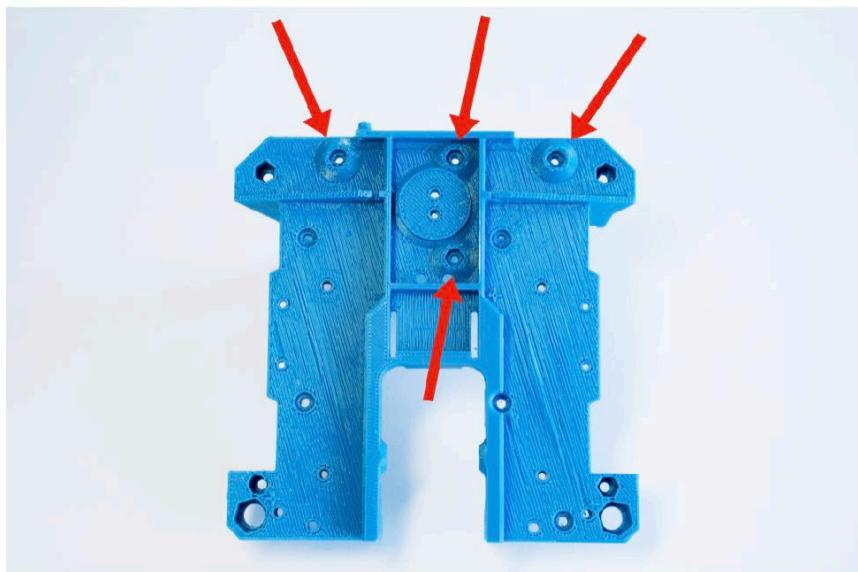
2. You can use screw to help to fix nuts in an easy way.

## Erwhi Hedgehog

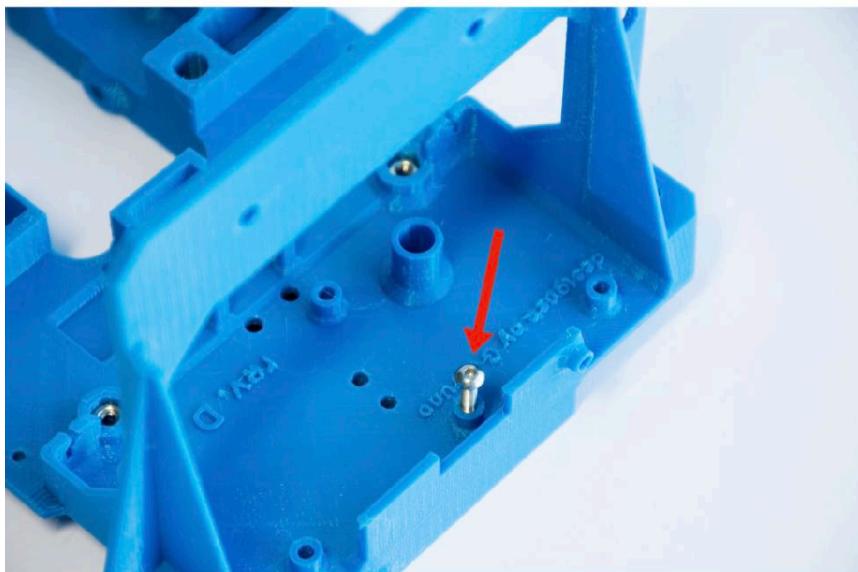


3. Check if everything is like in photo.

## Erwhi Hedgehog



4. Turn chassis.
5. Insert a nut in each of marked hexagonal holes.

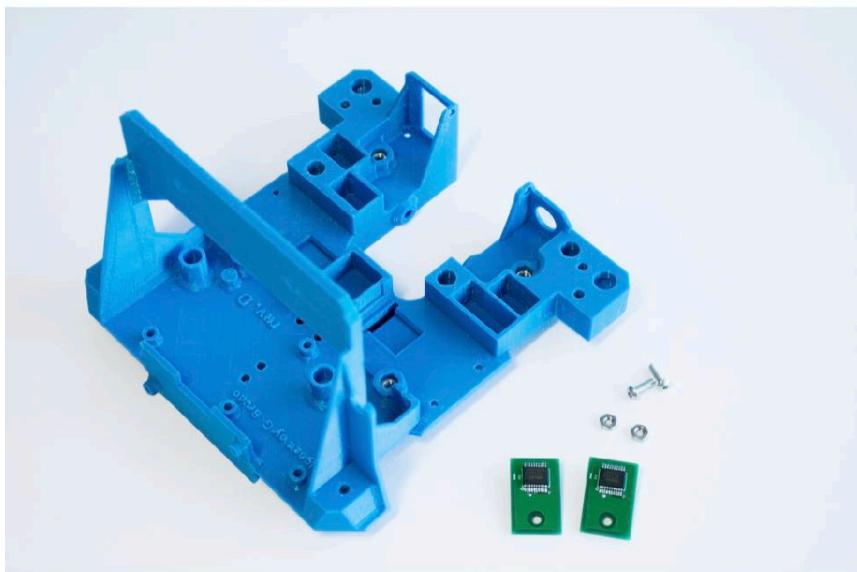
**Erwhi Hedgehog**

6. You can use a screw to fix nuts.

**Erwhi Hedgehog**

7. You should see something like the one in photo.

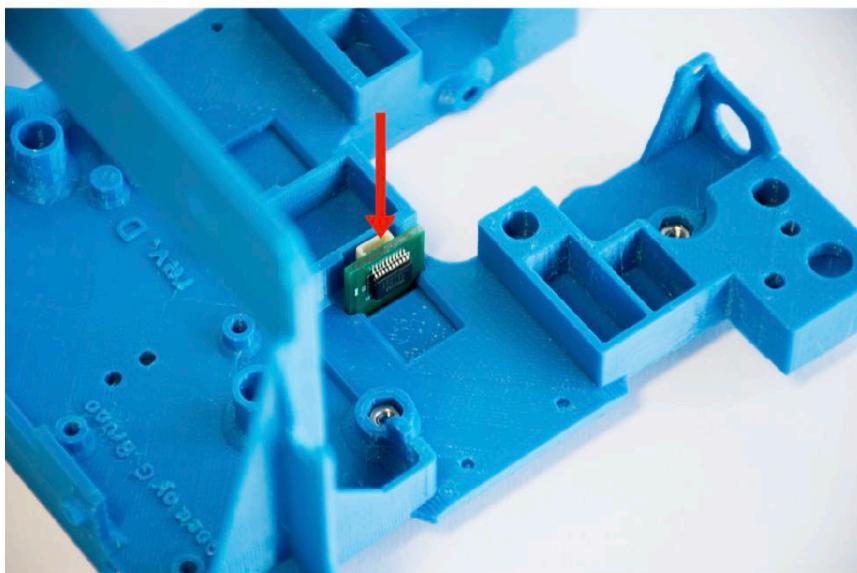
## Erwhi Hedgehog



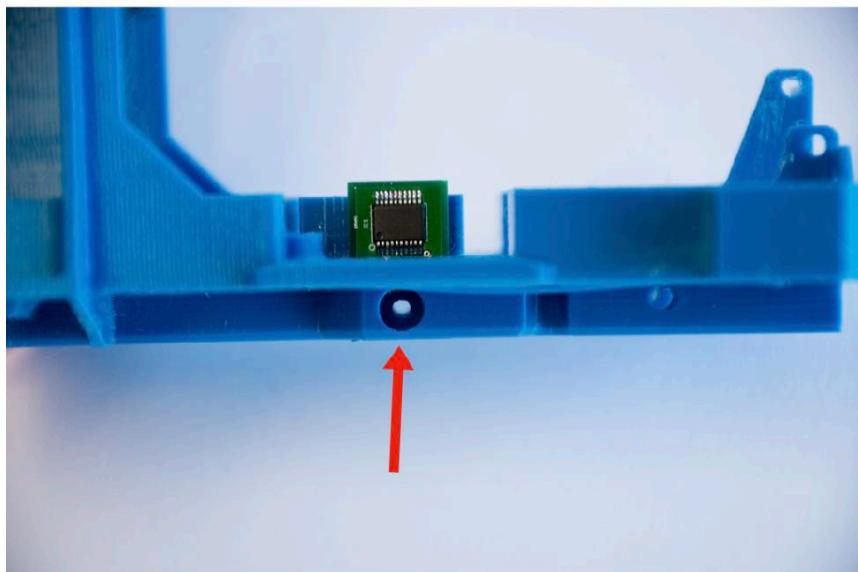
In following steps you need:

- 1x Erwhi Hedgehog chassis with nuts;
- 2x Encoders (**BOM ID T1#9**);
- 2x M2.5 nuts (**BOM ID T1#29**);
- 2x M2.5x8mm screws (**BOM ID T1#30**).

## Erwhi Hedgehog

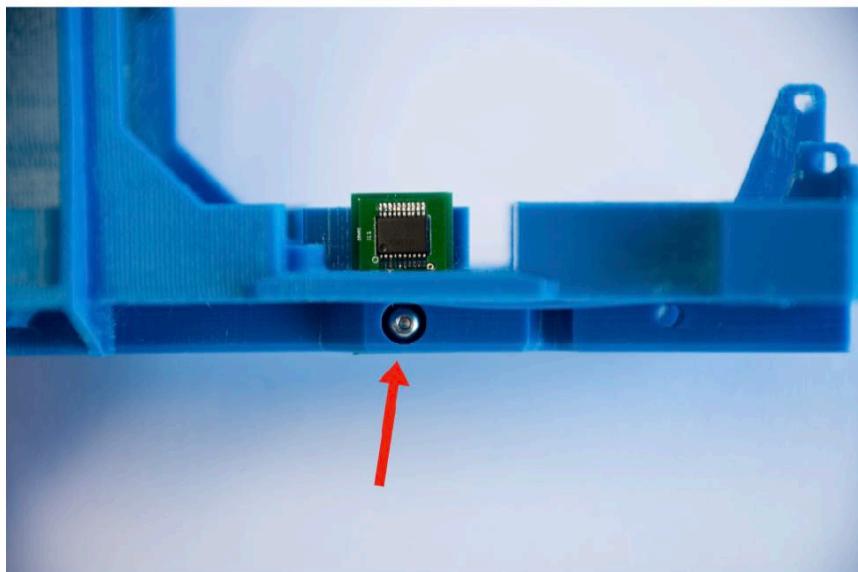


8. Insert the encoder into the marked rectangular hole.
9. Check the correct position as shown in photo.

**Erwhi Hedgehog**

10. Check that encoder hole is aligned to chassis hole.

## Erwhi Hedgehog

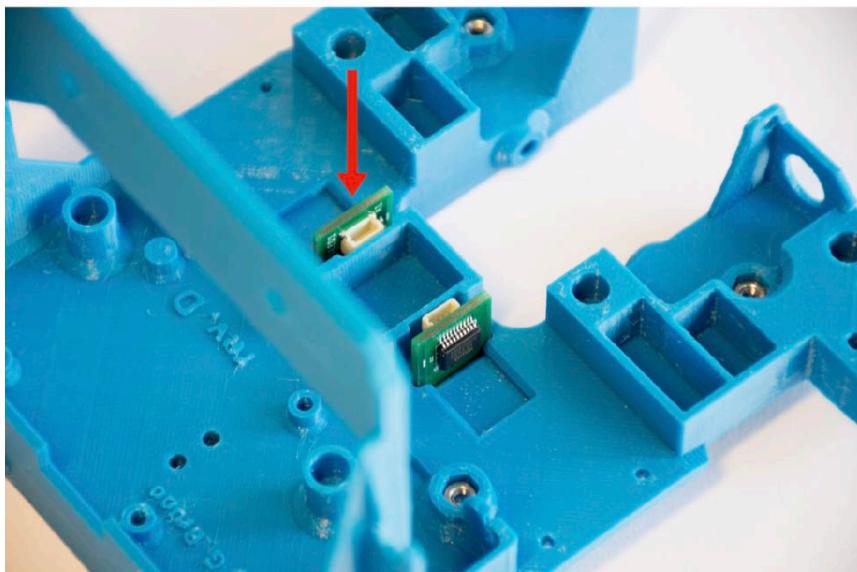


11. Insert a screw to constrain the encoder.

**Erwhi Hedgehog**

12. Fix everything using a nut.

## Erwhi Hedgehog

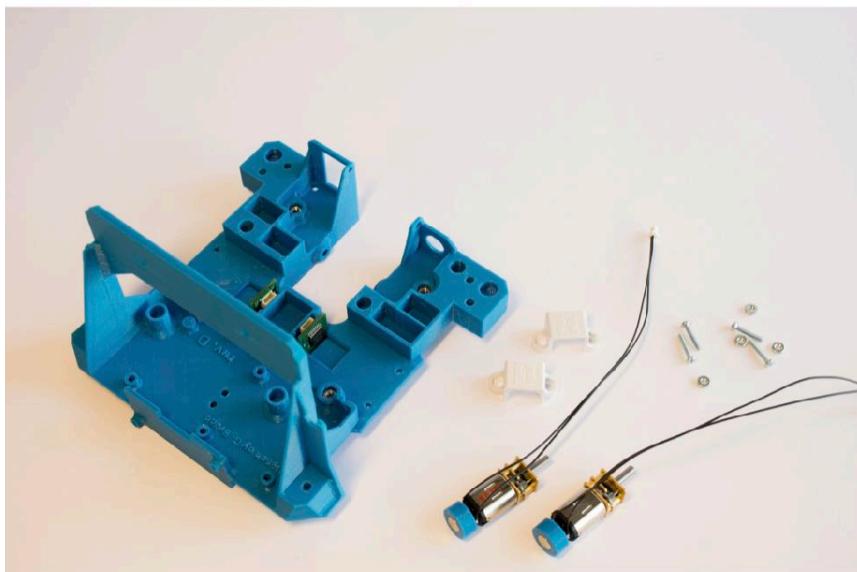


13. Insert the other encoder.
14. Constrain using a screw.

**Erwhi Hedgehog**

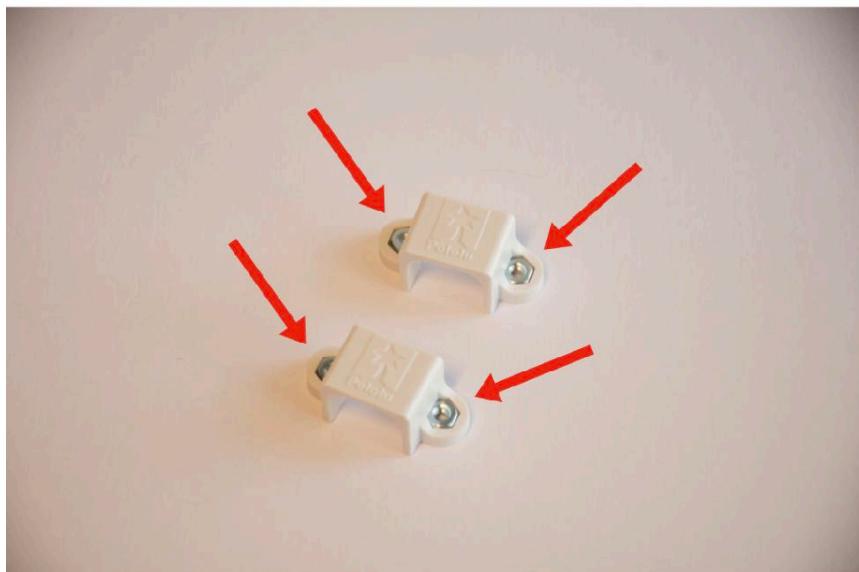
15. Fix using a nut.
16. You should see something like in the photo.

## Erwhi Hedgehog

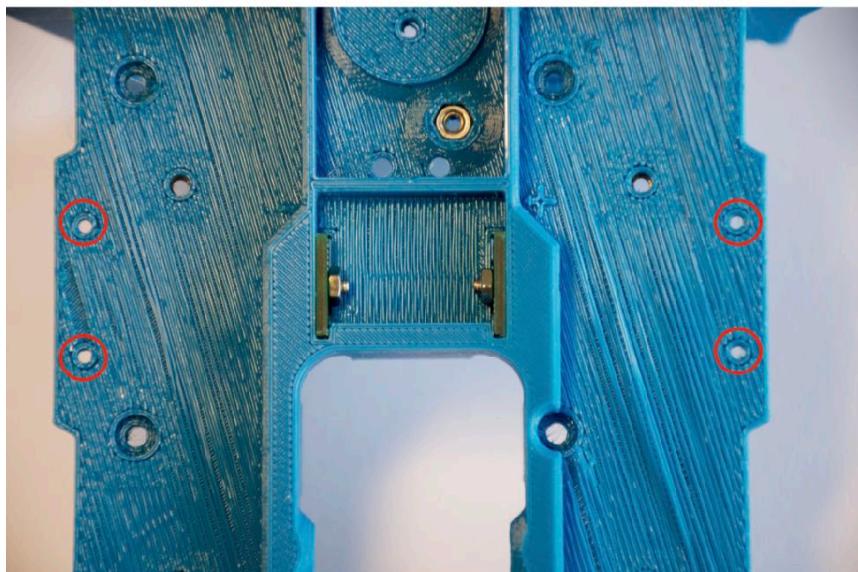


In following steps you need:

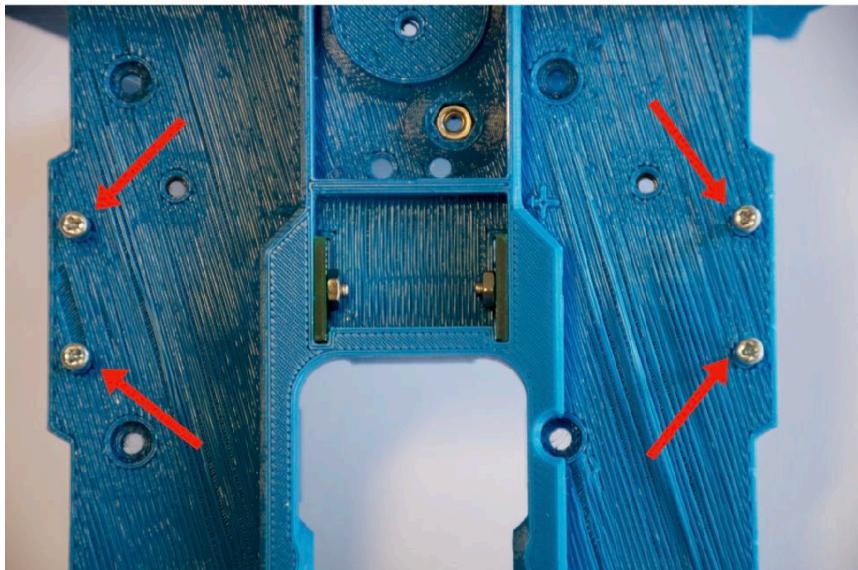
- 1x Erwhi Hedgehog chassis with nuts and encoders;
- 2x Motor assemblies (**BOM ID T1#13 - [Motor Assembly](#)**);
- 1x Pololu Motor Brackets kit (**BOM ID T1#14**).

**Erwhi Hedgehog**

17. Insert nuts in brackets hexagonal holes.

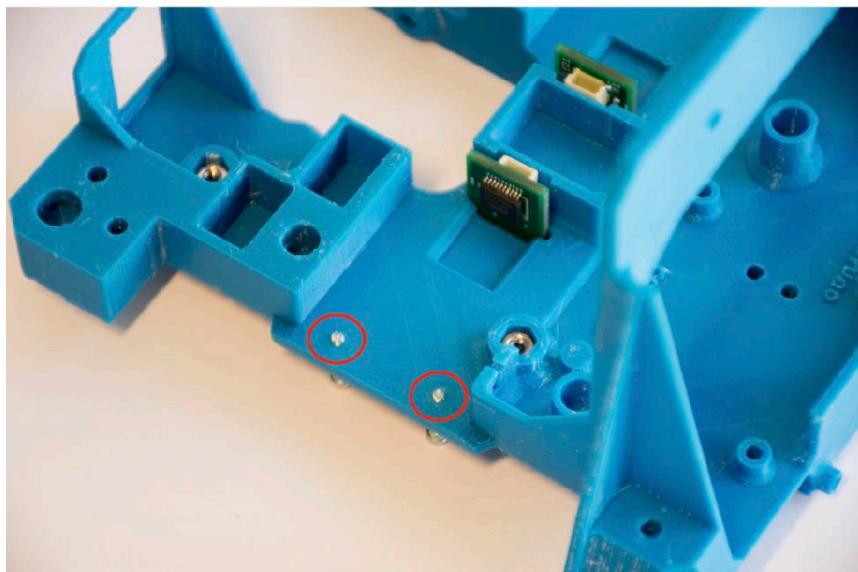
**Erwhi Hedgehog**

18. Marked holes are used in next steps to mount motors.

**Erwhi Hedgehog**

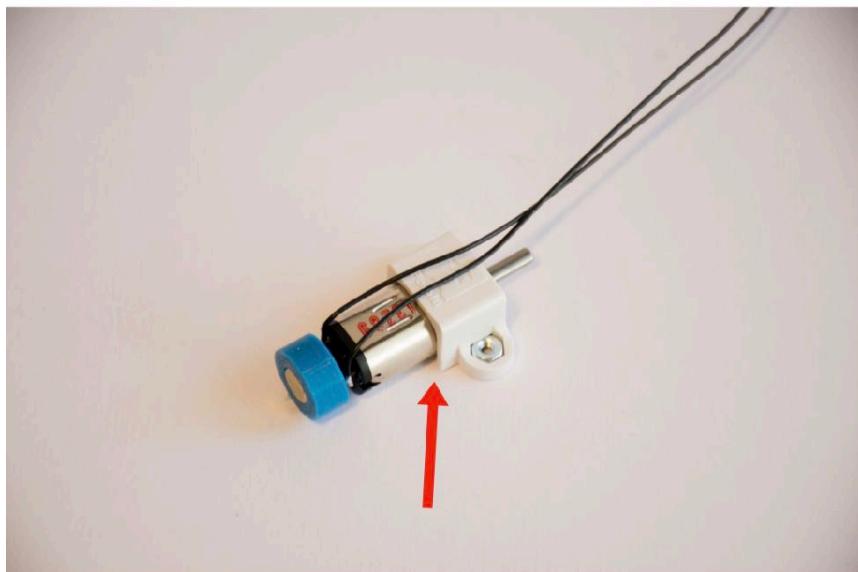
19. Insert the four screws.

## Erwhi Hedgehog

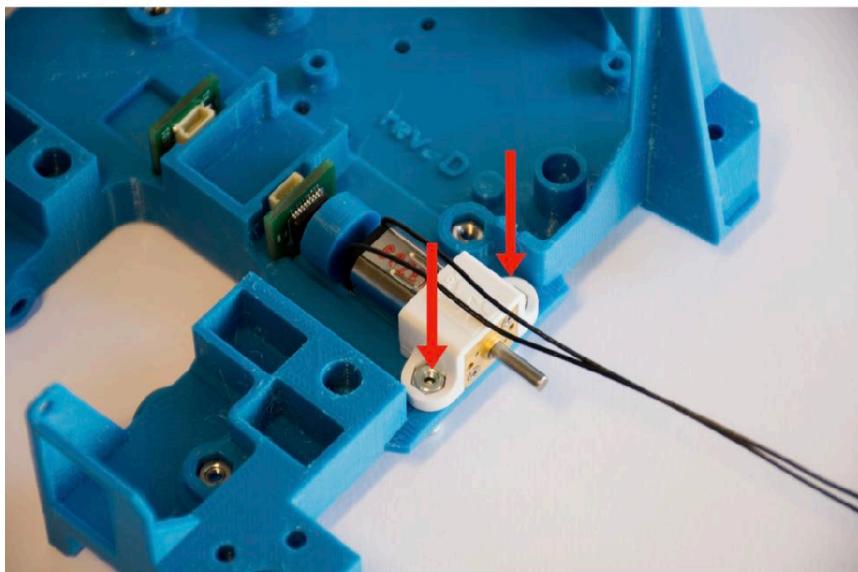


20. Don't insert totally. Just 1mm is needed to easy mount motors.

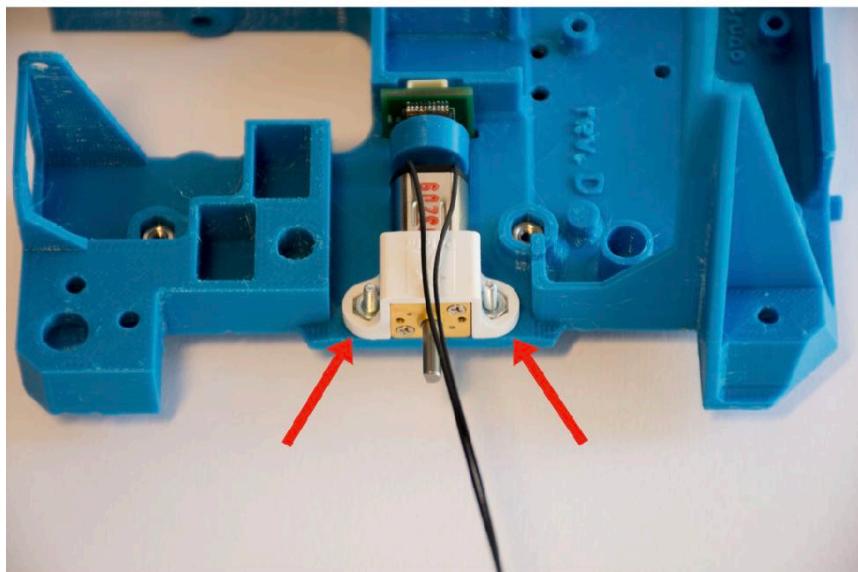
## Erwhi Hedgehog



21. Insert motors in motor brackets as shown.

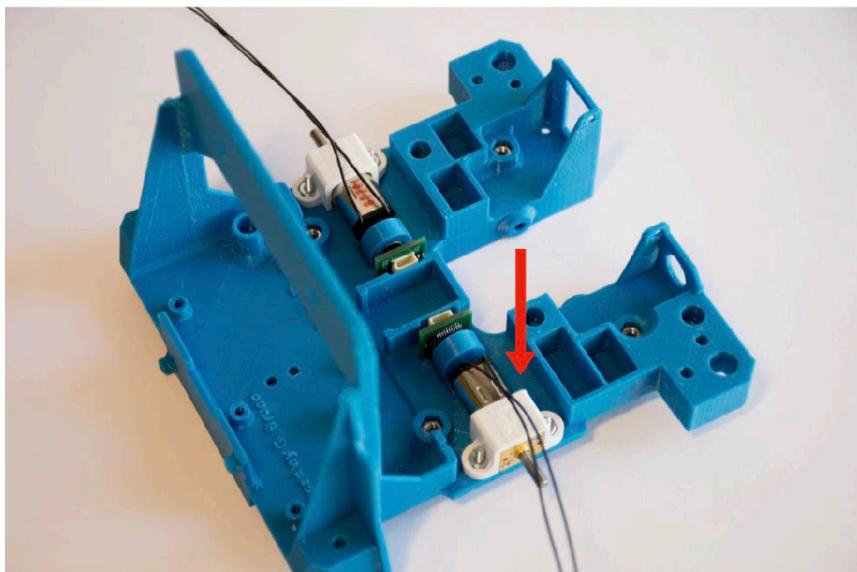
**Erwhi Hedgehog**

22. Mount the motor using screws to align. Wires must be up.

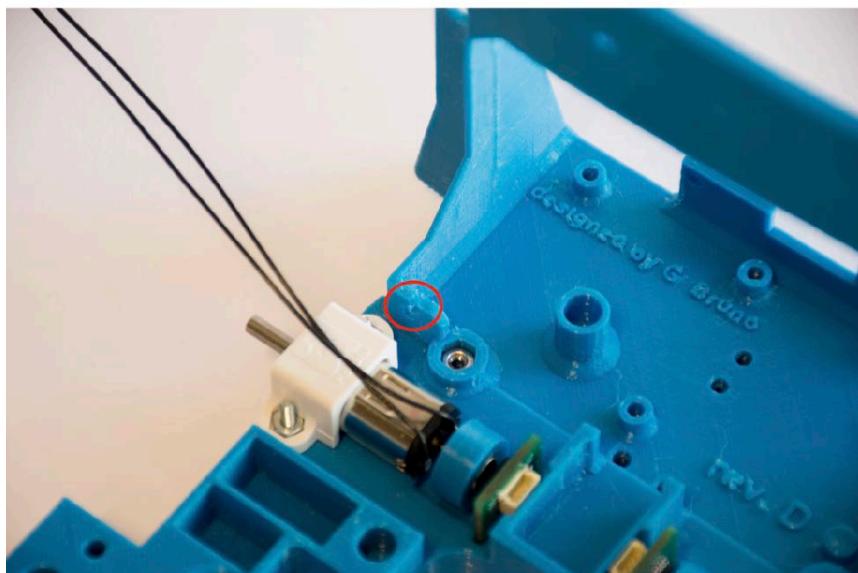
**Erwhi Hedgehog**

23. Fix screws.

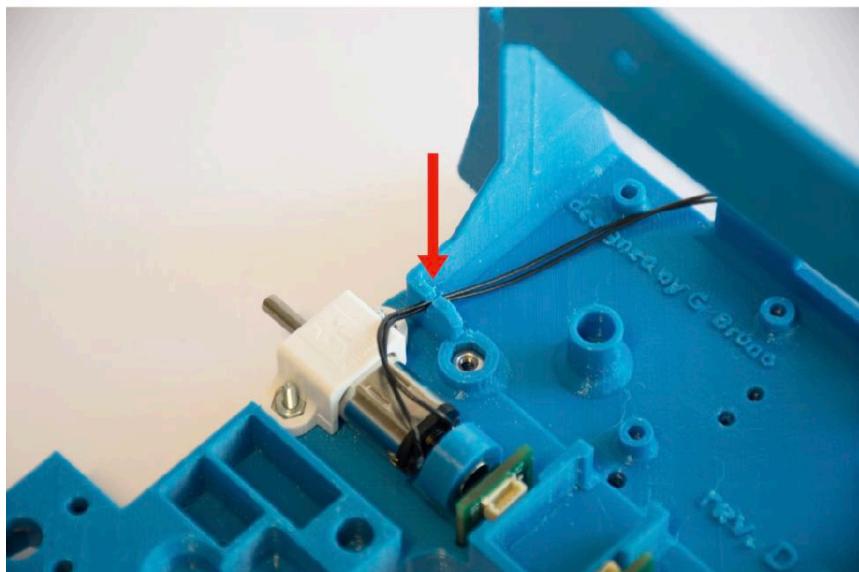
## Erwhi Hedgehog



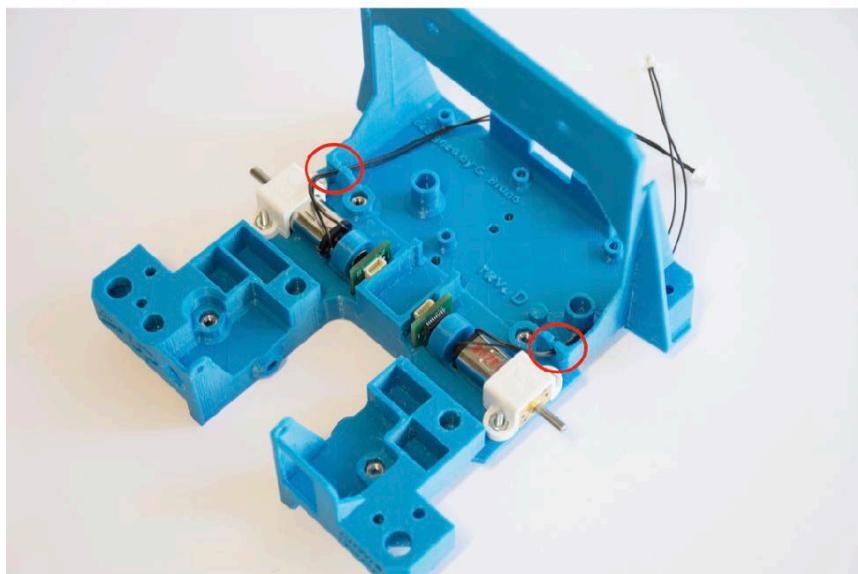
24. Mount the other motor.
25. Check if everything is mounted as shown in photo.

**Erwhi Hedgehog**

26.Check little Z shaped hole marked in photo.

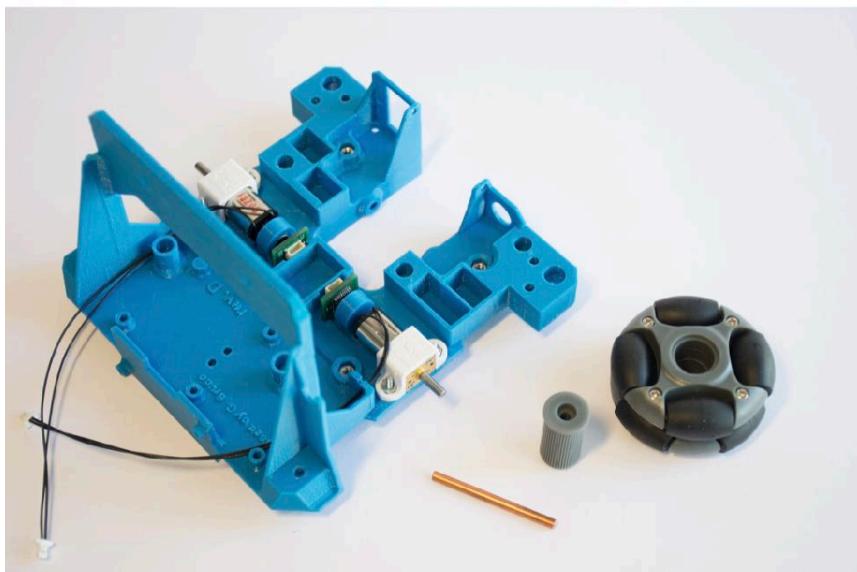
**Erwhi Hedgehog**

27. Carefully insert into motor wires into the hole, this will prevent wires from damaging.
28. Do same for other motor wires.

**Erwhi Hedgehog**

29. You should have something as shown in photo.

## Erwhi Hedgehog



In following steps you need:

- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Nexus Robots 48mm Omniwheel kit (**BOM ID T1#16**);
- 1x Ø3mm x 40mm shaft (**BOM ID T1#17**).

## Erwhi Hedgehog



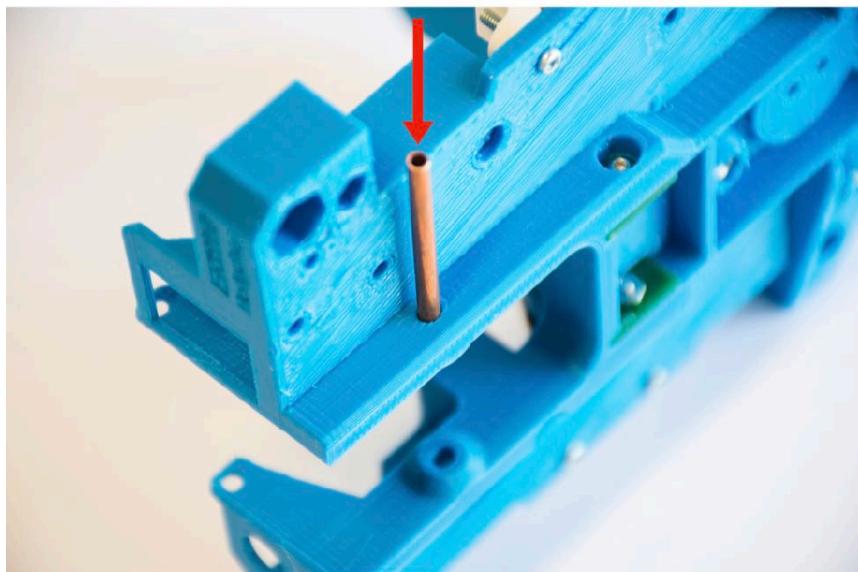
30. Insert hub in omniwheel.

## Erwhi Hedgehog

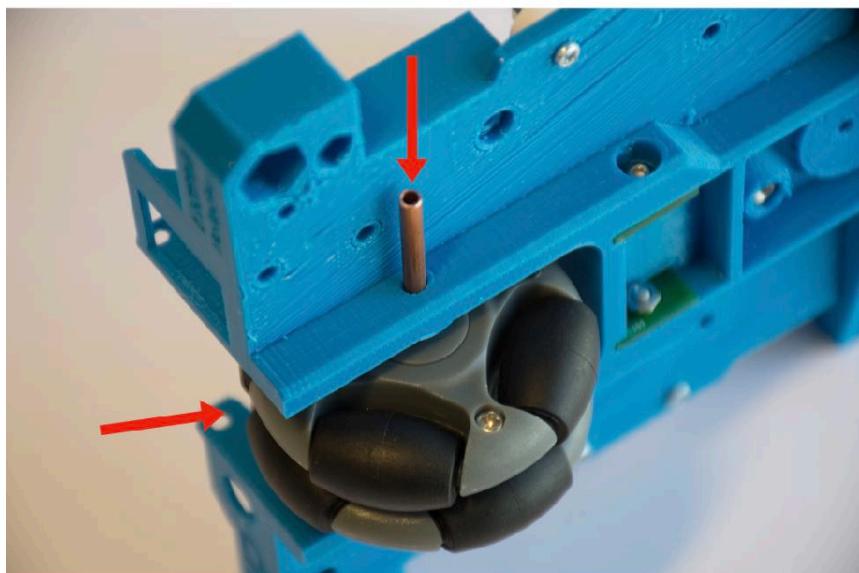


31. You should have something like the one shown in photo.

## Erwhi Hedgehog

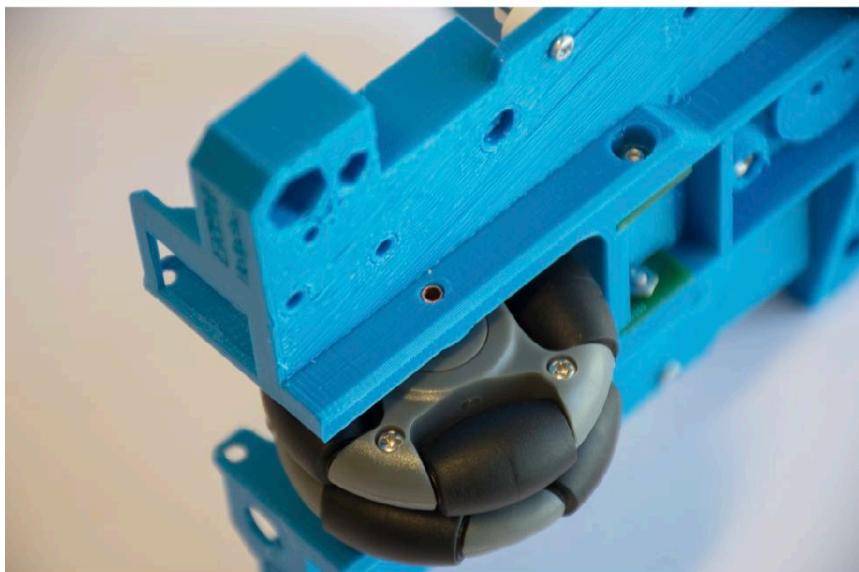


32. Start to insert shaft into Erwhi Hedgehog chassis.

**Erwhi Hedgehog**

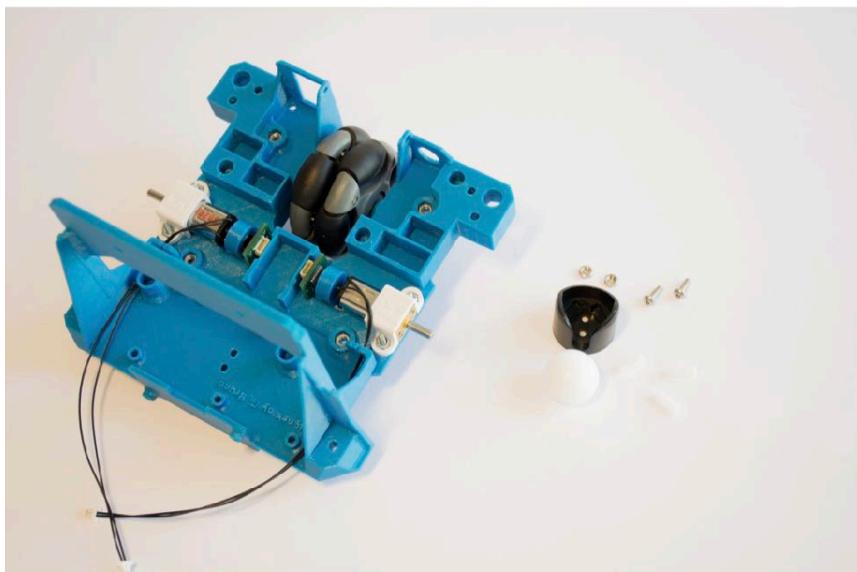
33. Insert omniwheel and continue to insert shaft.

## Erwhi Hedgehog



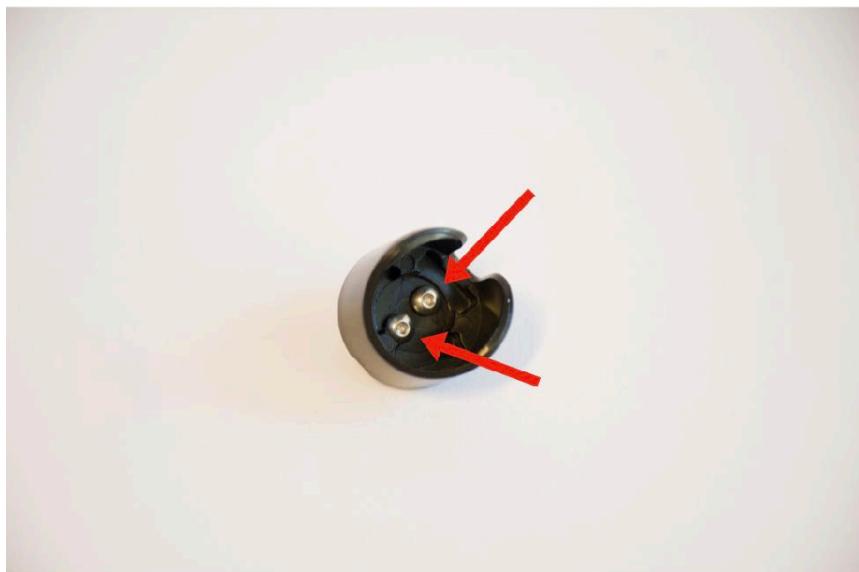
34. Shaft is correctly mounted if the edge is aligned with chassis.

## Erwhi Hedgehog

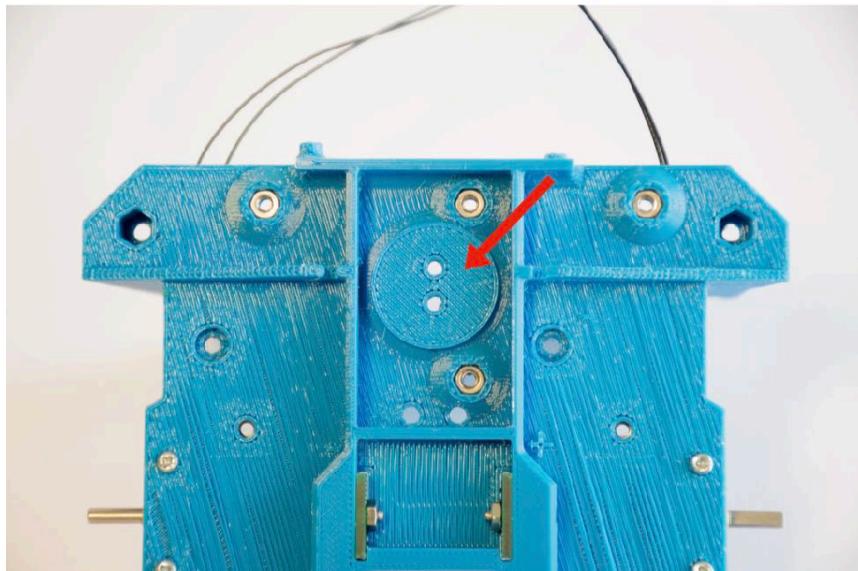


In following steps you need:

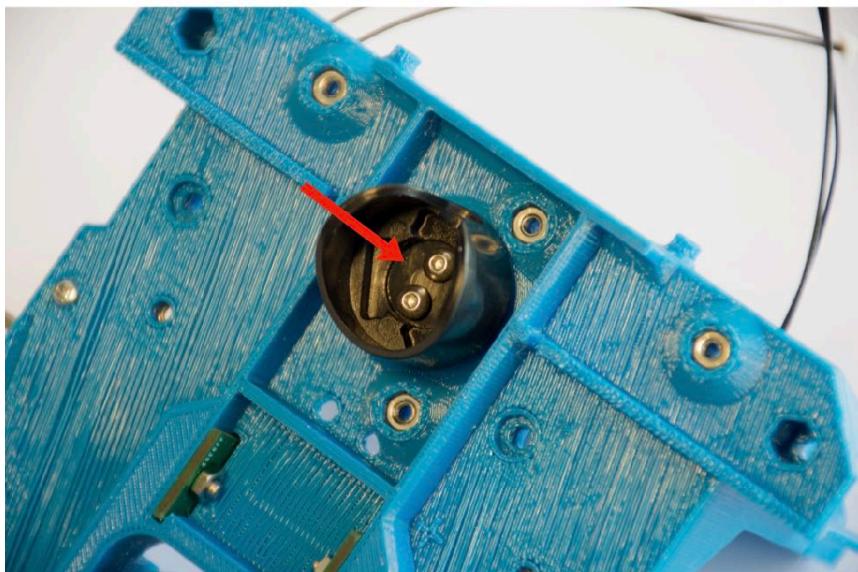
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Pololu 3/4inch plastic ball caster kit (**BOM ID T1#18**);
- 2x M2.5 nuts (**BOM ID T1#29**);
- 2x M2.5x10mm screws (**BOM ID T1#31**).

**Erwhi Hedgehog**

35. Insert the two screws into ball mount.

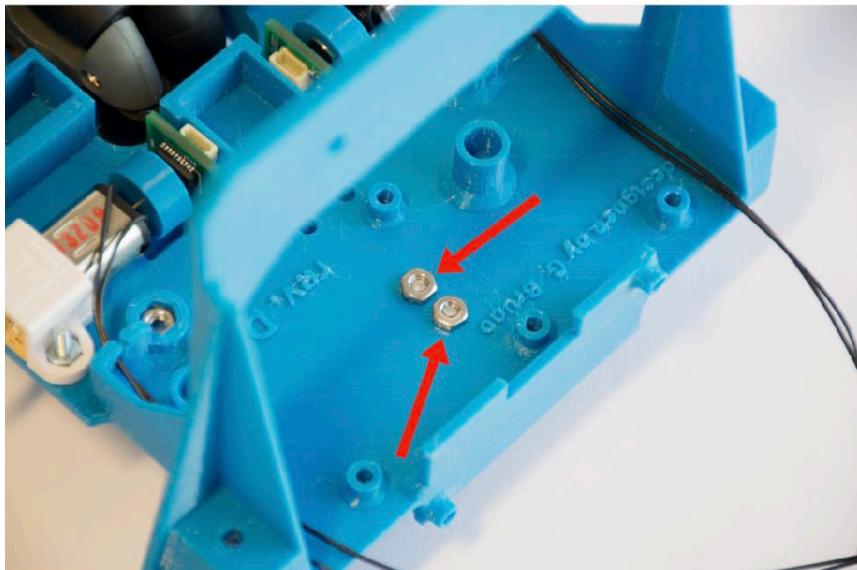
**Erwhi Hedgehog**

36. Ball caster mount must be fitted in marked area.

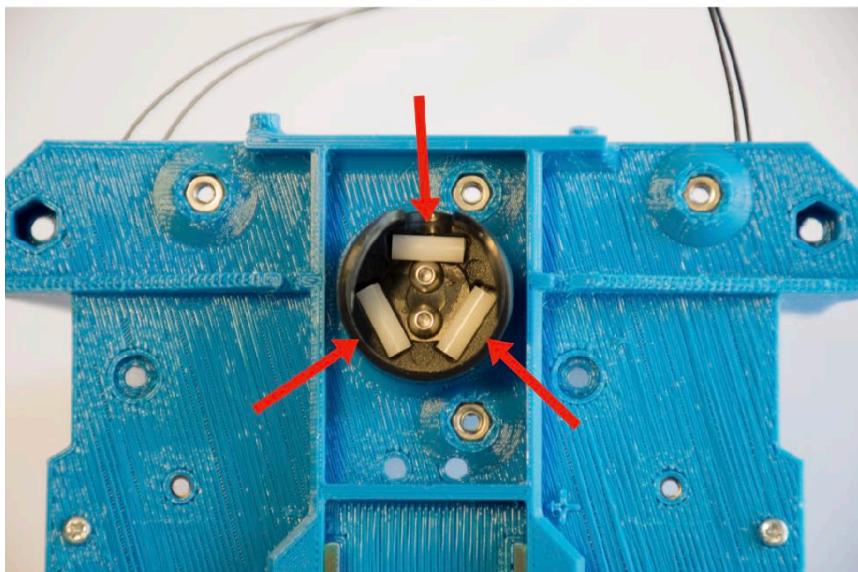
**Erwhi Hedgehog**

37. Insert ball caster mount into the chassis.

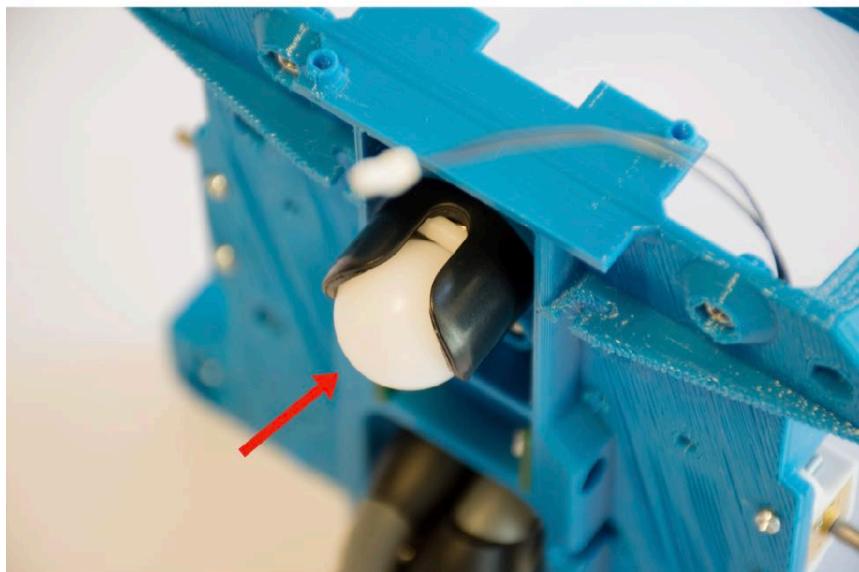
## Erwhi Hedgehog



38. Fix the screws using the two nuts.

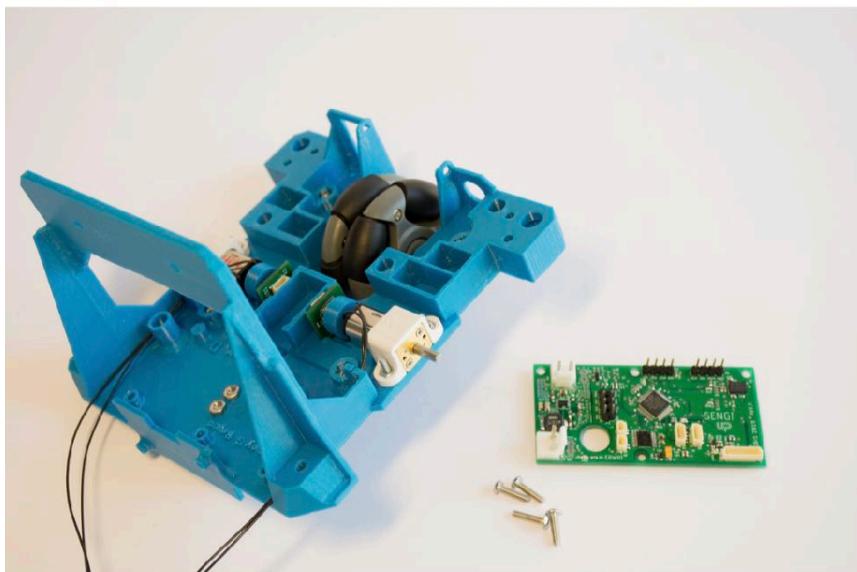
**Erwhi Hedgehog**

39. Turn the chassis.
40. Insert the 3 rollers into ball caster mount as shown in photo.

**Erwhi Hedgehog**

41. Insert the ball.

## Erwhi Hedgehog



In following steps you need:

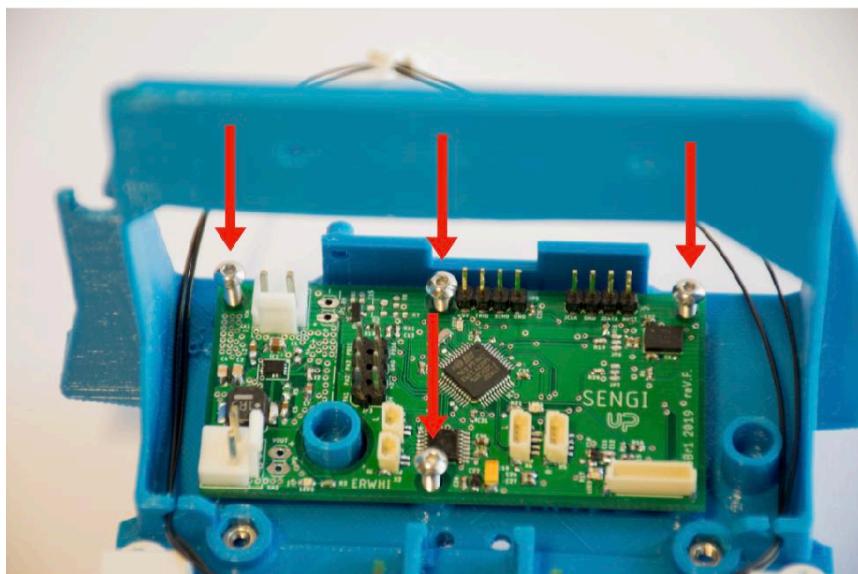
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Sengi carrier board (**BOM ID T1#7**);
- 4x M2.5x10mm screws (**BOM ID T1#31**).

## Erwhi Hedgehog



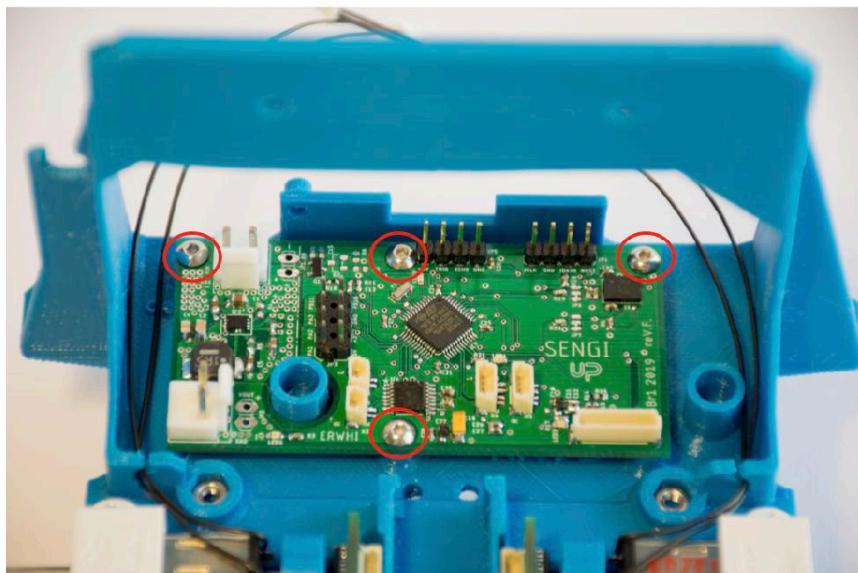
42. Place the Sengi carrier board.

## Erwhi Hedgehog



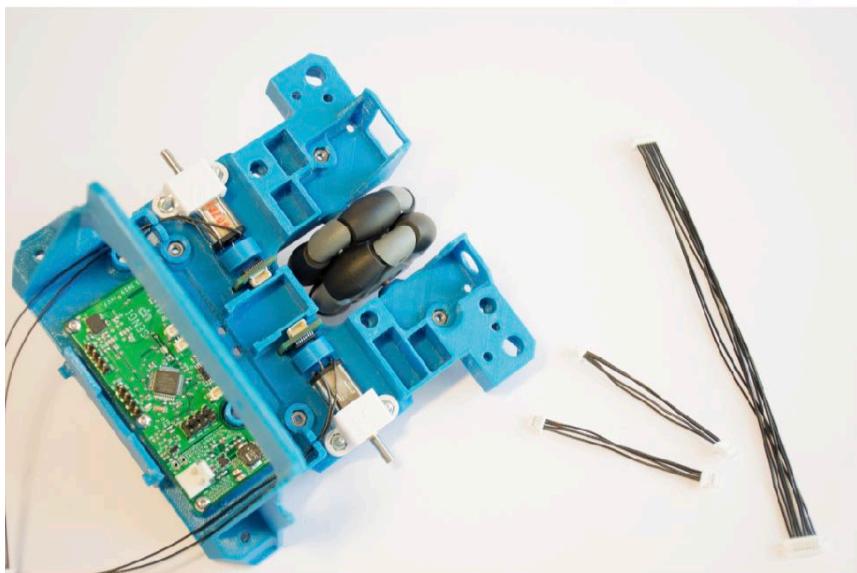
43. Mount the 4 screws to fix Sengi to the chassis.

## Erwhi Hedgehog



44. Screws must not be tightened too hard.

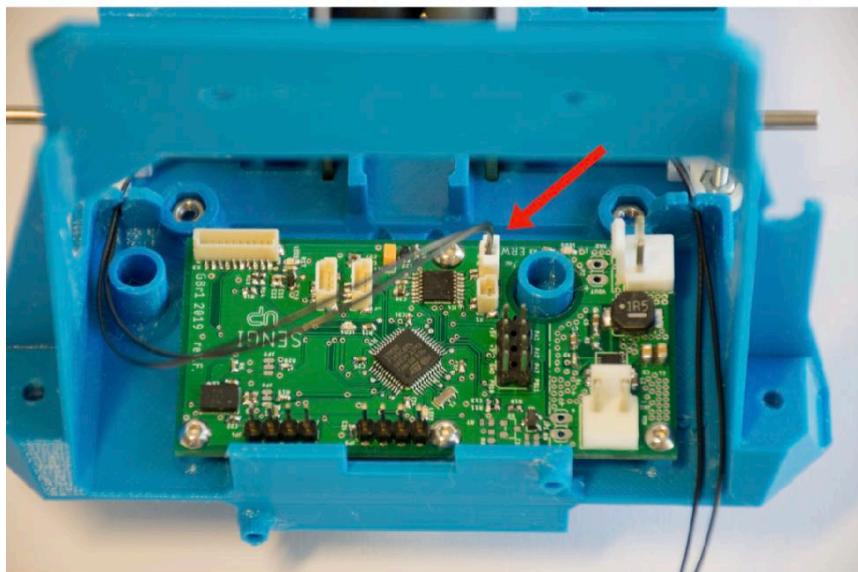
## Erwhi Hedgehog



In following steps you need:

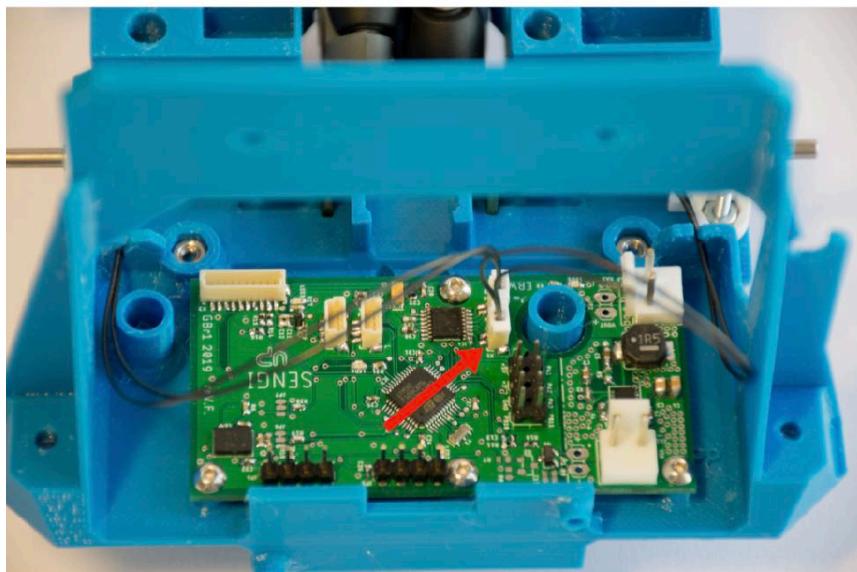
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x USB to UP jst cable (**BOM ID T1#8** - [USBs cable assembly](#));
- 2x Encoder cables (**BOM ID T1#12** - [Encoder cable assembly](#)).

## Erwhi Hedgehog



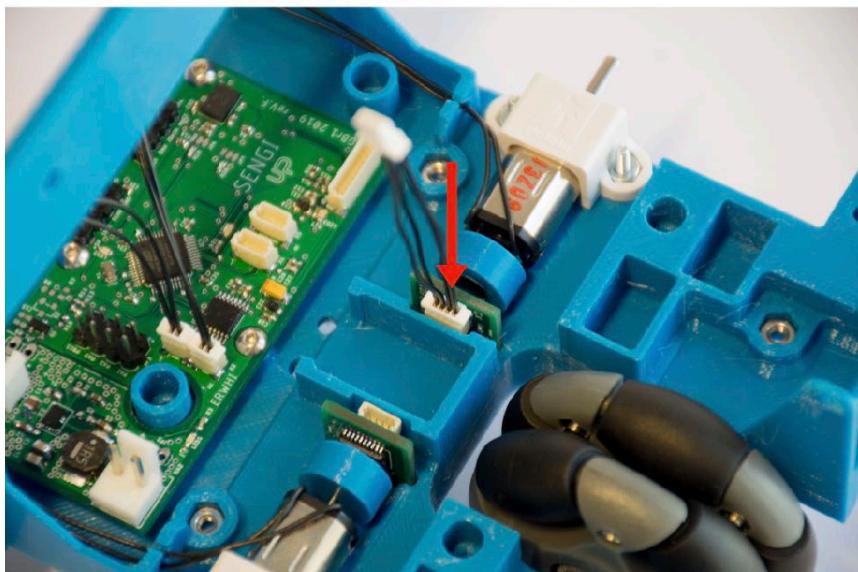
45. Plug right motor connector in R connector on Sengi as shown.

## Erwhi Hedgehog

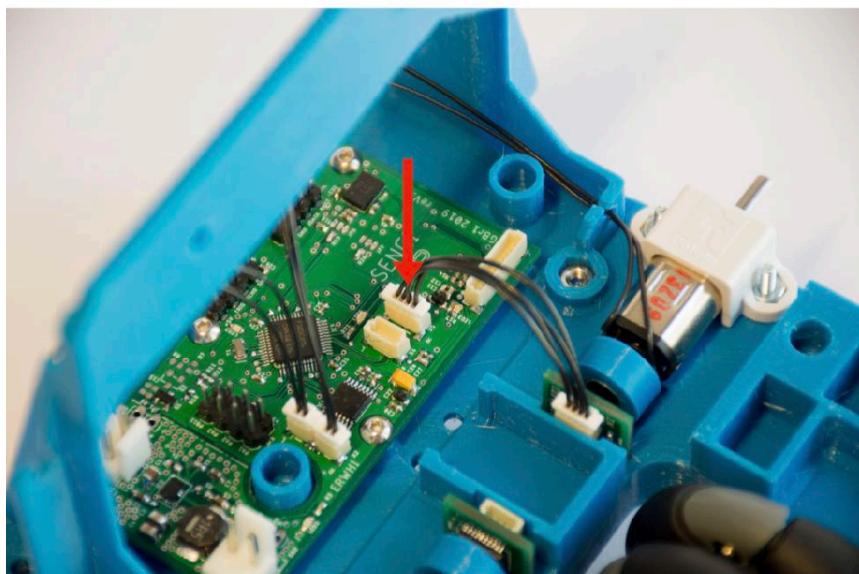


46. Plug left motor connector in L connector on Sengi as shown.
47. Motors are now connected to Sengi.

## Erwhi Hedgehog

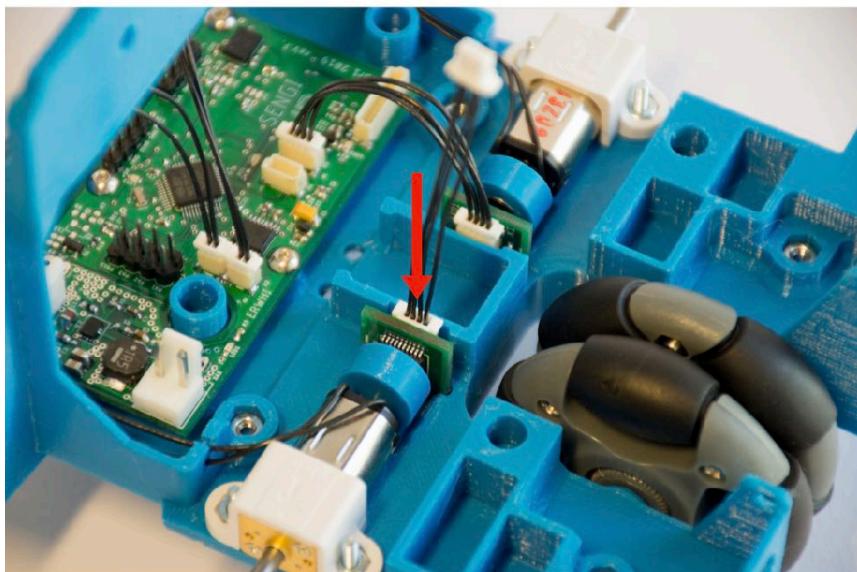


48. Plug an encoder cable in right encoder connector.

**Erwhi Hedgehog**

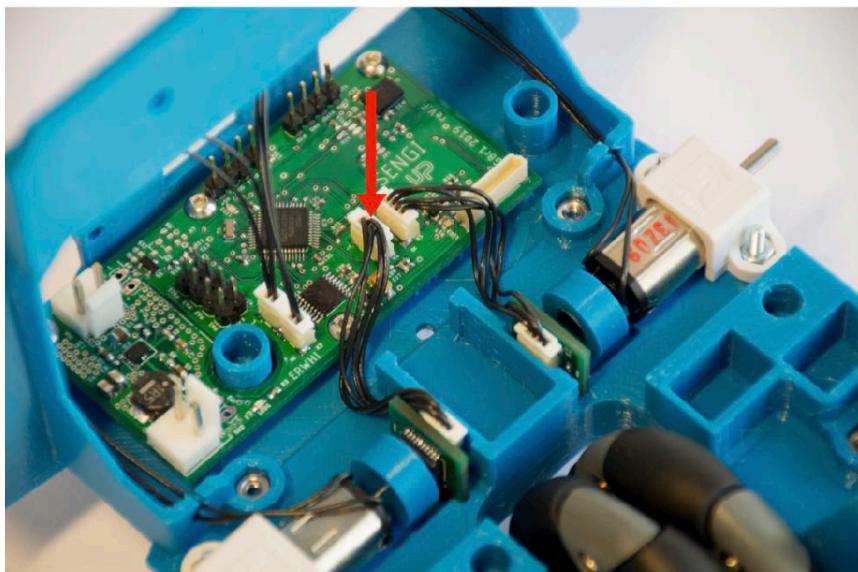
49. Plug encoder cable into R connector on Sengi as shown.

## Erwhi Hedgehog



50. Plug an other encoder cable into left encoder connector as shown.

## Erwhi Hedgehog

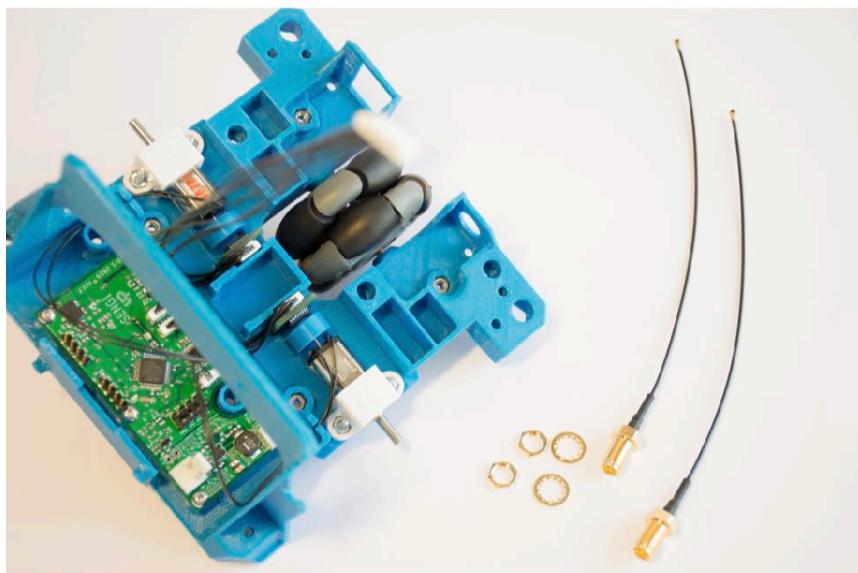


51. Plug left encoder cable into L connector on Sengi as shown.
52. Arrange cables as shown, it simplifies next steps.

**Erwhi Hedgehog**

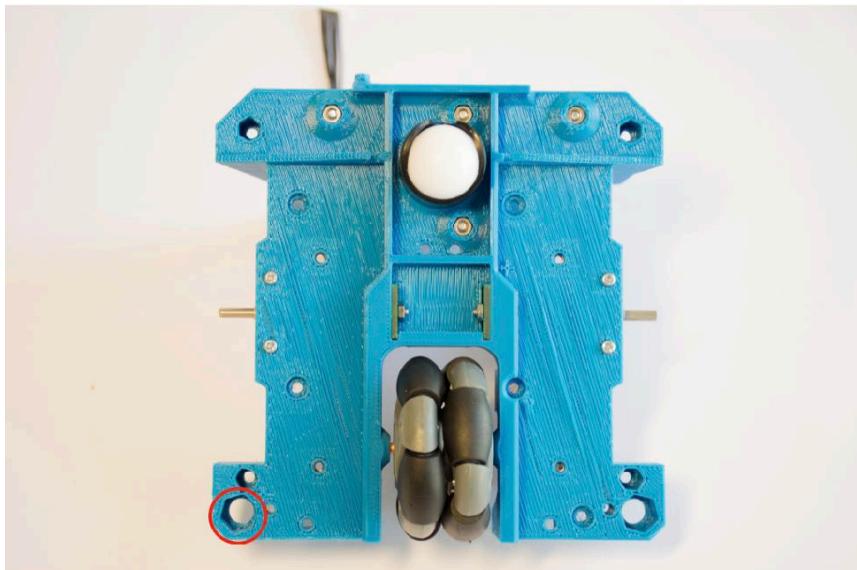
53. Plug the usbs (UP to Sengi) cable into Sengi as shown.

## Erwhi Hedgehog

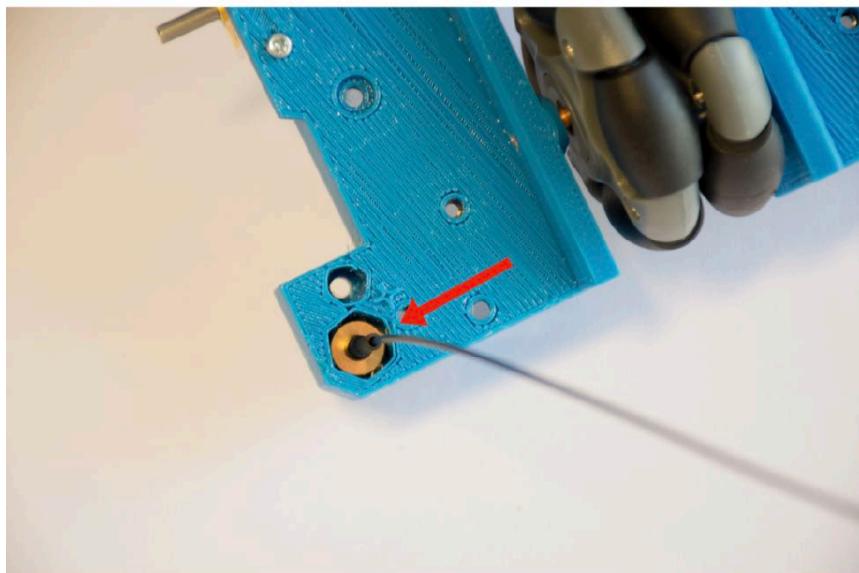


In following steps you need:

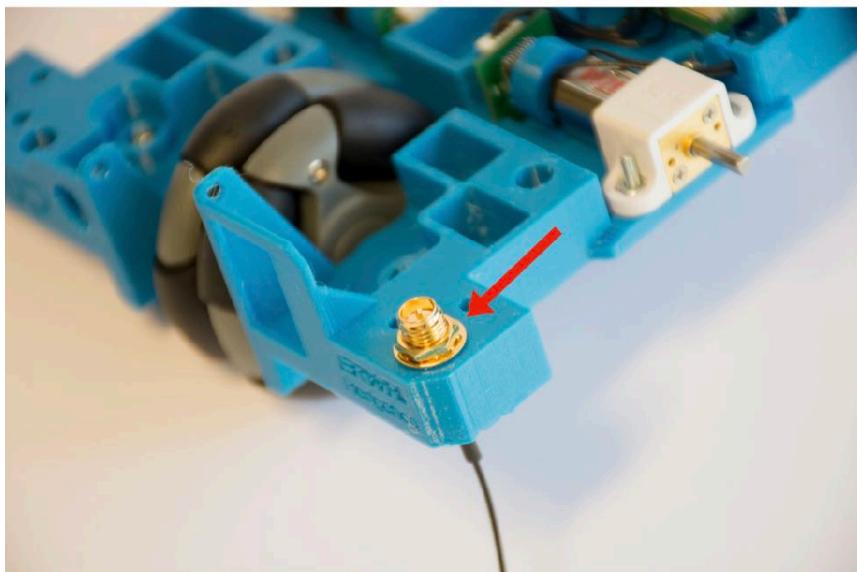
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 2x antennas cables (**BOM ID T1#3**).

**Erwhi Hedgehog**

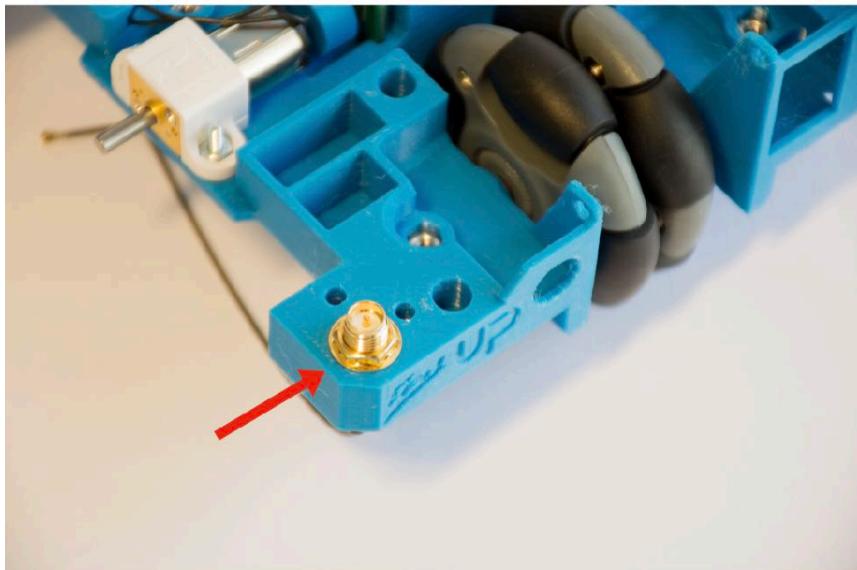
54. Turn chassis on its back and take a look to big hexagonal holes.

**Erwhi Hedgehog**

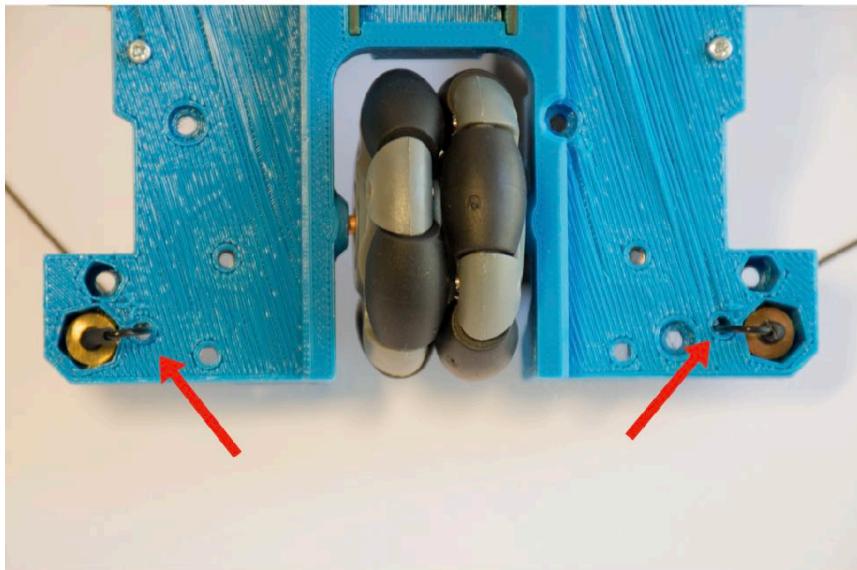
55. Insert antenna cable in big hexagonal hole.

**Erwhi Hedgehog**

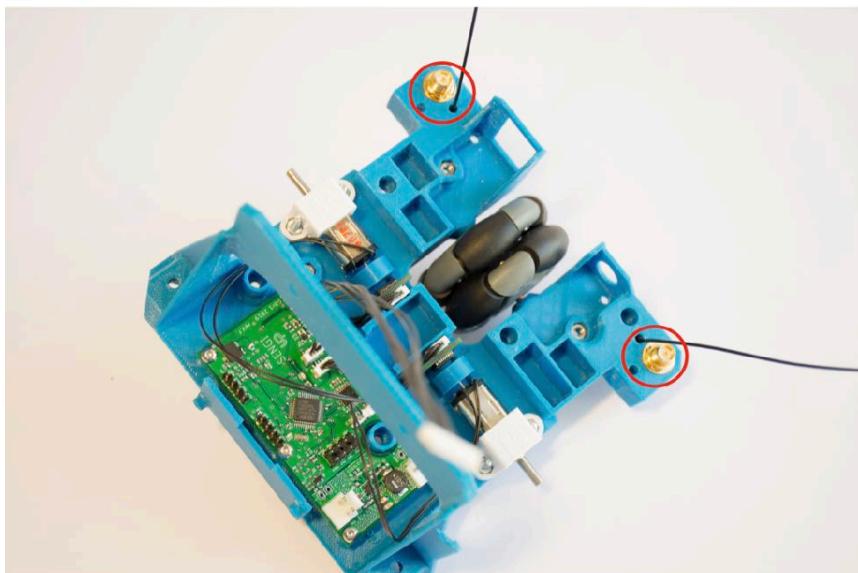
56. Fix antenna connector using a washer and a nut.

**Erwhi Hedgehog**

57. Do the same for the other antenna cable and hole pair.

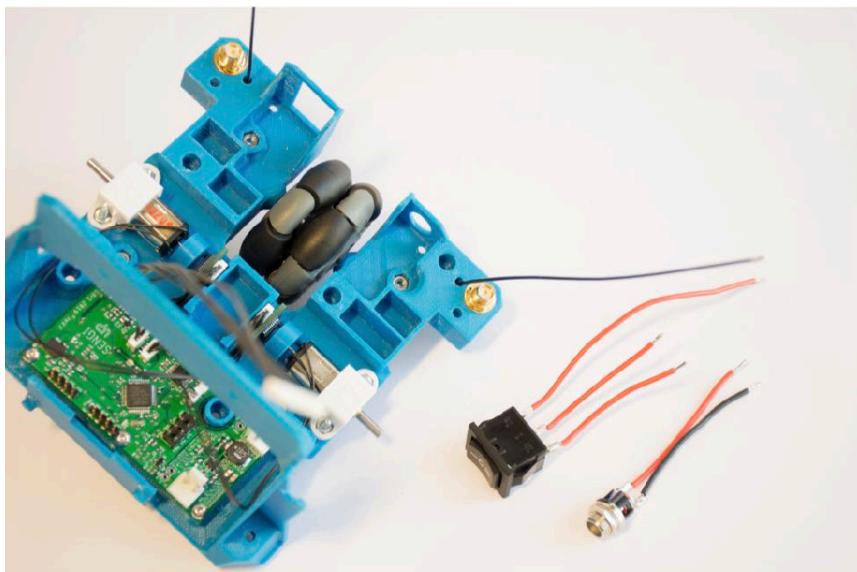
**Erwhi Hedgehog**

58. Insert antenna wires into the small holes near hexagonal holes as shown.

**Erwhi Hedgehog**

59. You should obtain something like in photo.

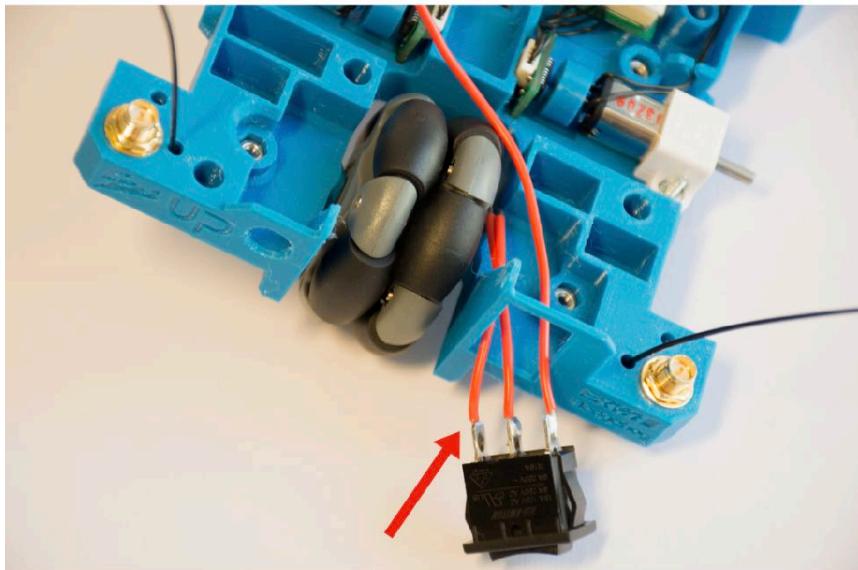
## Erwhi Hedgehog



In following steps you need:

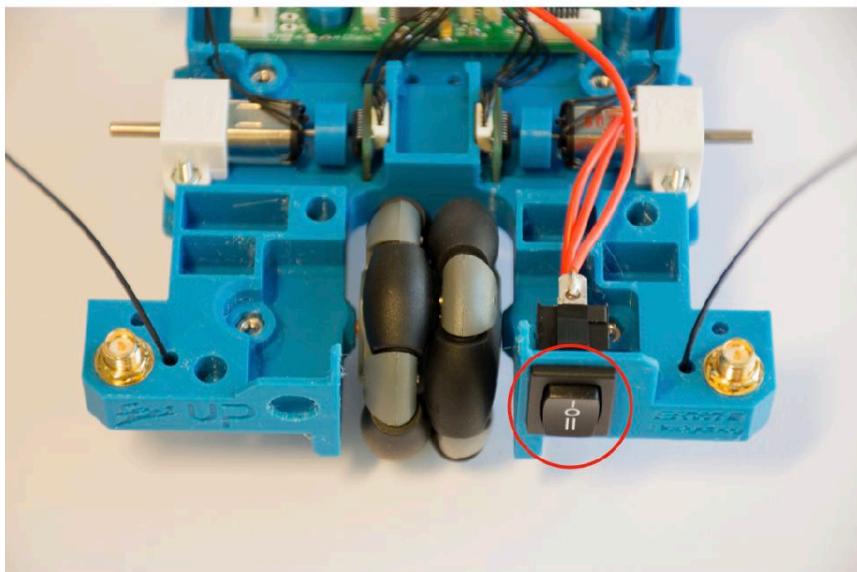
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Power switch (**BOM ID T1#20 - [Power switch assembly](#)**);
- 1x External power supply connector (**BOM ID T1#21 - [External power supply connector](#)**).

## Erwhi Hedgehog



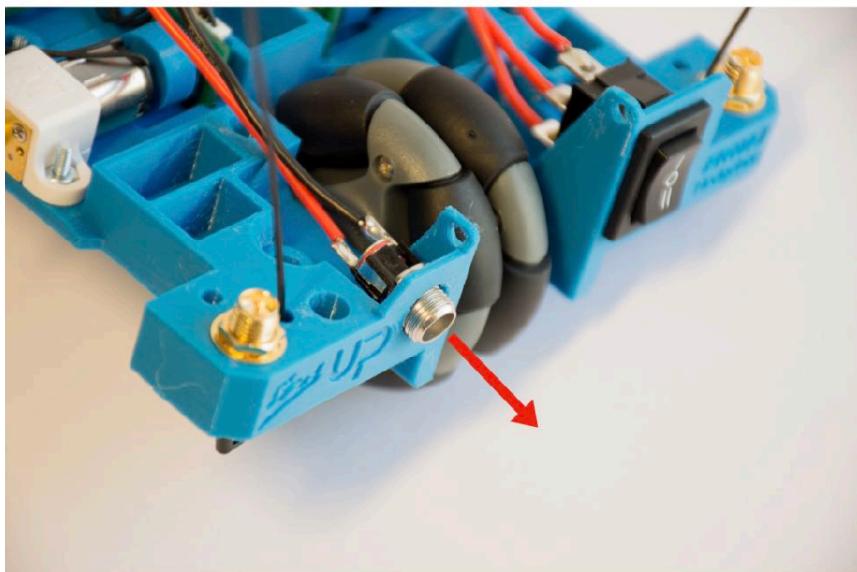
60. Pass cables inside.

61. Carefully insert the power switch. Check also next step before to proceed.

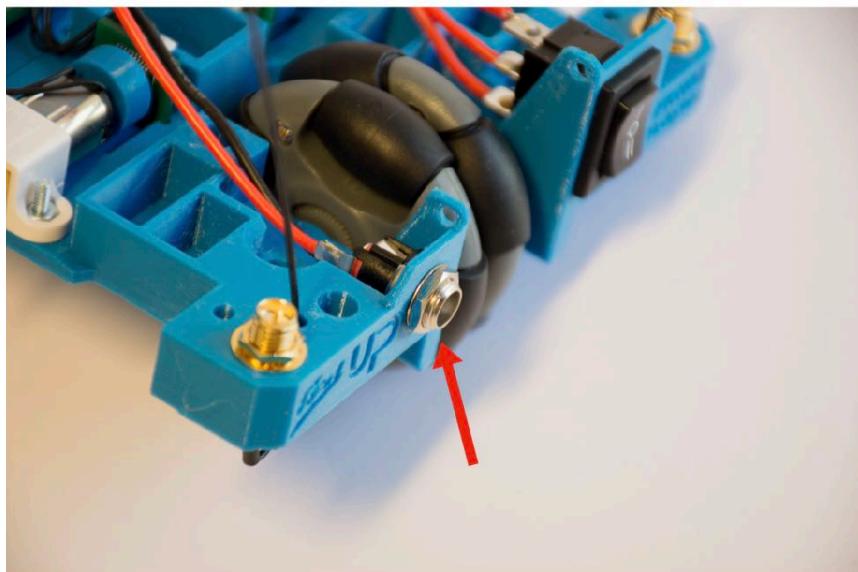
**Erwhi Hedgehog**

62. The position “I” must be on top.
63. You can use glue to fix power switch if it moves.

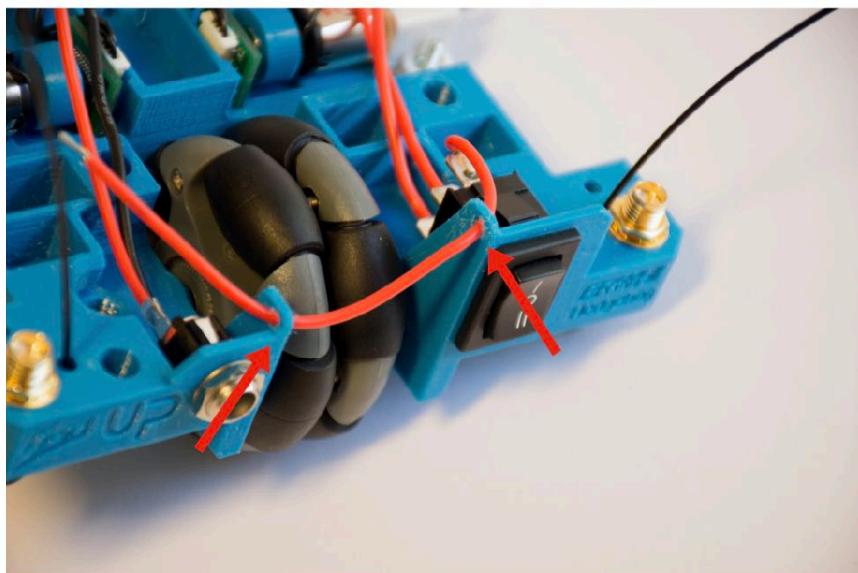
## Erwhi Hedgehog



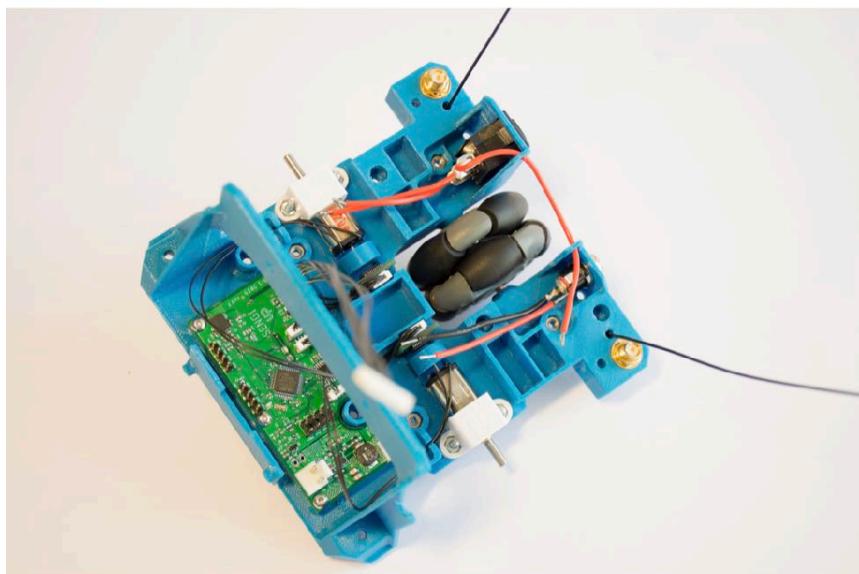
64. Insert external power supply connector.

**Erwhi Hedgehog**

65. Fix it using the washer and the nut as shown in photo.

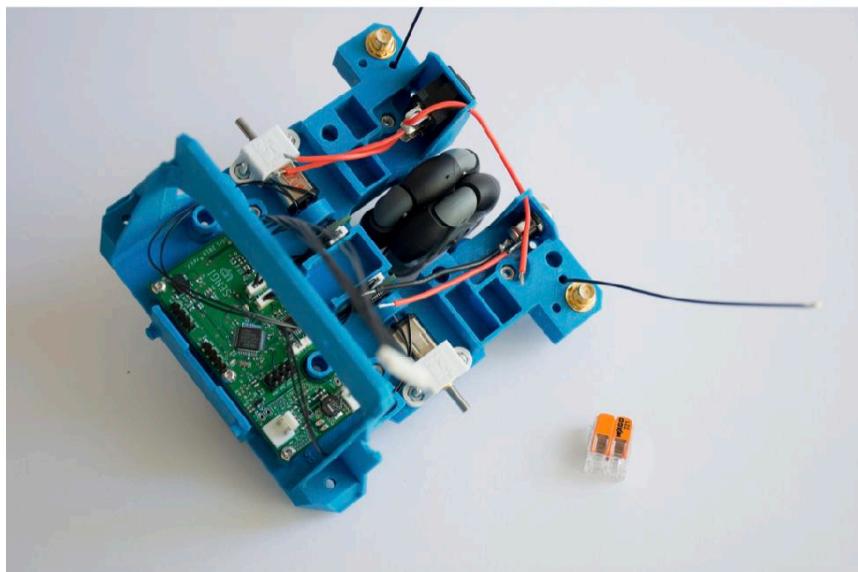
**Erwhi Hedgehog**

66. Pass the long wire of power switch into the two small marked holes.

**Erwhi Hedgehog**

67. You should obtain something like in photo.

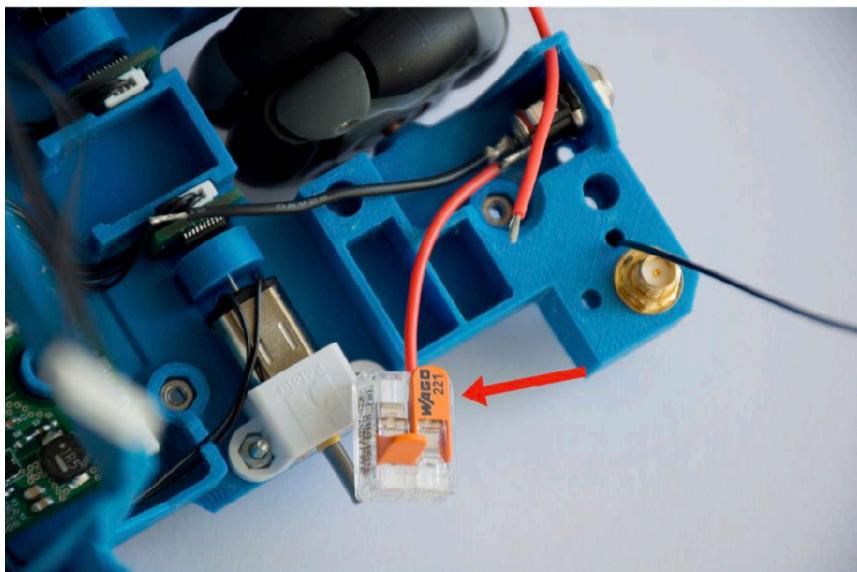
## Erwhi Hedgehog



In following steps you need:

- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Wago221 2 positions connector (**BOM ID T1#22**).

## Erwhi Hedgehog

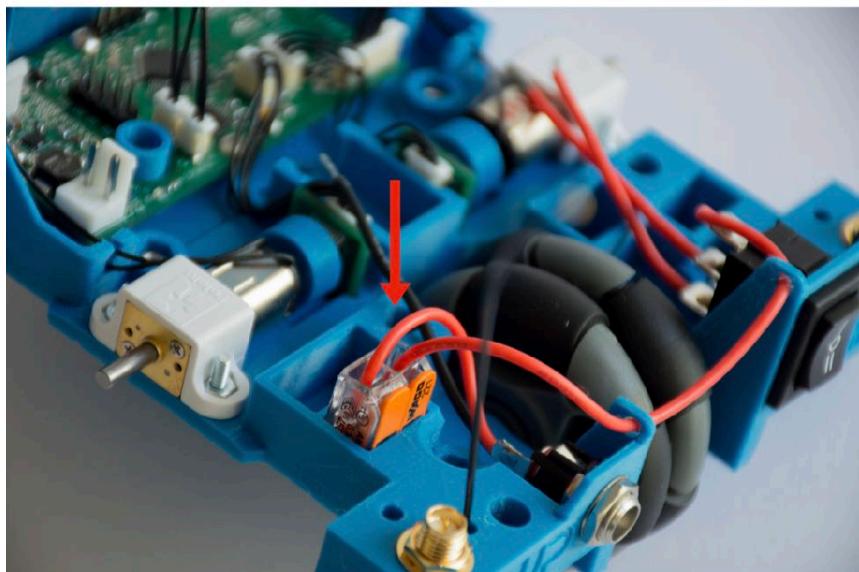


68. Plug red wire from external power supply connector to Wago.

## Erwhi Hedgehog

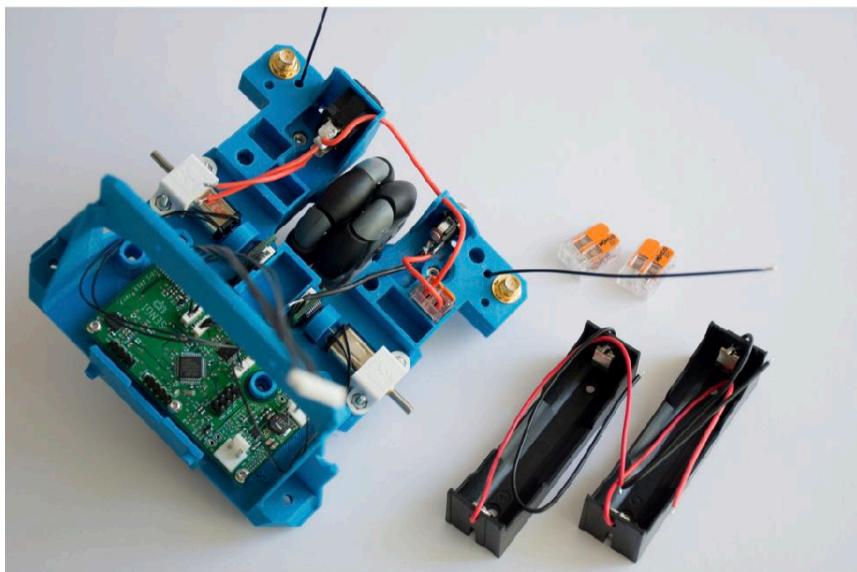


69. Insert the long red wire from power switch into Wago.
70. Now Power switch position “II” and positive pole from external power supply are connected.

**Erwhi Hedgehog**

71. Insert Wago in marked chassis hole.

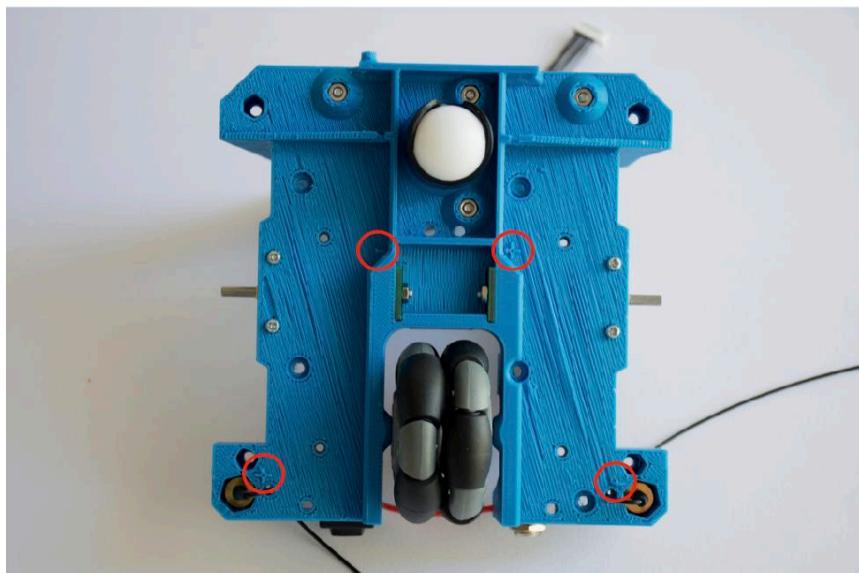
## Erwhi Hedgehog



In following steps you need:

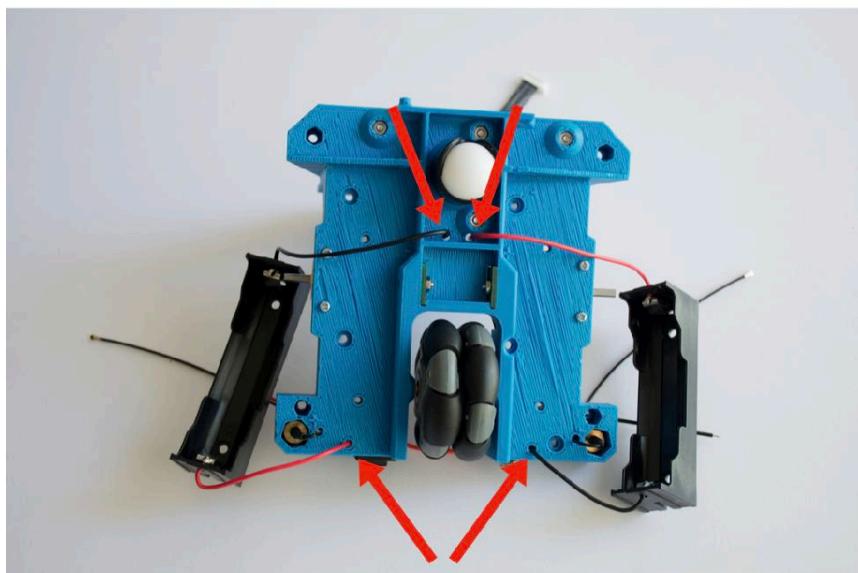
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 2x Wago 2 positions connector (**BOM ID T1#22**);
- 2x 18650 battery holder (**BOM ID T1#19**).

## Erwhi Hedgehog

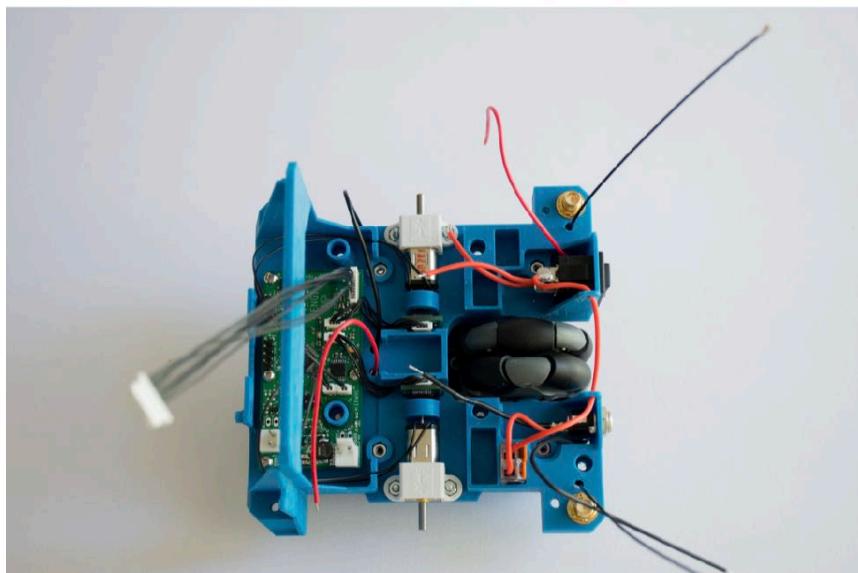


72. Turn chassis and take a look at polarity marks.

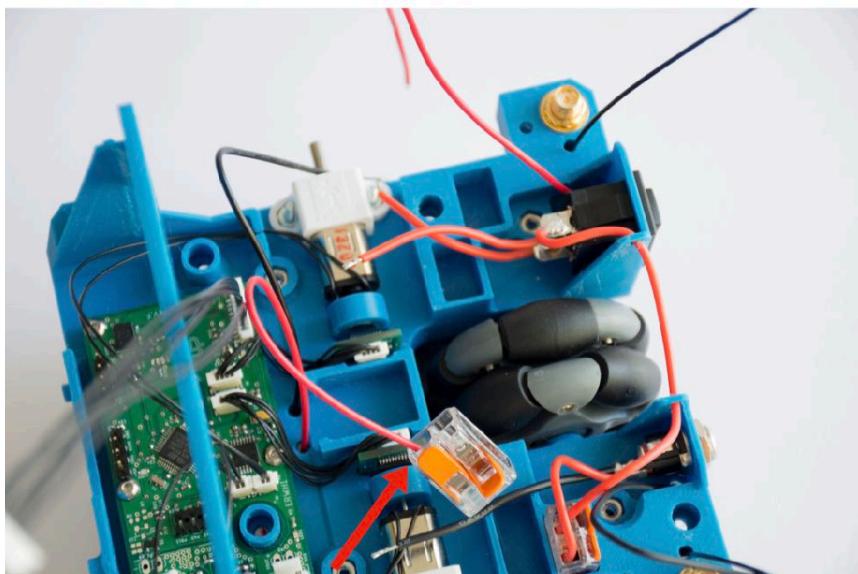
## Erwhi Hedgehog



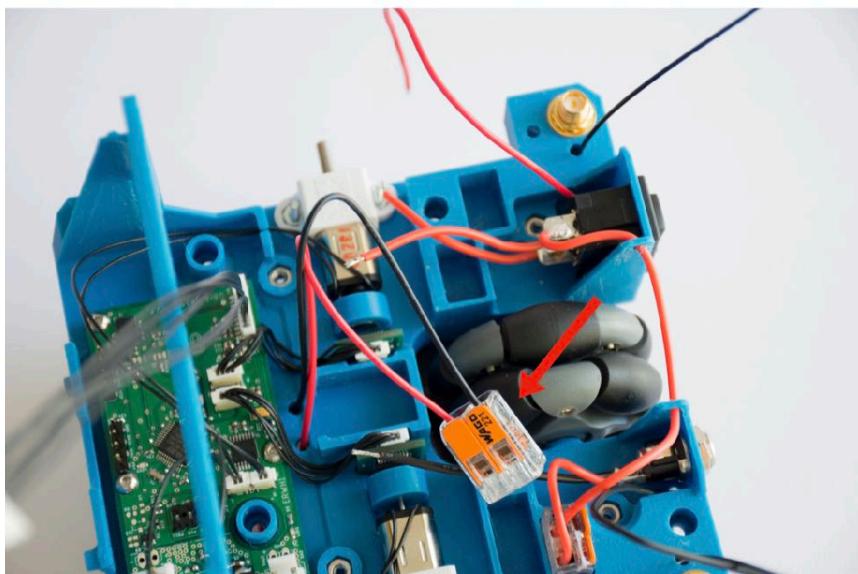
73. Insert battery holder wires as shown according polarity (red is +, black is -).

**Erwhi Hedgehog**

74. Turn the chassis. You should have something like in photo.

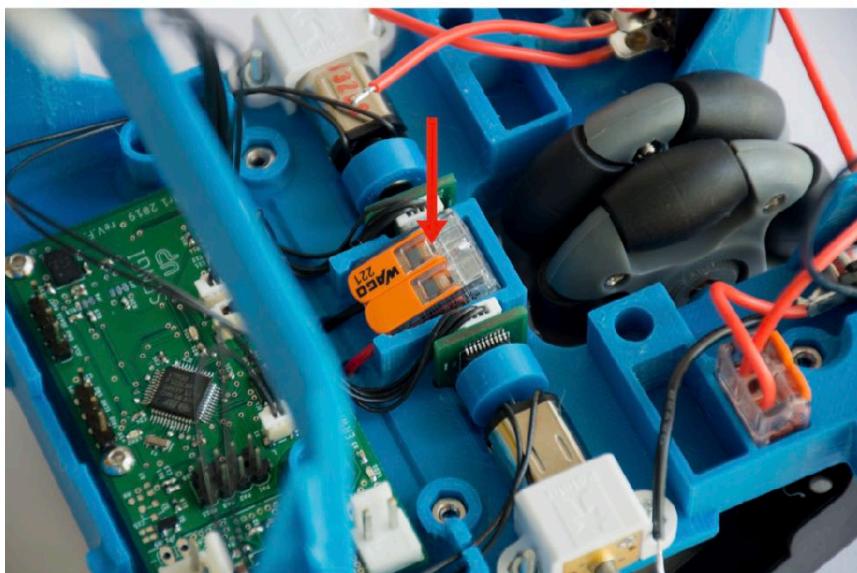
**Erwhi Hedgehog**

75. Insert red wire from battery holder (frontal) into a Wago.

**Erwhi Hedgehog**

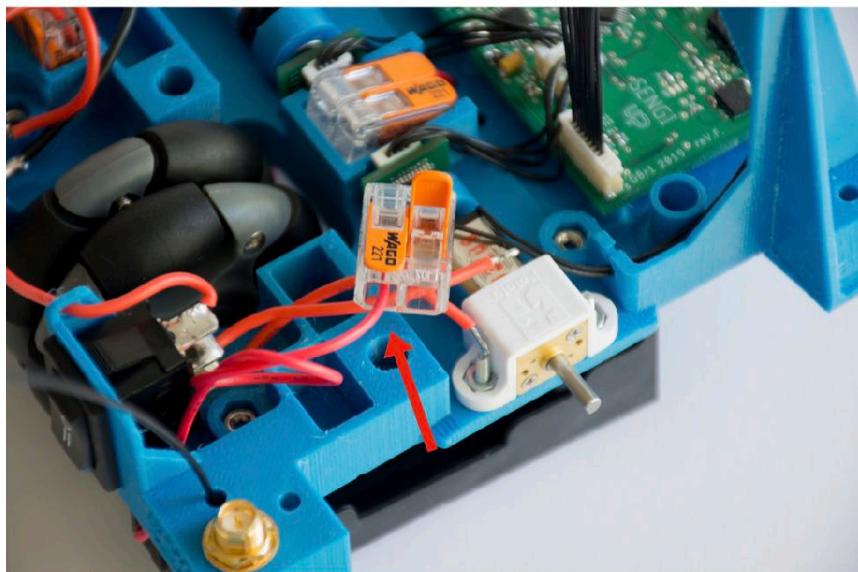
76. Insert back wire from battery holder (frontal) into the Wago.

## Erwhi Hedgehog

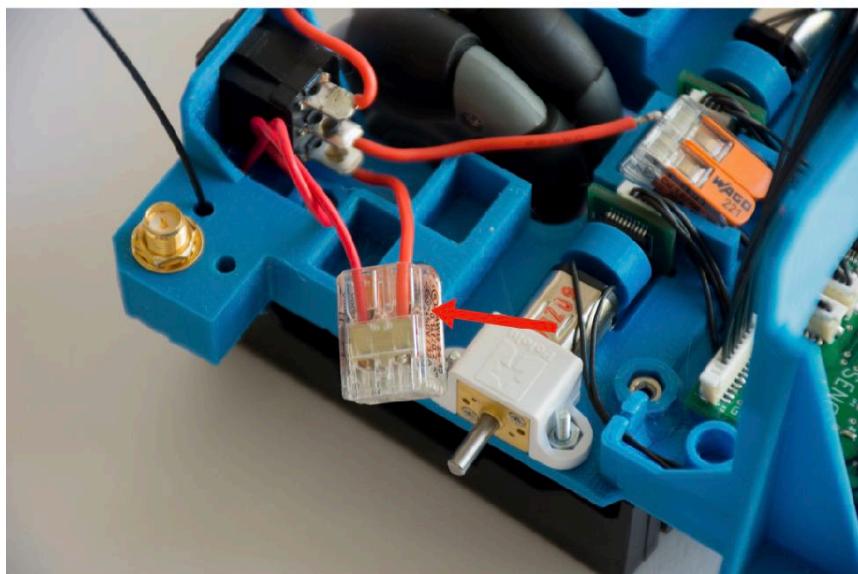


77. Insert Wago into marked chassis area.

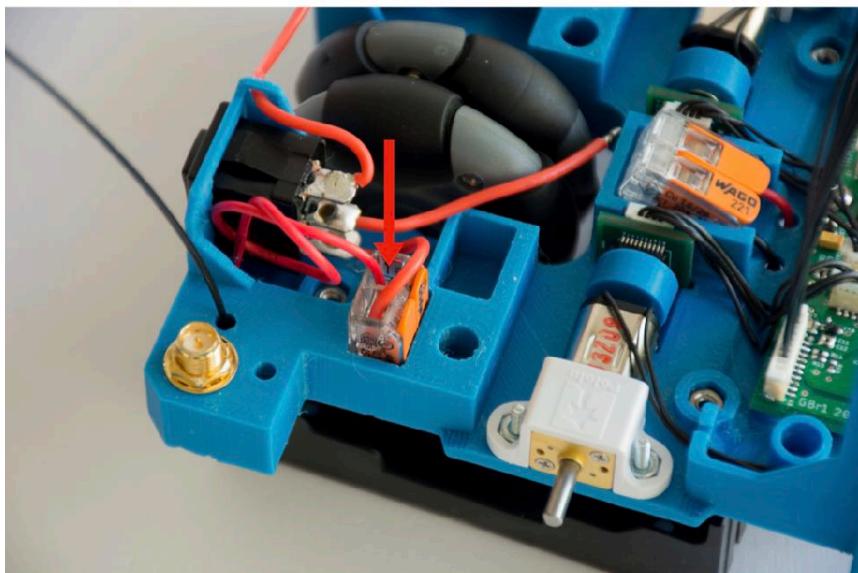
## Erwhi Hedgehog



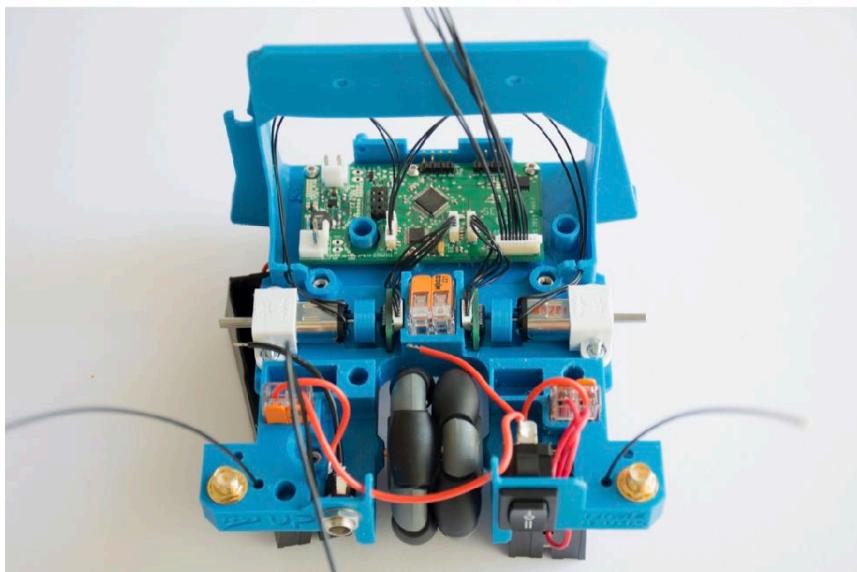
78. Insert red wire from battery holder (back) into a Wago.

**Erwhi Hedgehog**

79. Insert red wire from lower pin of power switch into the Wago.

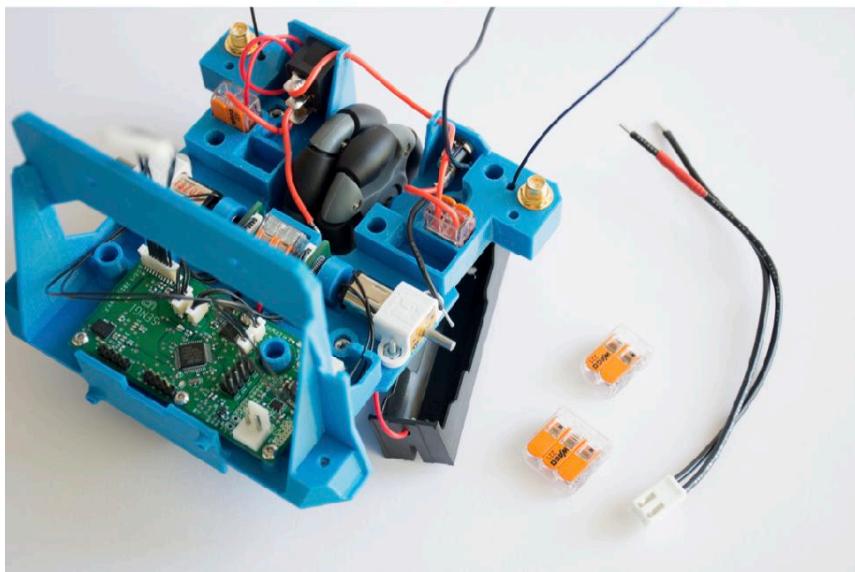
**Erwhi Hedgehog**

80. Insert Wago into marked chassis area.

**Erwhi Hedgehog**

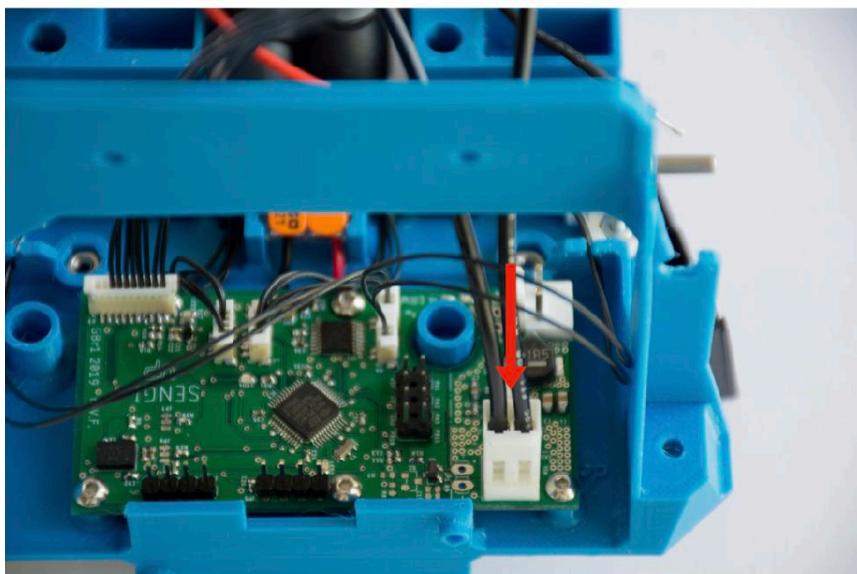
81. You should have something the one shown in photo.

## Erwhi Hedgehog



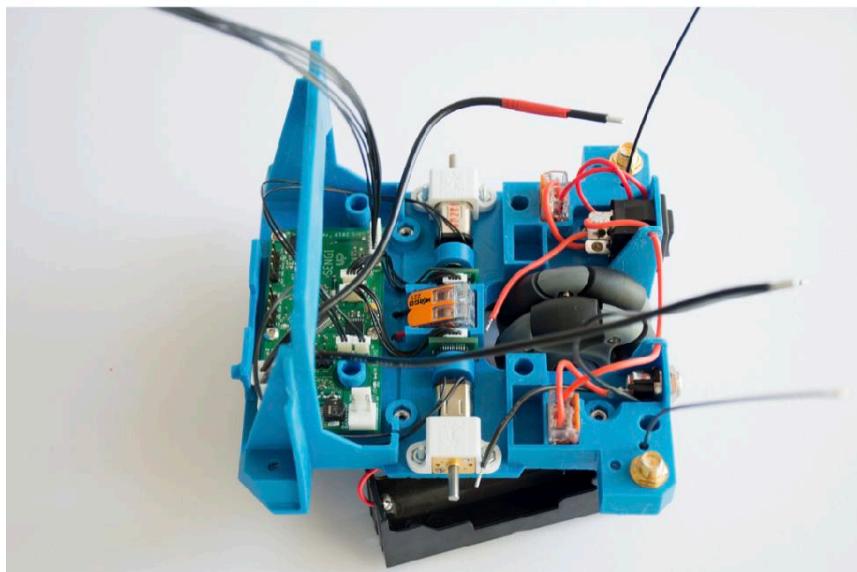
In following steps you need:

- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Wago 2 positions connector (**BOM ID T1#22**);
- 1x Wago 3 positions connector (**BOM ID T1#23**);
- 1x Power cable (**BOM ID T1#24** - [Power cable](#)).

**Erwhi Hedgehog**

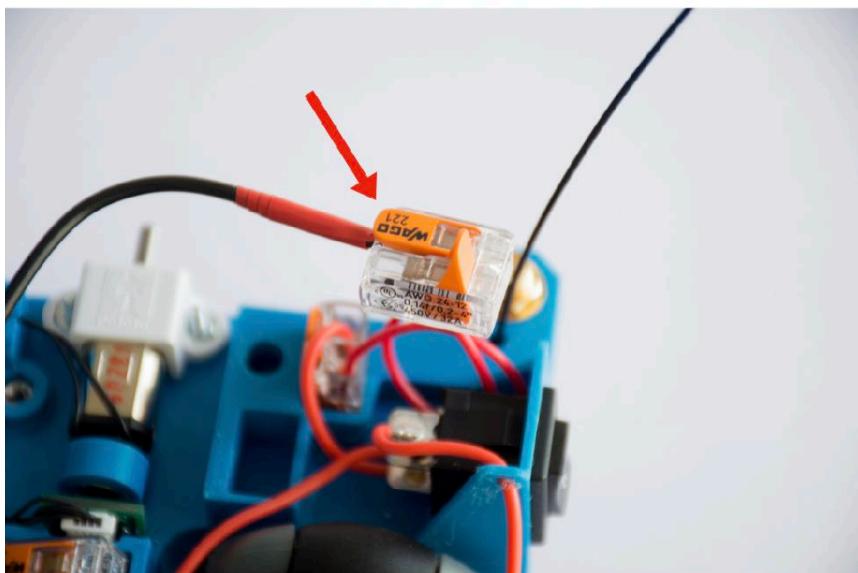
82. Plug the power cable on frontal Sengi connector as shown.

## Erwhi Hedgehog



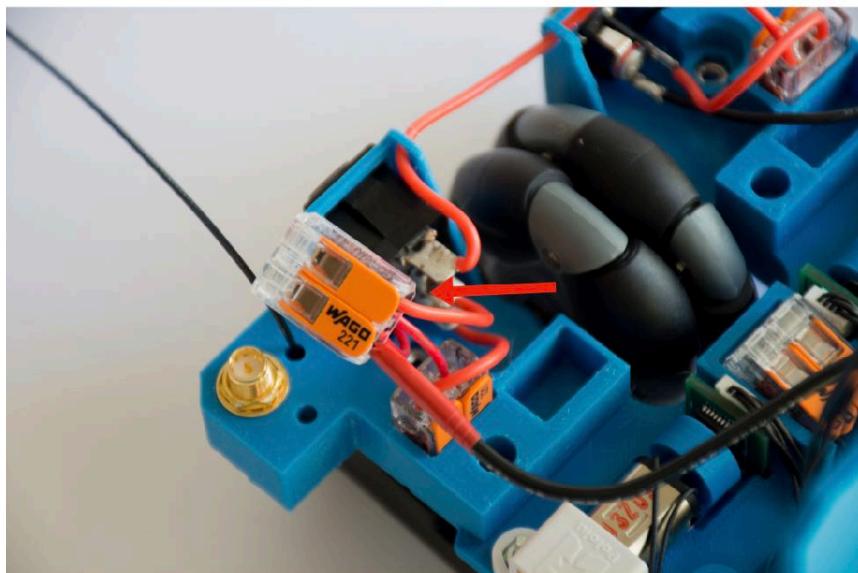
83. Arrange wires as shown. In order to proceed, you need to have the red marked on robot right and black one on robot left.

## Erwhi Hedgehog



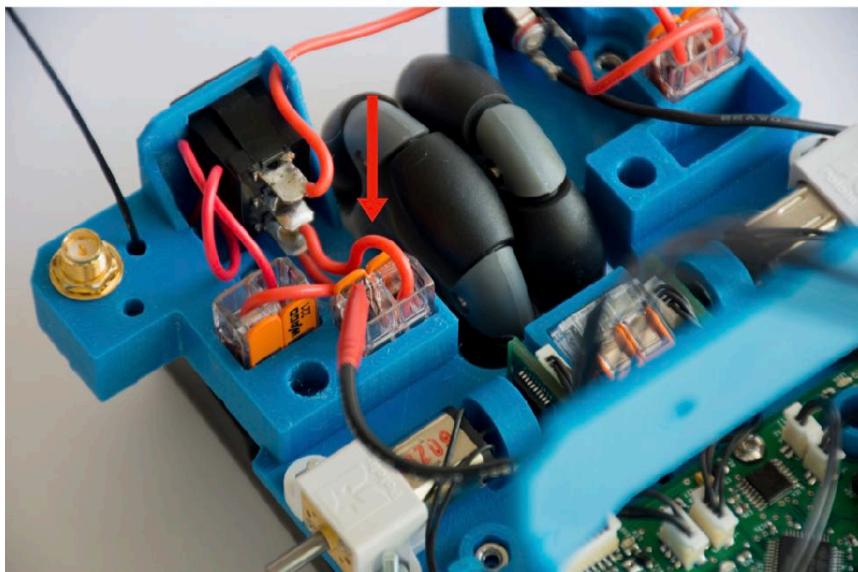
84. Connect Wago 221 to marked wire.

## Erwhi Hedgehog

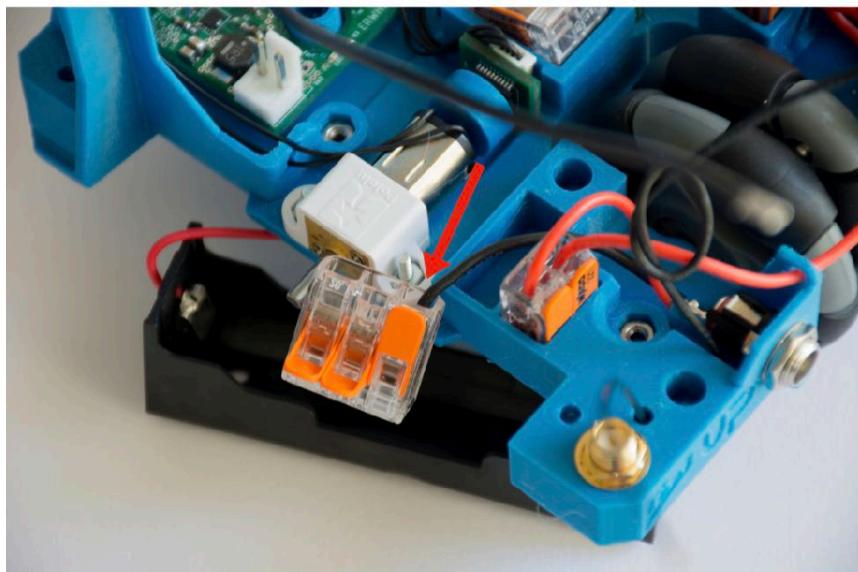


85. Connect Wago 221 to Power Switch central wire.

## Erwhi Hedgehog

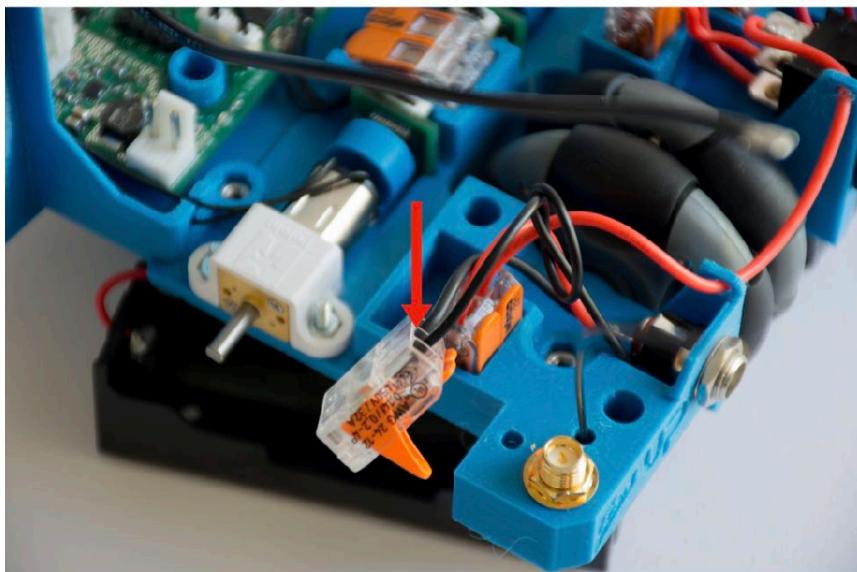


86. Insert the Wago 221 into the dedicated hole in Erwhi chassis.

**Erwhi Hedgehog**

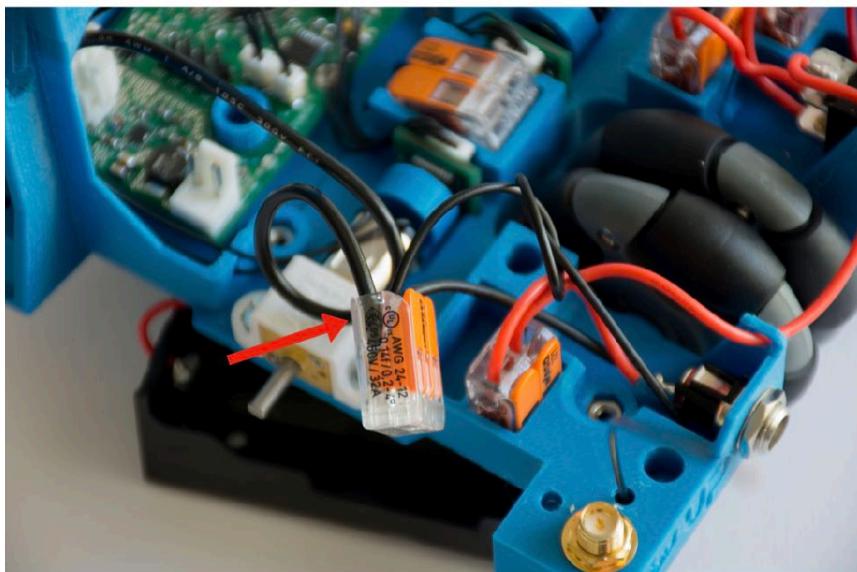
87. Connect Wago 221 (3 positions) to External power supply jack black wire.

## Erwhi Hedgehog



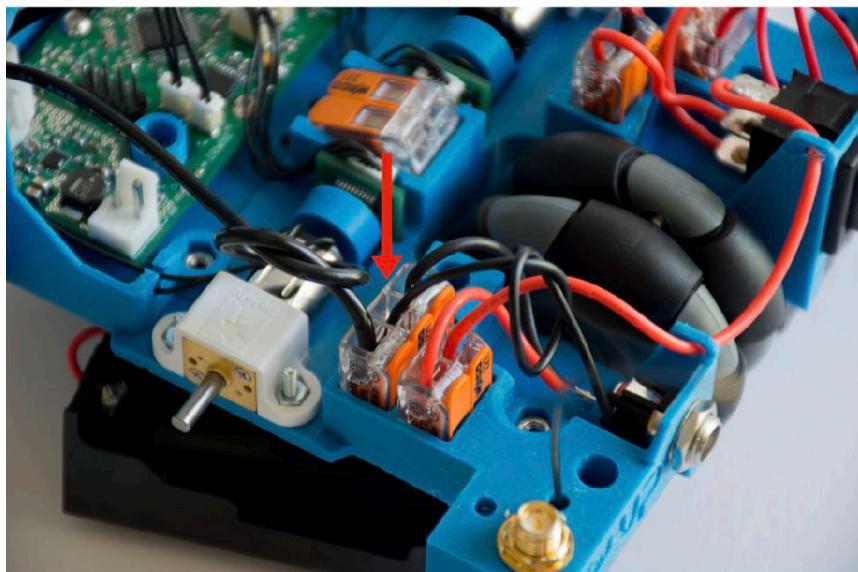
88. Connect Wago 221 (3 positions) to battery holder black wire.

## Erwhi Hedgehog



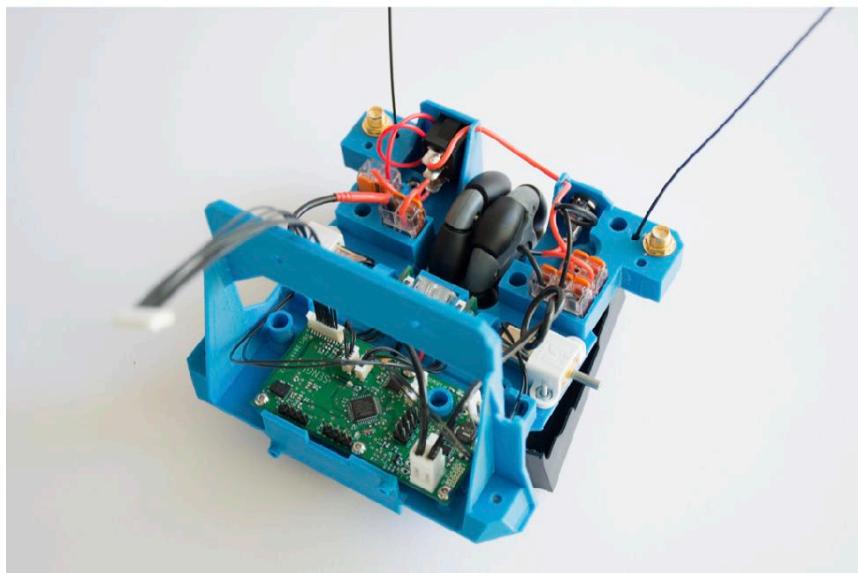
89. Connect Wago 221 (3 positions) to Sengi black wire.

## Erwhi Hedgehog



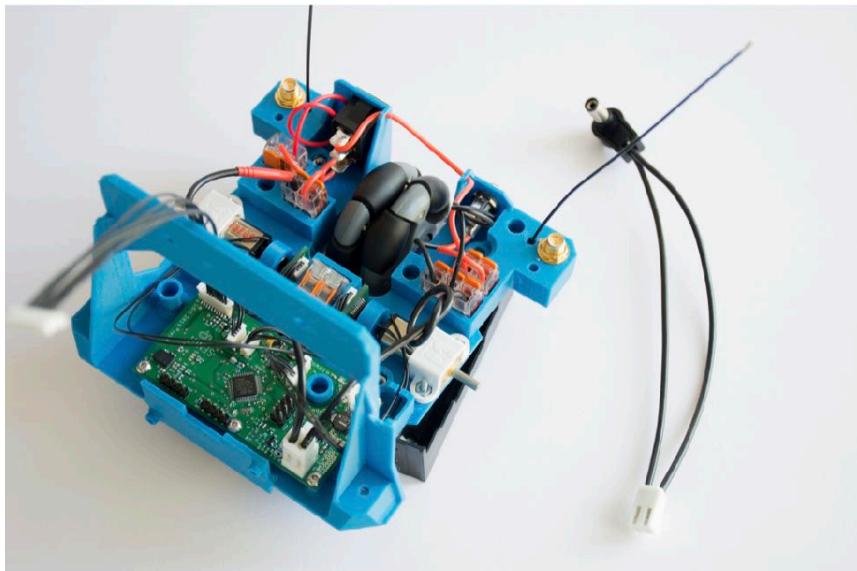
90. Insert Wago 221 into dedicated hole in Erwhi chassis.

## Erwhi Hedgehog



91. Check if your robot is like the one in photo.

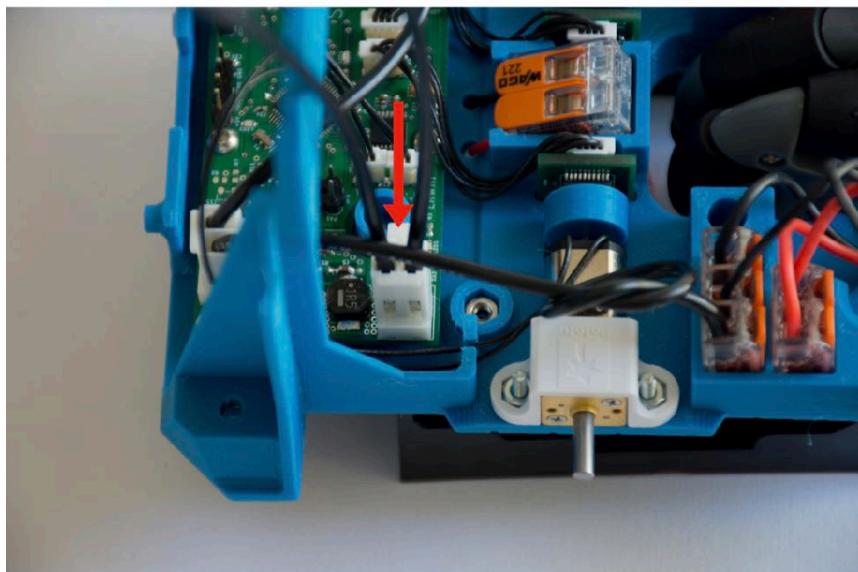
## Erwhi Hedgehog



In following steps you need:

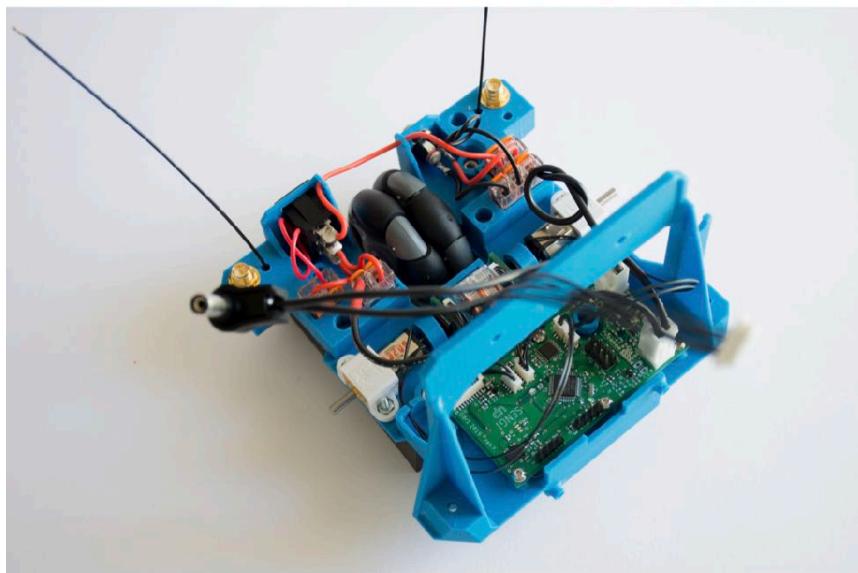
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Power Jack cable (**BOM ID T1#25** - [Power jack](#)).

## Erwhi Hedgehog



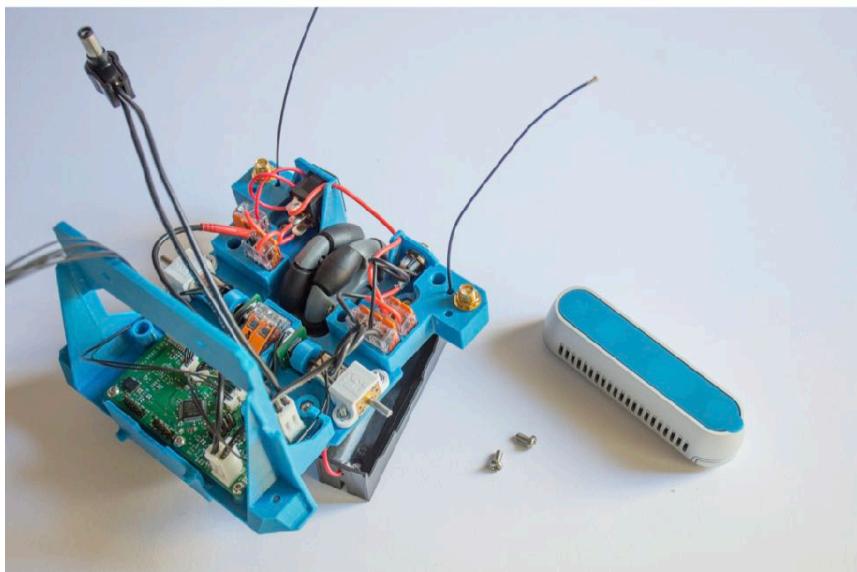
92. Insert cable into Sengi connector.

## Erwhi Hedgehog



93. Check if your robot is like the one in photo.

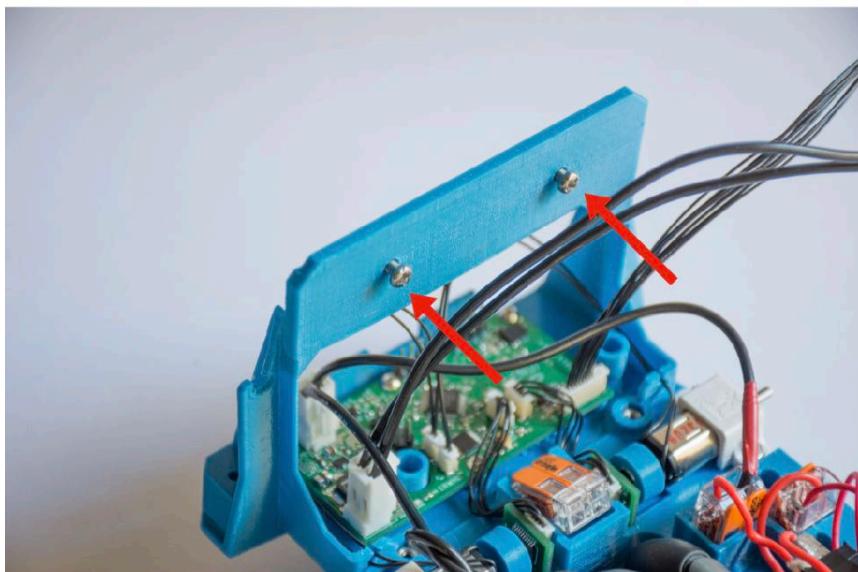
## Erwhi Hedgehog



In following steps you need:

- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x Intel Realsense D435 (**BOM ID T1#4**);
- 2x M3x6mm screws (**BOM ID T1#32**).

## Erwhi Hedgehog

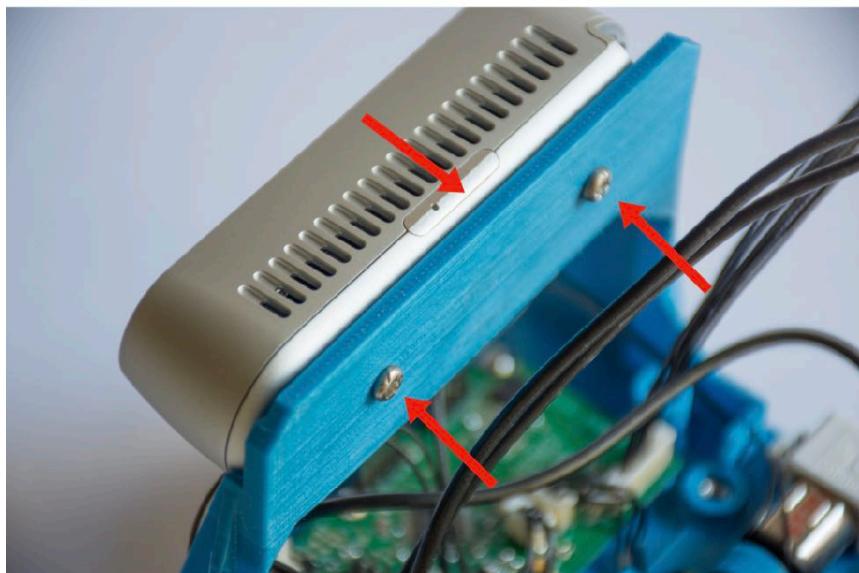


94. Insert two screws into the holes on the front of Erwhi chassis.

## Erwhi Hedgehog

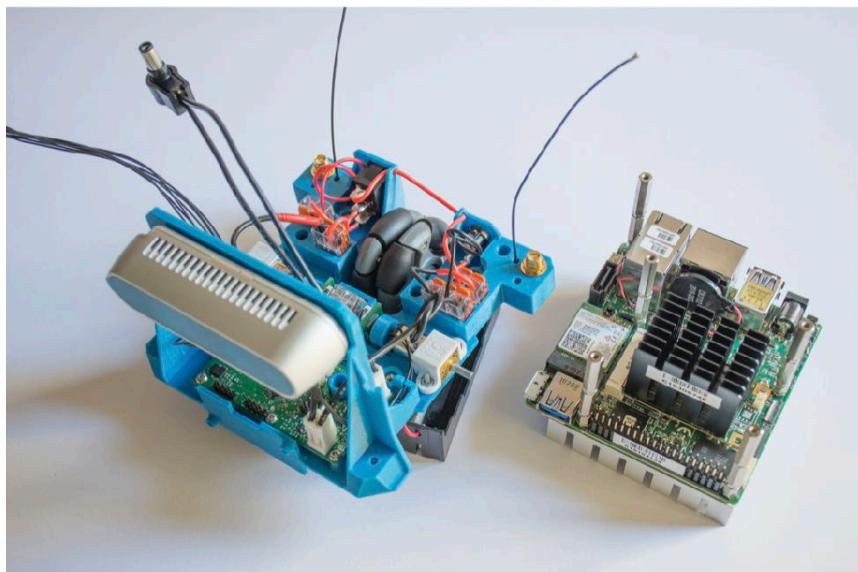


95. Remove USB protection cap from Intel Realsense D435.

**Erwhi Hedgehog**

96. Fix Intel Realsense D435 locking screws. Open grid should be on top.

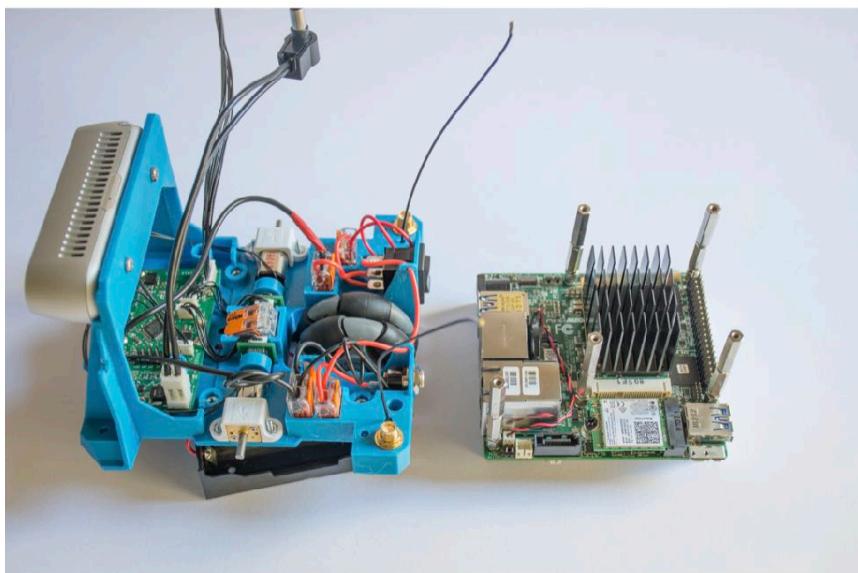
## Erwhi Hedgehog



In following steps you need:

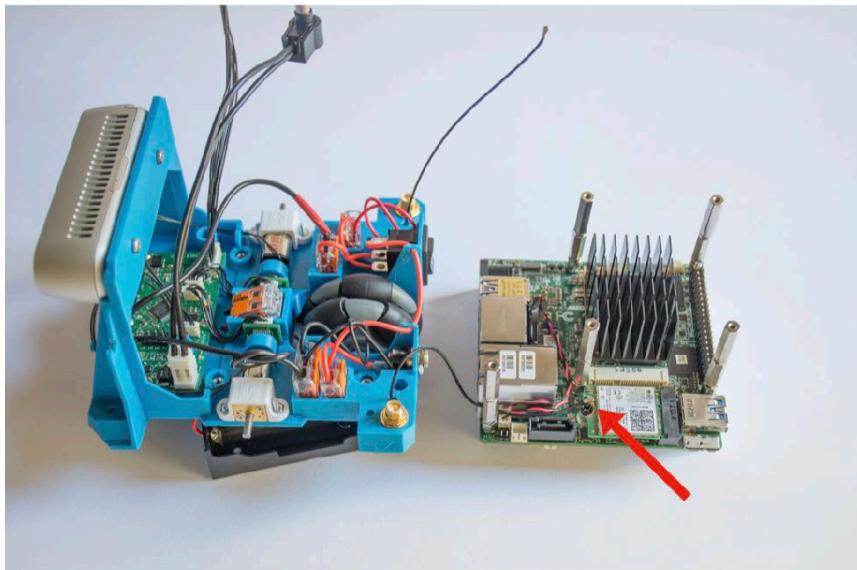
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x UP Squared assembly ([UP Squared assembly](#)).

## Erwhi Hedgehog



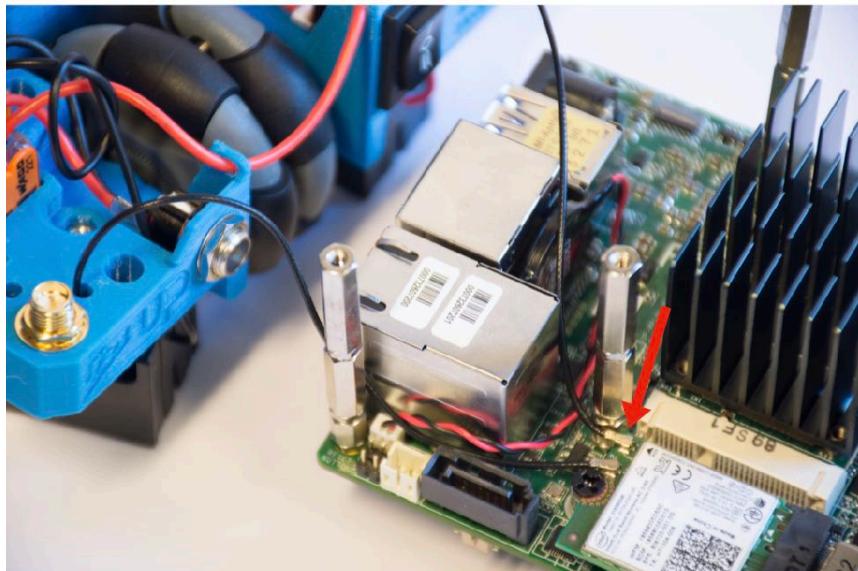
97. Place parts as shown.

## Erwhi Hedgehog



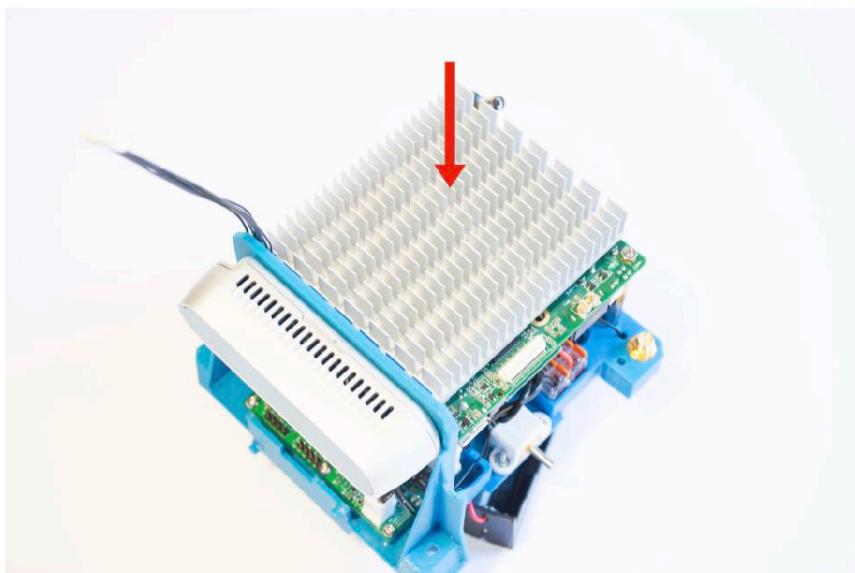
98. Connect left antenna cable to WiFi card port 2.

## Erwhi Hedgehog



99. Connect right antenna cable to WiFi card port 1.

## Erwhi Hedgehog



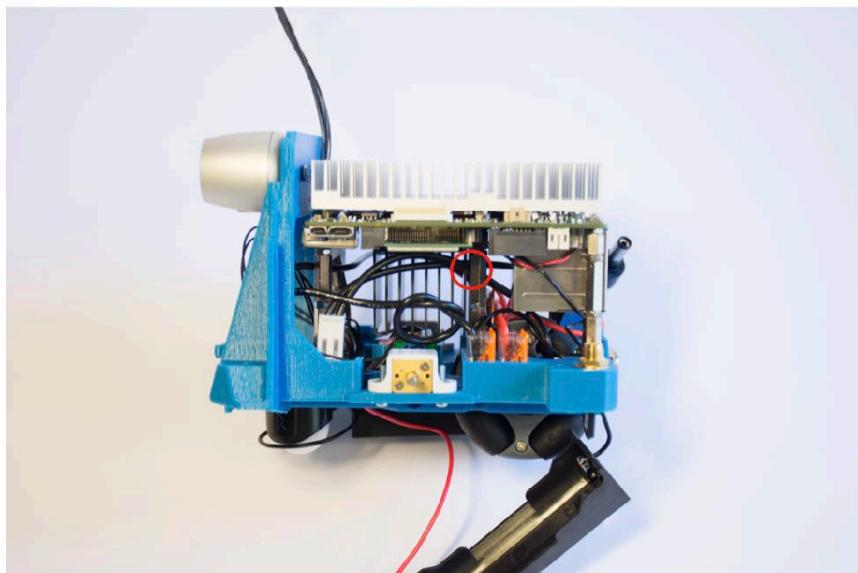
100. Put UP onto the chassis.

## Erwhi Hedgehog

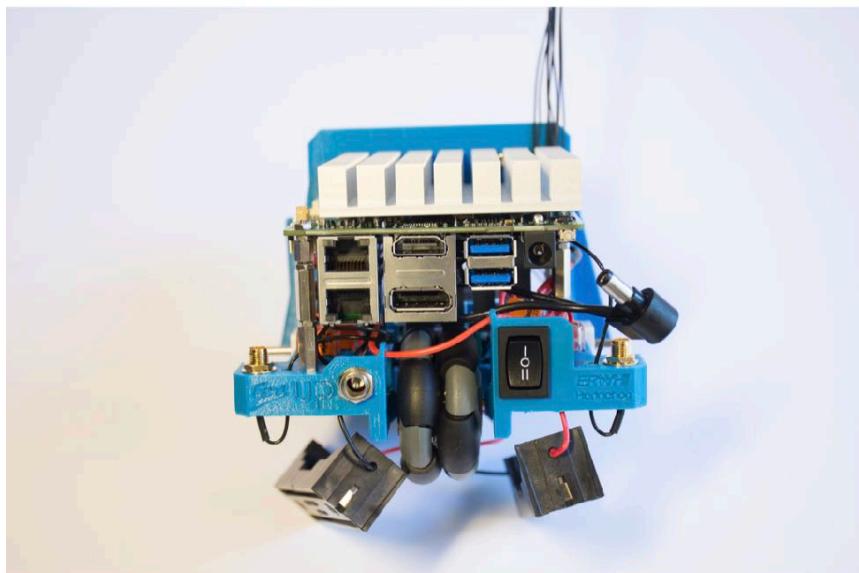


101. Check if marked cables are placed correctly.

## Erwhi Hedgehog

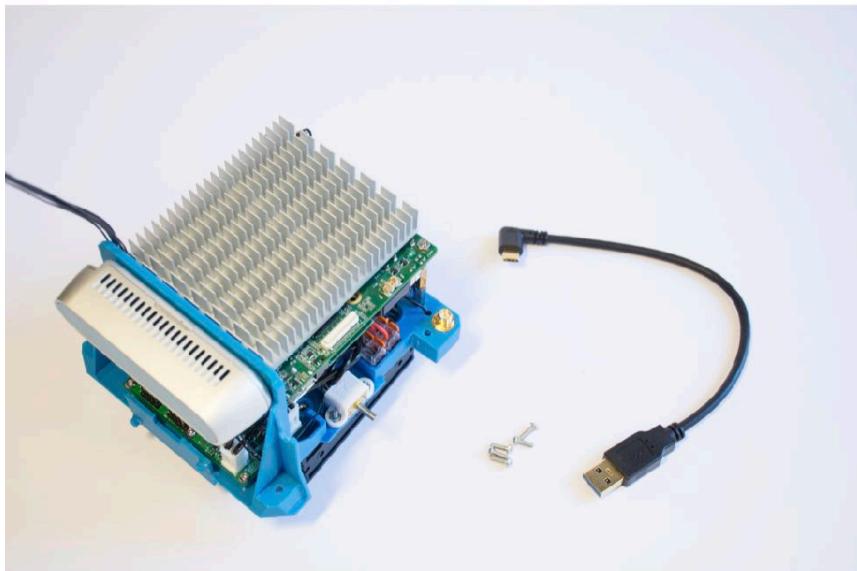


102. Check if marked cable is placed correctly.

**Erwhi Hedgehog**

103. Check robot back.

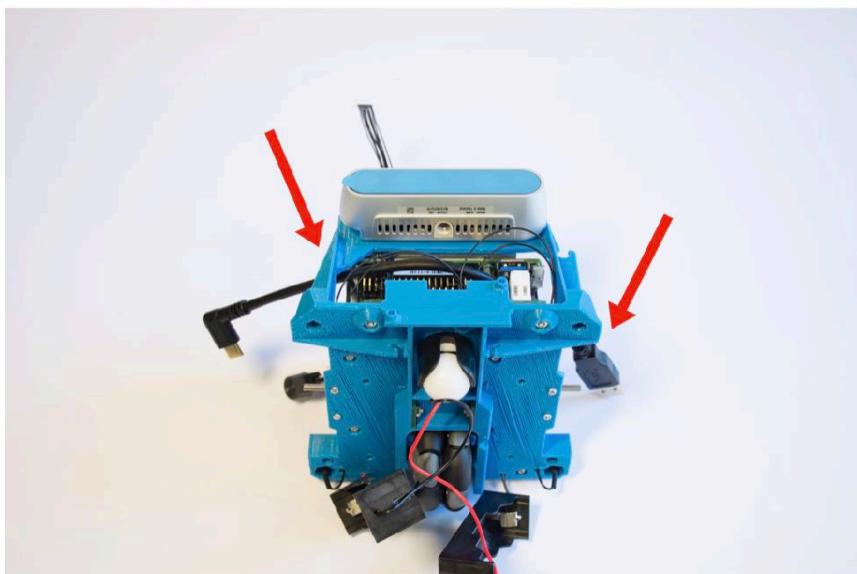
## Erwhi Hedgehog



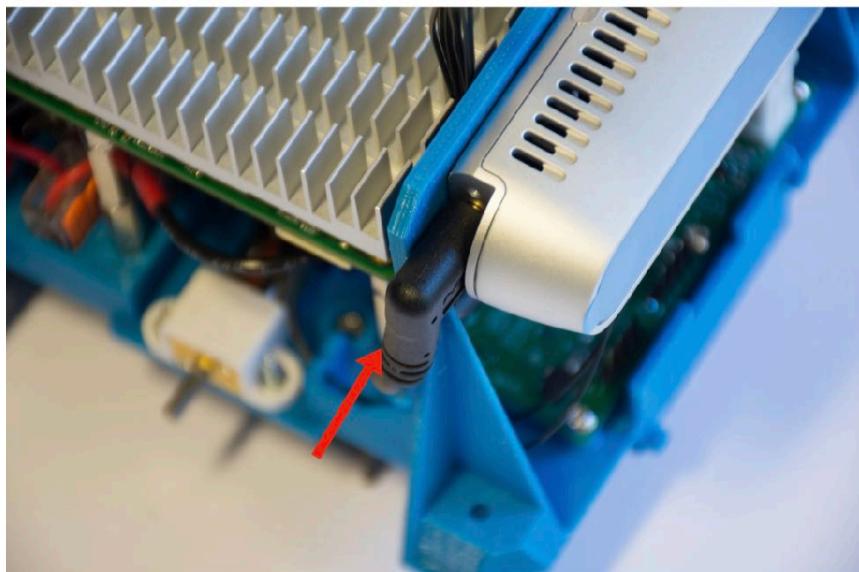
In following steps you need:

- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 1x USB 3 USB C cable (**BOM ID T1#5**);
- 5x M2.5x8mm screws (**BOM ID T1#30**);
- 4x M2.5x10mm screws (**BOM ID T1#31**).

## Erwhi Hedgehog

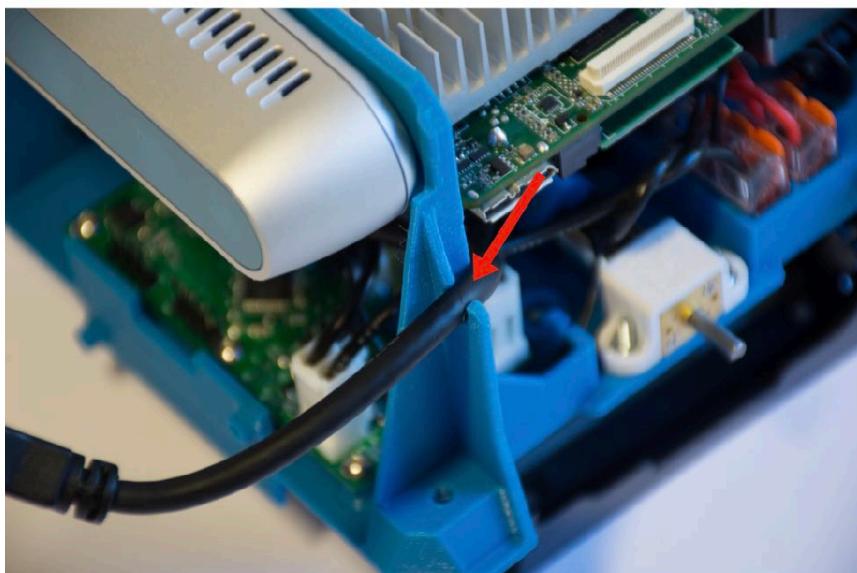


104. Insert USB cable.

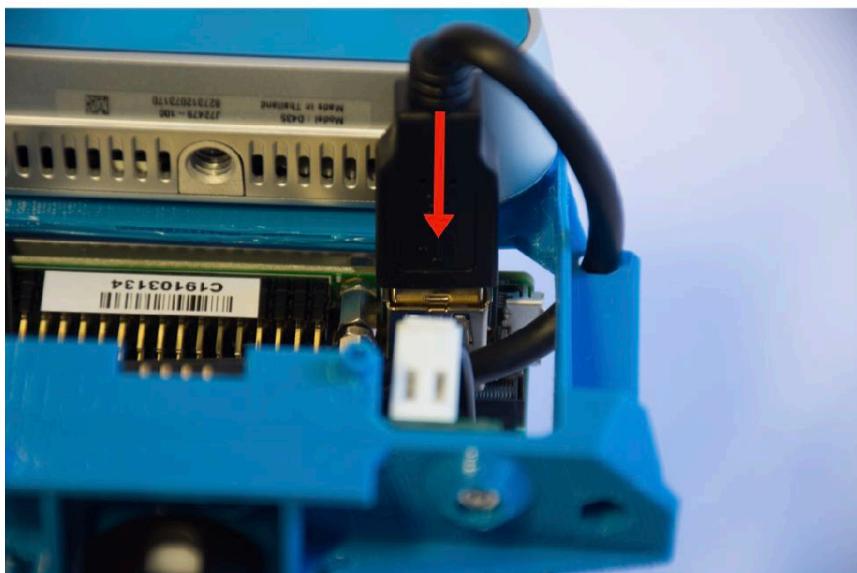
**Erwhi Hedgehog**

105. Connect USB C to Intel Realsense D435.

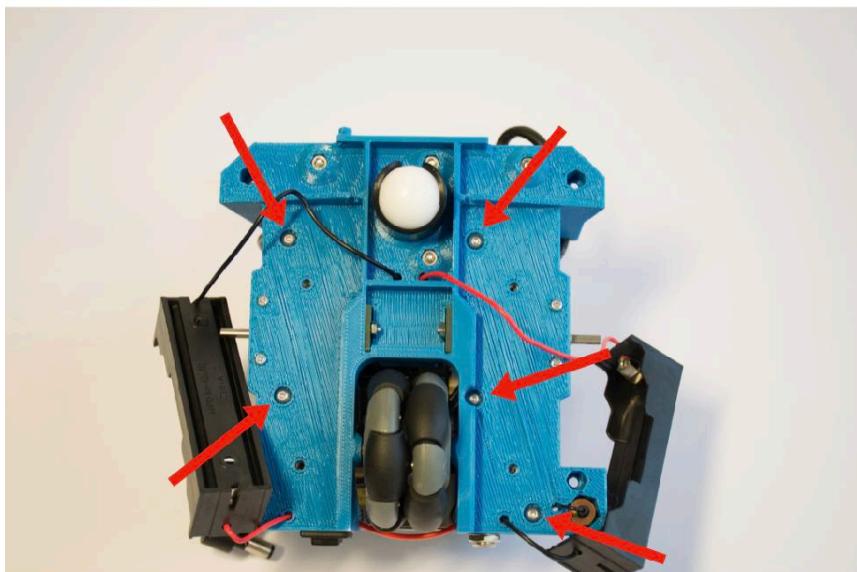
## Erwhi Hedgehog



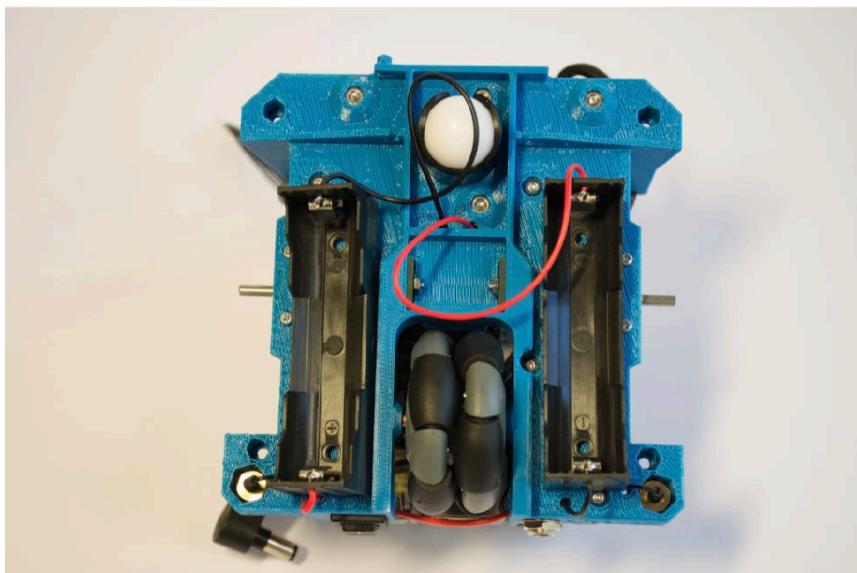
106. Snap USB cable into Erwhi chassis.

**Erwhi Hedgehog**

107. Connect USB 3 to UP Squared USB port.

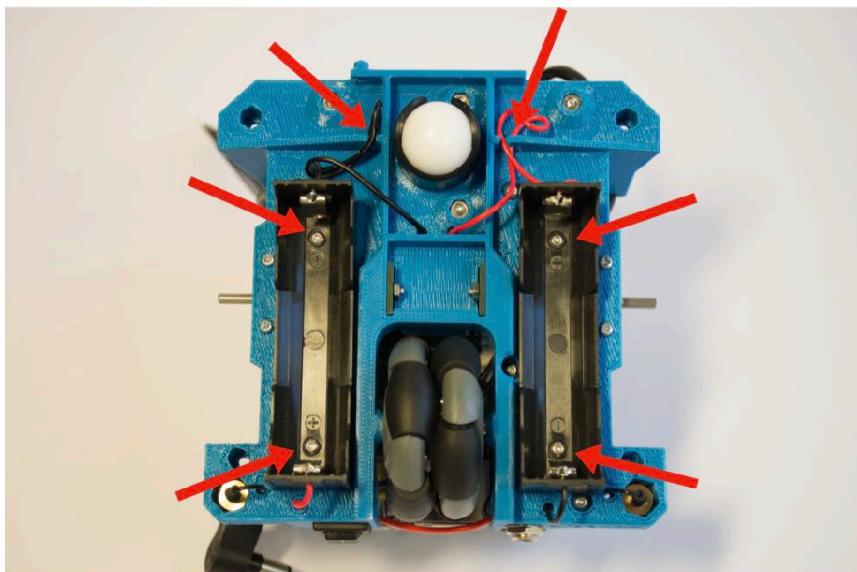
**Erwhi Hedgehog**

108. Insert and fix UP using five M2.5x8mm screws.

**Erwhi Hedgehog**

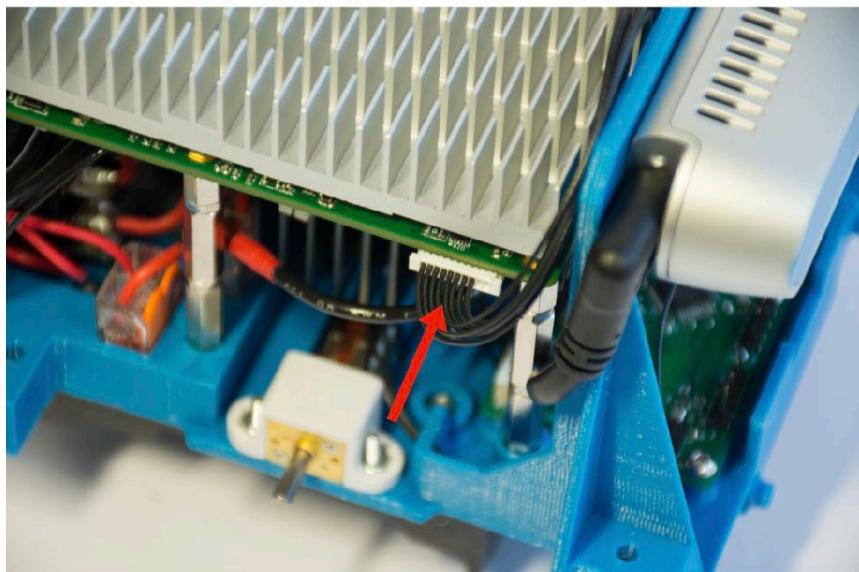
109. Place battery holders as shown in photo.

## Erwhi Hedgehog

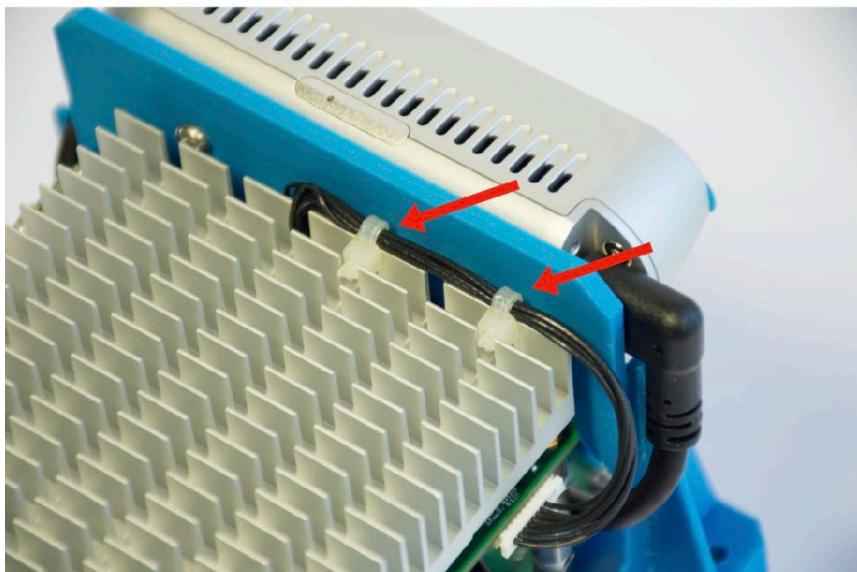


110. Fix battery holders using four M2.5x10mm screws.

111. Fix cables into Erwhi chassis.

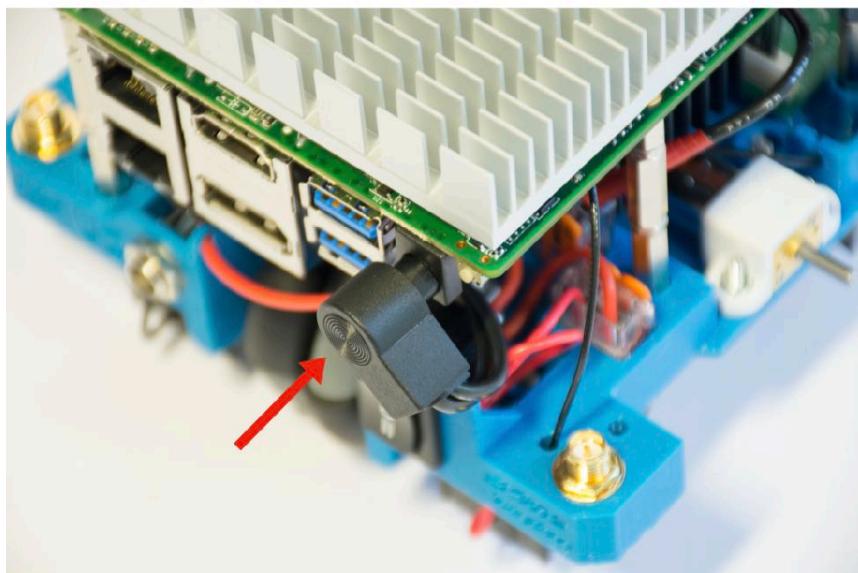
**Erwhi Hedgehog**

112. Insert USB connector from Sengi to UP Squared.

**Erwhi Hedgehog**

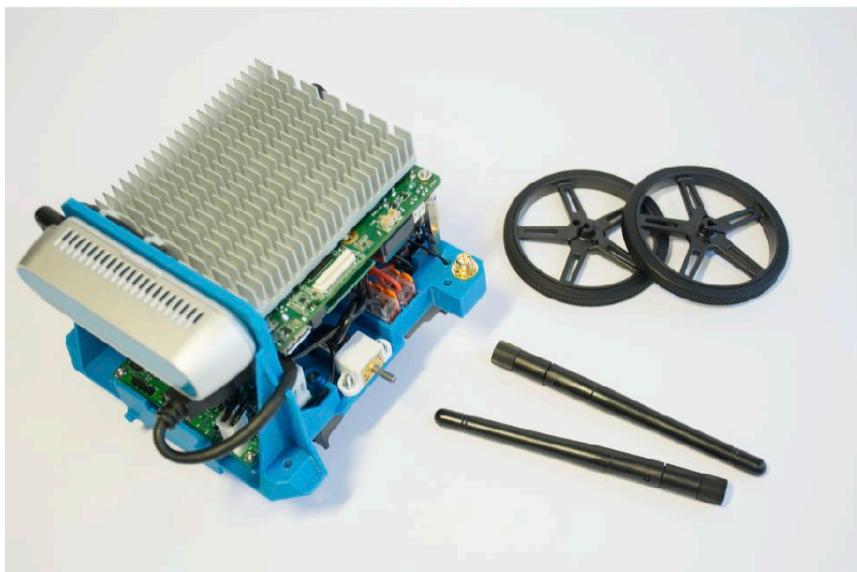
112b. (Optional) Using 2 Nylon cable ties lock cable.

## Erwhi Hedgehog



113. Plug Jack into UP Squared.

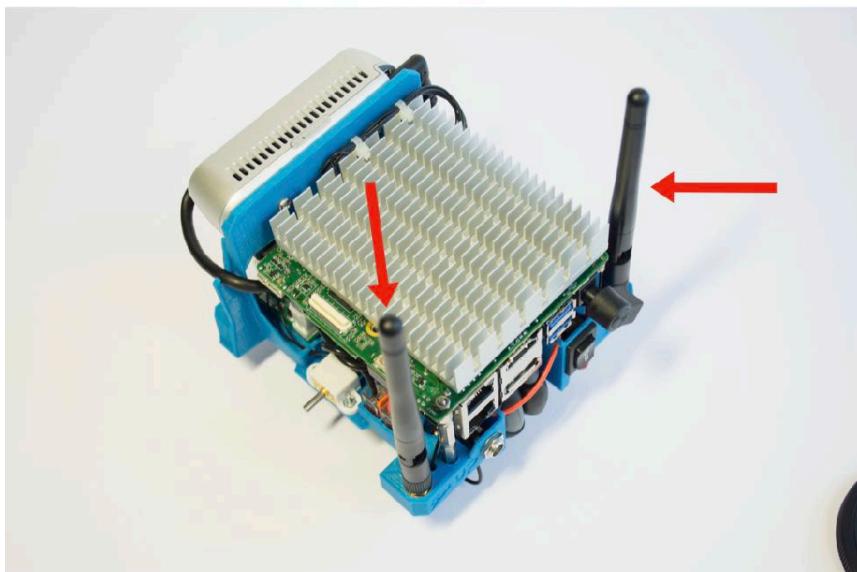
## Erwhi Hedgehog



In following steps you need:

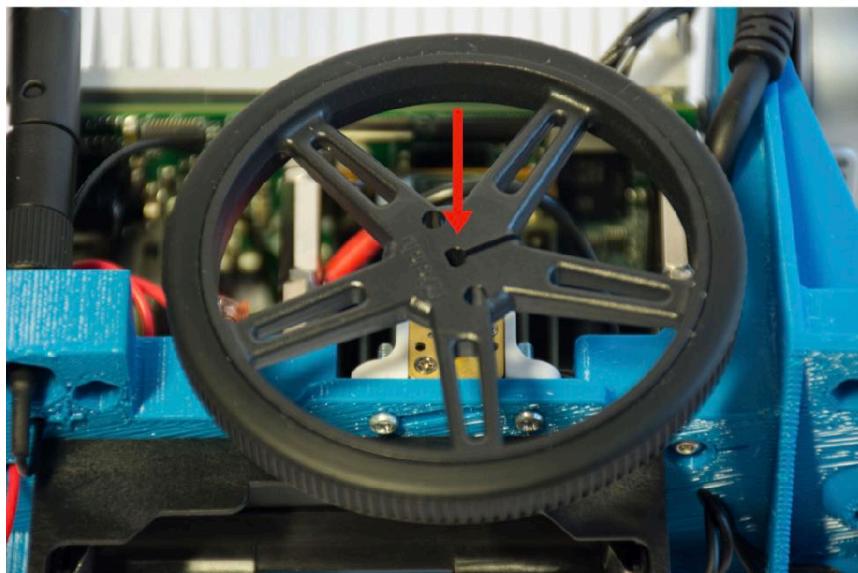
- 1x Erwhi Hedgehog chassis with previous steps mounted parts;
- 2x WiFi antennas (**BOM ID T1#3**);
- 2x Pololu wheels (**BOM ID T1#15** - [Wheels](#)).

## Erwhi Hedgehog

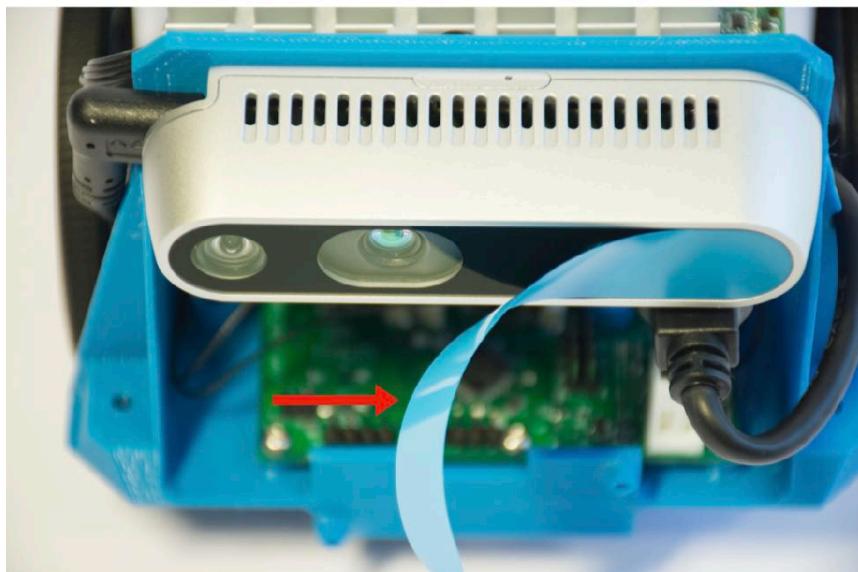


114. Fix the antennas.

## Erwhi Hedgehog

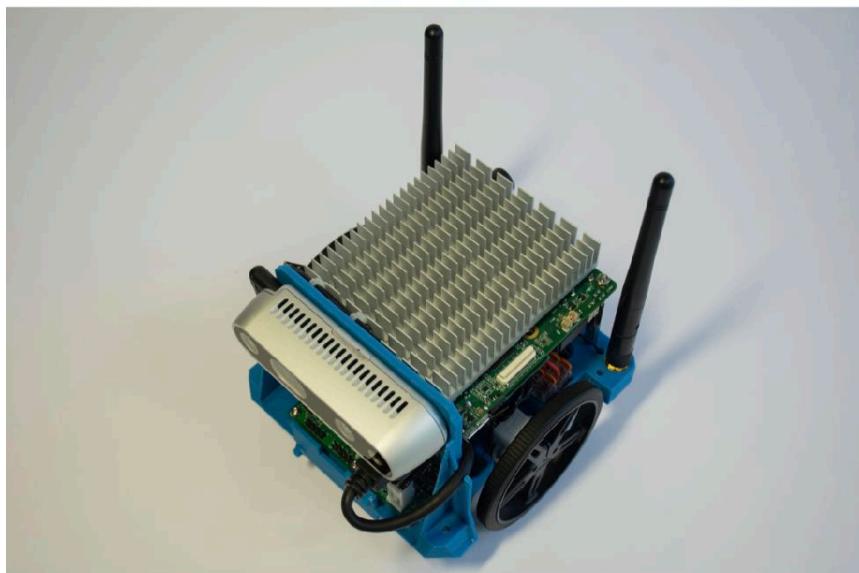


115. Insert wheels, flat part is external.

**Erwhi Hedgehog**

116. Remove Intel Realsense D435 protection.

## Erwhi Hedgehog



117. Congrats! Your Erwhi Hedgehog is ready.

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## NOTES:

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## **NOTES:**

581

## **NOTES:**

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# Changelog:

August 2019: First release

Giovanni di Dio Bruno

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[giovannididio.bruno@gmail.com](mailto:giovannididio.bruno@gmail.com)  
[gbr1.github.io](https://github.com/gbr1)