Adeept

ADEEPT AWR-A ROBOT KIT FOR ARDUINO

www.adeept.com
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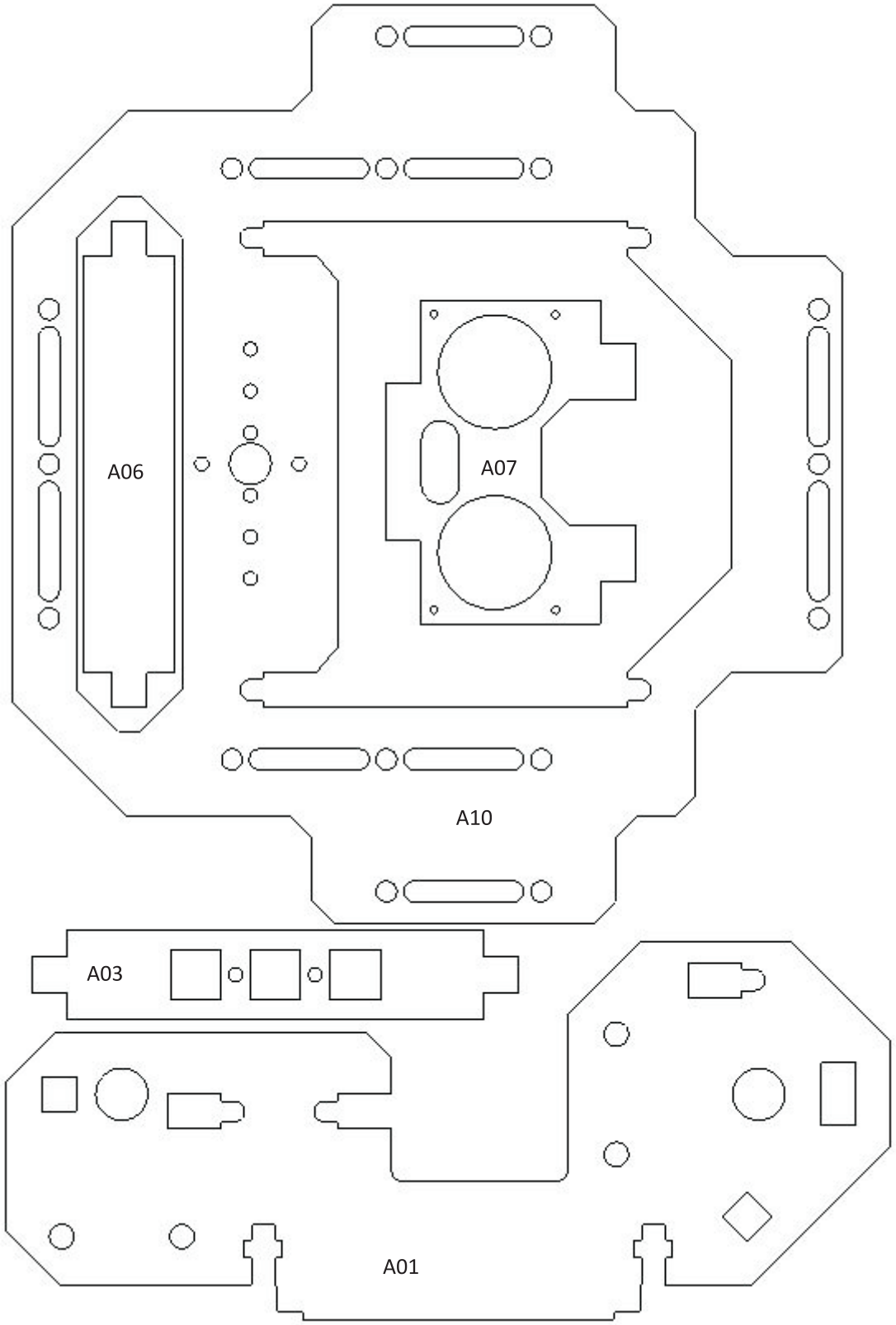
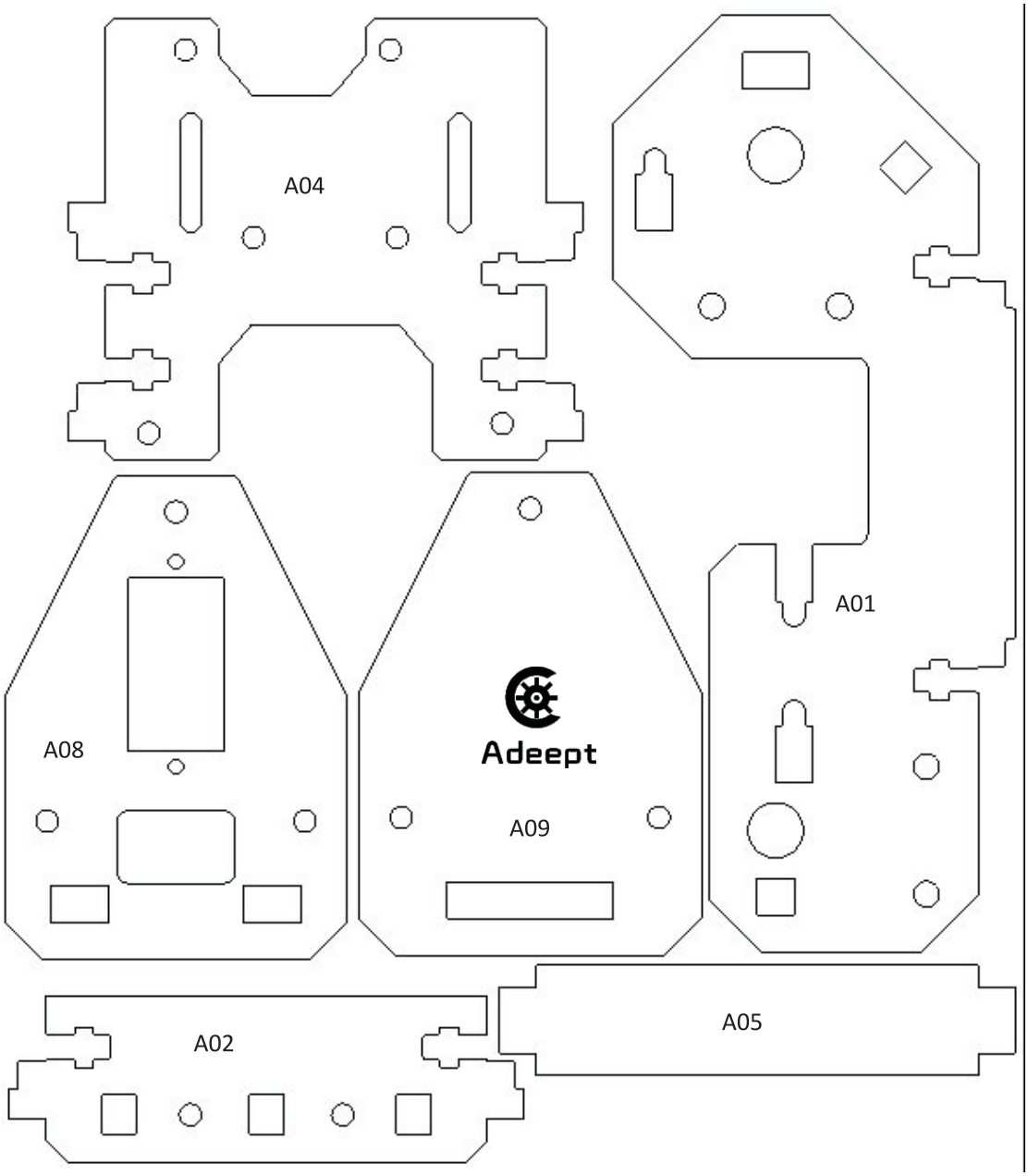
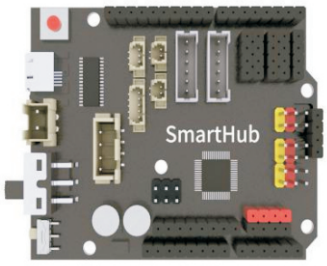
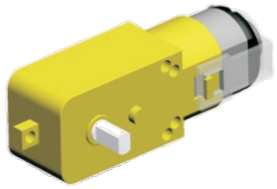
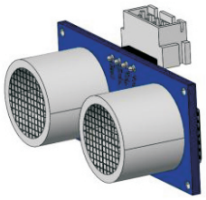
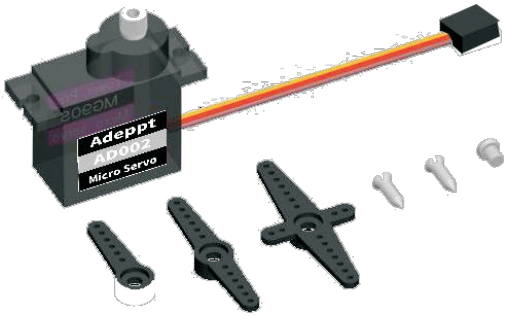

A06
A07
A10
A03
A01


A04
A01
A08
Adeept
A09
A02
A05

M2 Black Nut X6 www.adeept.com	M2.5 Silver Nut X4 www.adeept.com	M3 Black Nut X20 www.adeept.com	M1.4*6 Self-tapping Silver Screw X4 www.adeept.com	M2*10 Black Screw X6 www.adeept.com
M2.5*8 Silver Screw X4 www.adeept.com	M3*10 Countersunk Head Screw X2 www.adeept.com	M3*12 Black Screw X16 www.adeept.com	M3*30 Silver Screw X8 www.adeept.com	M2.5*6+6 Copper Standoff X4 www.adeept.com
M3*25 Nylon Standoff X3 www.adeept.com				

Adeept Smart Hub x 1 	ESP8266 x 1
18650 Battery Holder Set x 1 	WS2812 RGB LED x 1

DC motor x 4 	Ultrasonic module x 1 
Adeept Servo x 1 	wheel x4
3pin wire x 1	USB Cable x 1
4pin wire x 1	
Tracking Module x 1	5pin wire x 1

Tools

Cross Screwdriver X1

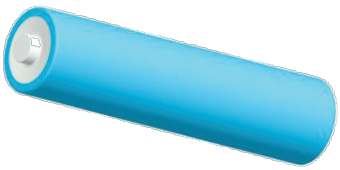
Cross Socket Wrench X1

Large Cross-head Screwdriver X1

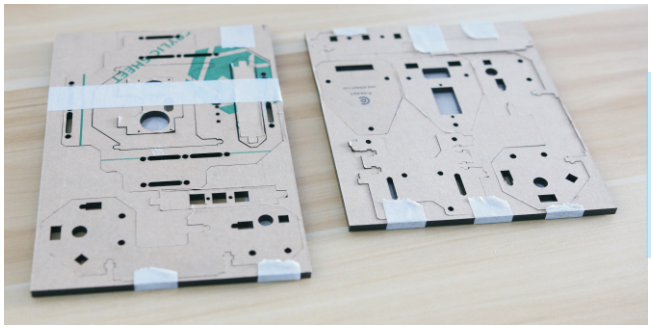
Ribbon X1

Self-prepared Parts

18650 lithium battery X2



Car Assembly.

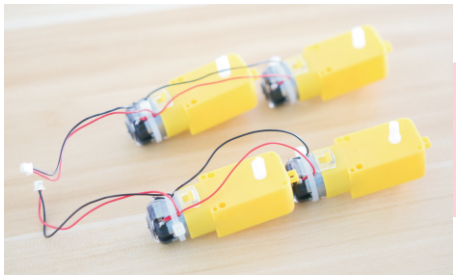


Take out the car acrylic plates, peel off the films.

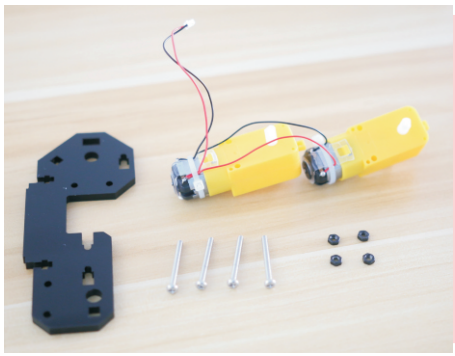
Take out the plates we will use.

Peel off the protective film on the two sides of the plates.

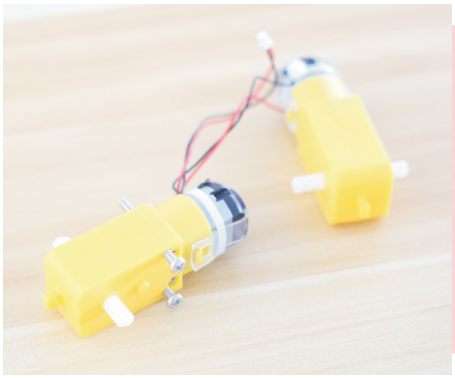
Motor Part assembly.



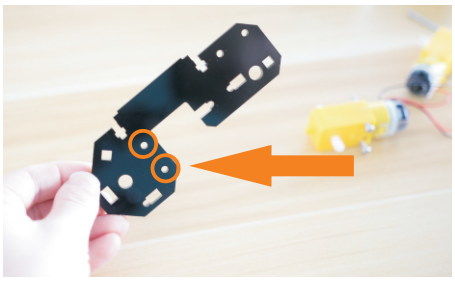
Take out two sets of motors (four motors one set), pay attention not to break the wire connected to the motor, handle gently.

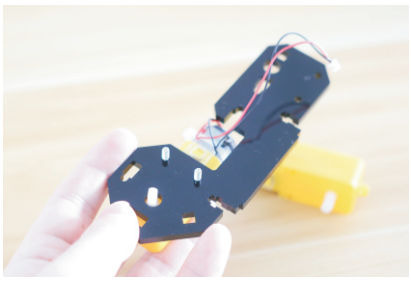


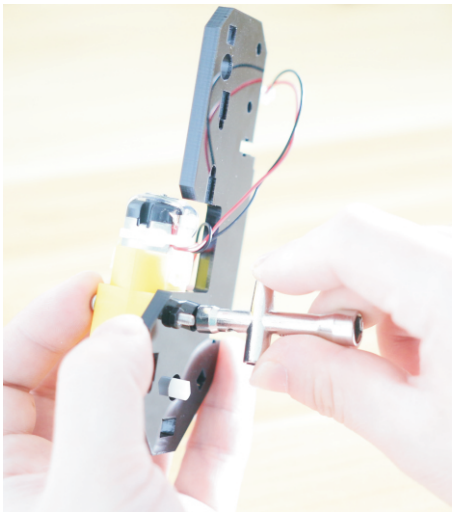
First we take out the materials we need according to the picture on the left:
1x set of motors
1x A01 acrylic plate
4x silver M3*30 screw
4x M3 nut

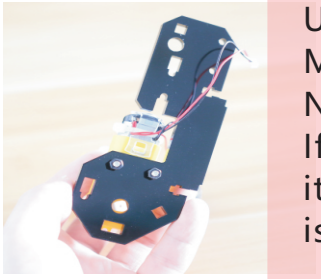


Pass two silver M3*30 screws from the protruding surface through the fixing hole of the motor.Note: First install the motor welded with four wires.

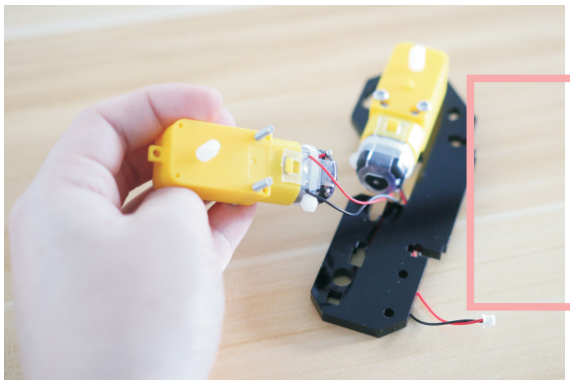




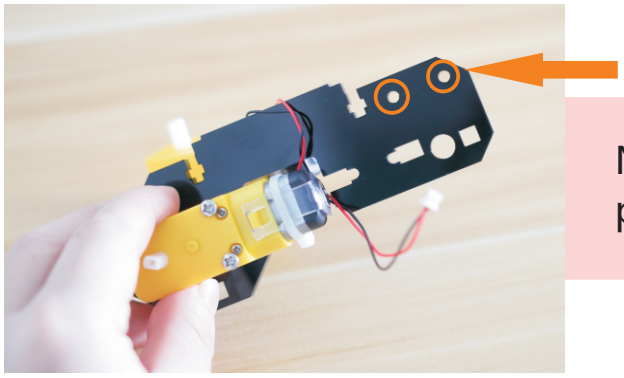




Use the cross wrench to screw the M3 nut onto the M3*30 screw.
Note that the screw can't be too tight. If the M3 nut is tightened too much, it will not be rotated after the motor is energized.

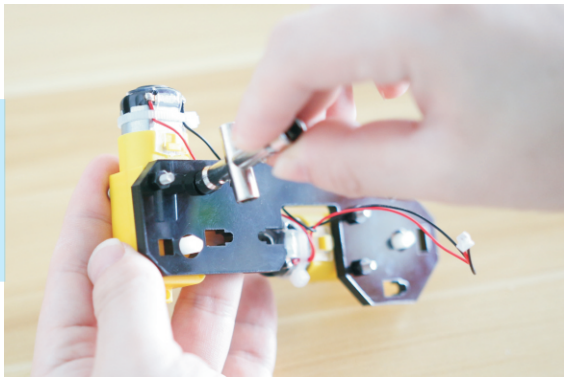


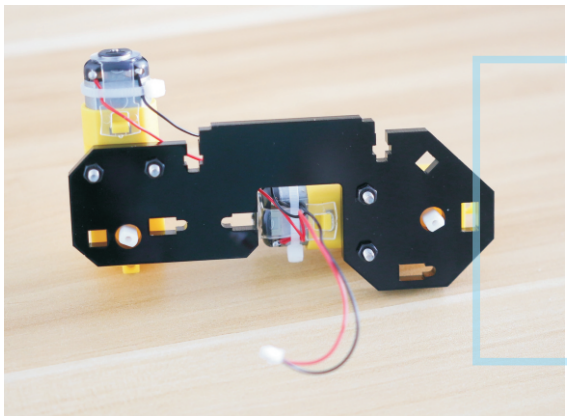
Next pass two M3*30 screws through the other motor.



Note: The M3*30 screw cap is on the protruding face.

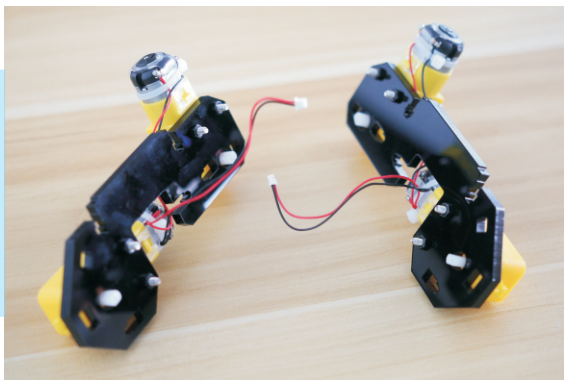
Use the cross wrench to fix two M3 nuts to two M3*30 screws.Note that the screw cannot be tightened too much.



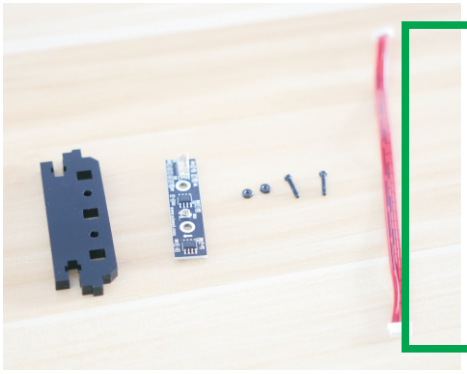


On the left is an installation drawings of one assembled set of motor.

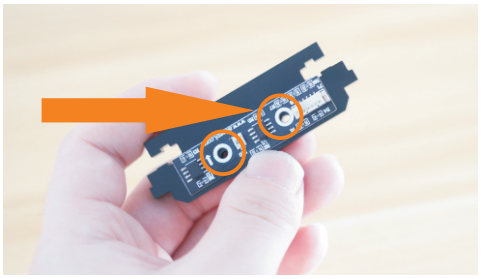
Assemble another part according to the above method. Note that the motor needs to be installed on the other side of the acrylic plate. Two sets of motors are symmetrically mounted.



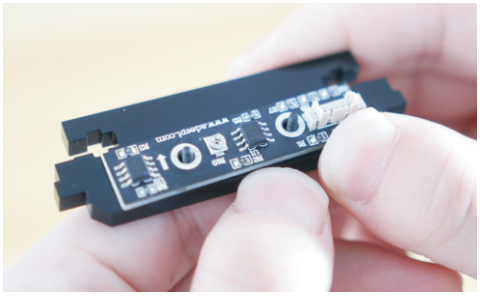
Tracking Module assembly.



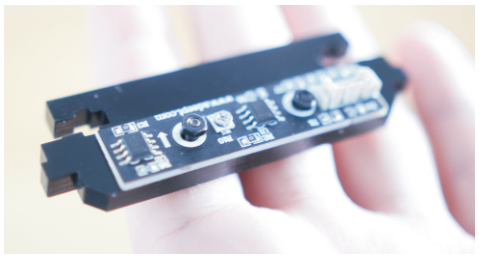
Materials needed to assemble
the tracking module:
1x A02 acrylic plate
1x 3-CH Tracking Module
2x black M2*10 screws
2x black M2 nut
1x 5Pin wire



Attach the 3-CH Tracking Module to A02 as shown in the figure. Note that the direction of the 5Pin wire interface is to the right. If it is to the left, the car tracking function will not work properly.



Pass two black M2*10 screws through the two holes as shown. ★

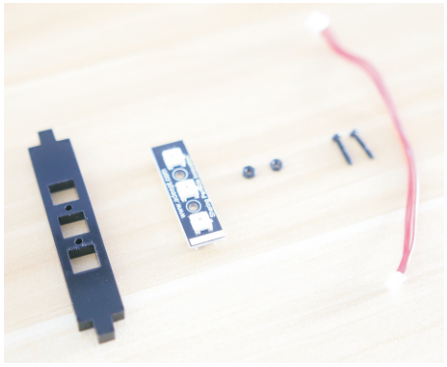


Screw two black M2 nuts onto the M2 screw. ★

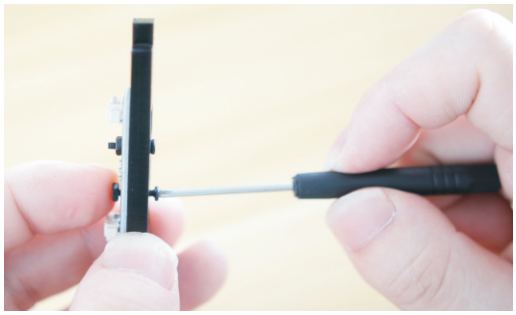
Use the small screwdriver to tighten the screws. ★

Connect the 5Pin wire to the
3-CH Tracking Module.

Ws2812 RGB LED Assembly.

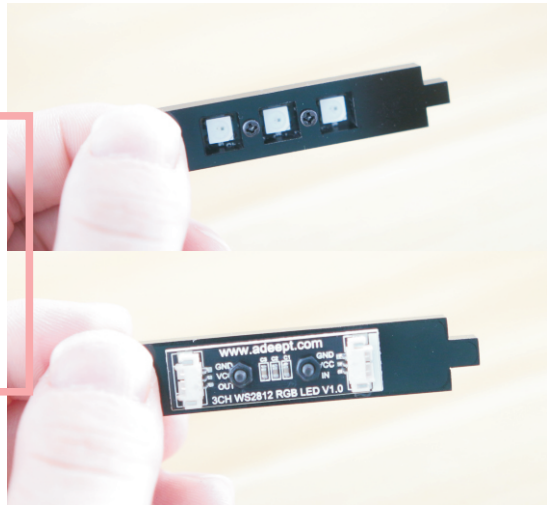


Materials needed to assemble the WS2812 RGB LED:
1x A03 acrylic plate
1x 3CH WS2812 RGB LED
2x black M2*10 screws
2x black M2 nut
1x 3Pin wire

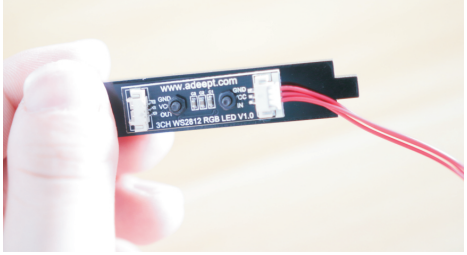


Attach the WS2812 to the acrylic plate. Pass two black M2*10 screws through the acrylic plate and the WS2812 module, and screw two black M2 nuts into the other end. Use the small screwdriver to tighten the screws.

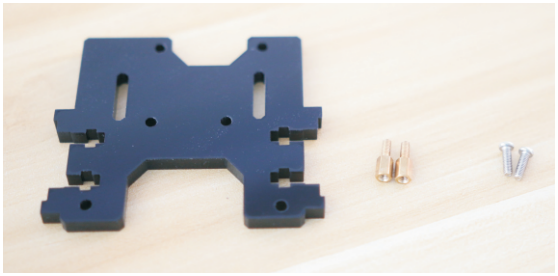
Front and back after screwing.



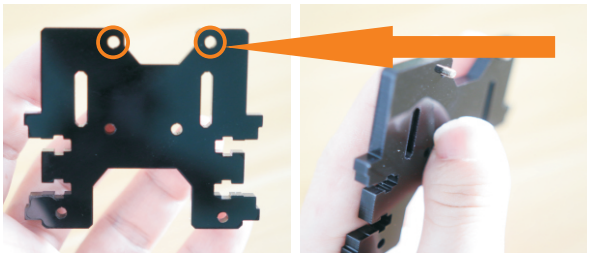
Connect the 3Pin wire to the "IN" connector. Note that it is the one with white lines on the 3CH Ws2812 RGB LED. If connected wrong, WS2812 will not work properly.



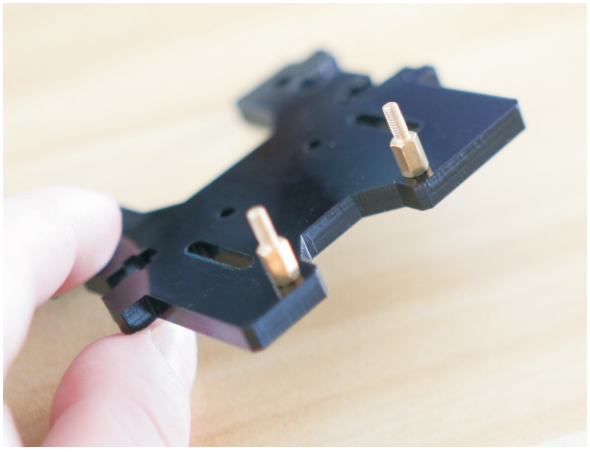
Car base Assembly.



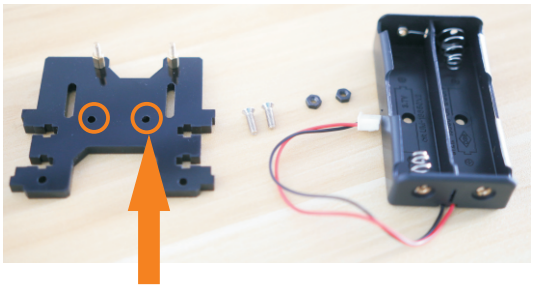
Materials needed to assemble the car base A04:
1x A04 acrylic plate
2x silver M2.5*8 screws
2x M2.5*6+6 copper standoff



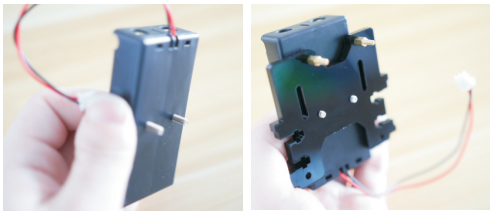
Pass two silver M2.5*8 screws through the two holes on the acrylic plate.



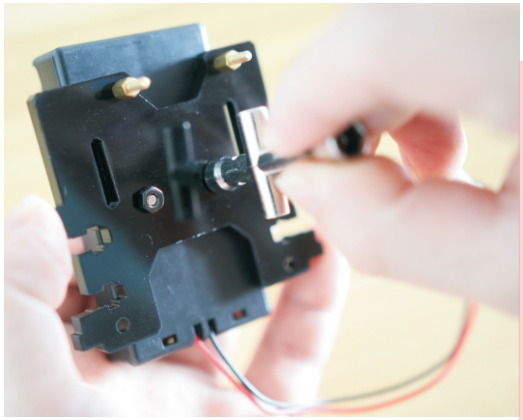
Screw the two M2.5*6+6 copper standoffs onto the M2.5*8 screws as shown in the figure. Pay attention to the position of the copper standoffs. If the copper standoffs are mounted on the other side of the acrylic plate, the subsequent installation of Adeept Smart Hub will fail.



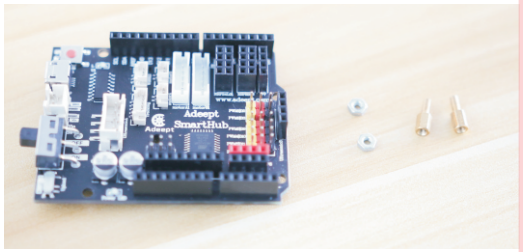
Materials needed to assemble the battery holder:
1x A04 acrylic plate
1x 16850 battery holder
2x silver flat head M3*10 screws
2x black M3 nut



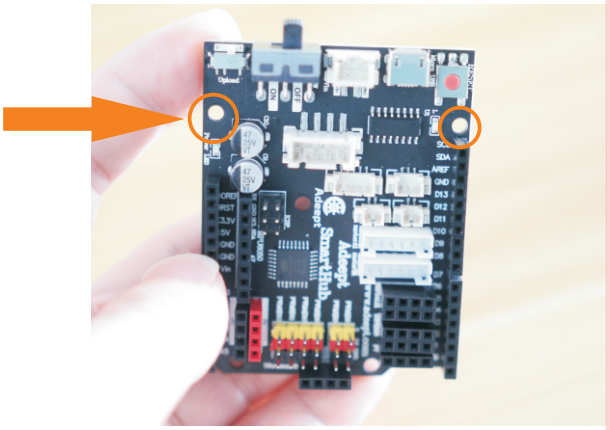
Fix the battery holder on the A04 acrylic plate as shown in the figure. Pay attention to the wiring position of the battery holder. If the battery holder is installed reversely, the wiring will not be able to connect to the power connector of Adeept Smart Hub.



Use the cross wrench to fix the black M3 nut to the silver flat head screw M3 * 10. Note that the screws here should be tightened to prevent them loosening and the battery holder to fall.



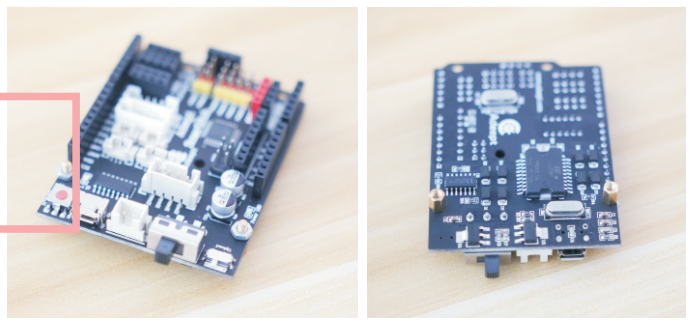
Materials needed to assemble the Adeept Smart Hub:
1x Adeept Smart Hub
2x silver M2.5 nut
2x M2.5*6+6 copper standoff

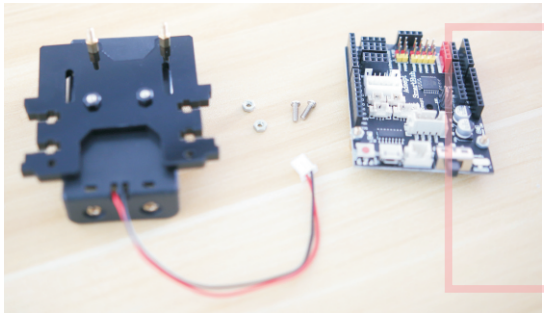


Fix the copper standoff in these two positioning holes.

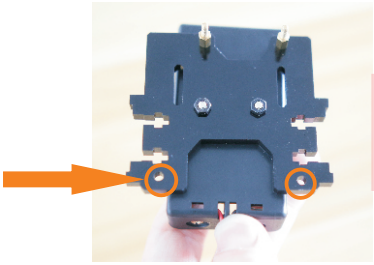
Pass the M2.6*6+6 copper standoff through the positioning hole as shown in the figure, fix the other end with silver M2.5 nut.

On the right is the effect after assembling.

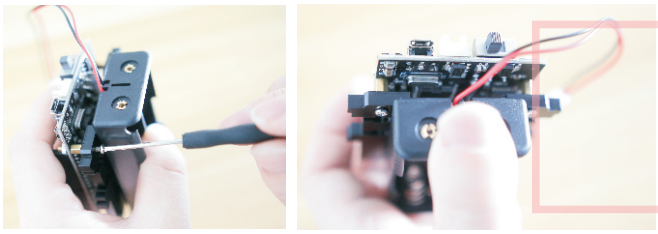




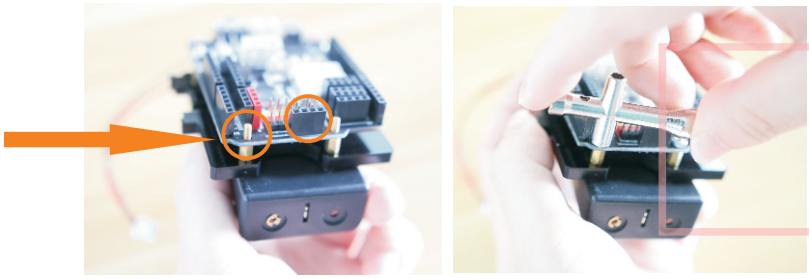
Materials needed to assemble the base:
1x A04 acrylic plate
2x silver M2.5 nut
2x silver M2.5*8 screws
1x Adeept Smart Hub



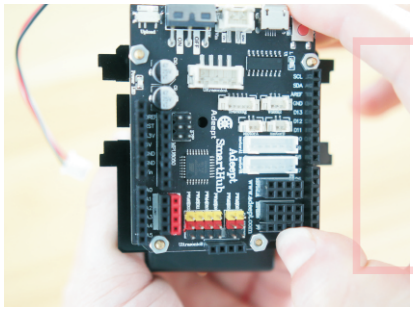
Pass the M2.5*8 screw through the A04 acrylic plate.



Use the small screws to screw two M2.5 screws to two M2.5*6+6 copper standoffs.

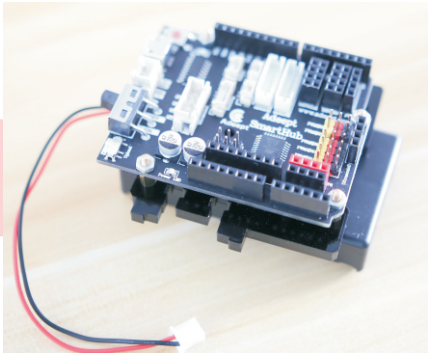


Use the cross wrench to fix two silver M2.5 nuts to the M2.5*6+6 copper standoffs as shown.

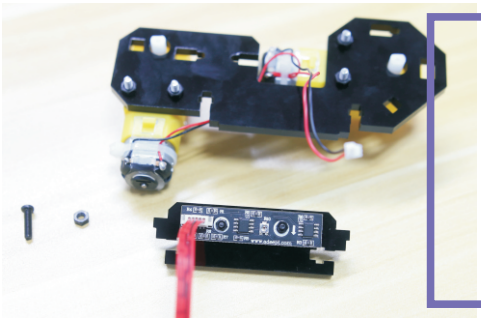


Note: If the silver M2.5 nut is not easily screwed onto the M2.5*6+6 copper standoff, push the black 4Pin female header of the P7.

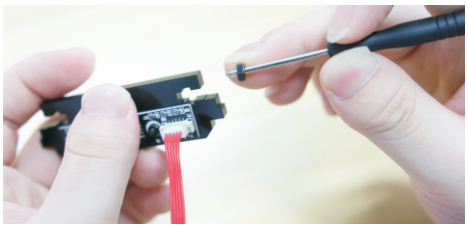
The car base after assembling is as shown.

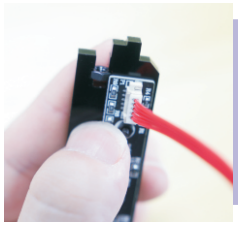


Motor And Tracking Module Assembly.

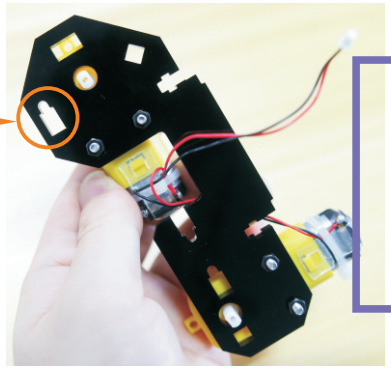


Materials needed to assemble the motor and tracking module:
1x A01 acrylic plate
1x black M3*12 screw
1x black M3 nut
1x A02 acrylic plate

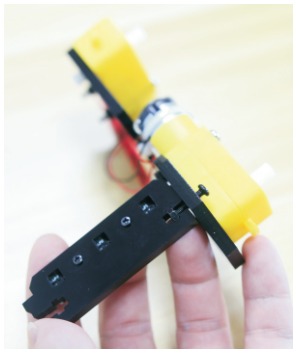


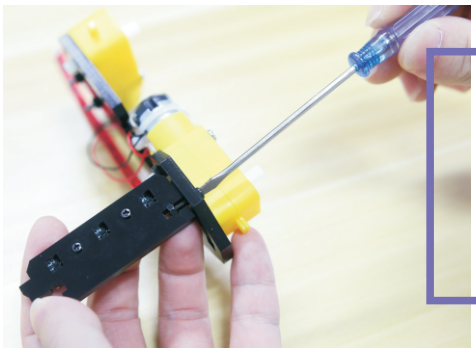


Use the small screwdriver to place the black M3 nut into the position as shown.



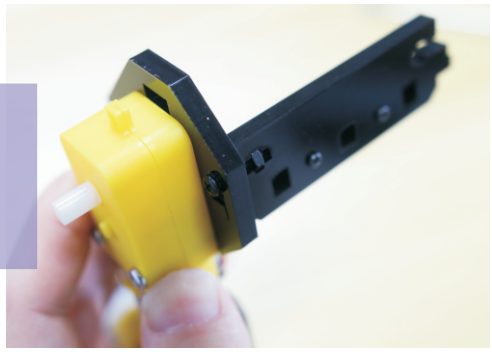
Place the A02 acrylic plate on the via of the A01 acrylic plate as shown.





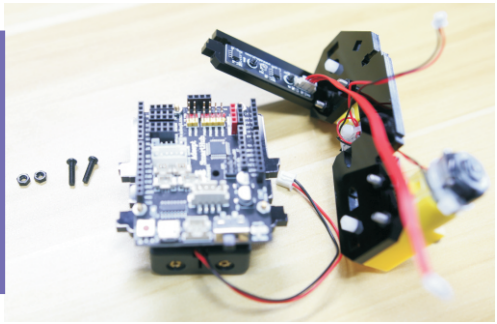
Pass the black M3*12 screw through the A01 acrylic plate and tighten the M3*12 screw with the large screwdriver.

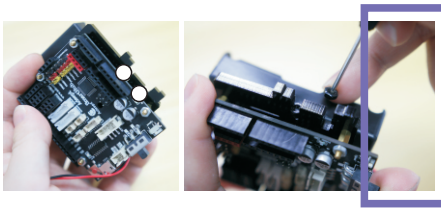
On the right is the real product after assembling.



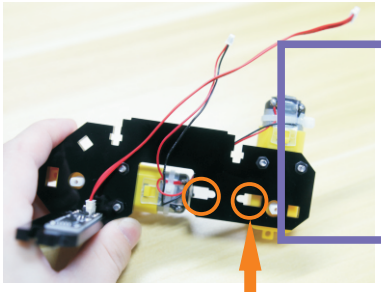
Fix The Base.

Materials needed to fix the base:
1x A01 and A02 acrylic plate
1x A04 acrylic plate
2x black M3*12 screw
2x black M3 nut

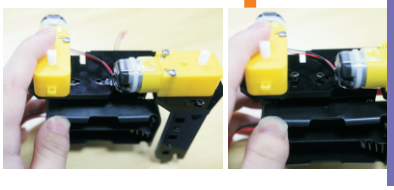




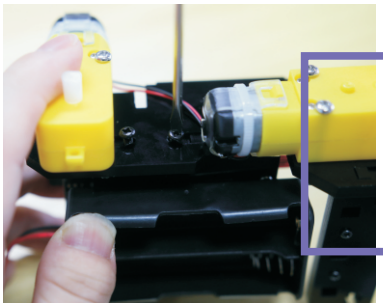
Use the small screwdriver to place the two black M3 nuts into the position as shown.Note: Be careful not to let the M3 nut slip off the A04 acrylic plate.



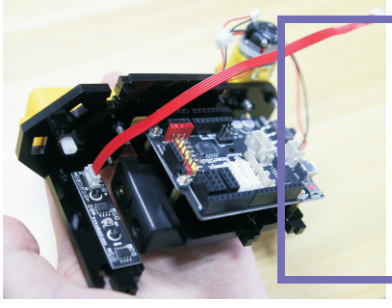
Fix A04 to this position on the A01 acrylic plate as shown.



Place two black M3*12 screws into the position as shown.

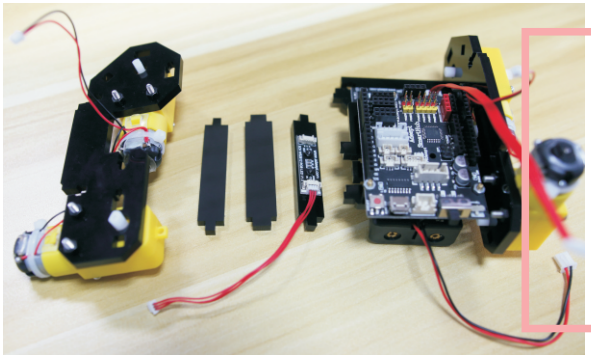


Use the large screwdriver to tighten the M3*12 screws.



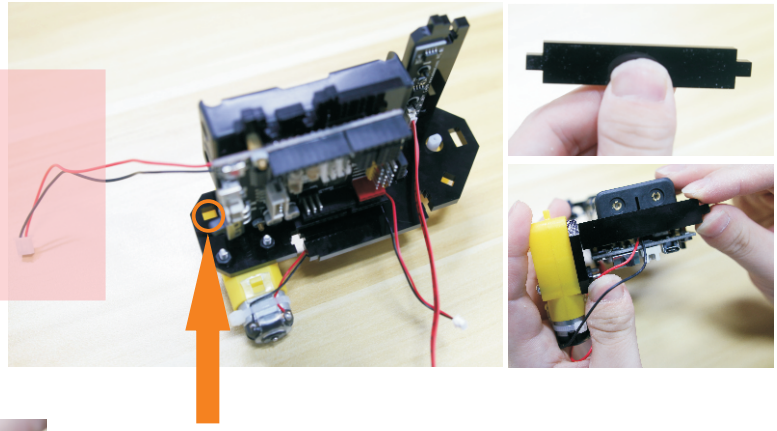
On the right is the effect after assembling.

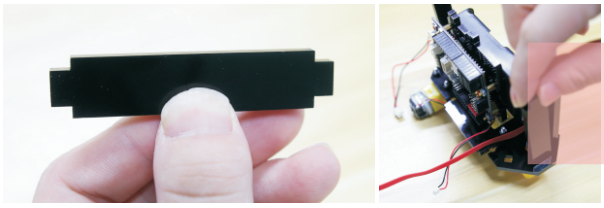
Car Base Assembly.



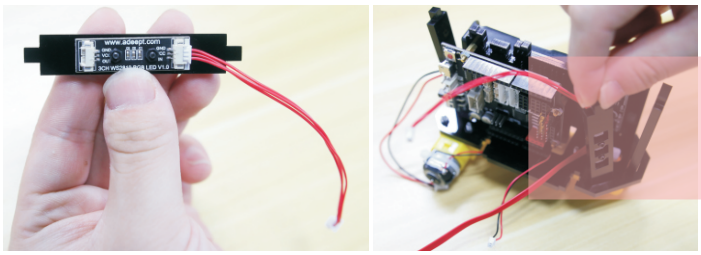
Materials needed to assemble the car base:
1x A01 and A04 base
1x A02 acrylic plate
1x A05 acrylic plate
1x A06 acrylic plate
1x A01 acrylic plate

Place the A06 acrylic plate on the A01 acrylic plate as shown.

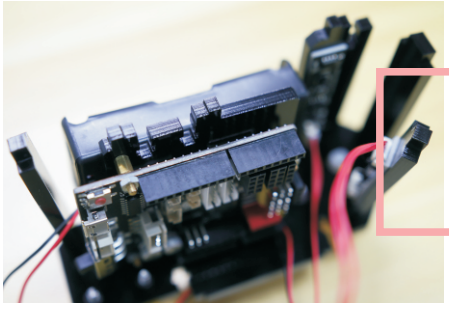




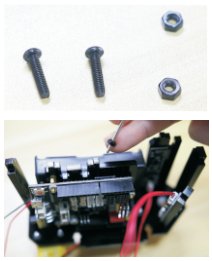
Place A05 on A01 acrylic plate as shown.

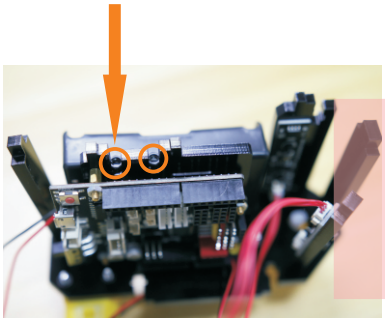


Place A03 acrylic plate on A01 acrylic plate as shown.

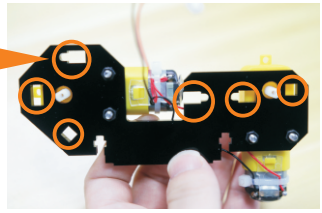


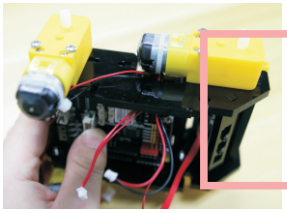
The effect diagram when get to this step.





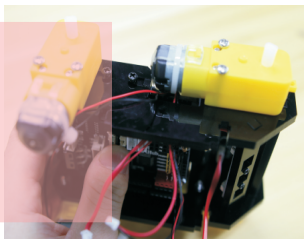
Use the small screwdriver to place the two black M3 nuts in the position as shown.

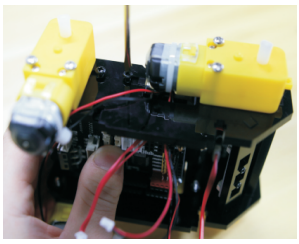


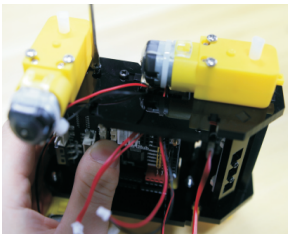


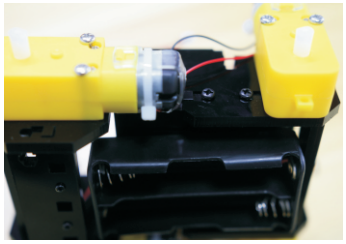
Fix the A01 acrylic plate to the car base.

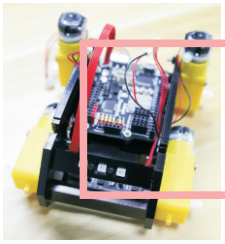
Pass two black M3*12 screws through the A01 acrylic plate and tighten the M3*12 screws with the large screwdriver.





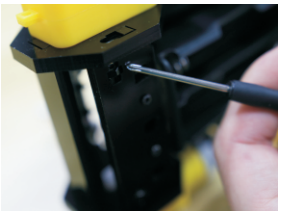


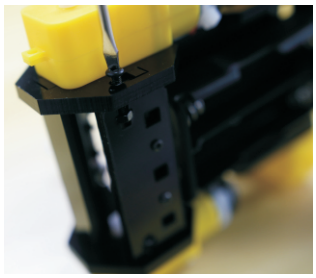


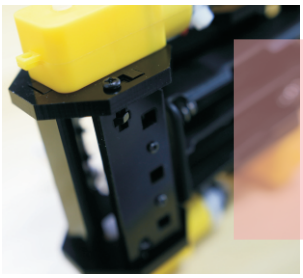


On the right is the effect after assembling.

As shown, use the small screwdriver to place the black M3 nut on the screw hole on the A02 acrylic plate.



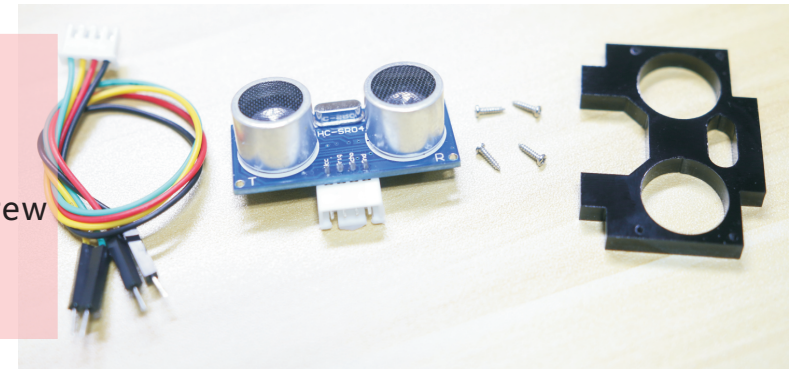


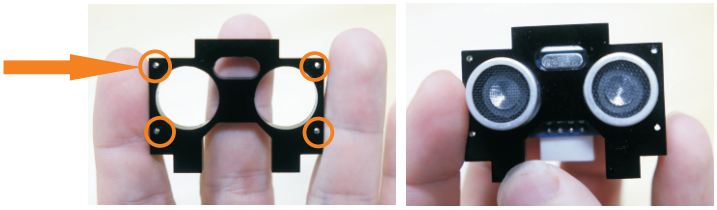


Pass the black M3*12 screw through the A01 acrylic plate and use the large screwdriver to tighten the M3*12 scre

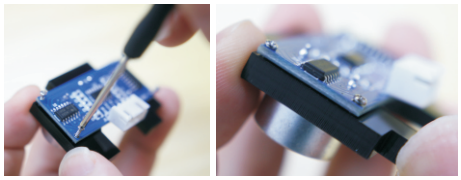
Ultrasonic Module Assembly.

Materials needed to assemble the ultrasonic module:
1x A07 acrylic plate
4x silver M1.4*6 self-tapping screw
1x ultrasonic module
1x 4Pin wire

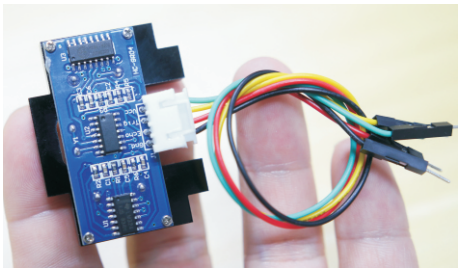




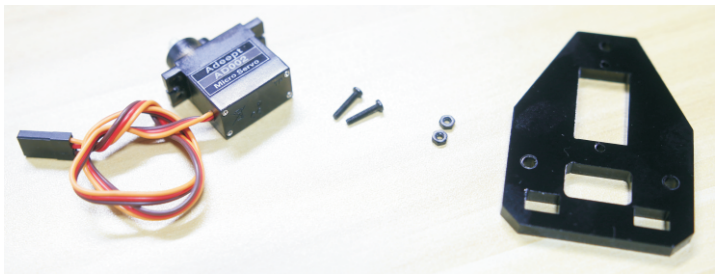
Install the ultrasonic module on A07 acrylic plate.



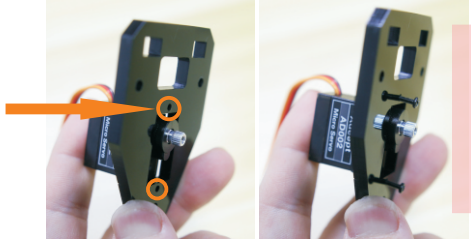
Install four silver M1.4*6 self-tapping screws into the ultrasonic positioning holes and use the small screwdriver to screw the screws vertically into the A07 acrylic plate.Note: if you find that A07 is difficult to screw in, you can try to turn over the A07 acrylic plate and screw it in again.



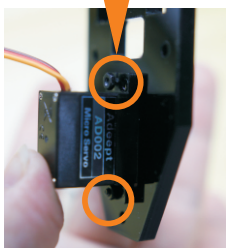
Connect the 4Pin wire with ultrasonic module.

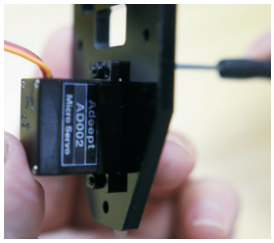


Materials needed to assemble the servo module:
1x Adeept AD002 Servo
2x black M2*10 screw
2x black M2 nut
1x A08 acrylic plate

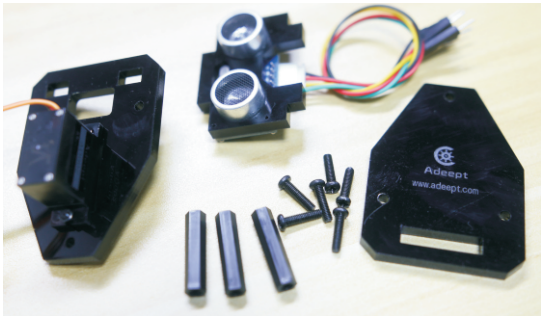


Install the servo on the A08 acrylic plate as shown in the figure, pass two black M2*10 screws through the A08 acrylic plate.



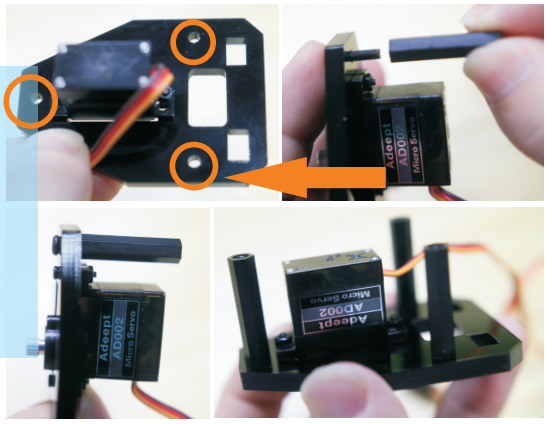


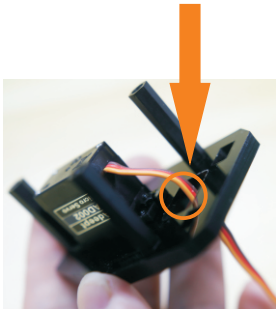
Screw two black M2 nuts onto the two M2*10 screws and tighten the M2*10 screws with the small screwdriver.

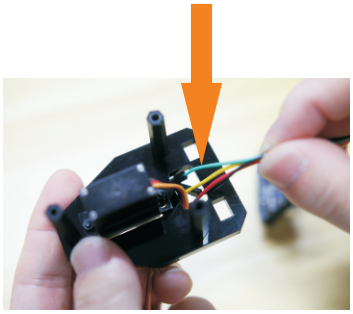


Materials needed to assemble the head of the car:
1x A09 acrylic plate
1x ultrasonic module
1x Ad002 servo module
6x black M3*12 screw
3x black M3*25 nylon column

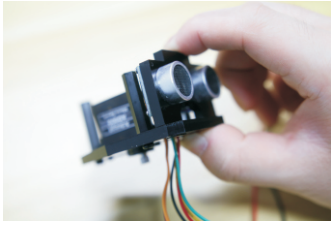
Screw three black M3*12 screws through the A08 acrylic plate and screw three black M3*25 nylon columns onto the M3*12 screws as shown.







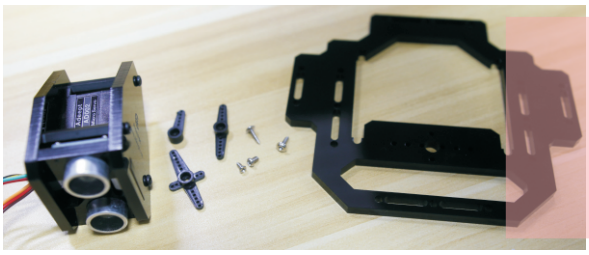
Pass the wires of the servo and ultrasonic module through the hole of A08 acrylic plate



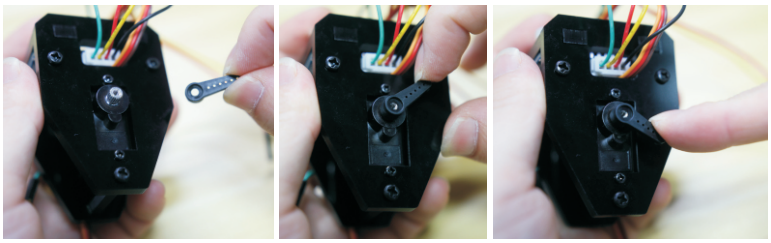
Mount the ultrasonic module on the A08 acrylic plate.

Cover the A09 acrylic plate on the A08 and the ultrasonic module.

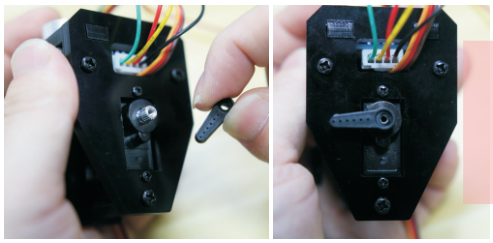
As shown in the figure, pass three black M3*12 screws through the A09 acrylic plate and tighten them with them large screwdriver.



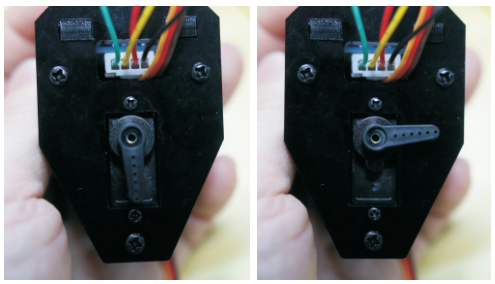
Materials needed to assemble the upper part of the car:
1x A10 acrylic plate
1x servo with rocker and screw
1x ultrasonic car head



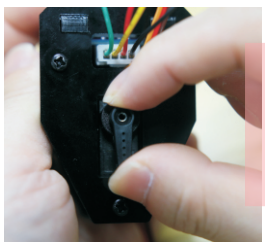
Attach the short rocker arm to the servo at any angle and then rotate the rocker arm clockwise until it stops.



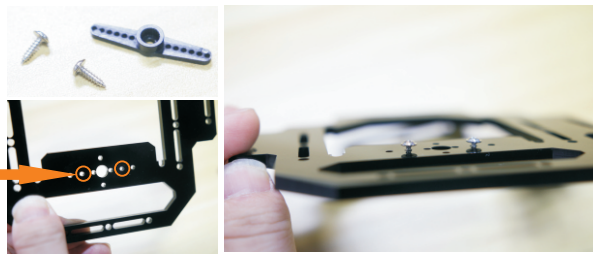
Remove the rocker arm and attach it to the servo as shown.



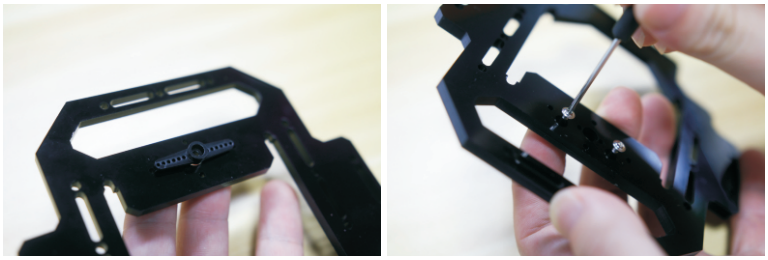
Then rotate 90 degrees counterclockwise, and then rotate counterclockwise about 90 degrees again, until it can not rotate counterclockwise anymore, which indicating that the servo angle calibration is correct.



Finally rotate the rocker arm 90 degrees clockwise as shown. Then gently remove the rocker arm and do not change the servo angle.

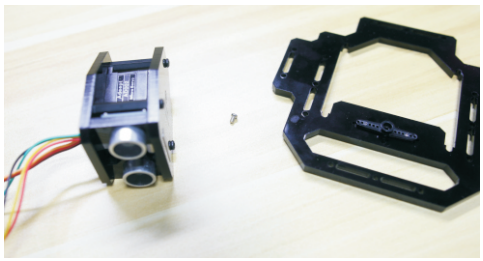


Take out the long rocker arm and 2 silver self-tapping screws in the servo package and put 2 silver self-tapping screws into the hole of A10 acrylic as shown.

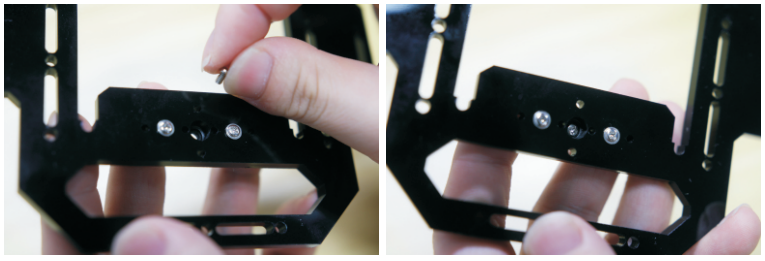


Attach the rocker arm to the other side of the A10 acrylic plate and s crew 2 self-tapping screws into the rocker arm with the small screwdriver.

The effect diagram after screwing in.

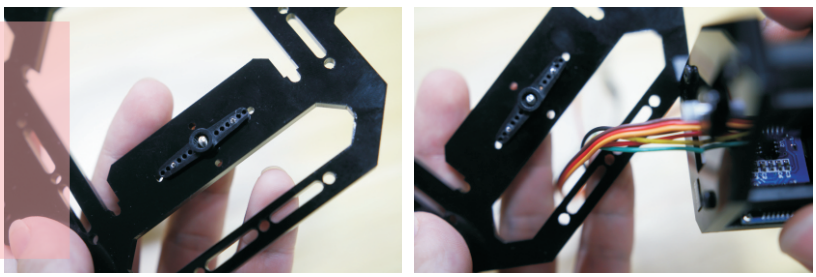


Use the silver M2.5*4 small screws provided in the servo package to fix the ultrasonic head to the A10 acrylic plate.

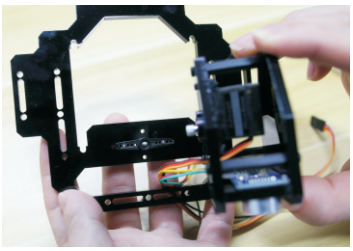


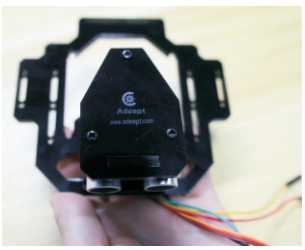
Place the silver M2.5*4 small screw in the hole of the rocker arm of the servo.

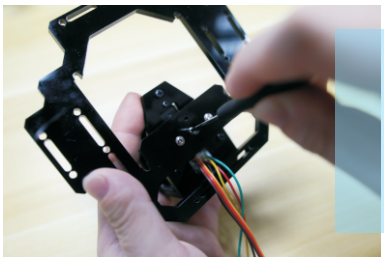
Hold the silver screw by hand to prevent it falling down, turn over the A10 acrylic plate, and pass the servo and ultrasonic module wires through the A10 acrylic plate.



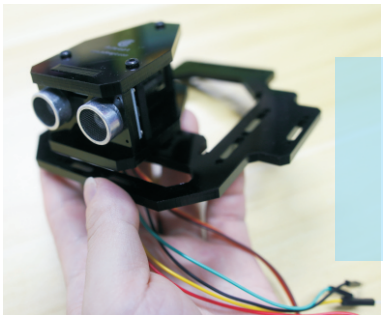
Install the servo on A10 acrylic plate at the angle as shown.



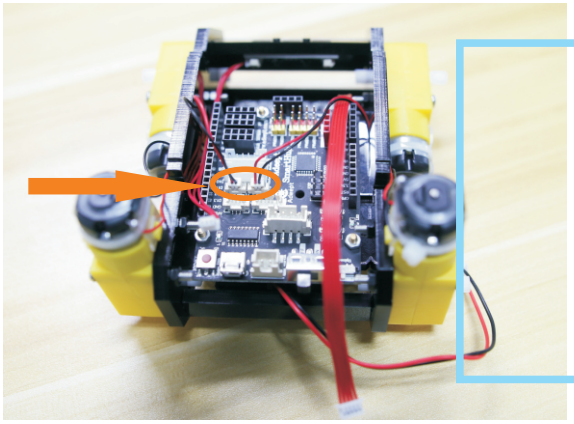




Use the small screwdriver to screw the silver M2.5*4 screw into the servo.

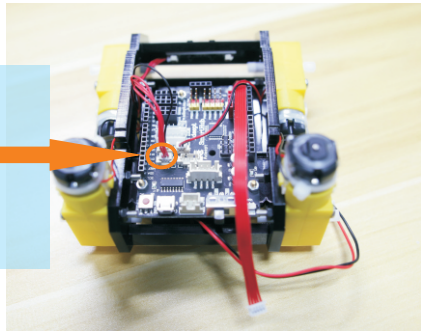


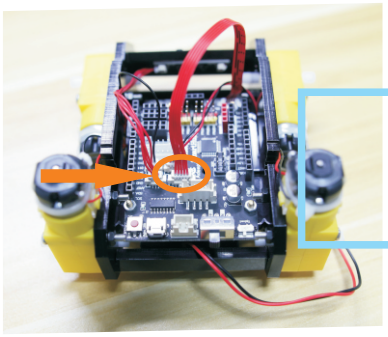
On the right is the effect diagram after assembling.



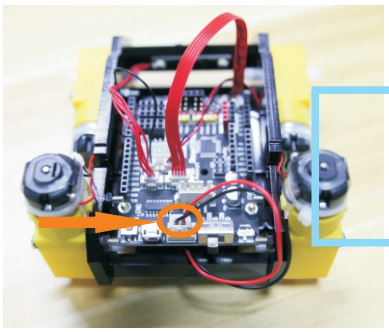
Connect the motor wires to motor A and motor B as shown. Note that the motor on the left is connected to the motor interface, motor B on the left, and the motor on the right is connected to the motor interface, motor A on the right.

Connect the WS2812 wire to the WS2812 interface on the control board as shown.

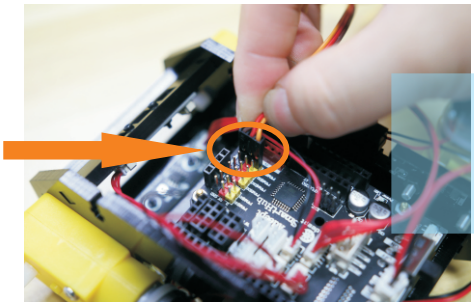




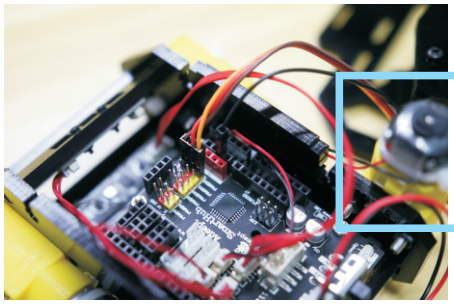
Connect the wire of the tracking module to the "tracking" interface of the control board as shown.



Connect the wire of the 18650 battery holder to the "Vin" interface of the control board.

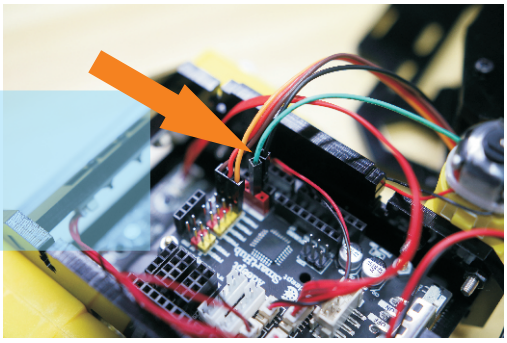


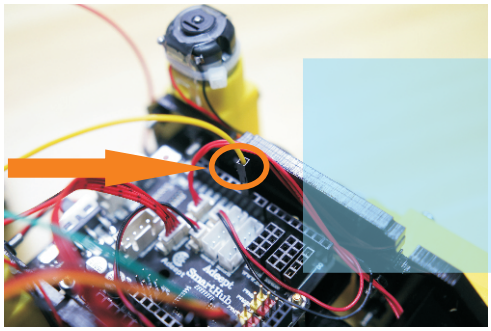
Connect the servo wire to the “PWM6|D12” interface on the control board as shown. Note that do not connect the wires reversely.



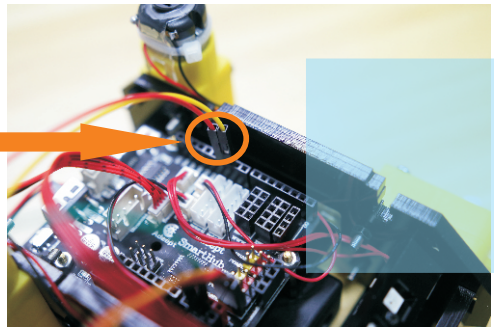
Connect the wire of the GND pin of the ultrasonic module to the GND interface of the control board.

Connect the VCC pin of the ultrasonic module to the 5V interface on the control board as shown.

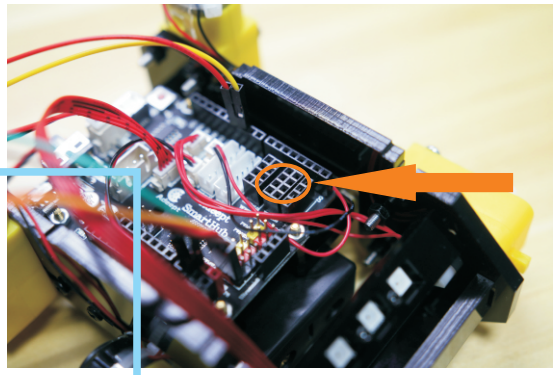




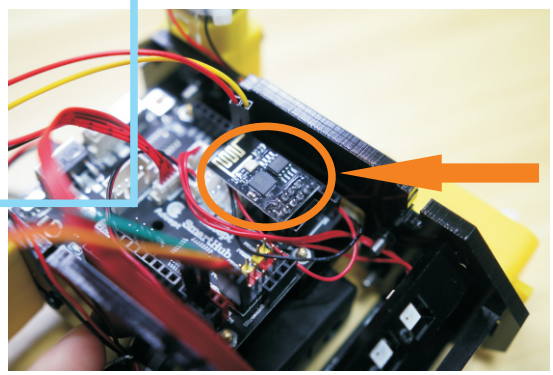
Connect the Trig pin of the ultrasonic module to the D10 interface on the control board as shown.

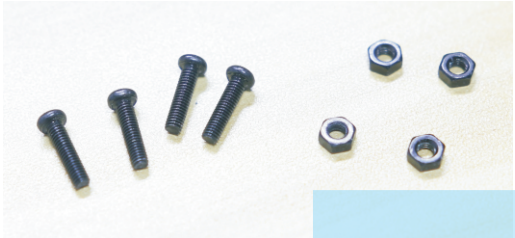


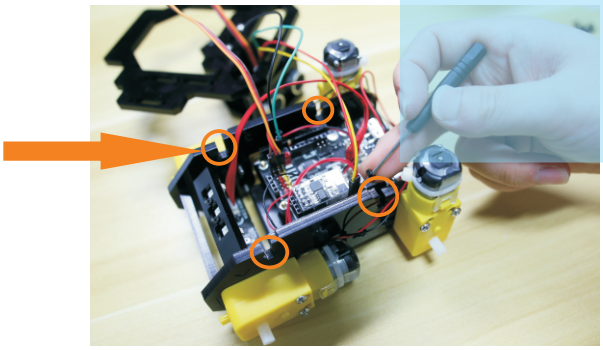
Connect the Echo pin of the ultrasonic module to the D11 interface on the control board as shown.



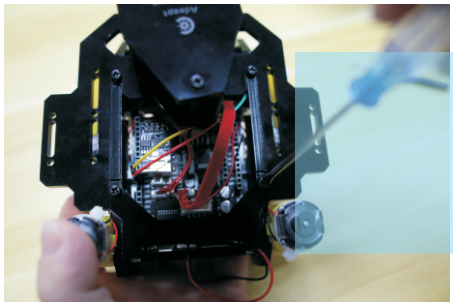
Connect the ESP8266 to the ESP8266 interface on the control board. Be careful not to connect reversely.





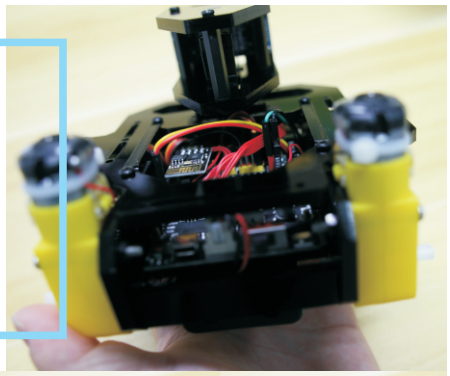


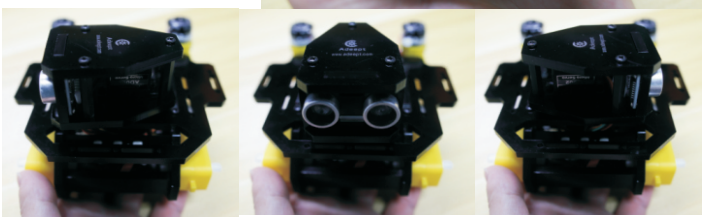
Use the small screwdriver to place 4 black M3 nuts on the A01 acrylic plate.

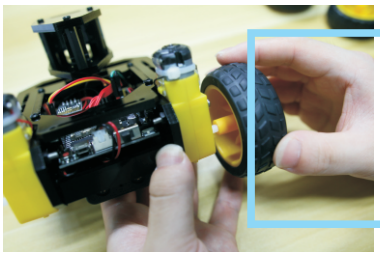


Install the A10 acrylic plate on the car and use the large screwdriver to screw the four black M3*12 screws into the A10 acrylic plate.

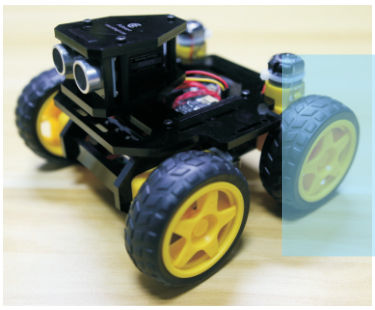
On the right is the effect diagram of screwing in. We can check if the car head is installed correctly, as shown in the figure below, it can be rotated to the following angle.







Install four wheels on the motor respectively.



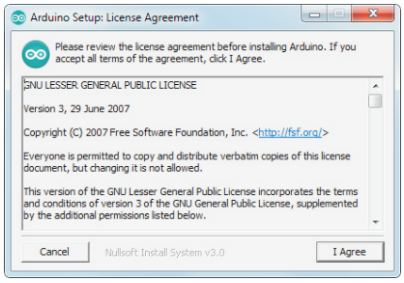
On the right is the four-wheeled car after assembling.

Arduino and Processing Environment Installation

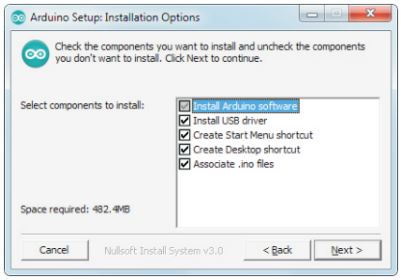
Let's take the Windows 64-bit system as an example (the Arduino IDE also supports MAC and Linux). First open the browser and enter the URL https://www.arduino.cc/en/Main/Software and you will see the following interface.

Click"JUST DOWNLOAD"

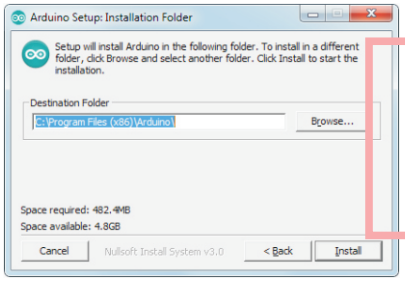
Run the downloaded file.



Click “I Agree”

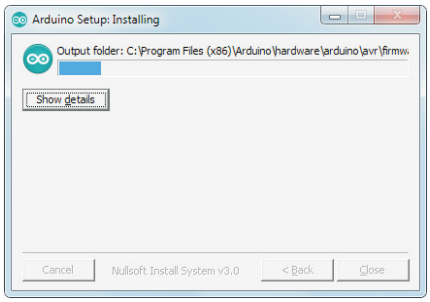


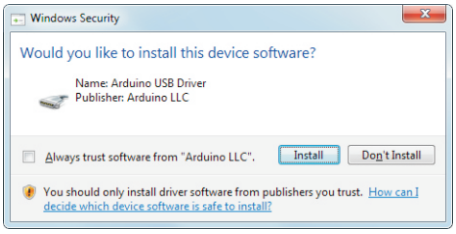
Click"Next"



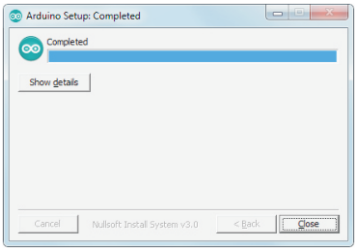
Leave the installation path as default, click "Install".

Then enter the installation process, please wait.





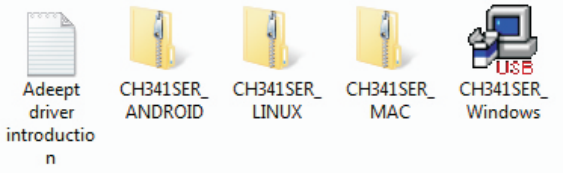
If the option pops up during the installation process, please select "Install".



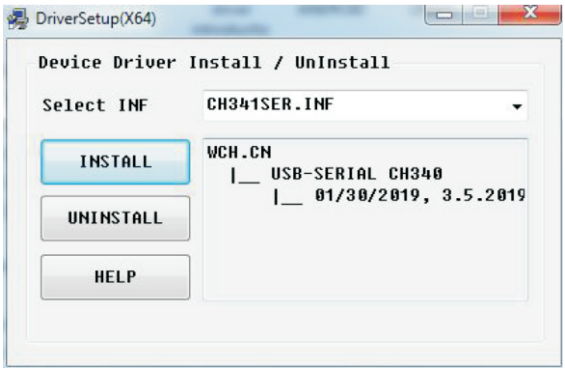
When the installation is complete, click "Close".

After the installation is complete, you can see the icon of the Arduino IDE on your computer desktop.

Click to run Arduino, the following interface will appear.

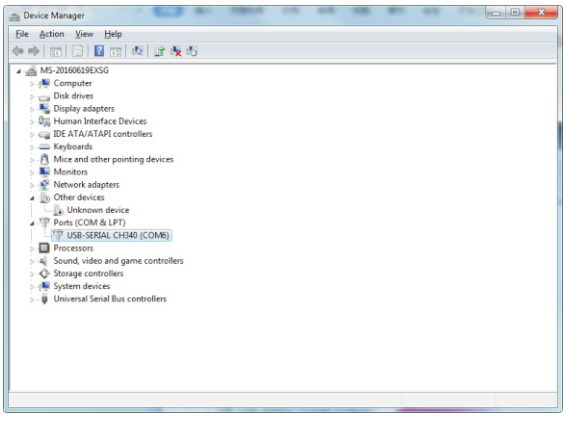


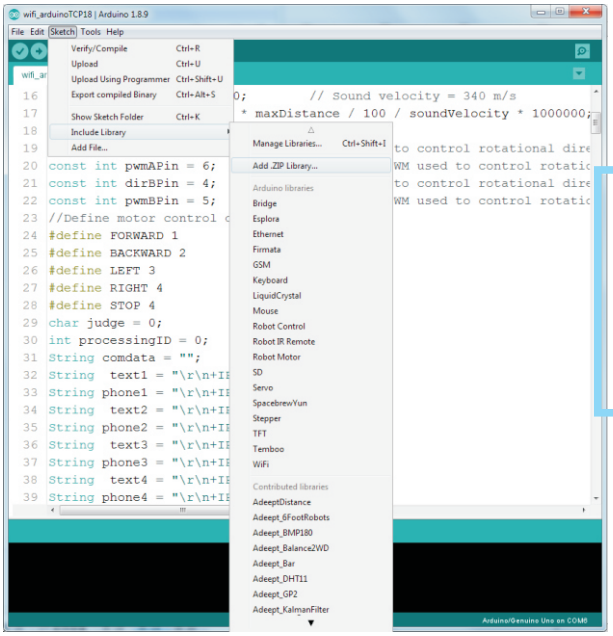
Next we need to install the driver program of the Adeept Smart Hub. We provide driver programs for 4 systems, Windows, Android, Linux and Mac in the package. We need to select the corresponding driver installation according to the system. Let’ s take the Windows system as an example. Firstly connect Adeept Smart Hub to thecomputer with a USB cable.Then open the package, find out the CH341SER_Windows.exe application, and run the program.



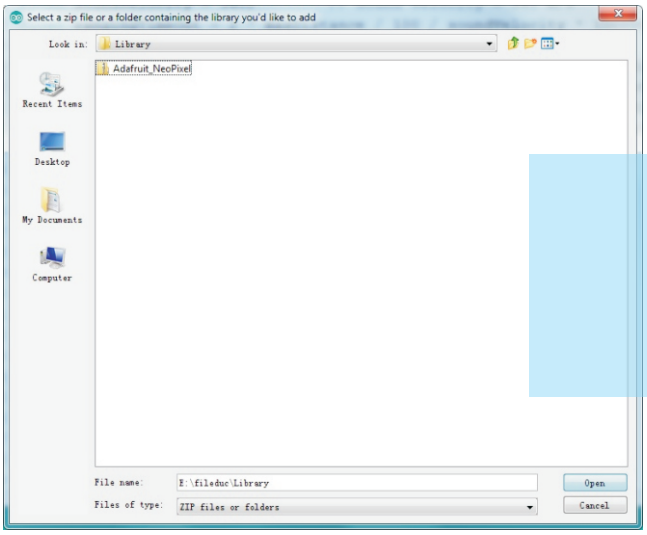
The following interface appears, click "INSTALL"

wait a few minutes for the driver to be installed,andthen open the "Device Manager"of the computerand you will see that the computer has recognized the Adeept Smart Hub,and Adeept Smart Hub portnumber is COM6. It may be recognized differently on different computers for example COM1,COM2,COM3 and so on.





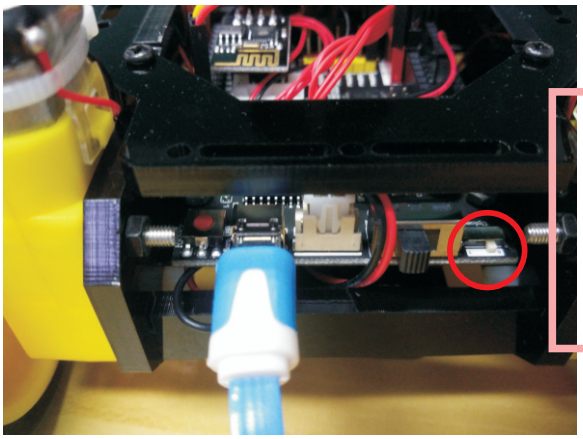
We first install the Adafruit_NeoPixel.ZIP file, open the Arduino IDE, click on "Sketch"->"Include Library"->"Add.ZIP Library"



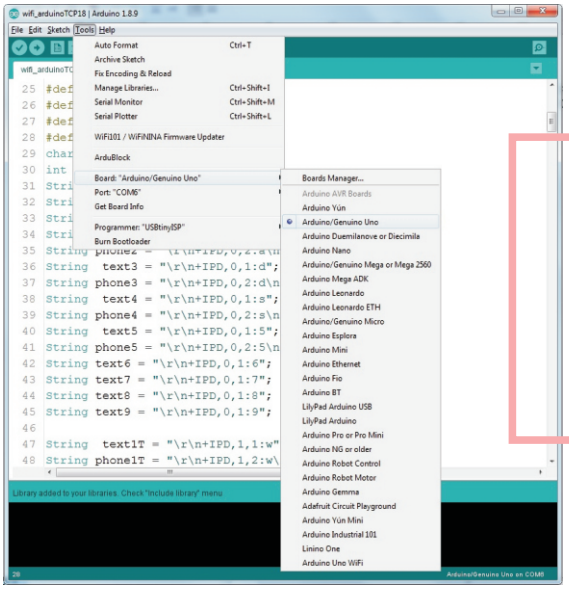
In the pop-up dialog box, find out the Adafruit_NeoPixel file we provided, click "Open"

Library added to your libraries. Check "Include library" menu

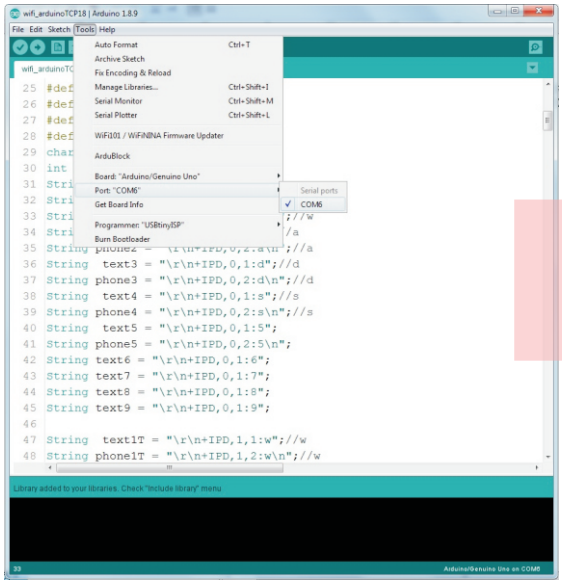
The Arduino IDE will prompt for this information after a successful installation.



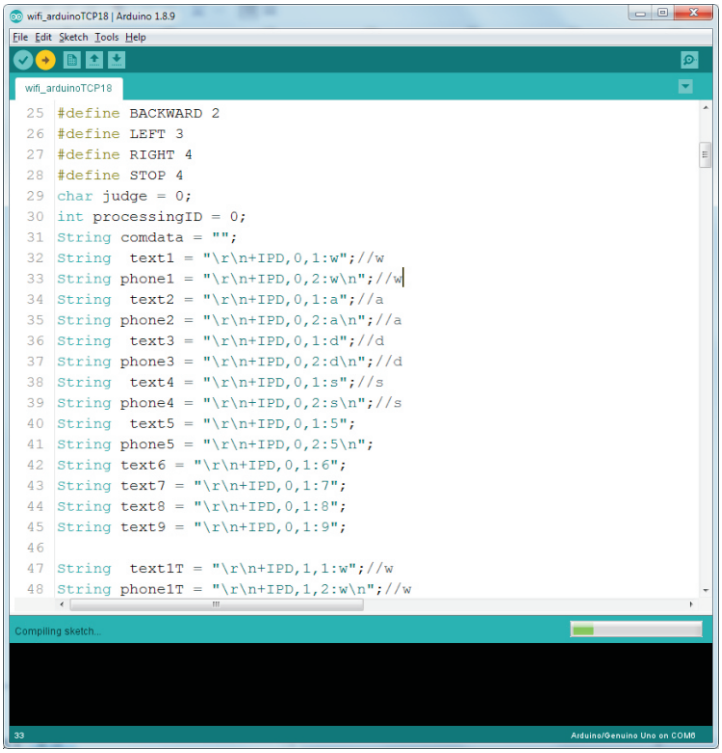
Connect the USB cable to the computer and switch the “Upload” button on the Adeept Smart Hub to "0".



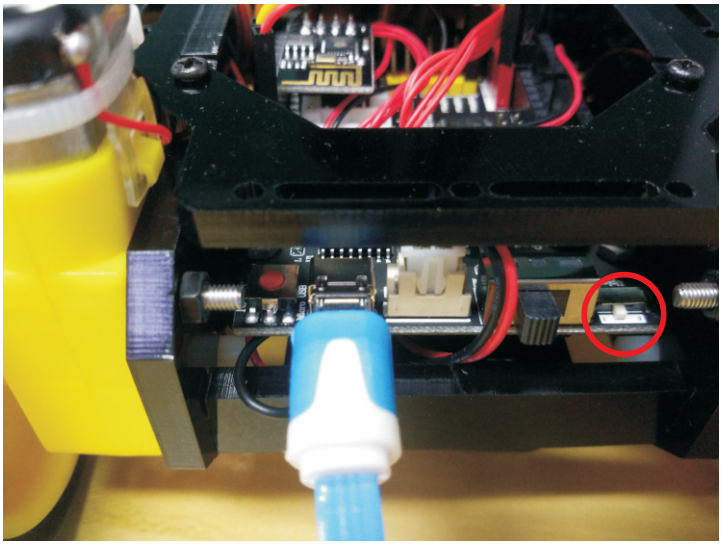
Click "Tools"->"Board:Arduino/ Genuino Uno"->"Arduino/Genuino Uno" on Arduino IDE.



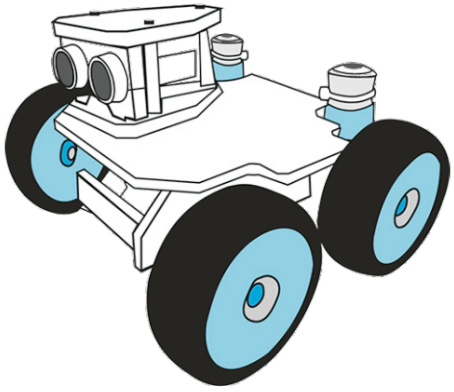
Click on "Tools"->"Port:"COM6""->"COM6"



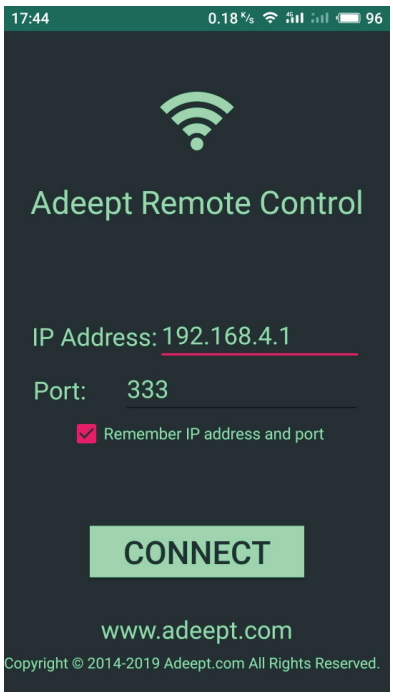
Click the "Upload" button on the Arduino IDE.



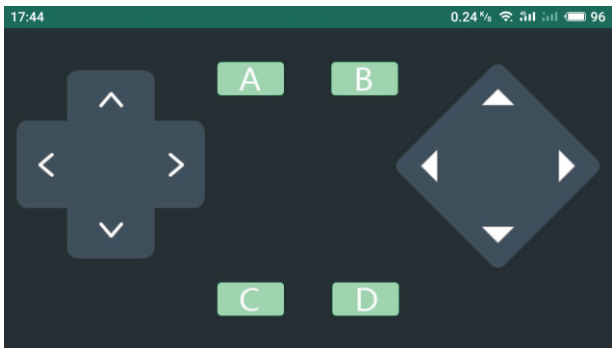
After the program is successfully uploaded, switch the “Upload” button on the Adeept Smart Hub to “1”. Unplug the USB cable, then install two 18650 batteries, switch on, and wait for the WS2812 indicator light to fully illuminate and then off. After that, you can use the mobile app to control the car. Note: The U4 power chip will generate a lot of heat during the work, the U4 part of the control board may become hot, which is a normal phenomenon.



Download address of Android App:
https://play.google.com/store/apps/details?id=com.adeept.lenovo001.smartcar
Or search for "Adeept Remote Control" on Google play.



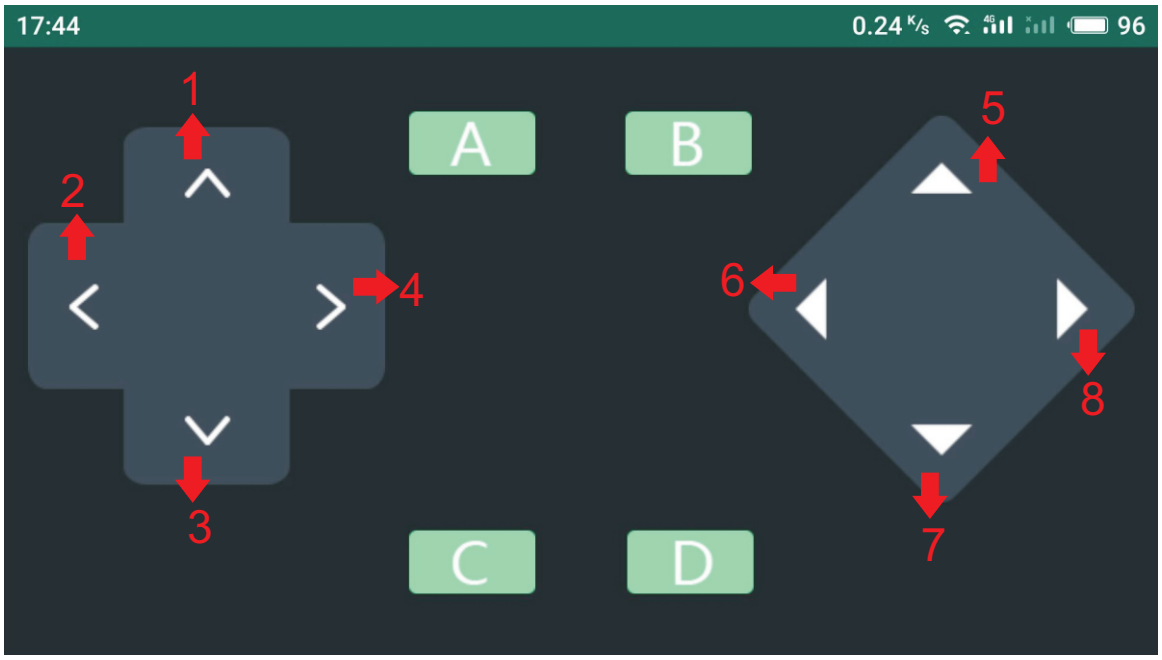
After installing the app, switch on the car, and remember to switch to 1 on the control board. Wait for the car Wi-Fi to start, connect the mobile phone to the car Wi-Fi. The car Wi-Fi has no password and can be connected directly. After the phone Wi-Fi successfully connects to the Wi-Fi established by the car, open the mobile app "Adeept Remote Control". Enter "192.168.4.1" on "IP Address" on this interface. Enter "333" on "Port" and click "CONNECT" to enter the next interface.



After entering the current interface, you can press the four direction buttons on the left to control the car to turn left and right, go forward and backward.

Note:
When exit the car control interface and enter it again, you may fail to control the car.
Solution: Turn off the car, and then turn on and reconnect the car Wi-Fi.

Commands of the remote control buttons:



Press button 1, the app sends out "forwardStart".
Release button 1, the app sends out "forwardStop".

Press button 2, the app sends out "leftStart".
Release button 2, the app sends out "leftStop".

.

Press button 3, the app sends out "backwardStart".
Release button 3, the app sends out "backwardStop".

Press button 4, the app sends out "rightStart".
Release button 4, the app sends out "rightStop".

Press button 5, the app sends out "upStart".
Release button 5, the app sends out "upStop".

Press button 6, the app sends out "lookLeftStart".
Release button 6, the app sends out "lookLeftStop".

Press button 7, the app sends out "downStart".
Release button 7, the app sends out "downStop".

Press button 8, the app sends out "lookRightStart".
Release button 8, the app sends out "lookRightStop".

Press button A, the app sends out "aStart".
Release button A, the app sends out "aStop".

Press button B, the app sends out "bStart".
Release button B, the app sends out "bStop".

Press button C, the app sends out "cStart".
Release button C, the app sends out "cStop".

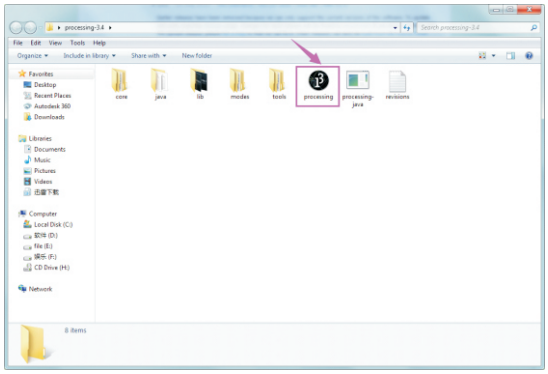
Press button D, the app sends out "dStart".
Release button D, the app sends out "dStop".

Open your browser and enter the URL www.processing.org
Click on "Download Processing"

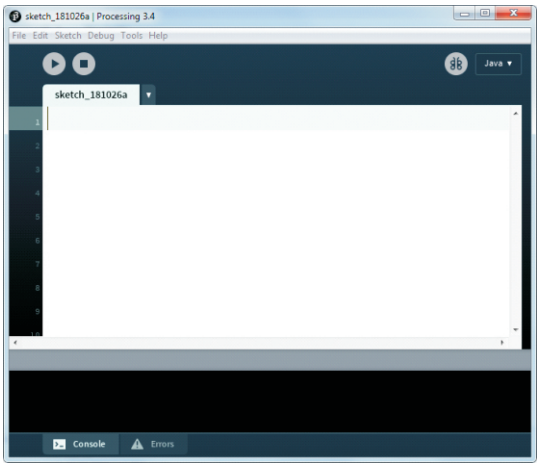
Note: When we use Processing to control the car, we need our computer to have WIFI function. The computer WiFi directly connect to the car WiFi to communicate, which does not pass through the router.

The operating system we choose to use here is windows 64-bit, select "Windows 64-bit"

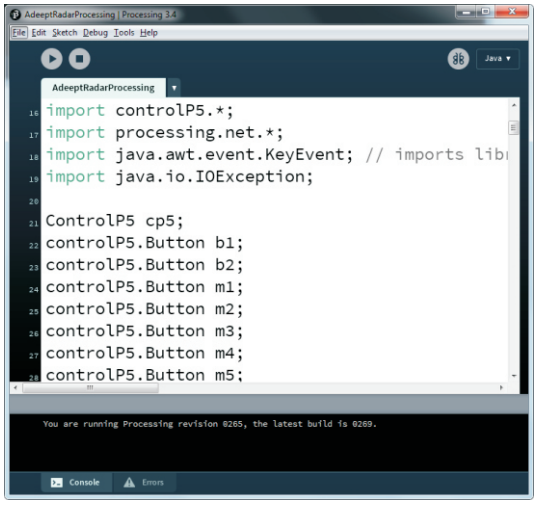
When finish downloading, you will get a compressed file "processing-3.4-windows64.zip".



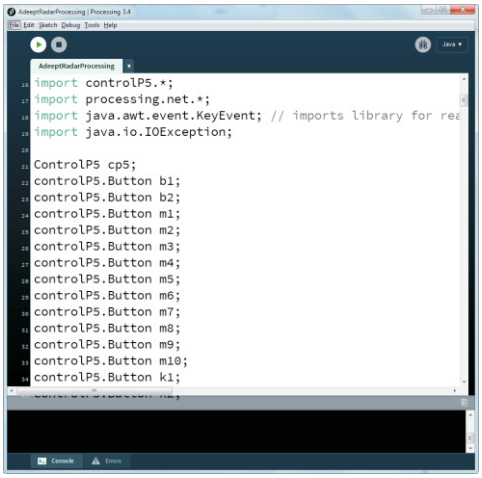
After extracting this file, you can get the following file, just click to run processing, it can be run directly without installation.



After this interface appears, we need to open the Processing code we provided in the Processing IDE.

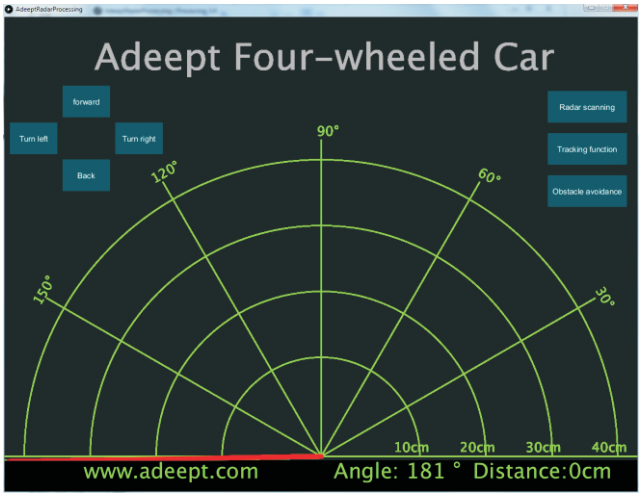


In this interface, we need to turn on the computer WiFi function to connect to the car WiFi.



Click the "run" button of the Processing IDE. If an error occurs, it should be that the Processing is missing the corresponding library file. Then follow the prompts to install it online.

Control the button of the car direction.



Control the working mode of the car.

Radar scanning: click the mouse once and the ultrasonic scan stops once.
Tracking function: After the mouse click, the car enters the tracking mode, and it will follow the black line on the white paper.
Obstacle avoidance: After the mouse click, the car enters the obstacle avoidance mode and it will automatically avoid the obstacles ahead

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