

AI for STEM Competition

Asia Pacific STEAM_AI Technology
Innovation Challenge

Transportation Robot Manual

CocoRobo

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Parts

Metal structural parts



Flipper × 1



Carriage × 1



Swingarm × 1



Module
bracket × 1



Base × 1



Battery
Holder × 1



Servo motor
bracket × 1

Fittings



Mecanum Wheels
Set × 1



Zipties × 2



Standoffs
M3*20mm × 4



Standoffs
M3*15mm × 5



Standoffs
M3*10mm × 5



Screwdriver × 1

Electronics

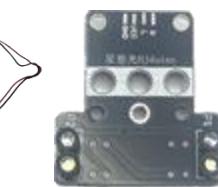


CocoPi Module × 1



MG90S Servo × 1

TT Motor × 4



Cross Socket Tool × 1



Self-Tapping
Screws
M1.4*5mm × 4



Screws
M3*8mm × 18



Lipo Battery
Charger × 1



Type-c Cable

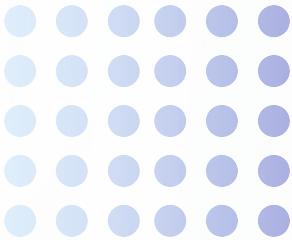


Lipo
Battery × 1

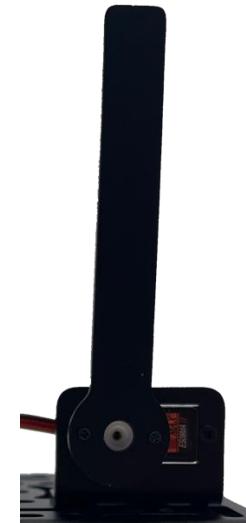
XINHUI_20kg High
Torque Servo × 1



AI Transport Robot Components



Robot Base



Mechanical Arm
mechanism



Carriage



Module



Battery and Module Bracket Assembly

Step 1

Battery Holder Installation

Parts
Needed



Battery
Holder×1



Standoffs M3*20mm×2



Screws
M3*6mm×2



① Align the
screws with the
corresponding
holes

② Align the left
standoff with the
screw and tighten it.

③ Do the same for
the right standoff

Battery and Module Bracket Assembly

Step 2

Battery Holder Installation

Parts Needed



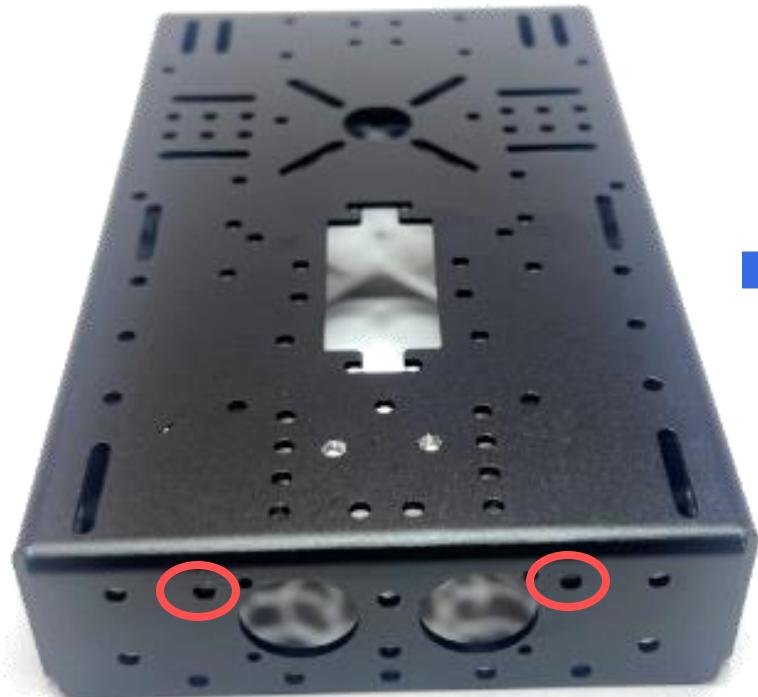
Base × 1



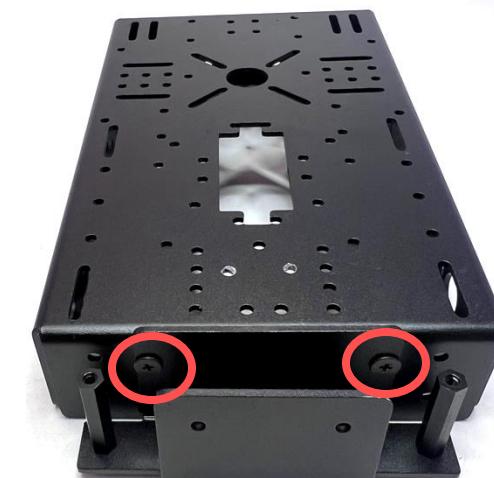
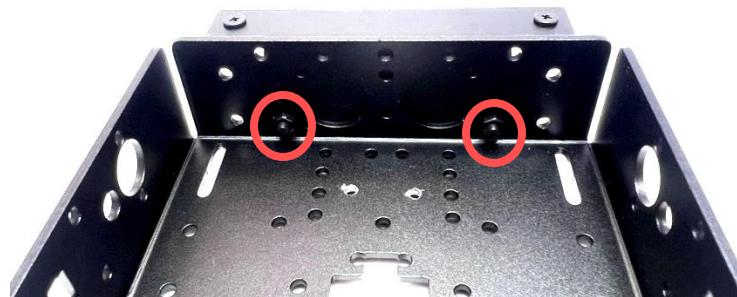
Screws
M3*8mm×2



M3mm Nuts×2
Screwdriver × 1



Align the screws in the corresponding hole and lock the bracket with a nut.



Battery and Module Bracket Assembly

Step 3 Install the module bracket

Parts Needed

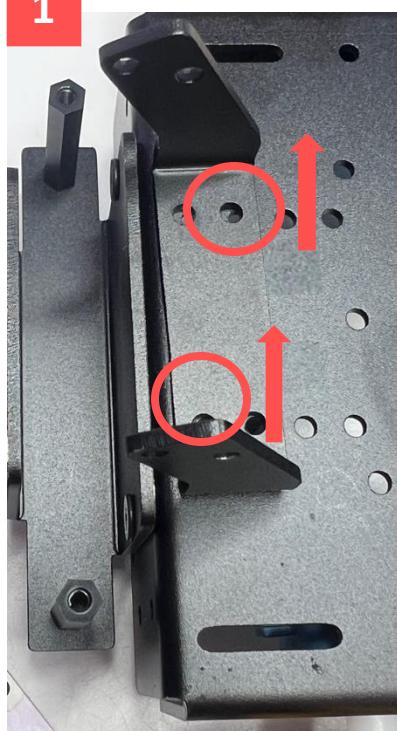


Module bracket ×1
M3mm Nuts ×6



Screws M3*8mm ×6 Screwdriver ×1

1



2



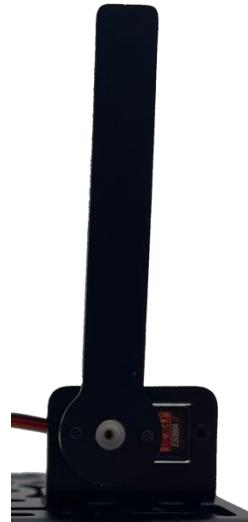
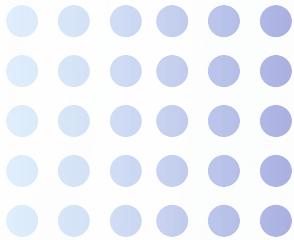
3



① Use two screws and lock with a nut;
② Fix the module bracket with screws, install the screws from the bottom up, pay attention to the installation direction.
③ Use 4 screws and nuts to secure the module bracket



Components



Mechanical
Arm Assembly

Parts Needed:



Self-Taping
Screws
M2.3*8mm*2



M3mm Nuts *2



Screws
M3*6mm*2



Self-Taping
Screws
M1.4*5mm*2



MG90S Servo×1



Servo Bracket×1



Arm ×1



Screwdriver×1



Mechanical Arm Assembly

Step 4

Servo Bracket Installation

Parts



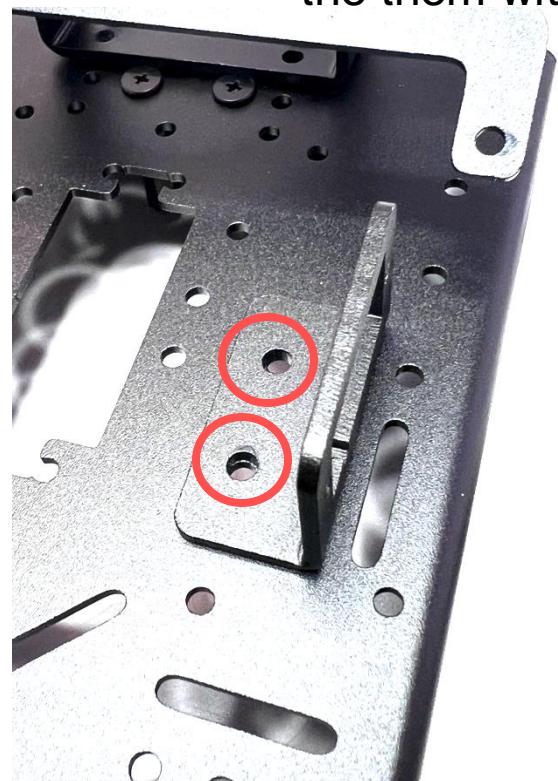
Servo Bracket ×1



Nuts ×2



Screws
3*8mm×2 Screwdriver ×1



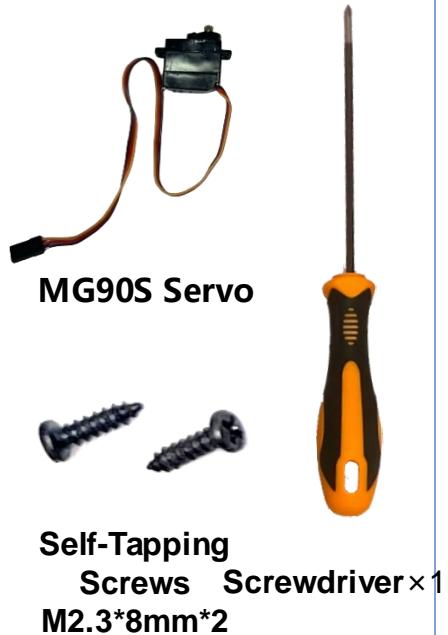
Put 2 screws in the red circle and tighten the them with a nut.



Mechanical Arm Assembly

Step 5 Servo Installation

Parts

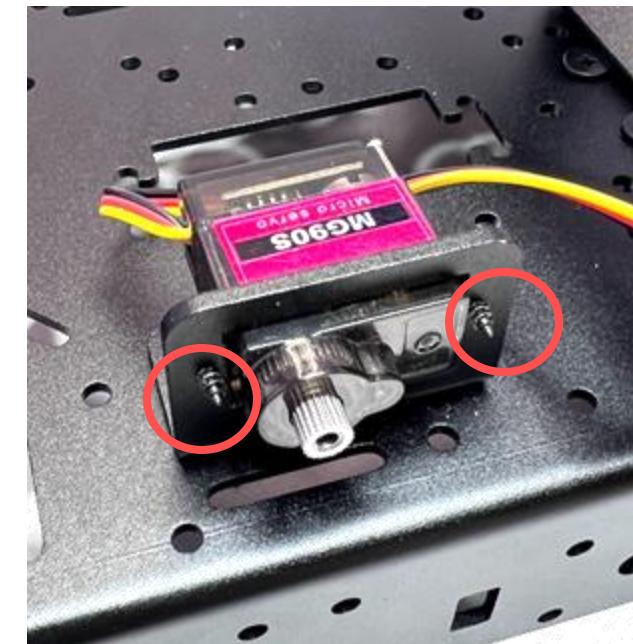


Insert the servo motor from the inside to the outside and into the servo motor bracket. Screw in the M2.3*8mm self-tapping screws into the small holes on both sides.



Notes:

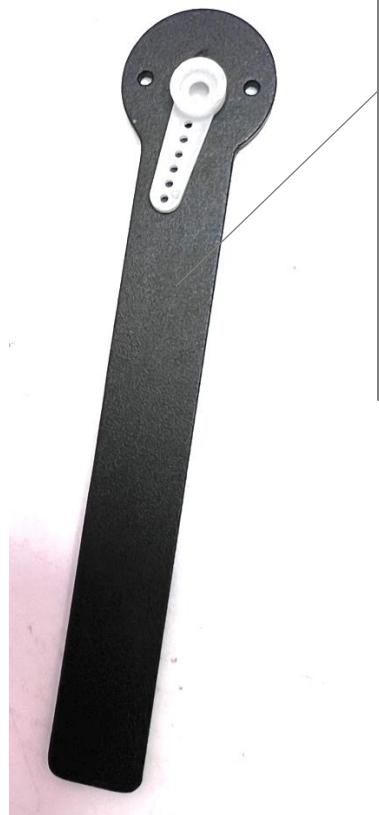
Installation direction of the servo motor:
The direction of the bracket notch is the same as that of the servo motor axis.



Mechanical Arm Assembly

Step 6 Connecting Arm to Servo

Parts



Notes:

- (1) One side of the servo motor has gear cutouts ;
- (2) The screw is threaded into the fixed servo motor disc from the metal side.

Mechanical Arm Assembly

Step 7

Connect the module cable to the computer

Connect the servo motor to the S1 port and use a Type-C cable to connect to the computer.

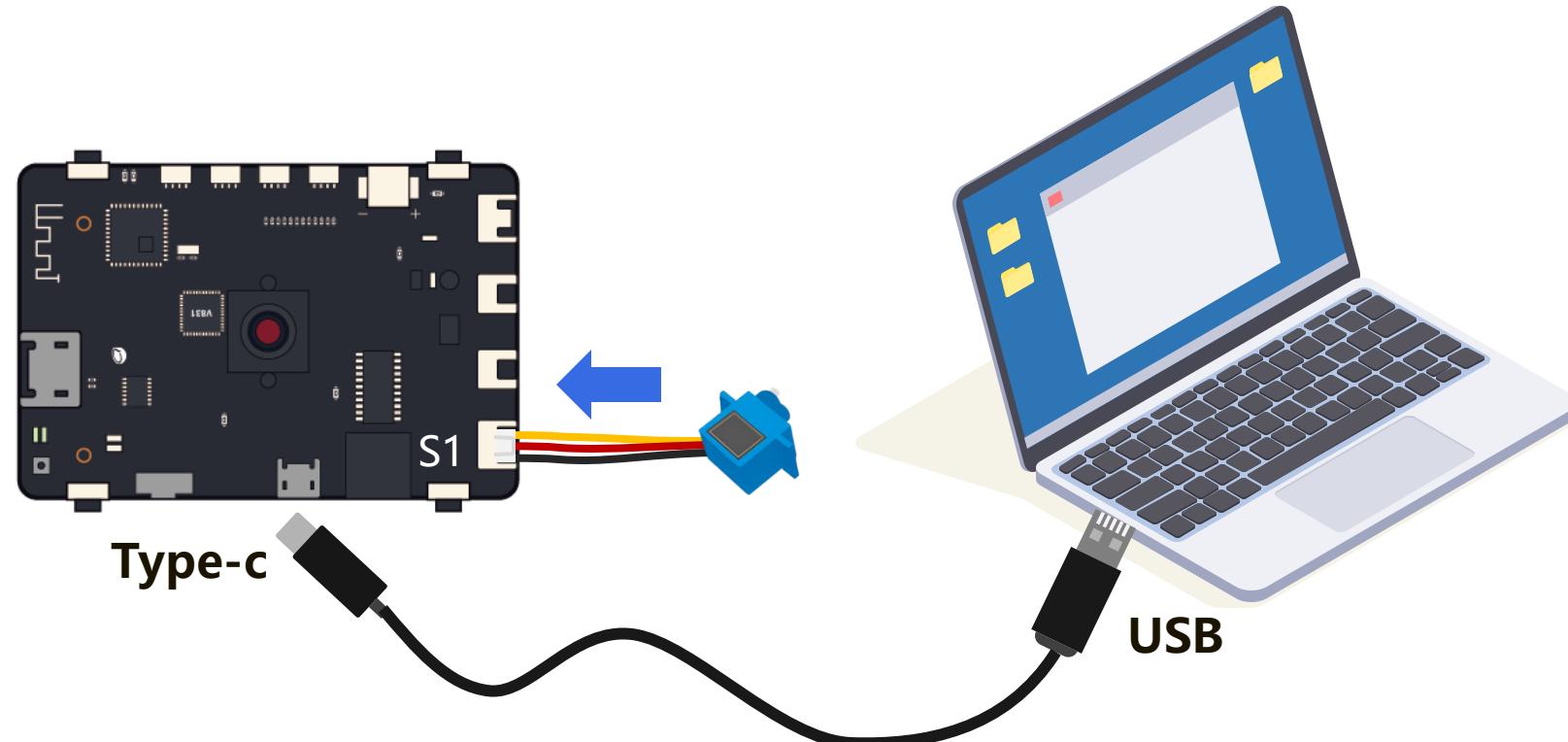
Parts



CocoPi Module×1



Type-c Cable



Mechanical Arm Assembly

Step 8 Calibrate the servo motor

Parts



CocoPi Module×1



Type-c Cable



Press the A key to enter the sample menu



Press the C key to move down, find Servo Control, press the B key to run

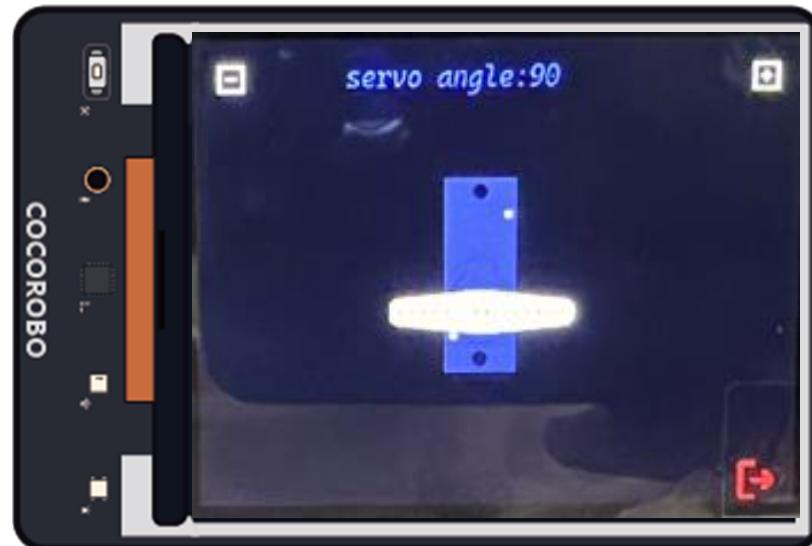
Mechanical Arm Assembly

Step 8 Calibrate the servo motor

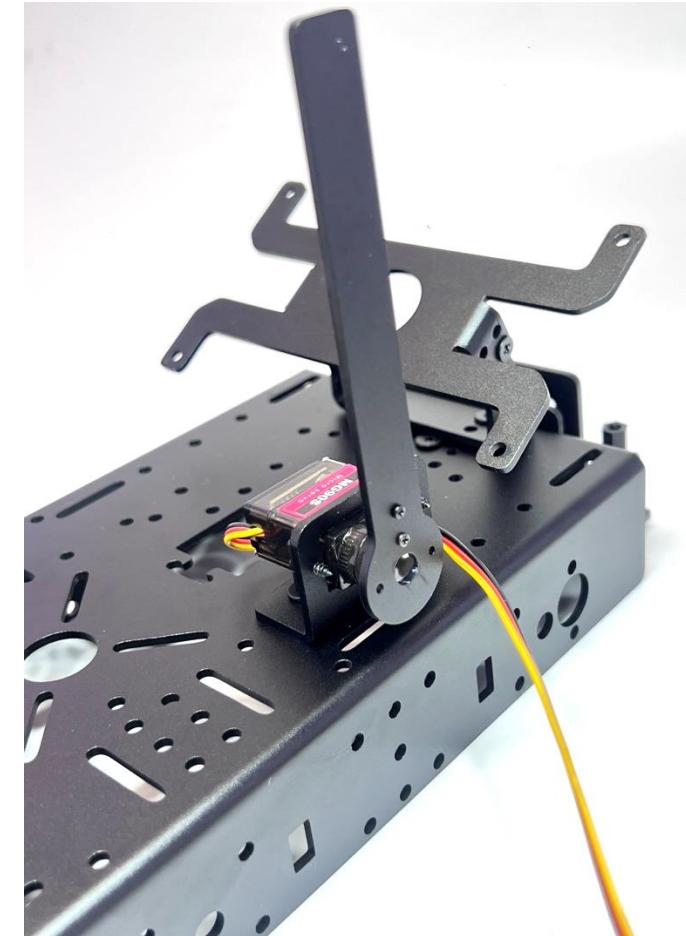
Parts



Arm ×1
Screw in
Servo
pack×1



Press the C and D keys to
adjust the angle to 90°



Install the servo motor swing arm
vertically according to the icon,
And use small flat-head screws to fix
the swing arm.



Components



Carriage

Parts:



Flipper × 1



Carriage × 1



XINHUI_20kg High Torque Servo × 1



Screws M3*8mm

M3mm Nuts



Self-Tapping
Screws
M1.4*5mm × 1



Standoffs
M3*15mm



黑色自攻螺絲
M2.3*8mm



Screwdriver × 1



● Carriage Assembly

Step 9 Servo Motor Bracket Installation

Parts



Carriage
x1



Screws M3*6mm*4



Standoffs M3*10mm*4

Install the bracket in the position as shown in the picture



● Carriage Assembly

Step 10 Servo Installation

Parts



High Torque Servo *1



Screws M3*6mm*4



Notes:

Use 4 screws to lock
the fixed servo motor
in the red circle
position.



Carriage Assembly

Step 11

Connect to your computer

Connect the servo motor to the S1 port and use a Type-C cable to connect to the computer.

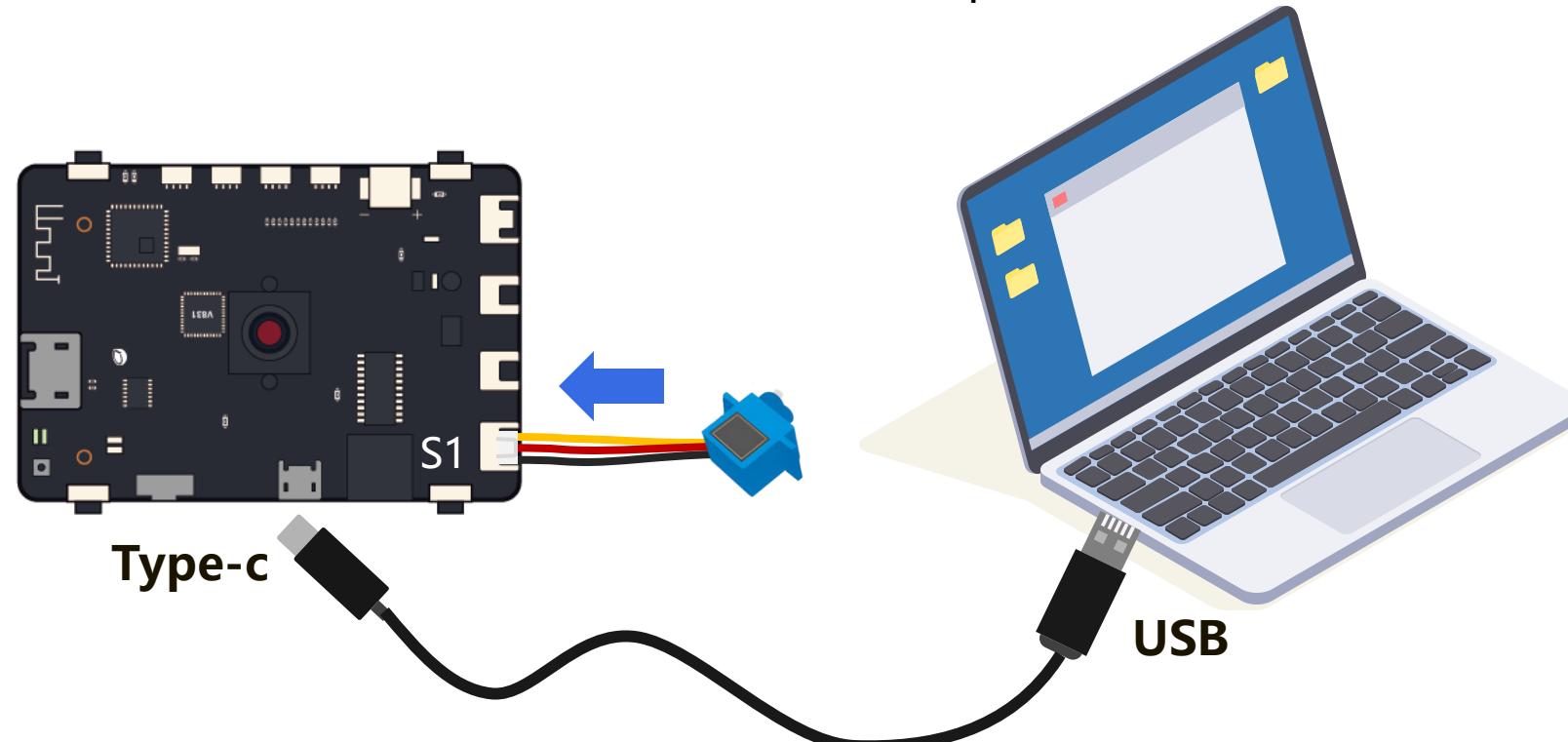
Parts



CocoPi Module × 1



Type-c Cable



Carriage Assembly

Step 12

Calibrate the servo
motor

Parts



CocoPi Module × 1



Type-c Cable



Press the A key to enter the sample menu



Press the C key to move down, find Servo Control, press the B key to run

● Carriage Assembly

Step 12

Calibrate the servo
motor

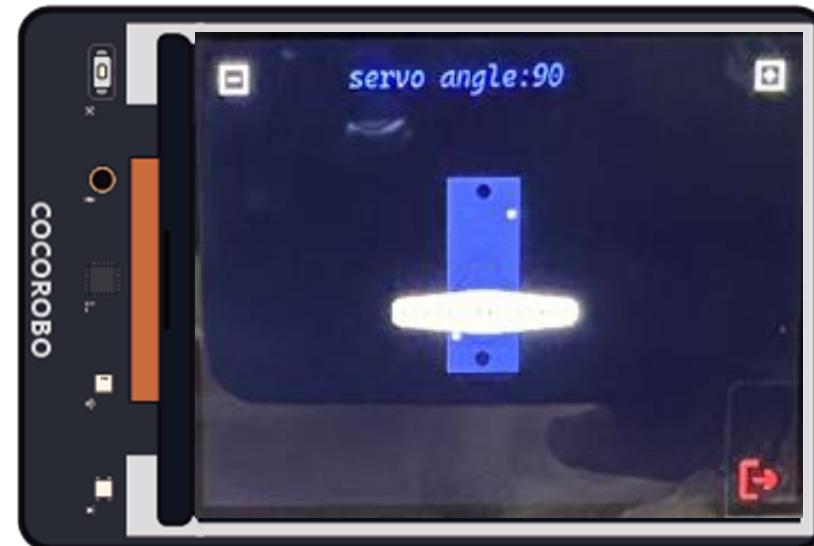
Parts



CocoPi Module × 1



Type-c Cable



Press the C and D keys to
adjust the angle to 90°

● Carriage Assembly

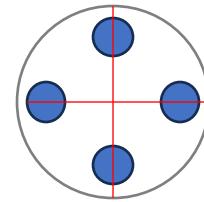
Step 13 → Servo Installation

Parts



High Torque Servo
Motorkit*1

Connect the disc with the servo motor shaft.



The holes on both sides of the disc need to be in the shape of a "+" to ensure that the four holes are in a "straight-horizontal" state

Carriage Assembly

Step 14

Connect the disc to the tipping bucket

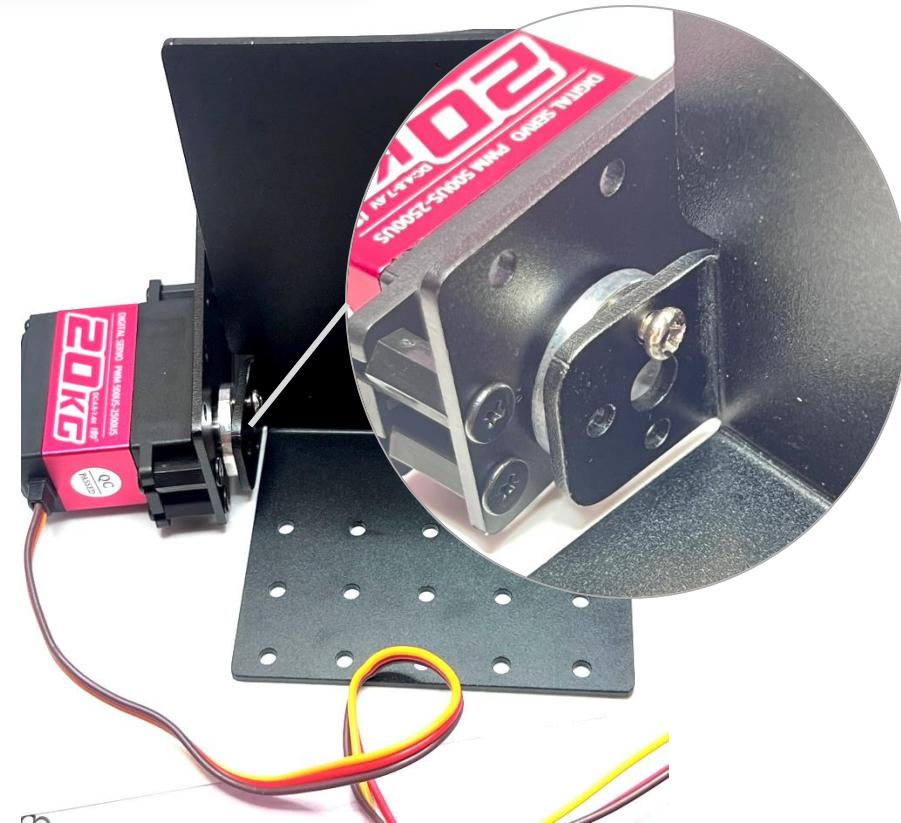
Parts



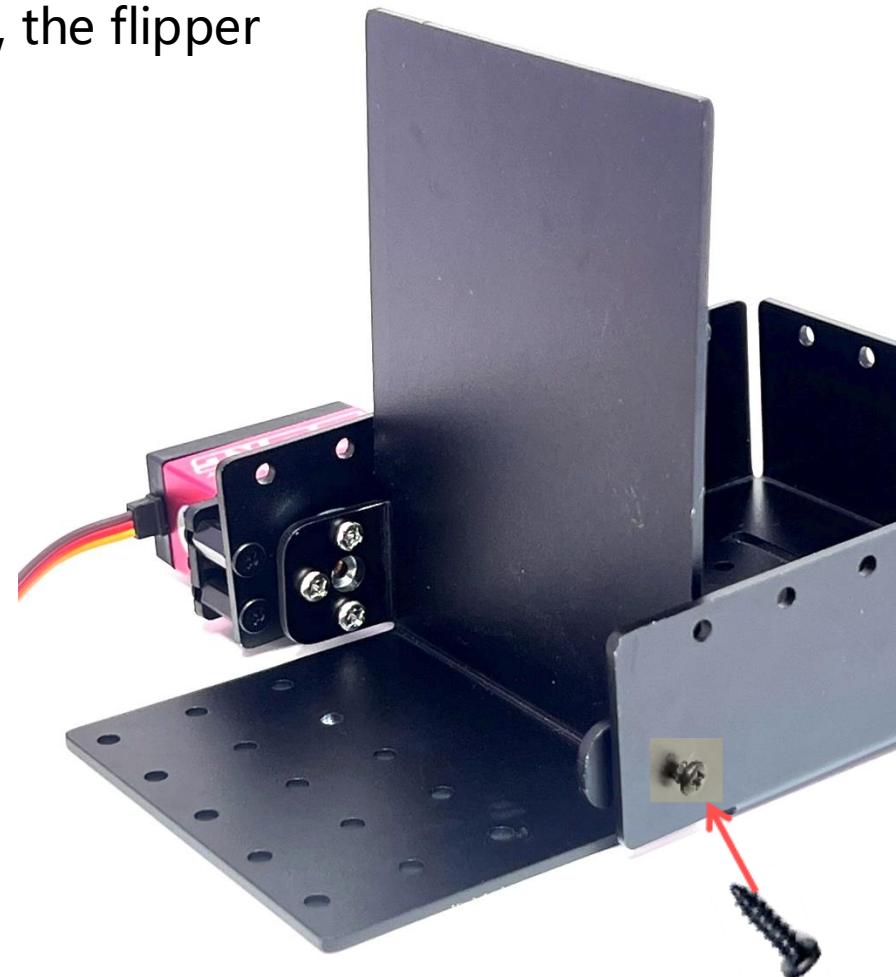
High Torque Servo
Motorkit*1



Flipper × 1 黑色自攻螺丝
 M2.3*8mm



According to the position
shown in the figure, the flipper
is installed straight.



Carriage Assembly

Step 15

Connect the carriage
to the base

Parts

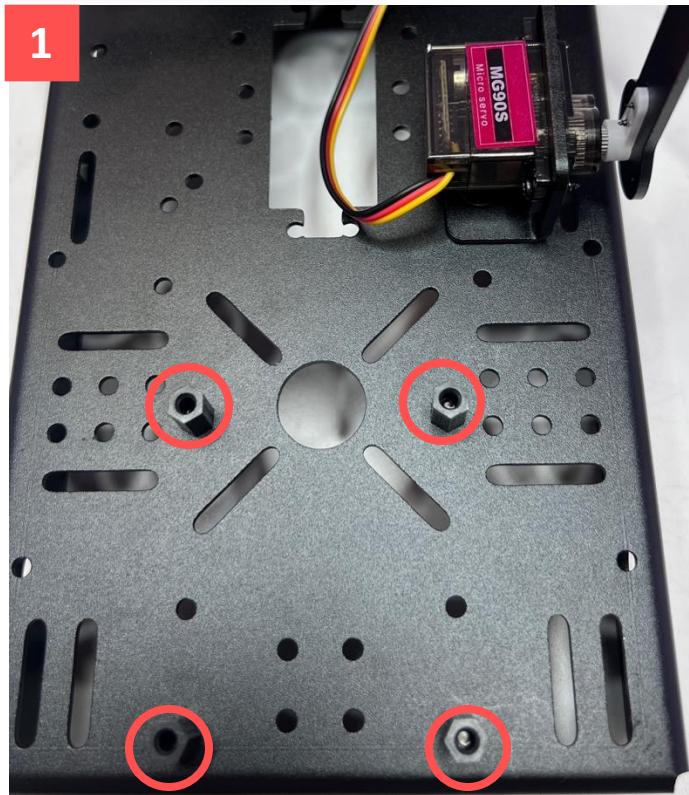


Screws M3*6mm*8



Standoffs M3*15mm*4

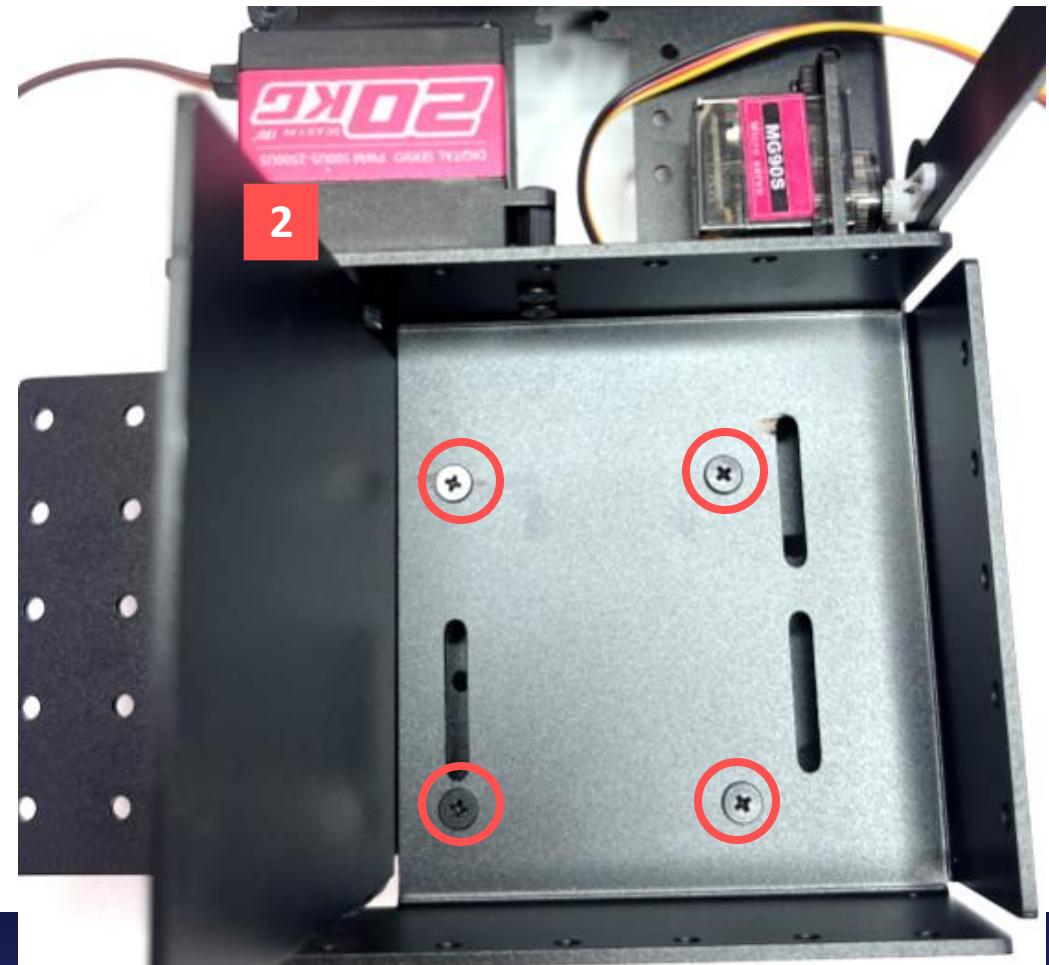
1



① Install the standoffs according to the red circle position.

② Manually turn the tipping bucket into the position shown in the picture, Push the screws in the red circle position.

2





Components



Wheels



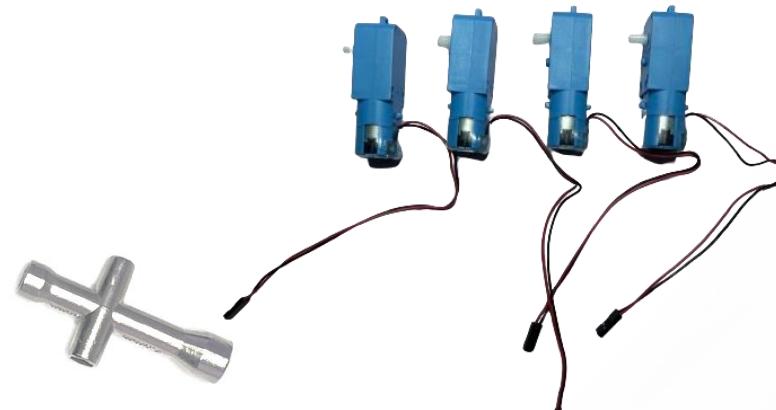
Parts:



Mecanum
Wheels×1



Screws
M3*25mm×8



Cross socket tool×1



Nyloc
Nuts×8



TT Motors×4



Screwdriver×1

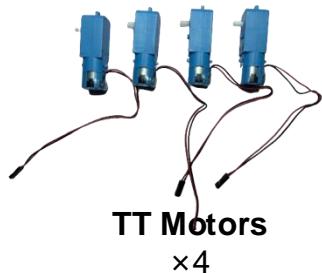


Body Assembly

Step 16

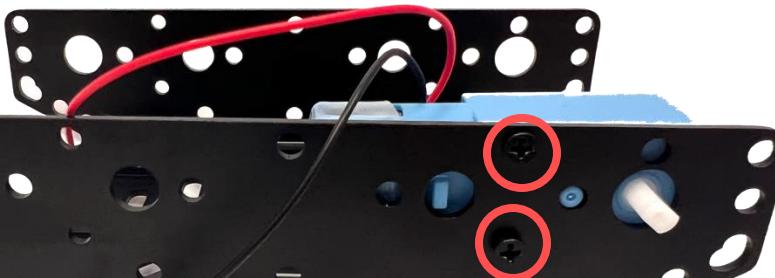
TT Motors
Installation

Parts

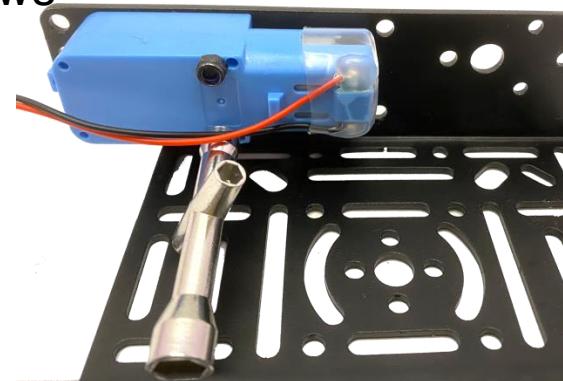


Notes:

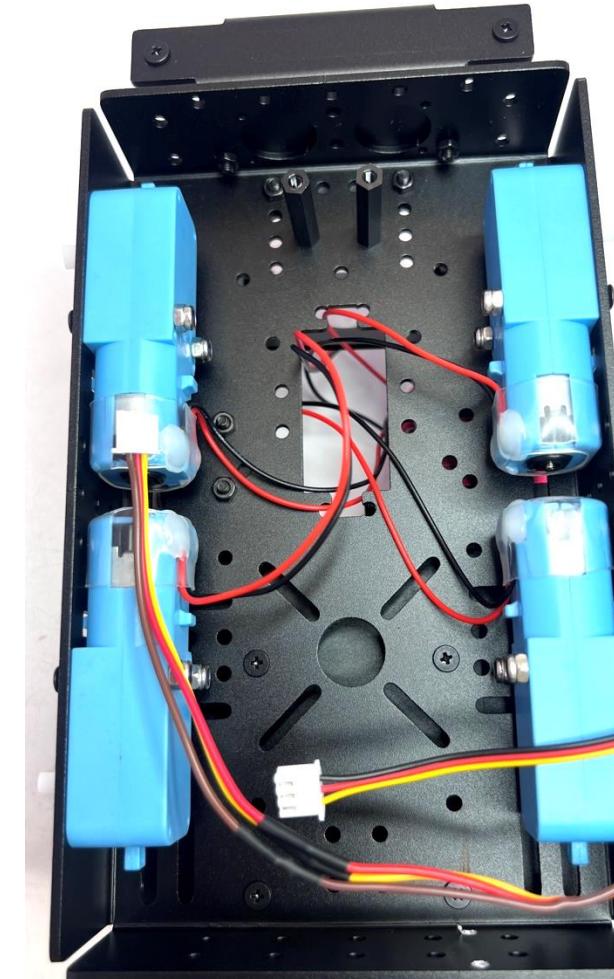
The locknut needs to be used with
the cross socket tool.



①Attach the TT motor and insert the
screws



②Use the cross socket tool to tighten locknut.



③Install the TT motors,
insert the screws, and
screw the locknut.

Body Assembly

Step 16

TT Motors
Installation

Parts



Mecanum Wheels
x1



Recognize the mecanum wheel and insert the white TT motor shaft into each of the 4 wheels in turn.



● Body Assembly

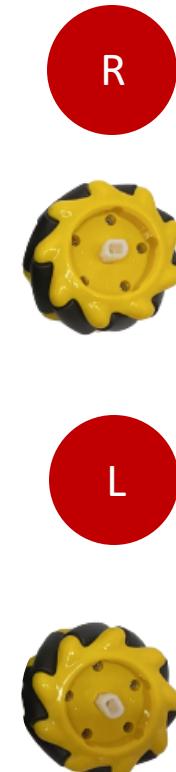
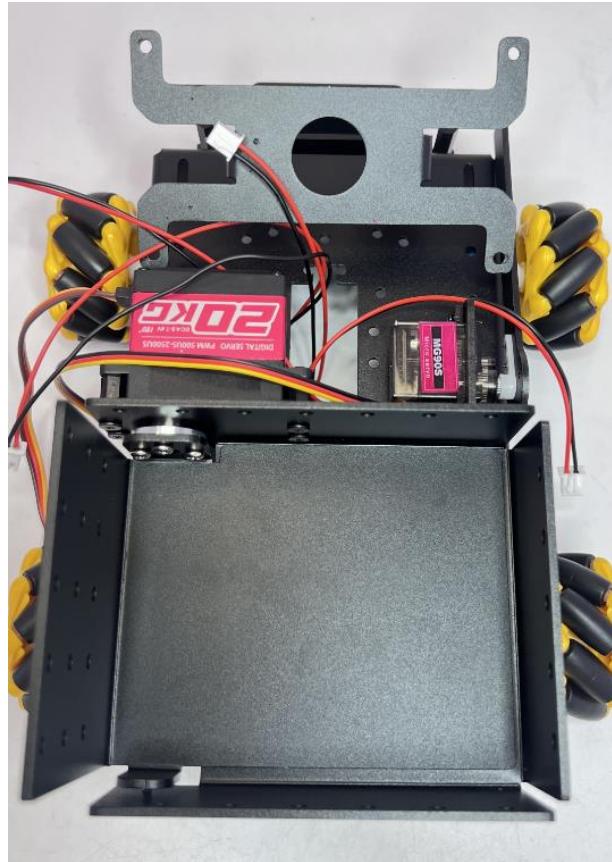
Step 17

Wheels
Installation

Parts



Mecanum
Wheels × 1



As per the pictures, the mecanum wheels are placed onto the motors.

● Body Assembly

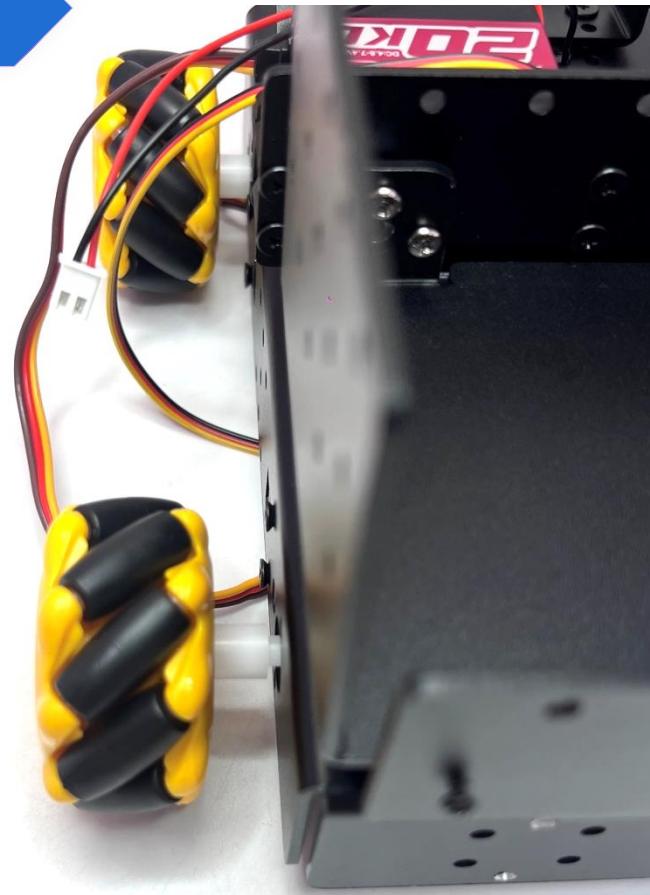
Step 17

Wheels
Installation

Parts



Mecanum
Wheel
Screws ×4



Use silver self-tapping screws to fasten 4 wheels.

Body Assembly

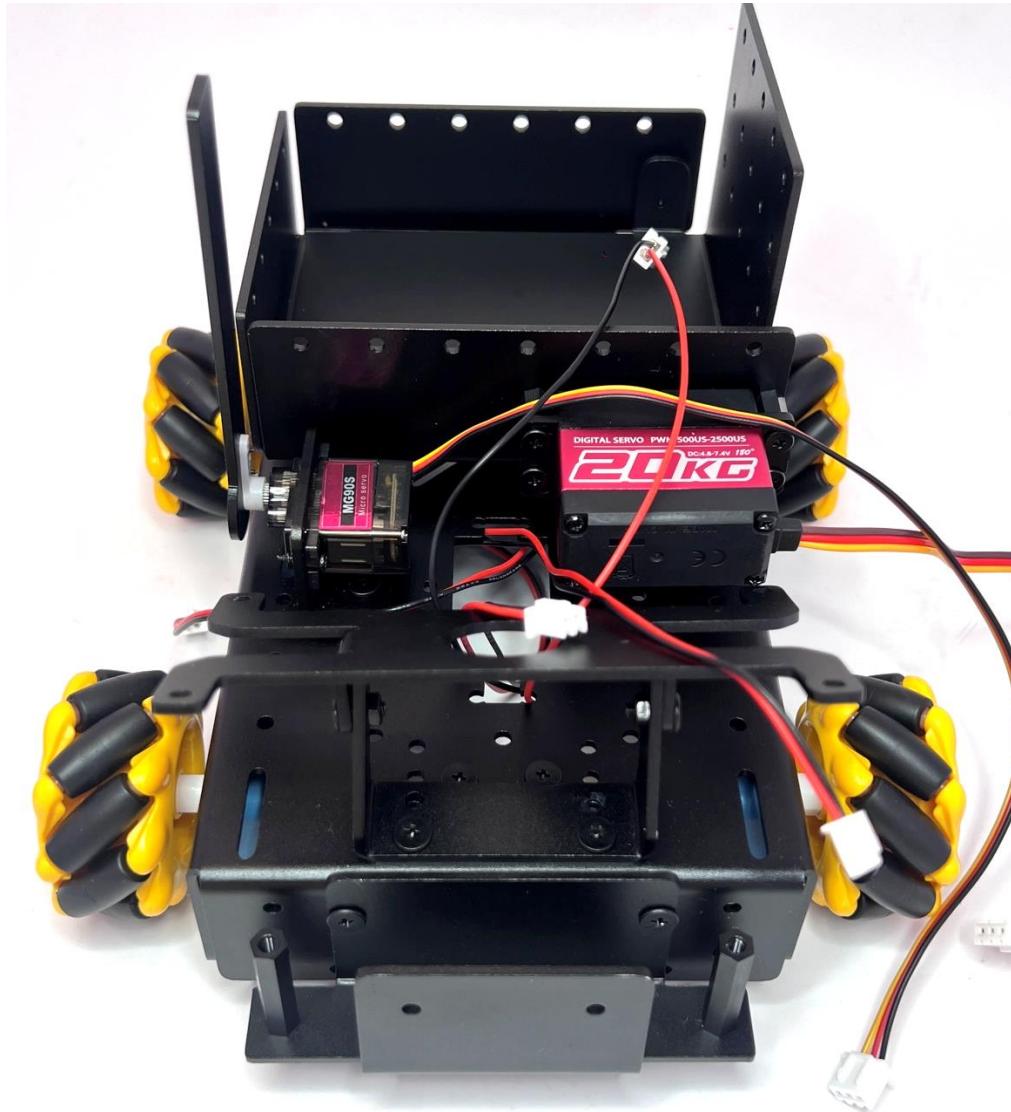
Step 17

Wheels
Installation

Parts



Mecanum
Wheel
Screws ×4





Components



Module

Parts:



CocoPi Module×1



Tracing module×1



Zipties×2



Tracing module
cable×1



Lipo
Battery × 1



Screwdriver×1



Screws
M3*6mm×24



M3mm Nuts



Standoffs
M3*20mm×1



Module Assembly

Step 18

Tracing Module
Bracket Installation

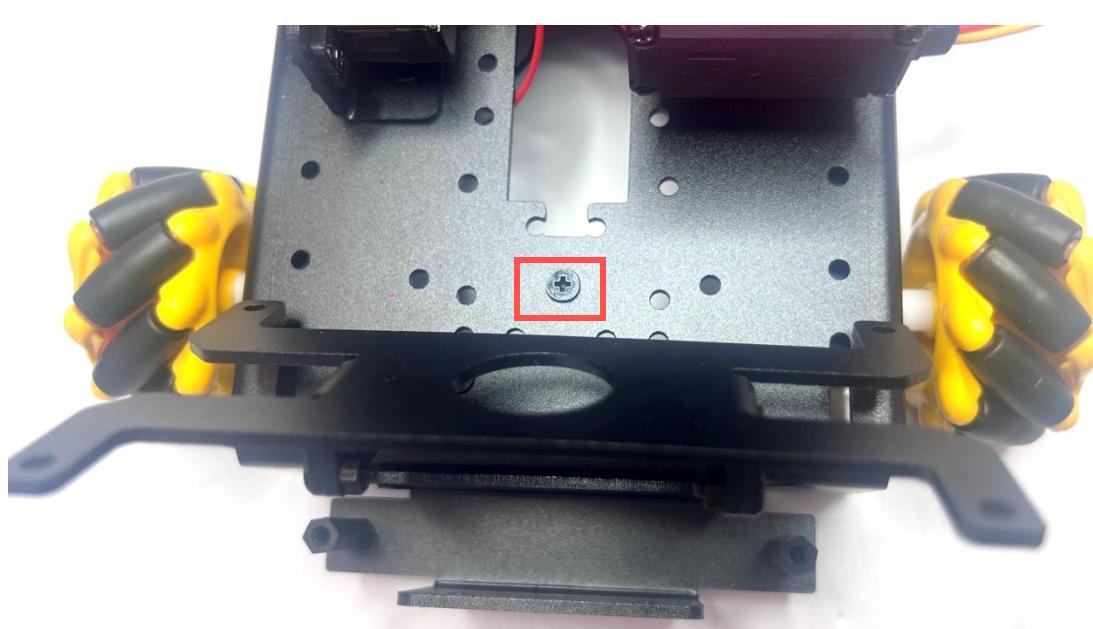
Parts



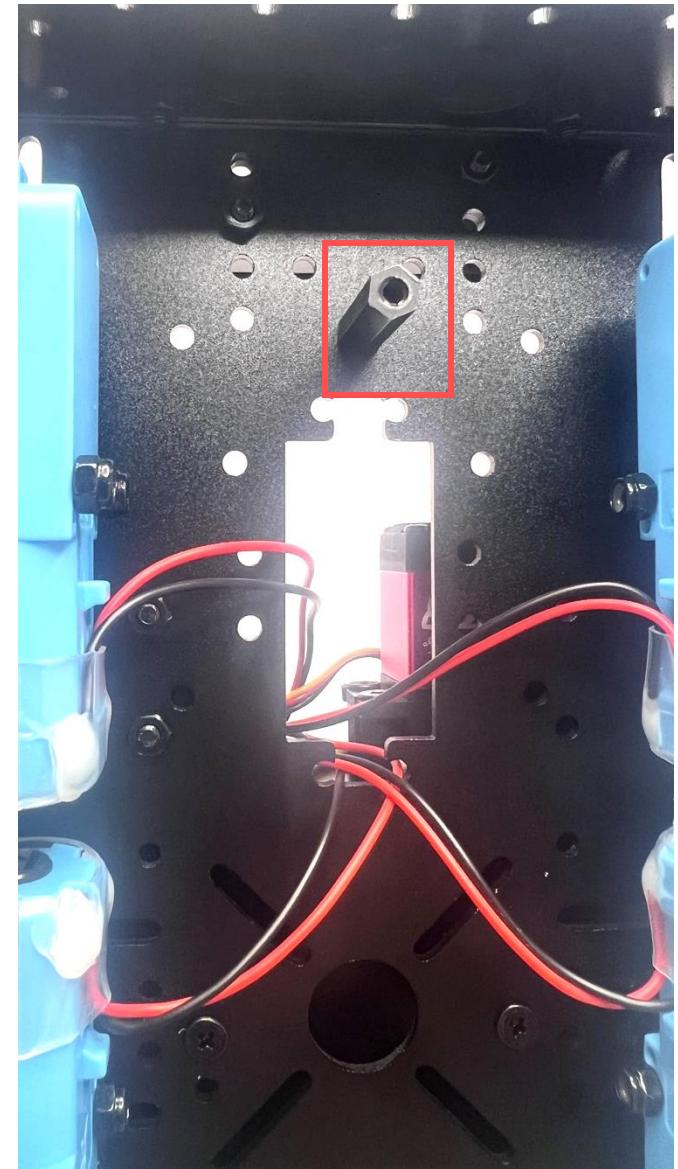
Standoff
 $M3 \times 20\text{mm} \times 1$



Screw
 $M3 \times 6\text{mm} \times 1$



In the red circle shown in the picture, a screw is used to fix the standoff under the car.



Module Assembly

Step 19 Tracing Module Installation

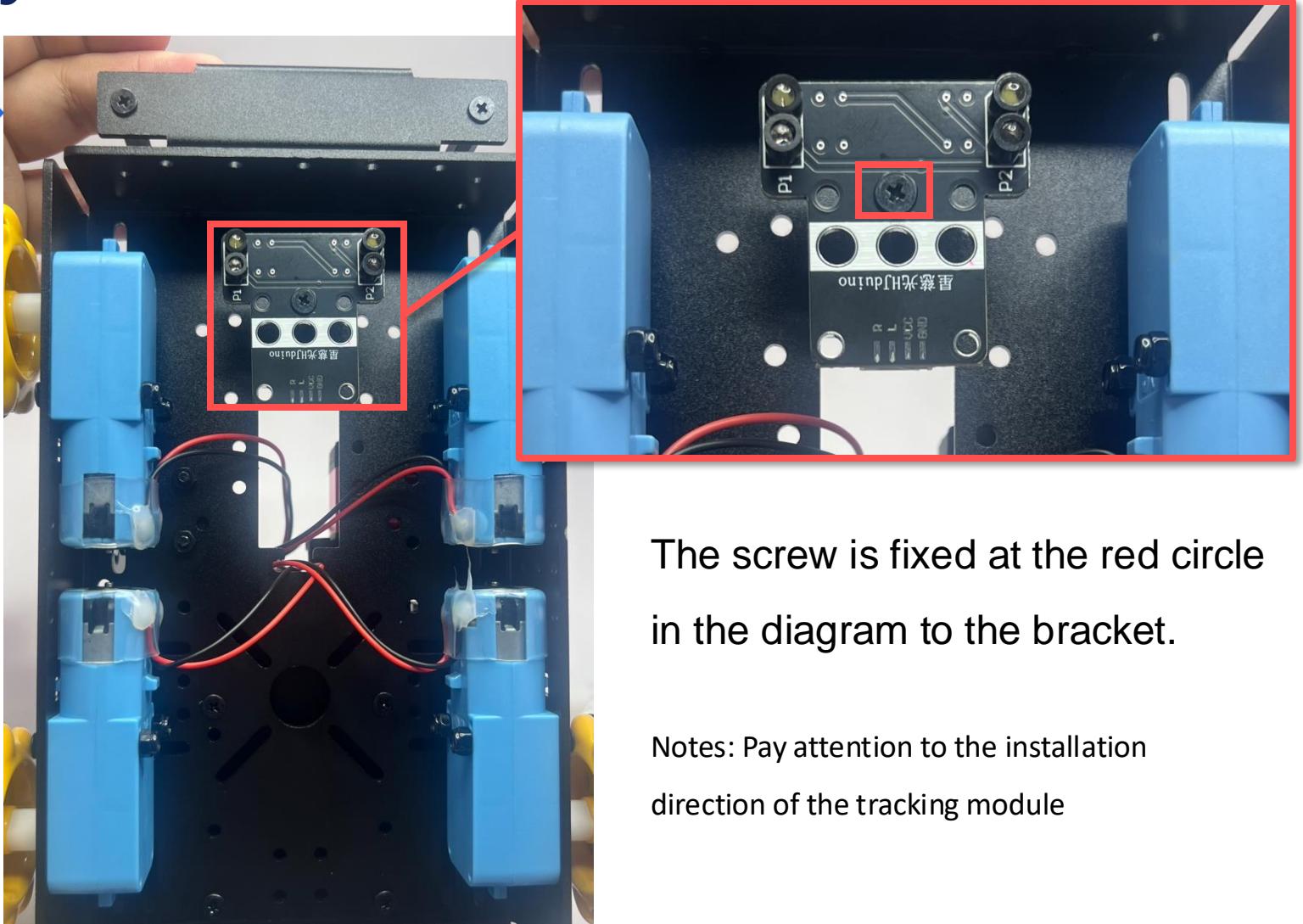
Parts



Tracing Module×1



Screws
M3*6mm×2



The screw is fixed at the red circle in the diagram to the bracket.

Notes: Pay attention to the installation direction of the tracking module

Module Assembly

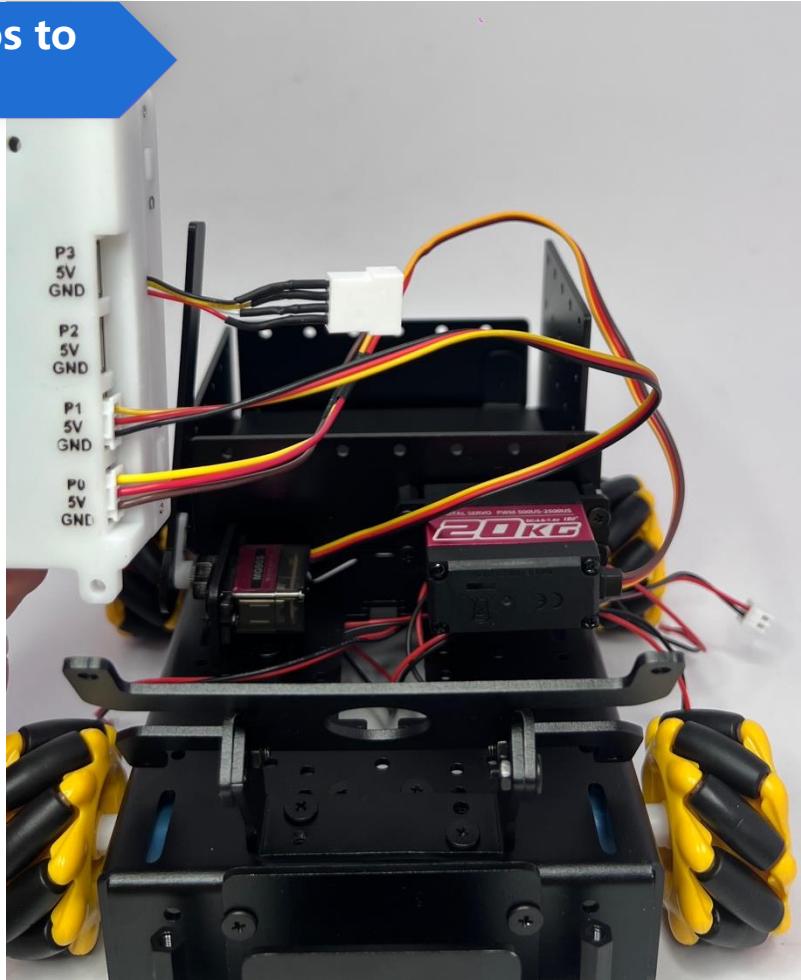
Step 20

Connecting Servos to
Module

Parts



CocoPi Module ×1



Arm
MG90S Servo



P1



Flipper
XINHUI_20kg High
Torque Servo



P0

Module Assembly

Step 21

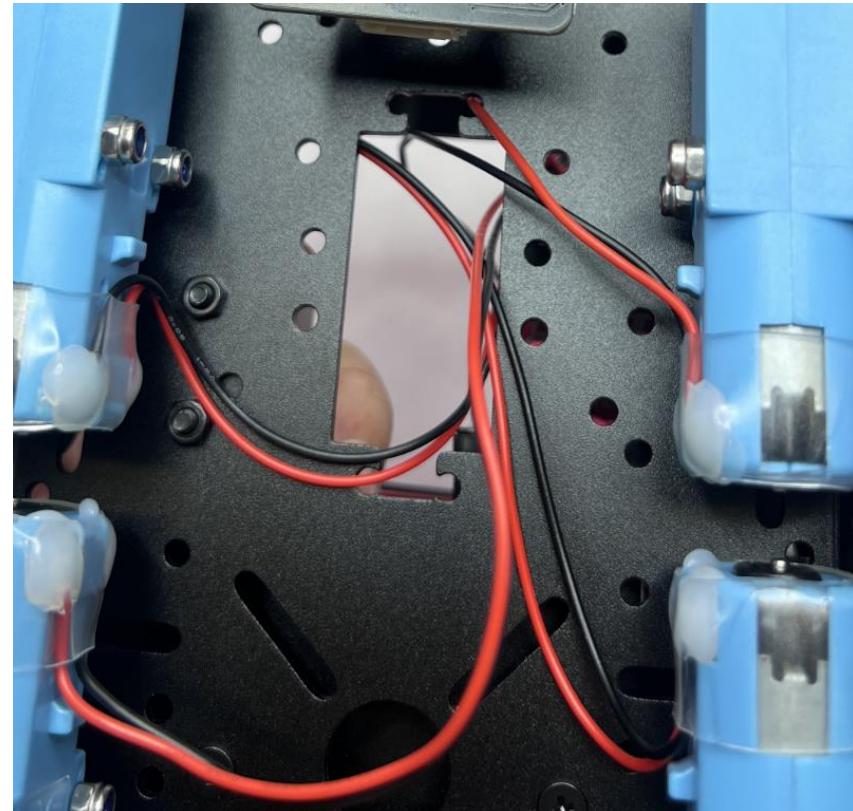
Organize the motor
wiring

Follow the icon position to thread the
motor cable through the hole.

Parts



CocoPi Module × 1



Module Assembly

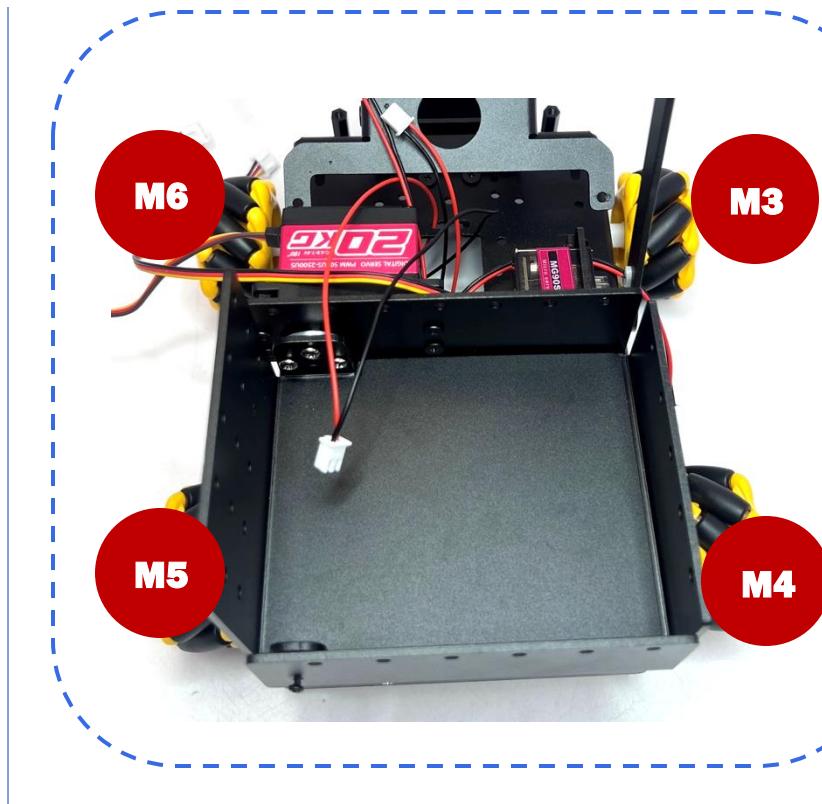
Step 22

Connecting Motors

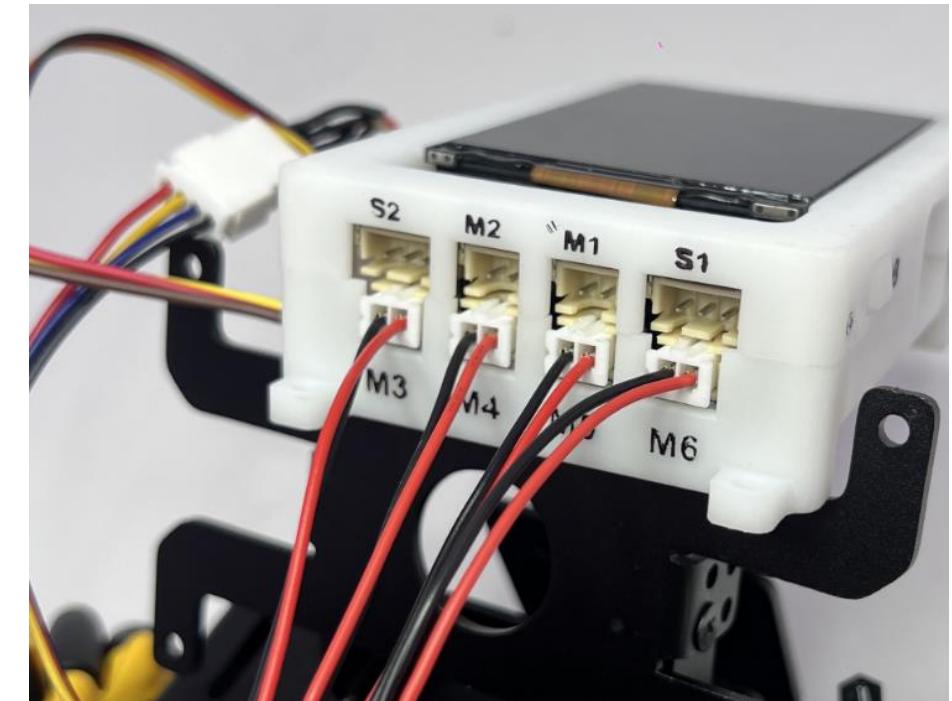
Parts



CocoPi Module ×1



Connect the four motors according to the icon interface number.



Module Assembly

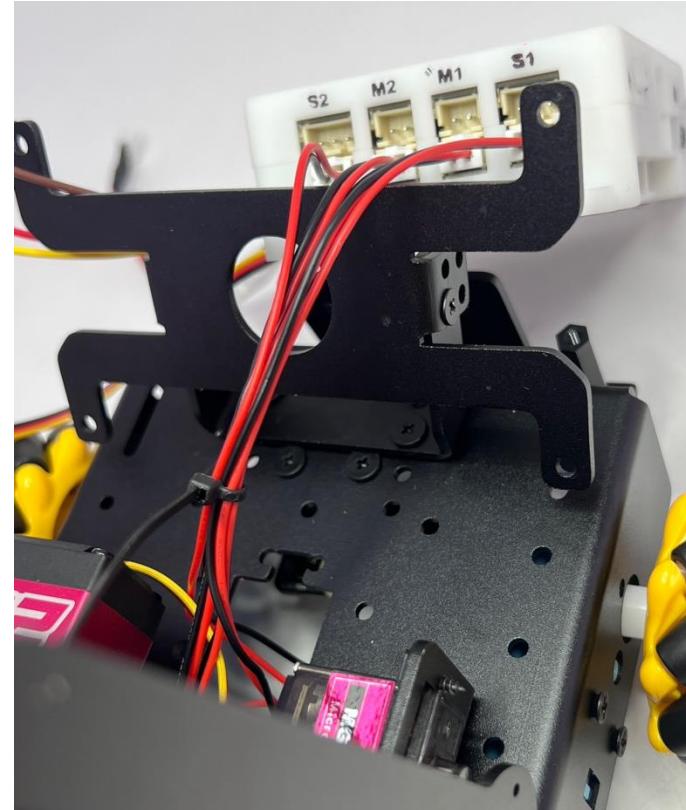
Step 23

Wire Management

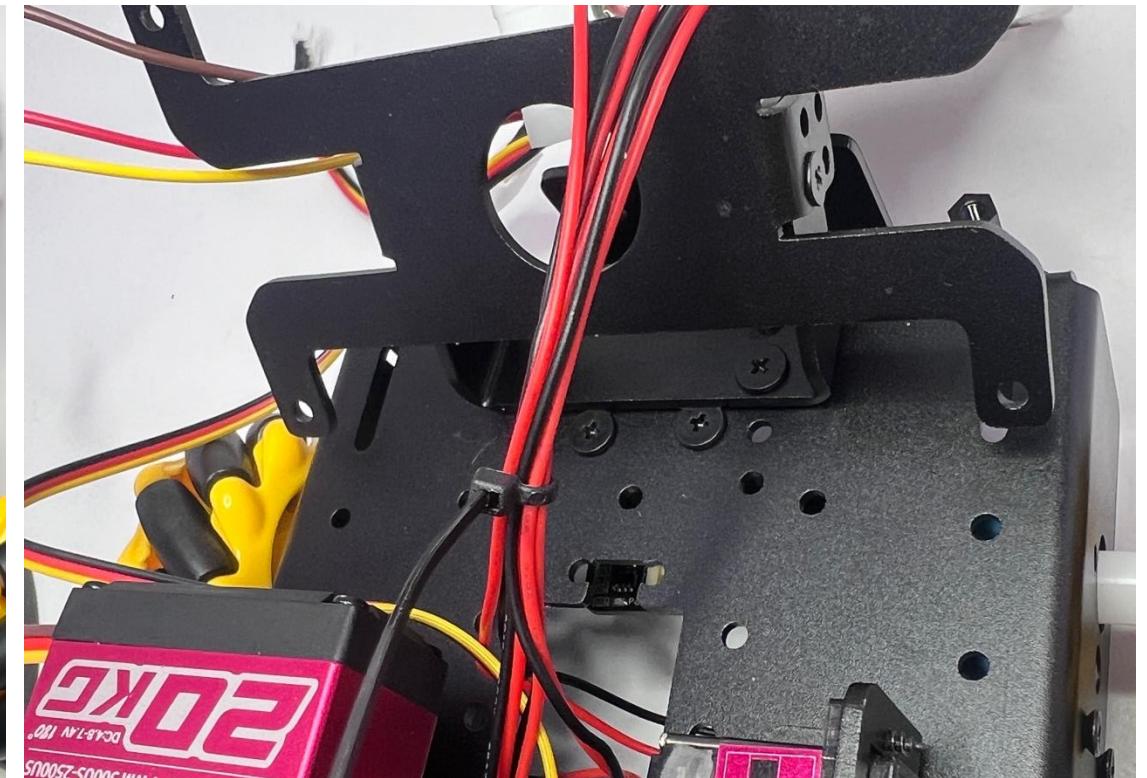
Parts



Zipties x2



Use zipties to tie excessively long lines together.



Module Assembly

Step 24

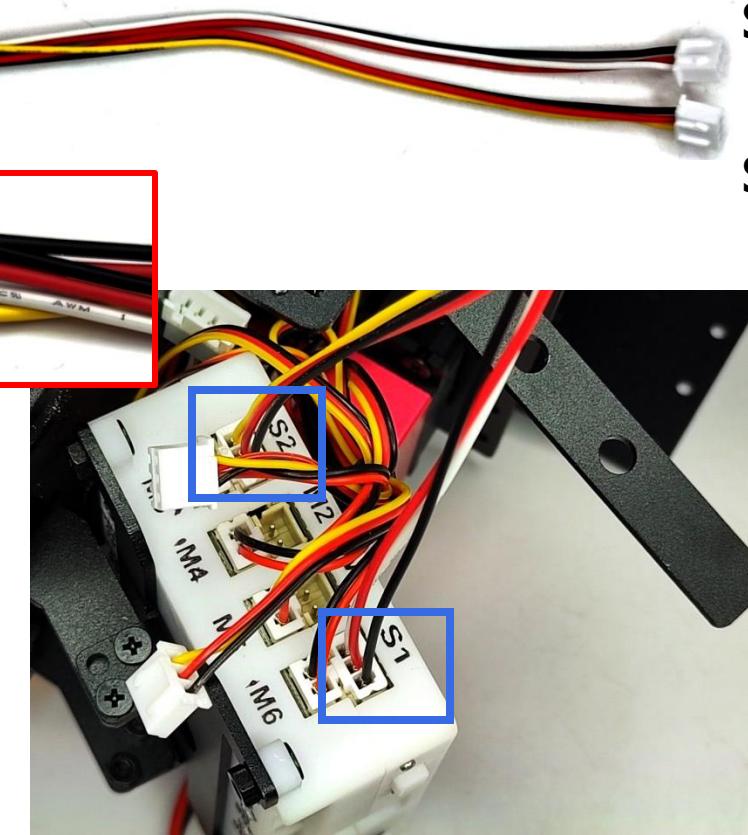
Connecting Tracing Module to CocoPi

Parts



Tracing Module
Cable×1

1



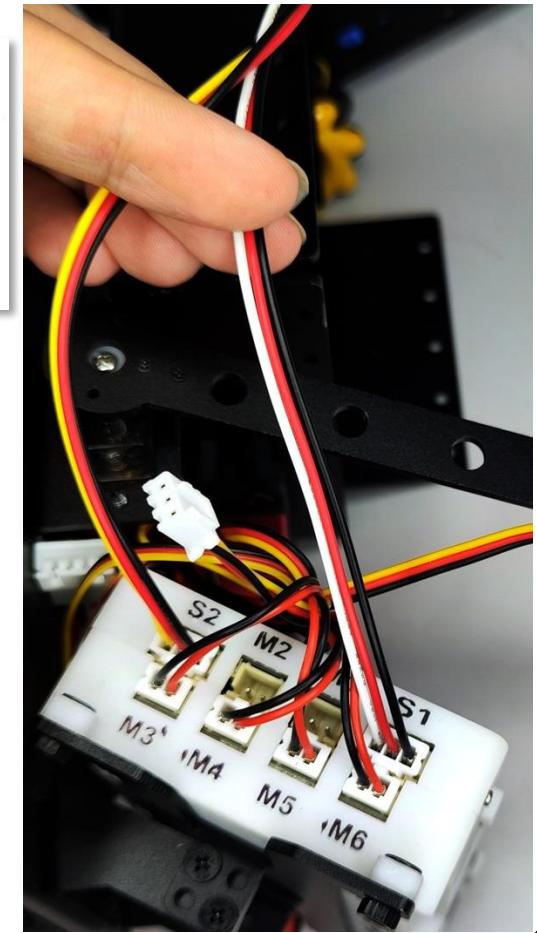
Connect as per picture.
Among them, the white line is connected
to port S1, and the yellow wire is
connected to port S2



Notes:

(1) Expand the cable of
the tracking module as
shown in the figure,
and then connect to the
S1 and S2 interfaces of
CocoPi;

(There is only one
direction that can be
accessed.)



Module Assembly

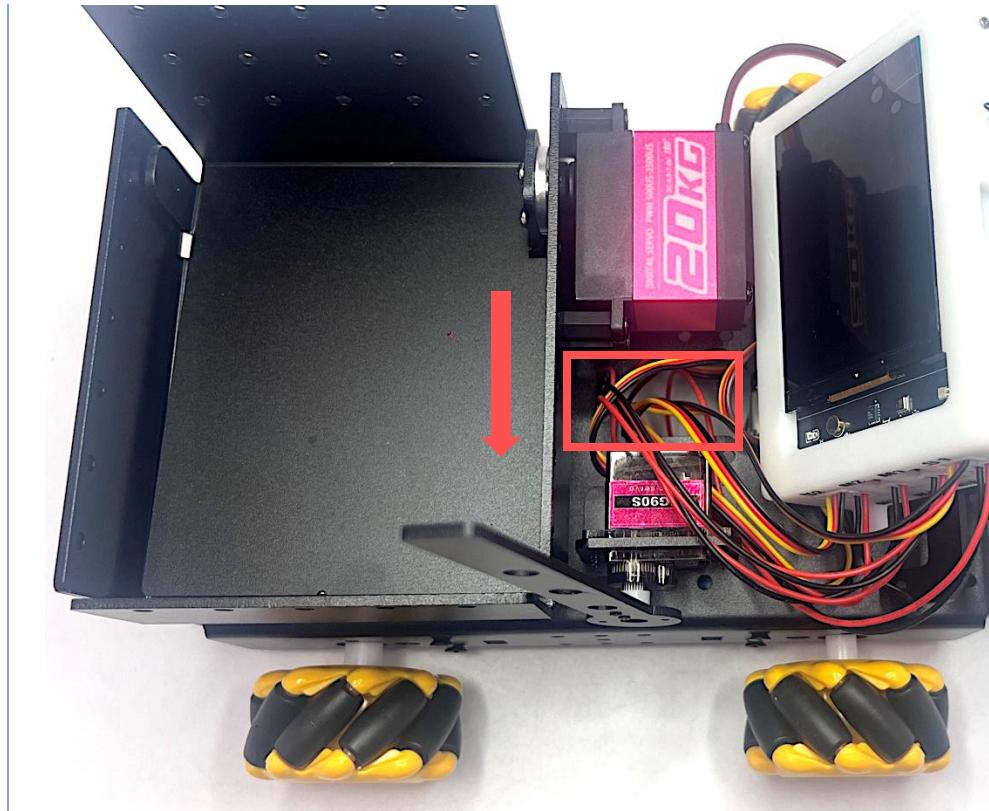
Step 25

Connecting Tracing Module to CocoPi

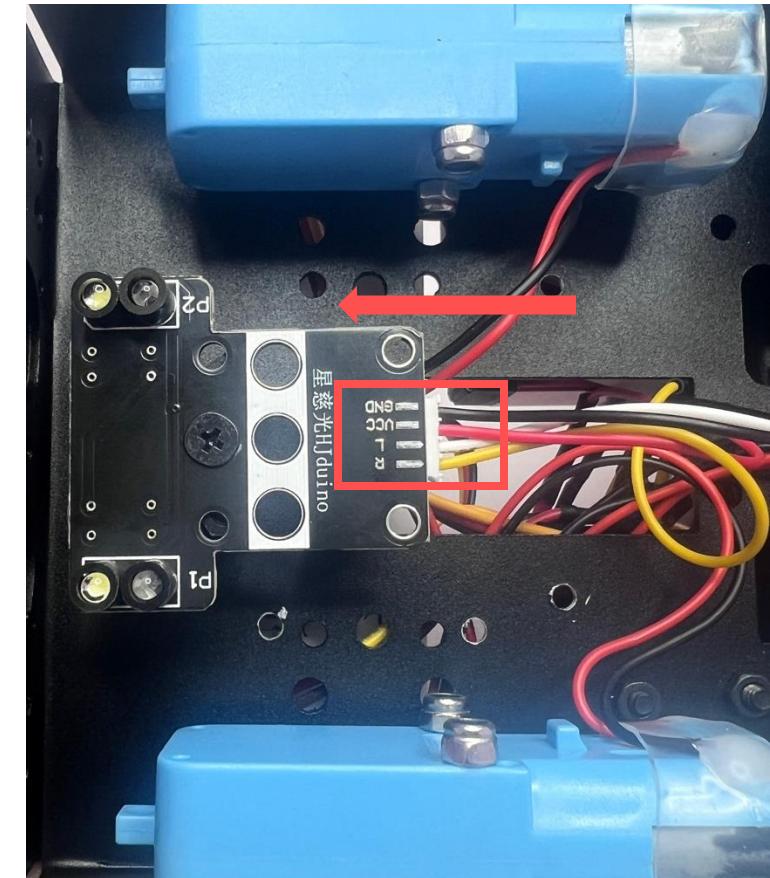
Parts



Tracing Module
Cable × 1



Insert the other end interface through the body and connect to the tracking module interface.



Module Assembly

Step 26

Mounting CocoPi

Parts



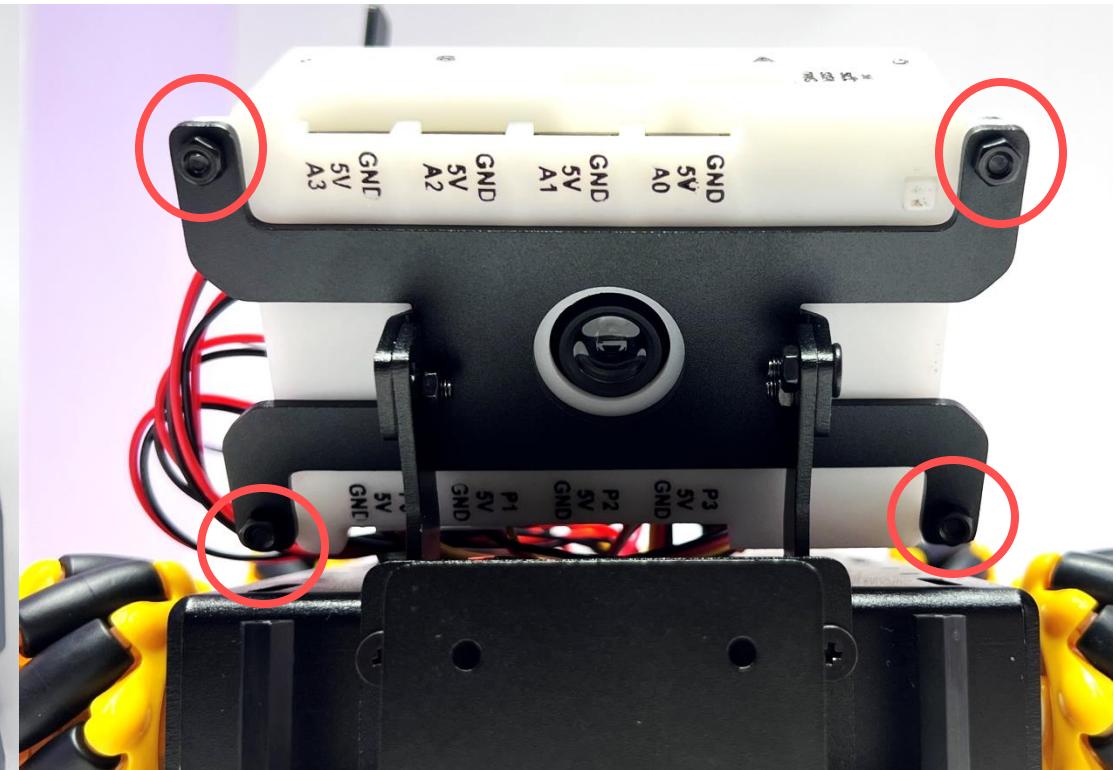
Screws
M3*8mm ×4



M3mm Nuts ×4



Fix the CocoPi with screws and nuts at the four corners of the bracket.



Module Assembly

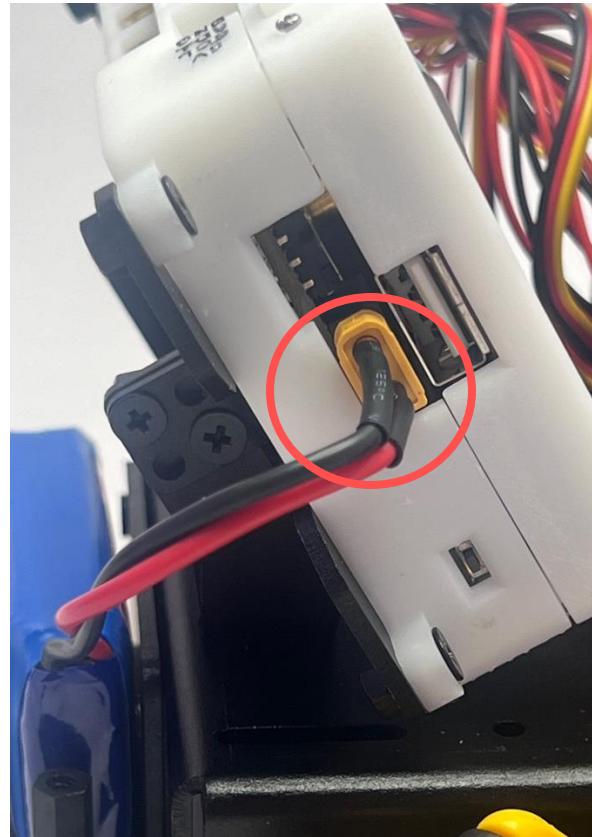
Step 27

Battery
Installation

Parts



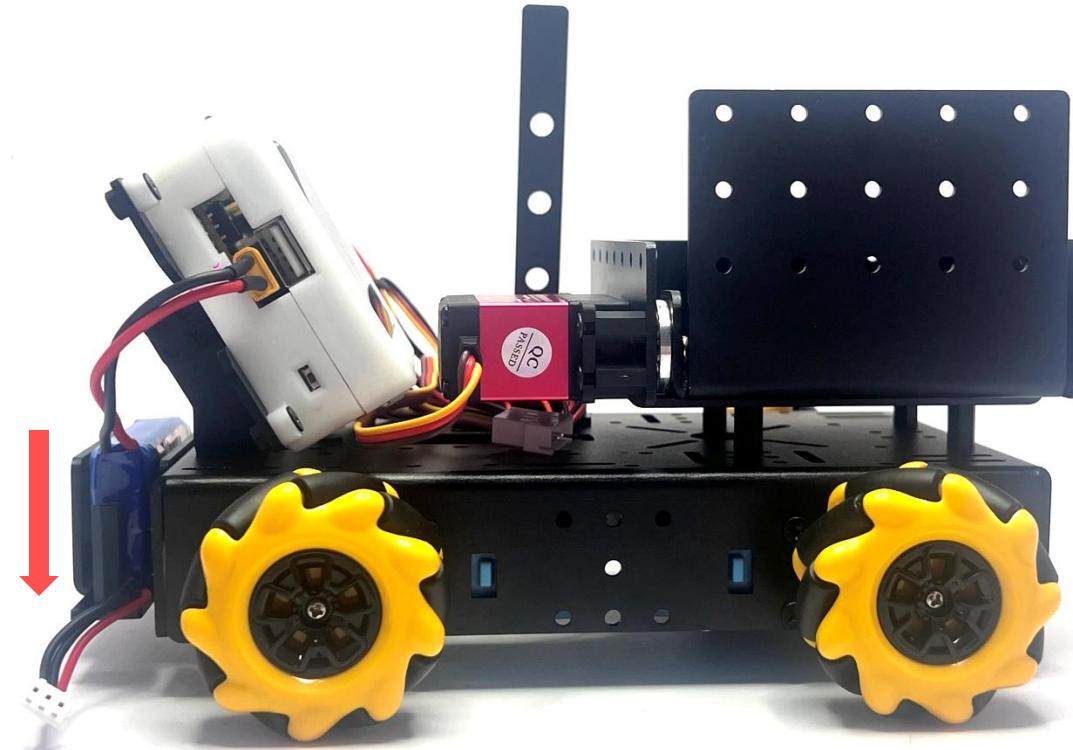
Lipo
Battery × 1



Notes:

Only one direction can be connected
to the interface.

Connect the yellow XT30 connector of the battery
in the red circle, and place the battery on the
battery holder.





Finish!

