The Future of Robots
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McZeal Robotics, LTD.

Service Robot v4

Operation Manual

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Precautions

- Please read this description carefully and operate the robot in strict accordance with this description.
- The non-specialist is prohibited to dismantlethe robot.
- Each robot is equipped with a dedicated charger and charging base.
- The robot can be use about 1 day, the continuous use time is not more than 8 hours, when the battery display remaining 2 cells/voltage is less than 23V, please charge with a special charger in time.
- prohibits flushing the robot with water.
- please use a robot in a good wifi network environment. A dedicated router is recommended. Otherwise, connection failure and voice conversation may occur.
- Avoids moving a robot on. Avoid remote control or push the robot to hit objects quickly in the state of non-autonomous navigation.

Charger Precautions

1. Read the instructions thoroughly before use
2. For indoor use, beware of rain
3. Do not charge non-rechargeable batteries
4. When charging, someone must be present. It is forbidden to charge at night
5. If the battery life is short or abnormal, do not charge it and contact the after-sales service.
6. During the charging, the charger is strictly prohibited to be covered , and it must be well ventilated
7. If the power cable or other places are damaged, it must be replaced by professional personnel
8. The charger is strictly prohibited to charge in inflammable and explosive places

1. The robot installation

a. Installation requirements of charging piles.

b. The charging pile should be backed against a solid wall, which does not reflect light.

c. There should be no objects within one meter in front, left and right of the charging pile.

d. The wall in front of the charging pile should be parallel to the solid wall backed by the charging pile.

e. The charging pile is fixed and cannot be moved. Please select the installation position carefully.

f. Turn on the robot.

The robot needs the key to turn on , and the key is in the accessory box.

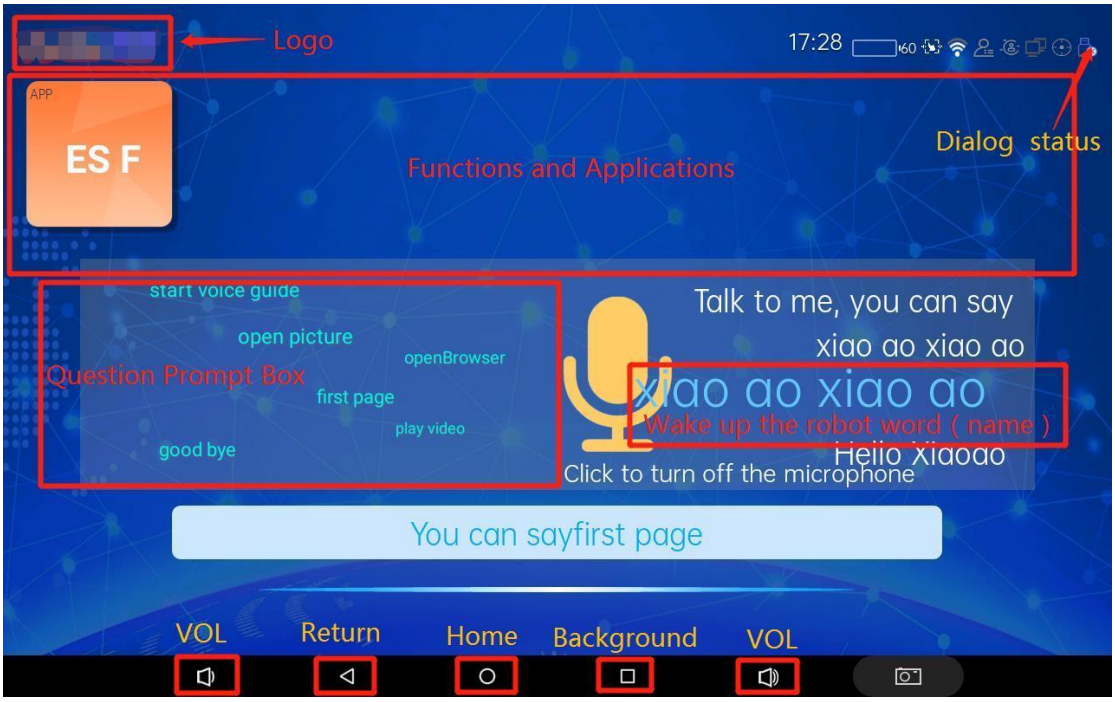
Keyhole（ switch）of robot

The key

Because the starting position is the starting position of scanning map, and also the coordinate of the recharge pile, the system will recognize the recharge base only after the recharge base is switched on. If the recharge base is not switched on, the automatic recharge function will be abnormal!

As shown below: After the charging pile is powered on, it can only be powered on when it touches the robot!

2. Home page introduction.



a. Logo icon (replaceable, refer to Appendix 1). Click continuously to enter the software setting page. (Appendix 2).

b. System functions and display area of third-party APP can be opened by clicking.

c. Local dialogue prompts can be set to display.

3. The robot relays the external network

Note: The external wifi of the robot relay must be 2.4g and can be used by entering your account and password. 5G signals and machines with third-party authentication (photo authentication, SMS authentication, etc.) cannot be relayed to the Internet.

Method 1：: On the machine through the browser Settings

a. Open browser X in the display area of APP.

b. Enter the address 192.168.31.1 in the browser and go to the address.Initial login account: admin, password: 02029042.

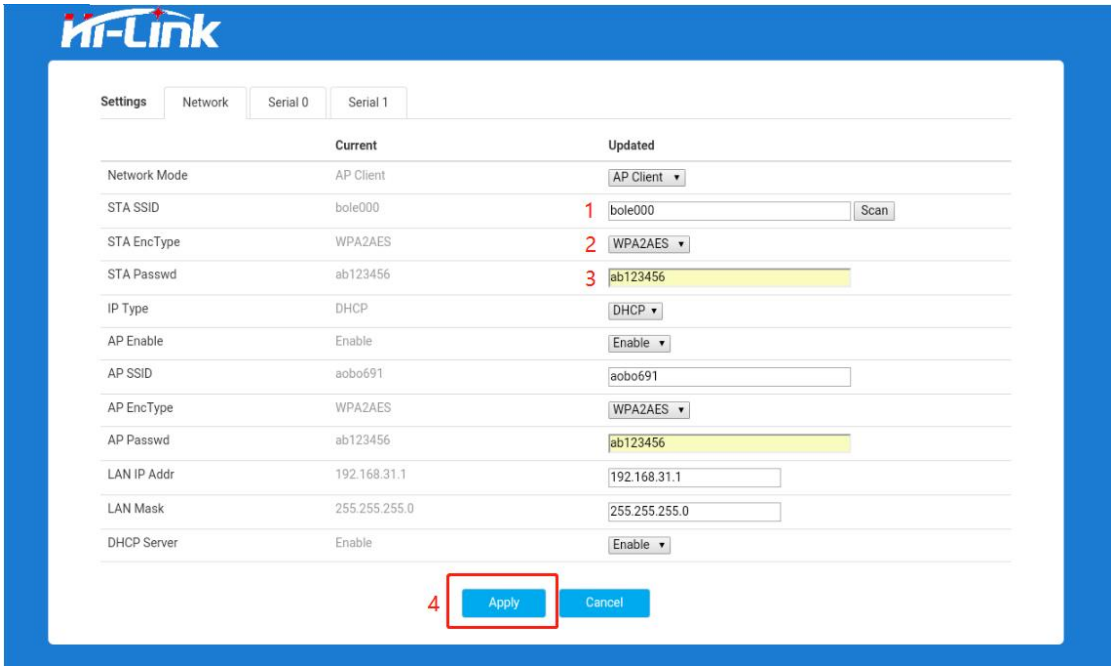
c. Fill in the external wifi account in the first part of the figure below, select the wifi encryption mode in the second part, and fill in the password of the external wifi in the third part. After filling in, click the fourth part to confirm.

Method 2：Access the browser Settings on the mobile phone

a. mobile phone connected to the robot wifi：aobo****, password：ab123456.

b. Open the browser, enter the IP: 192.168.31.1 in the browser. Initial login account: admin, password: 02029042

c. Fill in the external wifi account in the step1 of the figure below, select the wifi encryption mode in the step 2, and fill in the password of the external wifi in the step 3. After filling in, click the step 4 to confirm.



Finally, you can open a web page to determine if you are connected to the network.

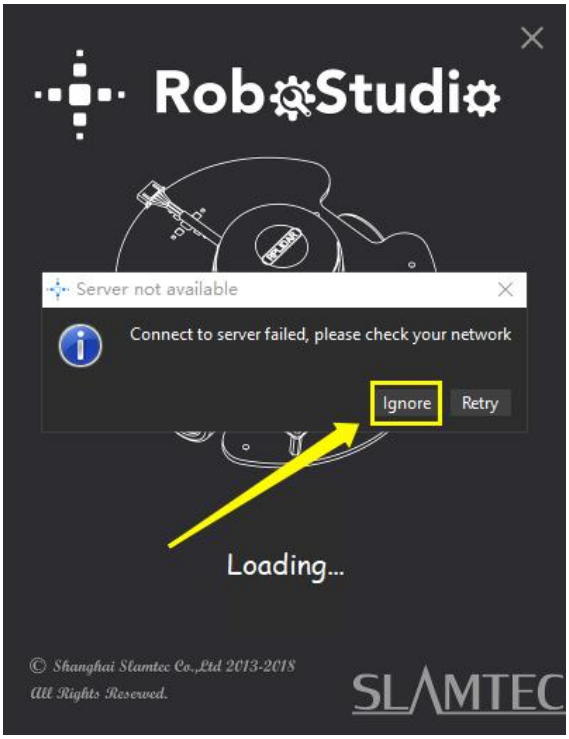
4. Scan map with computer and navigation Settings.

1)、Preparation 1（About laptop）

a、Prepare a Windows laptop.

b、Download and install the scanning map software (obtain the software installation package from the after-sales service).

c、Open the software and register your account.



（login page）

d、Enter your account and password to log in.

（After logging in）

2.)Preparation 2（About the robot）

A. Enter the robot map creation interface

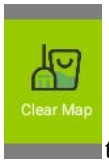
a、Click the logo in the upper left corner of the robot home page

to the background.

b、Click

the icon to enter navigation settings.

c、Click the menu button in the upper left after entering

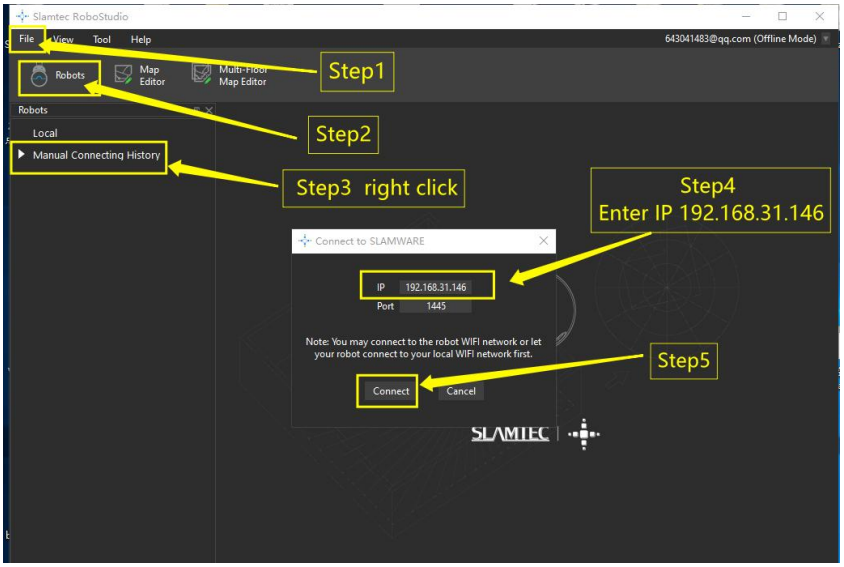
d、Click the icon 

to clear the old map， the robot will enter scanning map mode automatically after clearing

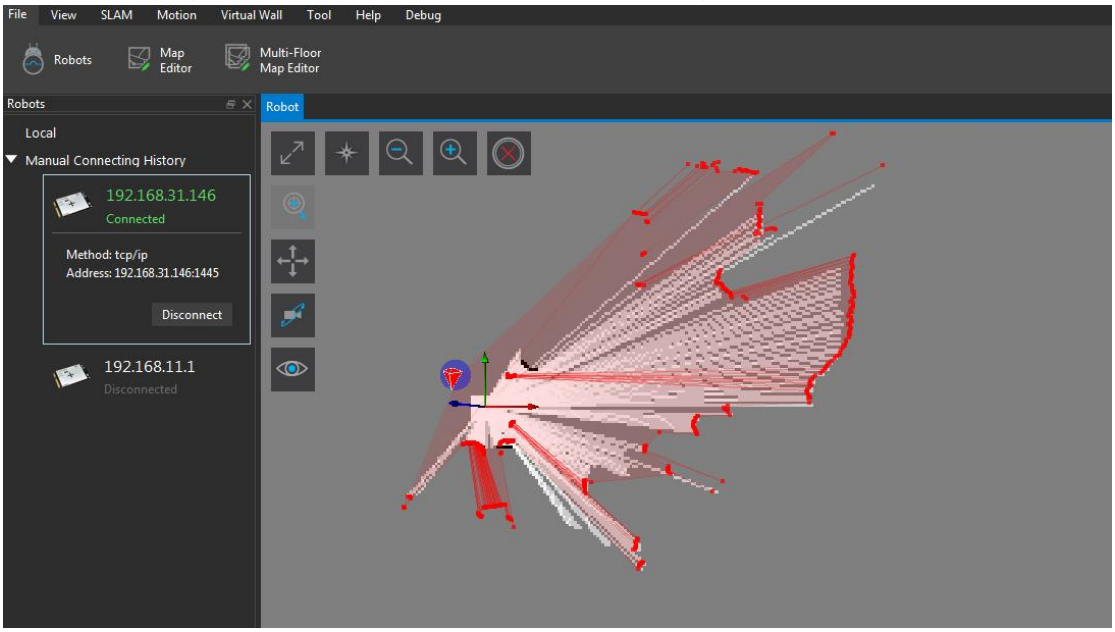
B. Computer connected robot.

a、Laptop connected to the WiFi（aobo***) of the robot , password: ab123456.The wifi name of each robot is different. Please confirm the WIFI name of multiple robots before connecting.

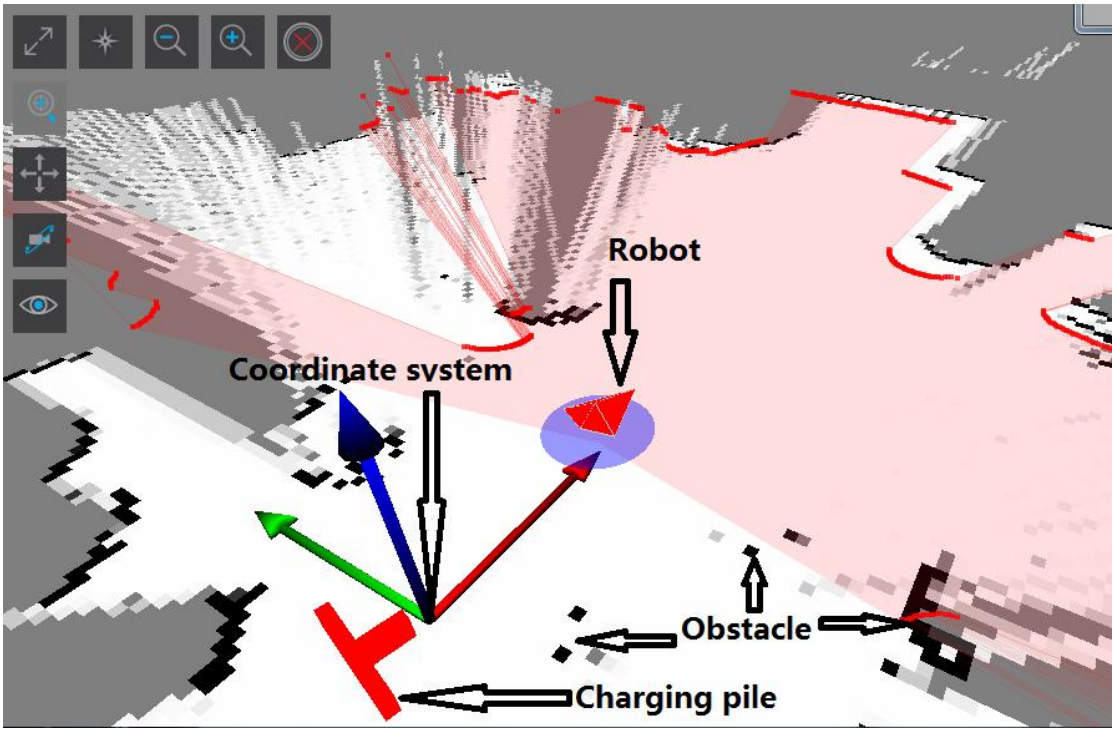
b、As shown below: File → robot → right mouse button as shown in the arrow → manually connect robot.



c、As shown below: Enter IP: 192.168.31.146 to connect. Enter and click ‘Connect’. The following figure shows the successful connection page.



After the connection is successful, observe whether the charging pile is vertical to the red arrow of the coordinate axis. If it is not vertical, the position of the charging pile needs to be changed .It needs to be vertical to make a drawing.



C. Control the robot walking scanning map.

Before controlling walking, please pay attention to whether this red button is unscrewed. This button is usually on the back of the robot. If so, please unscrew according to the direction of the arrow.

Press ↑ ↓ ← →to control the robot walkingon the keyboard.

At the same time, we need to pay attention to the surrounding obstacles to avoid collision.because at this time, it is not autonomous navigation, obstacle avoidance sensor is not working properly!!

Note：

a.If the robot does not move after pressing the button, please check whether the emergency stop button on the back of the robot is pressed.

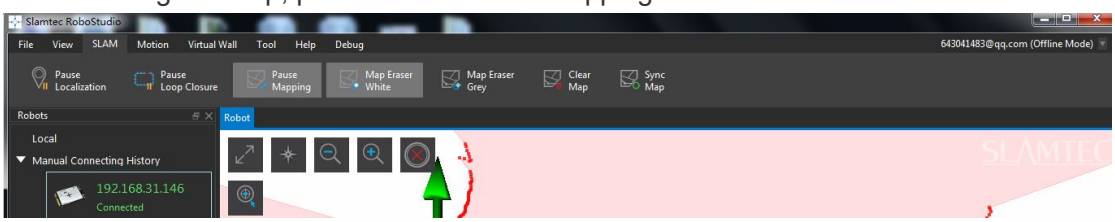
b.If the robot does not move for more than 3 minutes , the robot will automatically sleep. If you need to control the robot again, just press the direction key of the keyboard again and wait for about 5 seconds to wake up the robot.

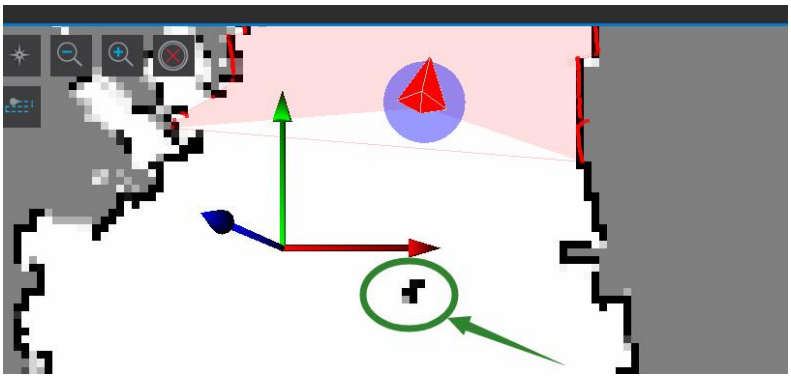
Refer to the appendix for scanning map skills.

D. Edit the map

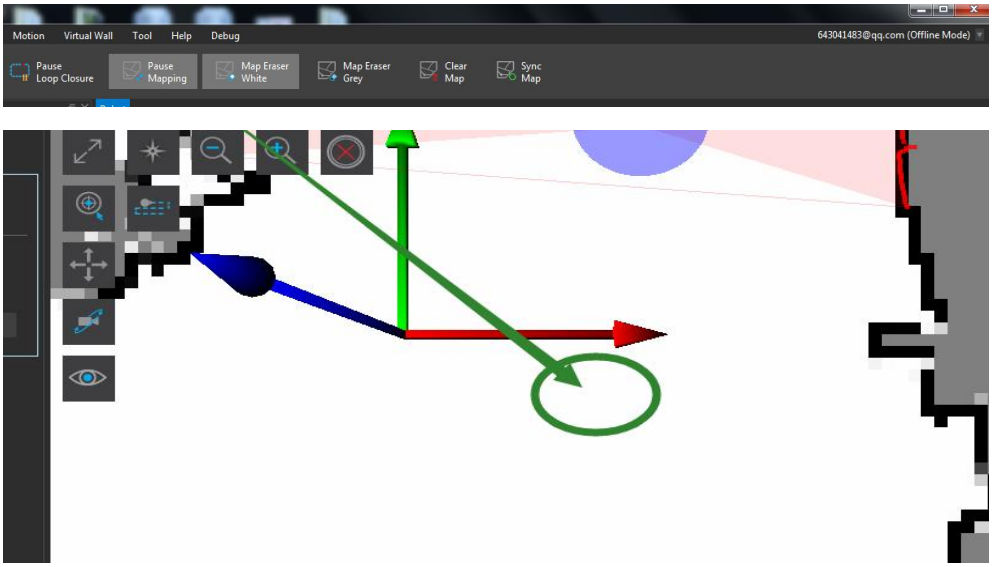
a. Erase the black spots.

Before editing the map, please click "Pause Mapping"





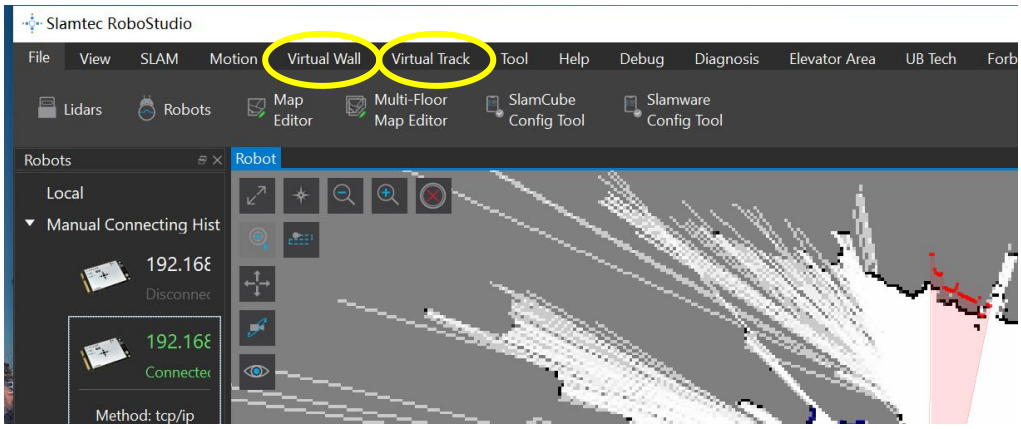
The black dots in the image above should not exist, perhaps someone walked by while scanning the map, which can be erased with the "white eraser on the map"

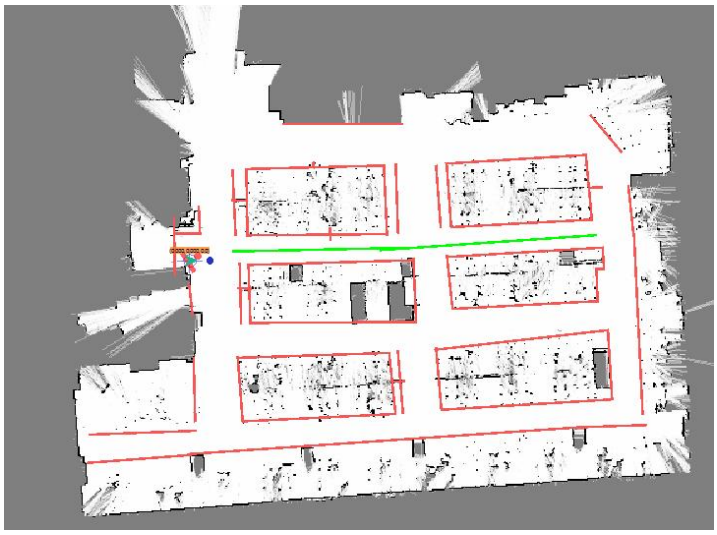


After erasing the black spots

b. Add a virtual wall or virtual track.

After scanning, we edited the map according to the needs of the site (for example, there were glass, objects with wide top and narrow bottom, objects with overhead in the middle, tables and chairs and other objects that could not be scanned by the robot). We needed to frame these objects with virtual walls to avoid collisions during robot walking.





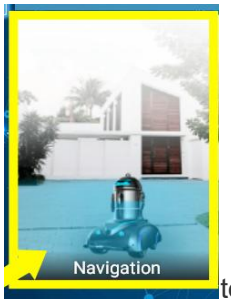
As shown in the figure above, virtual walls and tracks need to be added depending on the actual situation

1. It is necessary to pay attention to whether the connection between the track and the track is completely overlapped. If it is disconnected, the robot may not be able to walk on the track.
2. The track should not be too close to black obstacles or virtual walls, otherwise the machine will not be able to walk on the track.

E. Save map

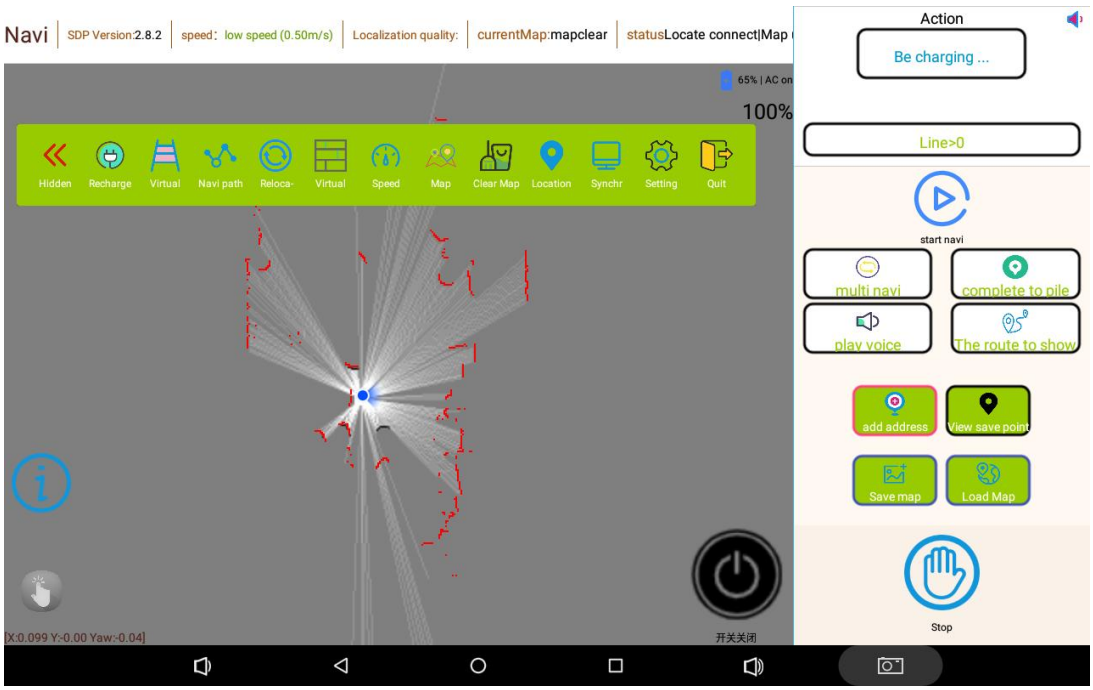
After the map is edited, we need to save the map on the robot. We need to continuously click the logo

in the upper left corner of the screen to enter the background setting page.

a、Click navigation 

to go to the navigation page.

b、Overview of navigation page.

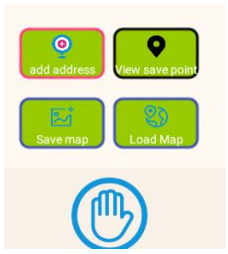


c、After entering, the SAVE MAP button to save the map is on the

right .Then click the LOAD MAP button

.

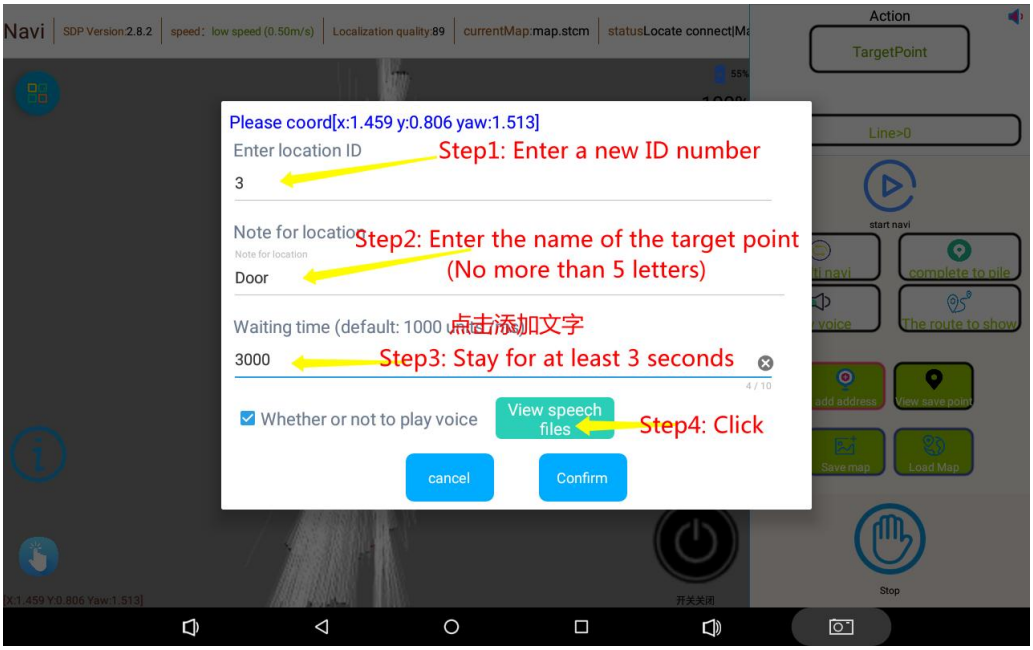
F. Add target points

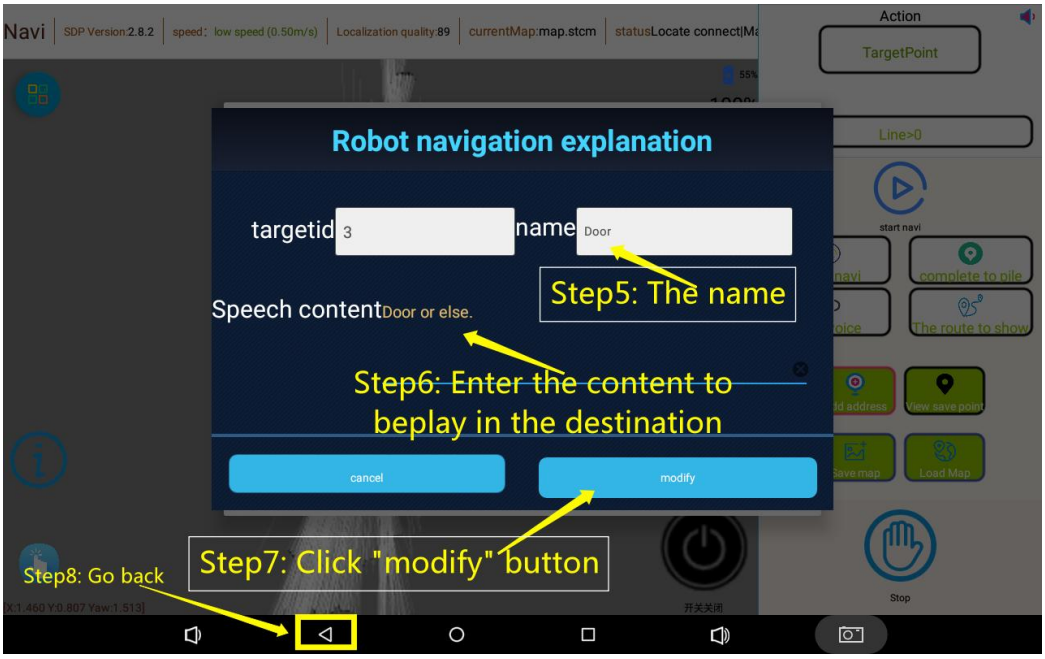
Note: before adding points, we need to load the map, otherwise we can't add points. We need to control the robot to stay at the position with computer direction keys, and then adjust the robot's orientation. 

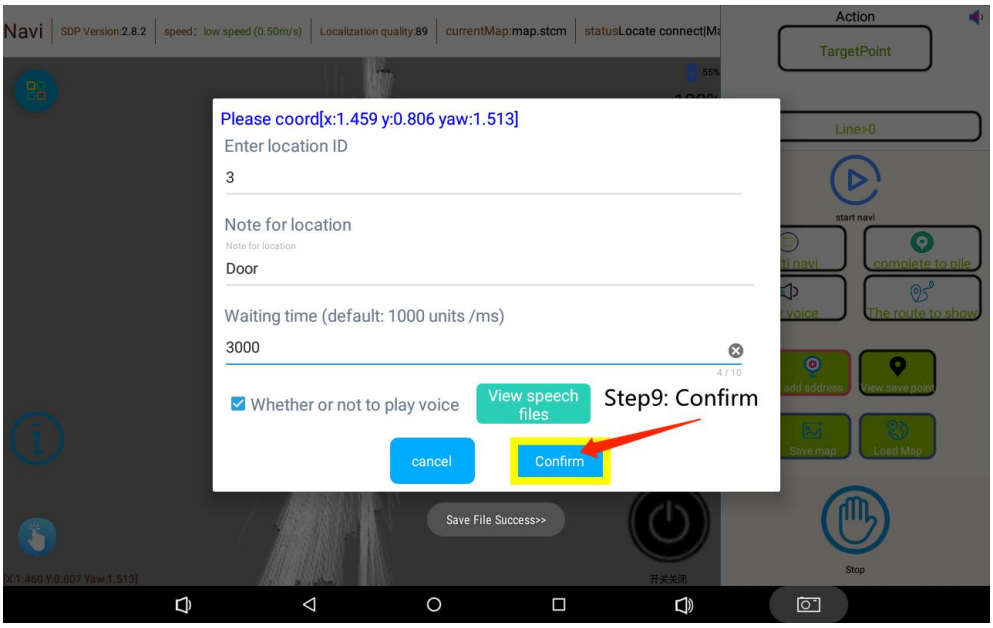
After loading the map， We need to control the robot with computer arrow keys to the position where the robot needs to stay. Adjust the orientation of the robot. （Orientation is

the orientation of the robot after it reaches the target point），Then we click the Add Point button.

Click the Add address button it will display this page：







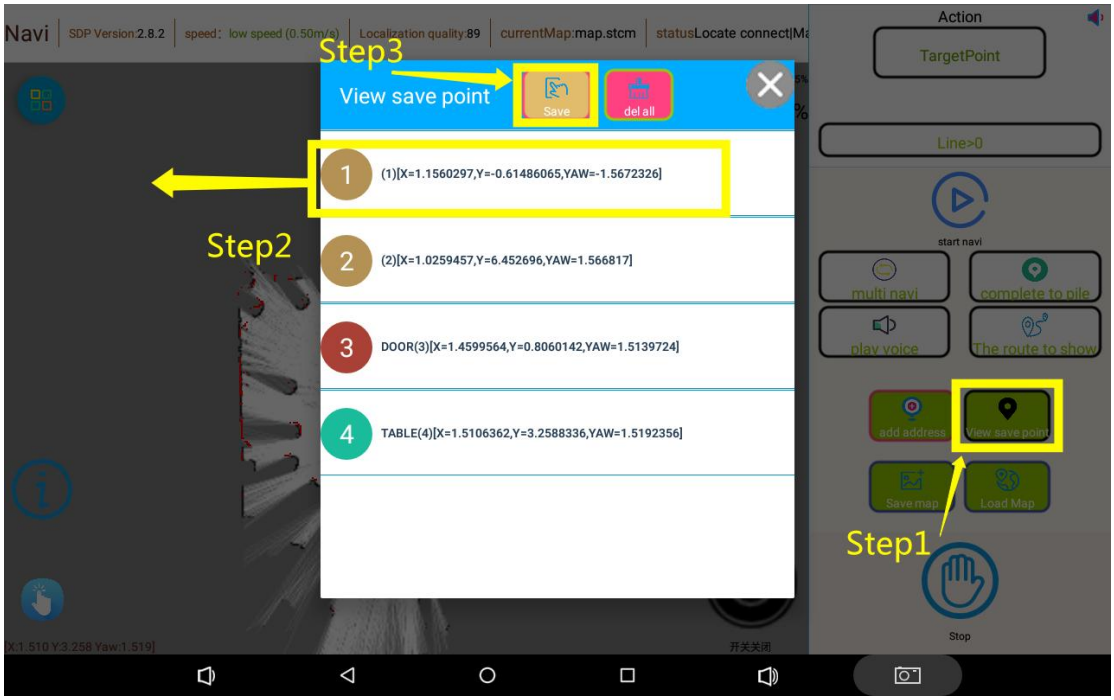
The coordinate is the default position of the current robot and cannot be changed.
After filling in the content, click CONFIRM.

Repeat the above method to control the robot to go to different places and set more target point.

G. Check and modify the saved points

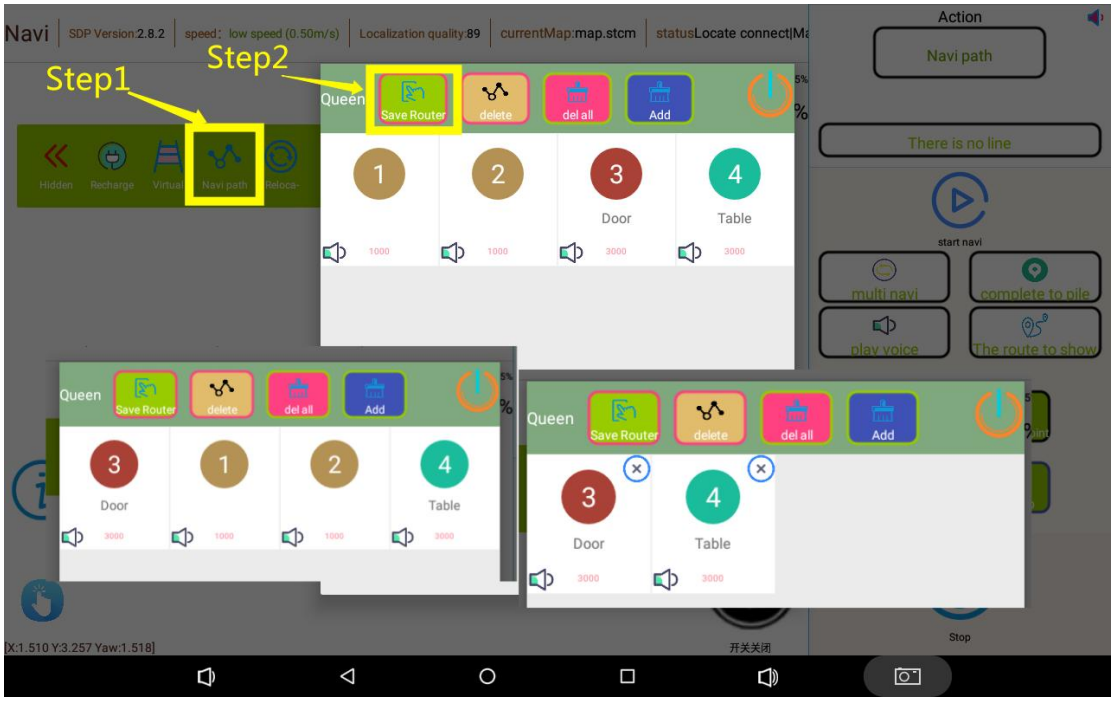
a、Click to view the save point. You can view the added points

b、Select the point you want to modify and slide to the right. The target point can be modified or deleted.

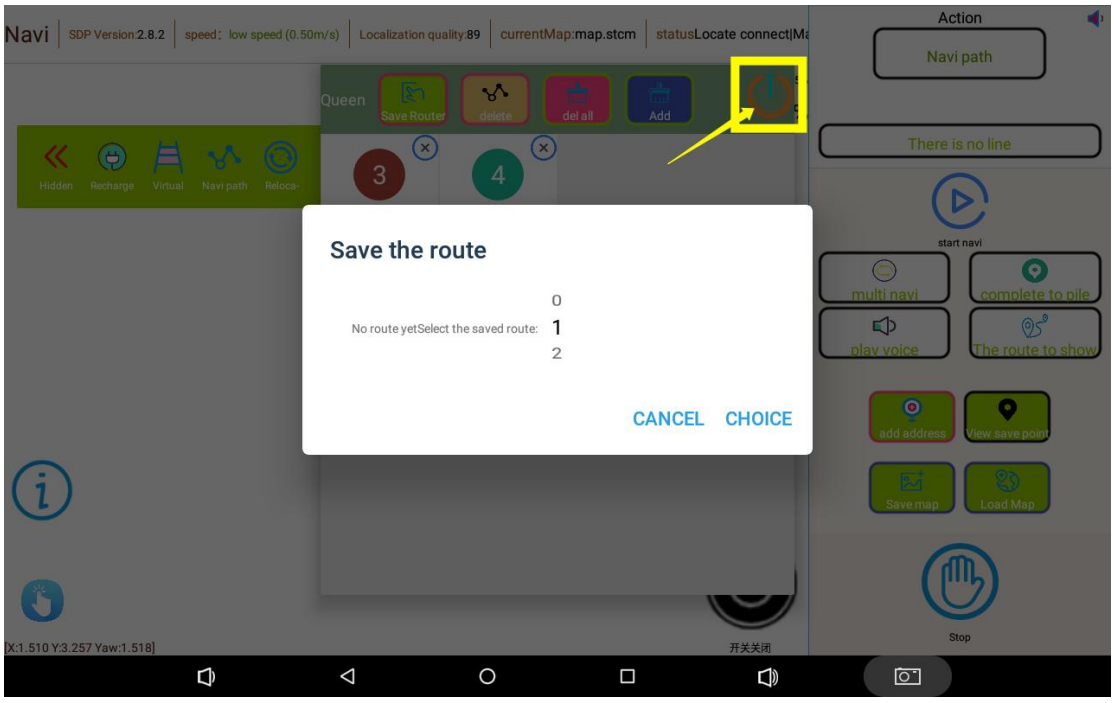


H. Set the path.

After adding the points, we also need to set the walking path if we want the robot to move according to the added points.



These target points need to be set as a route. Long press the target point number to change the order by dragging the target point number. The target points added on other maps previously , they need to be deleted. You can also click “ Add ”to add the target point on the route repeatedly. You can also delete points that the robot does not need to pass in the route. Then click “save router” button.

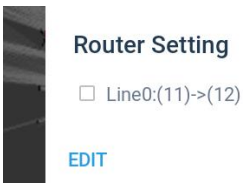


Select the route to save and click the “ CHOICE ” button. You can save three different paths，Select the path number by sliding up or down .After that, click

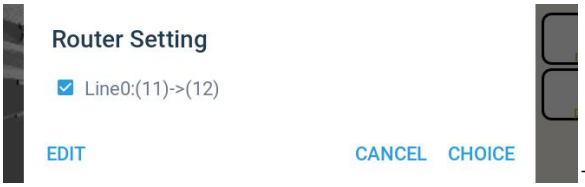
to close the page.

Then click on the navigation path again

→



→Select the path you just set

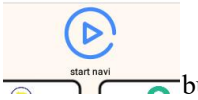


→And then click Select button.

I. Navigation and Stopping

After setting the path, I could click the Start navigation button on the right side of the page

， Let the robot walk several times according to the set path to determine whether there is a problem with the set point. If there is a point that the robot cannot reach, it is necessary to delete add the point again.

While the robot is walking， Click this 

button again， The robot will stop walking.Click the button again and the robot will continue to walk.

While the machine is walking, click on this

button， The robot will be stop all navigation commands.

Click on this

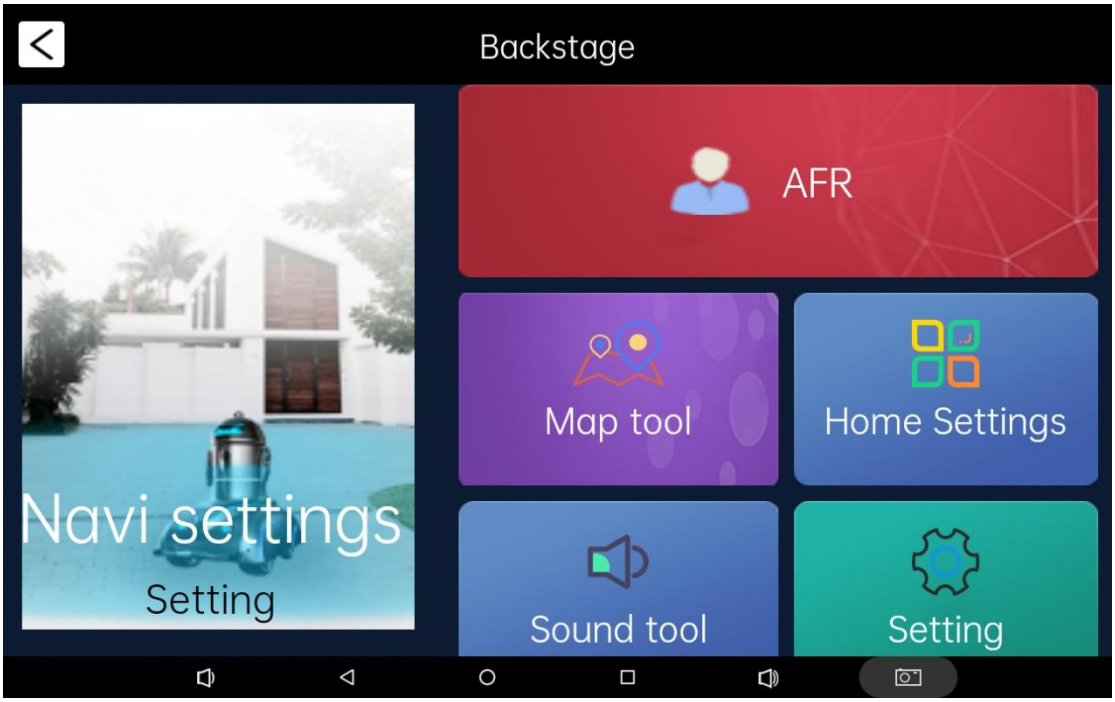
button. You can toggle navigation mode (single/loop).

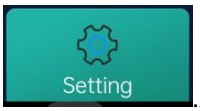
5、The setting of lead and explain.

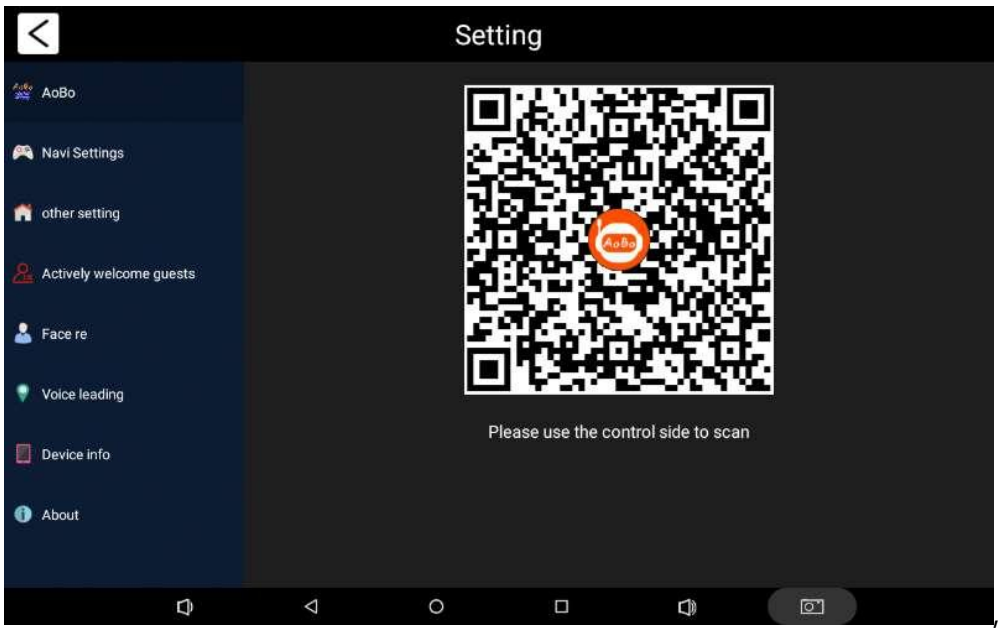
Click the logo on the upper left corner of the software homepage

continuously

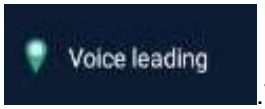
The software background page is displayed



Select Settings 

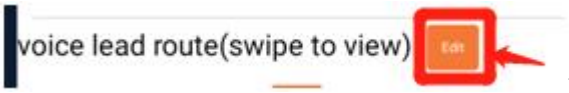
.After entering 

,

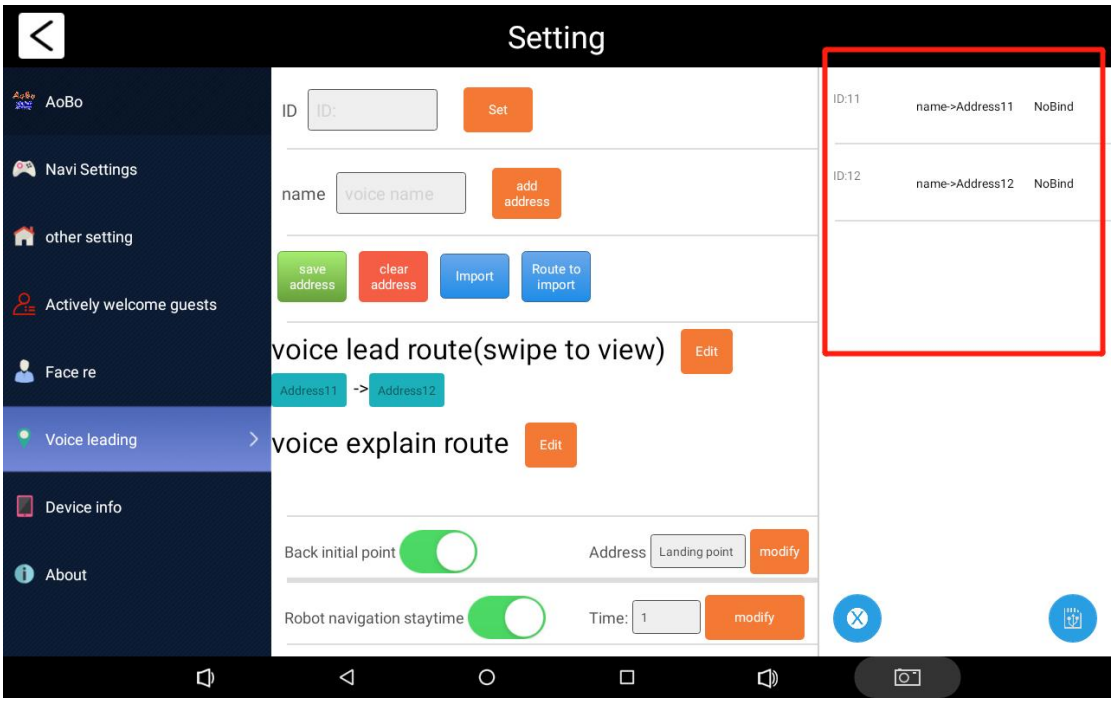
click the voice leading button 

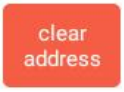
.The screen will be displayed

a. Import of voice guide route

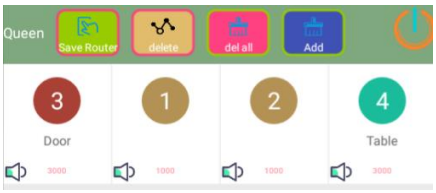
click 

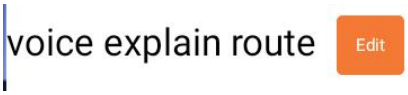
to edit it next, as shown below



The target point editing page for the route will be on the right. If the target point is displayed, clear the target point first 

, Click the import button

. 

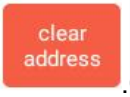
You can delete, add point, and adjust point sequence by holding point in this page. After that，click import on the top left 

，Then click on the bottom right corner to save the Settings

b. Voice explanation route import

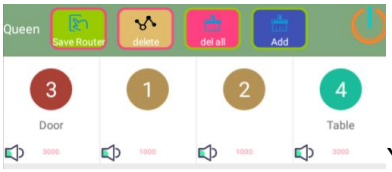
Click

button to edit , as shown in the figure.

The target point editing page for the route will be on the right. If the target point is displayed, clear the target point first 

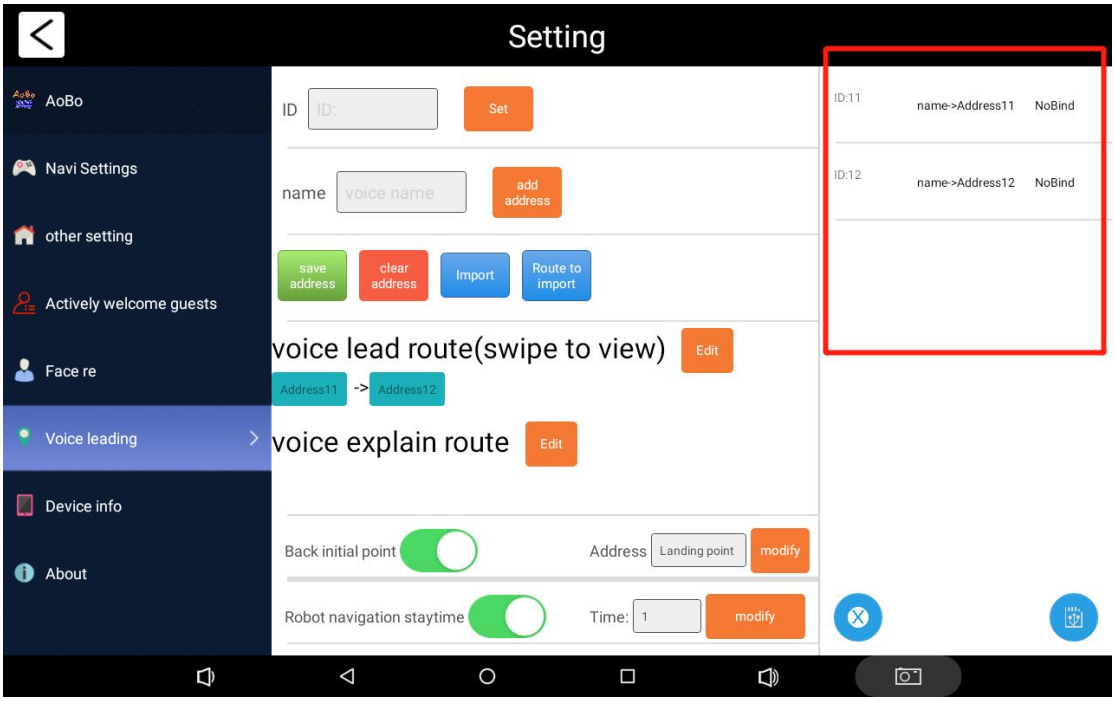
.Click the import

button.



You can delete, add point, and adjust point sequence by holding point in this page. After that，click import on the top left
，Then click on the bottom right corner to save the Settings.

Once you're done all, you can go back to the home page and wake up the robot to perform these functions.



The target points in the red box can be clicked to modify, delete, and change sequence of arrival

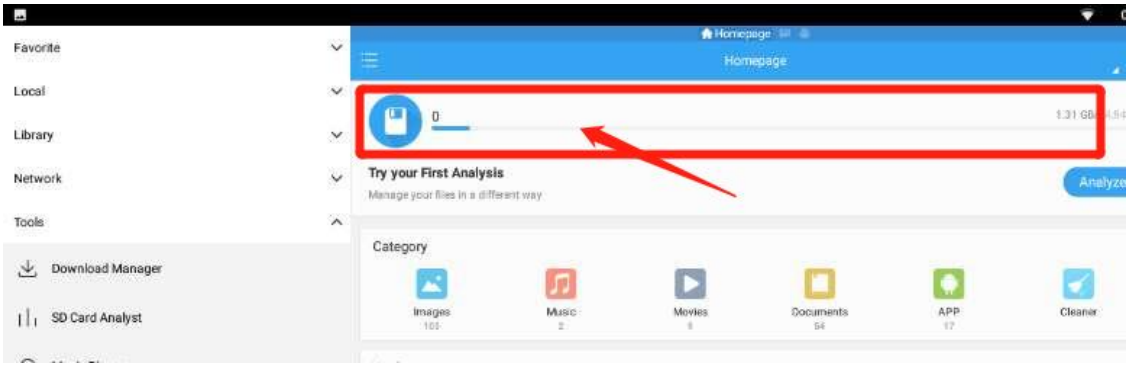
Appendix 1

1、Prepare a picture with a resolution of 360X180 and put it into a USB flash drive.

2、After the USB flash drive is inserted into the screen, a pop-up window of ES file browser will appear

3、Click the USB flash drive storage area (refer to 4) and long press the prepared picture to copy.

4、Click the area below (the area below is the robot's own storage area, and the USB disk storage area will be displayed below it)



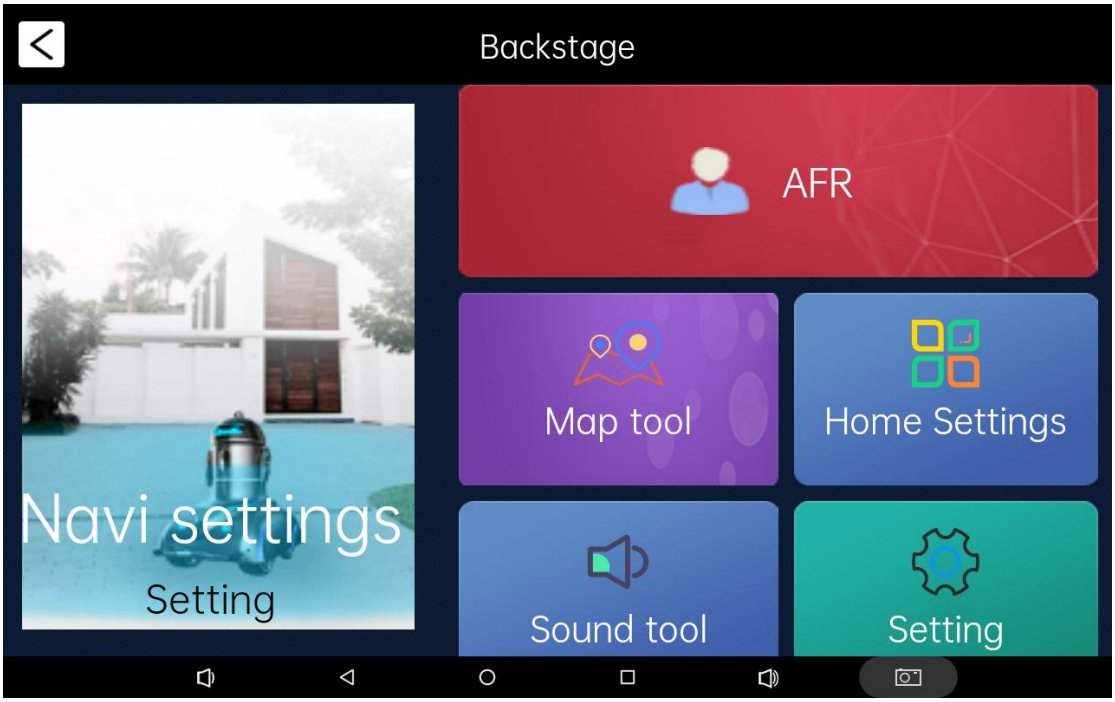
5、After entering the 0 folder, the order is 0→ aobo →apps→ aobocenter → logo folder (if there is no logo folder, we need to create one)

6、Paste the image into the logo folder and change the name of the image to 'otherlogo.png' or 'otherlogo.jpg'.

7、Restart the robot.

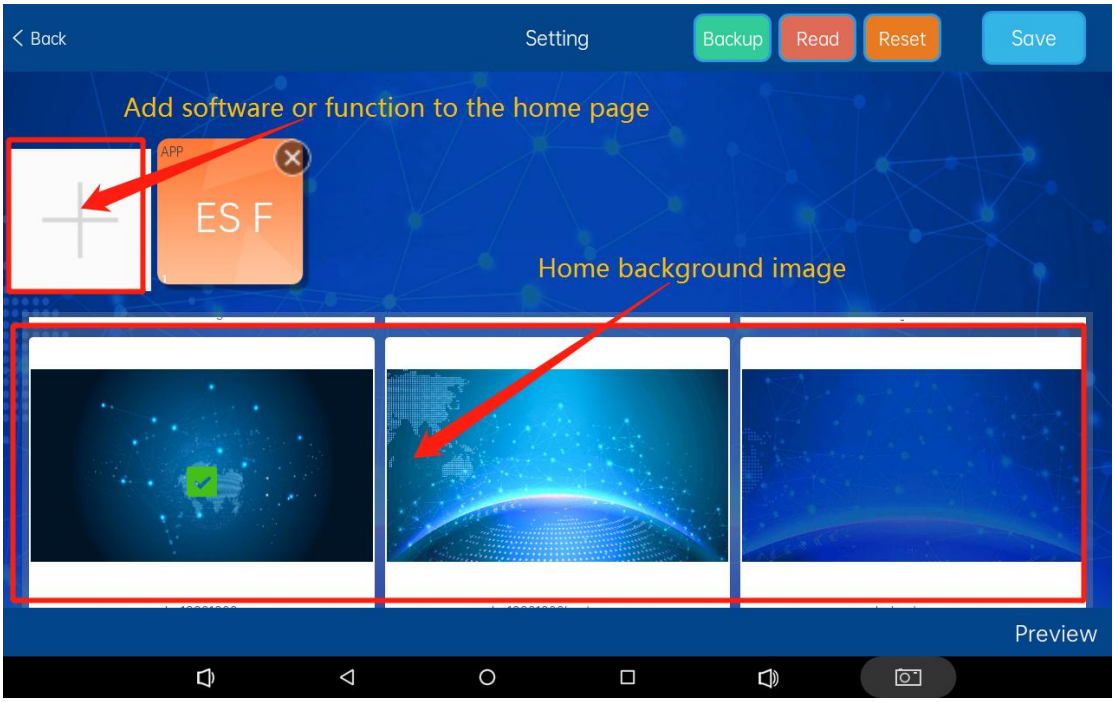
Appendix 2

Software background management interface



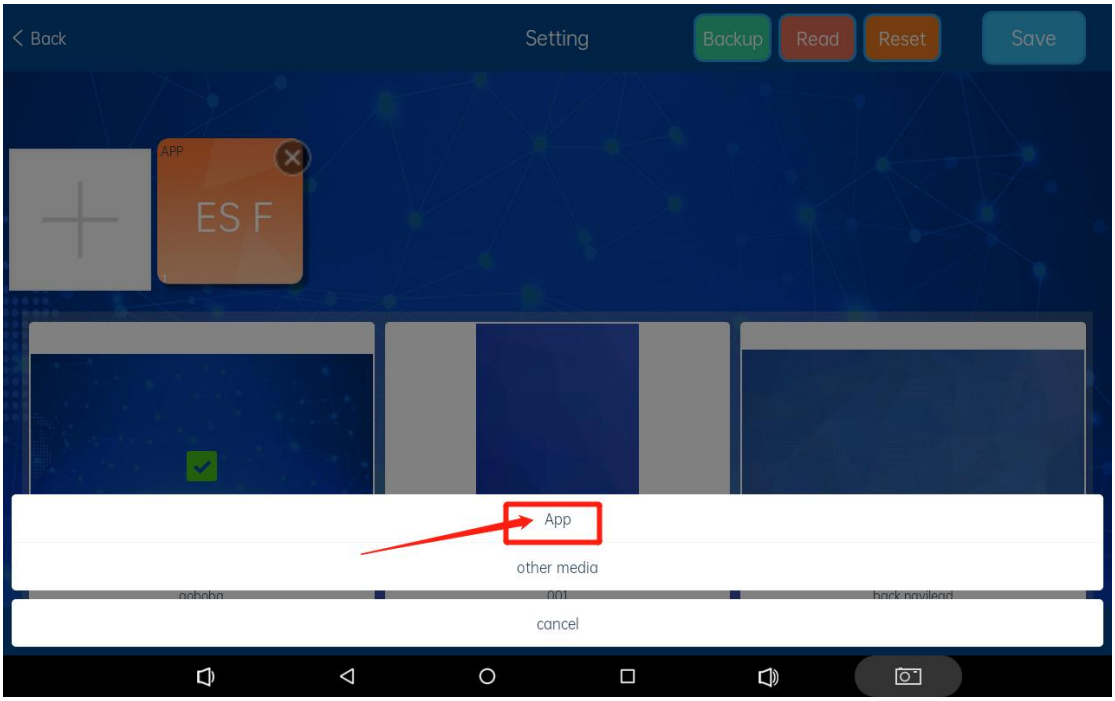
a. Navigation Settings: You can create and save maps, edit points and edit routes here.
b. Face recognition: not open the function.
c. Map tool: This function has not been opened yet.
d. Home Page setting: You can add system functions, pictures and videos, and third-party apps to the home page here.
e. Local voice: you can edit the local Q&A library here.
f. Setting: You can set functional parameters of the robot and start some functions of the robot here. (Already set, please do not change)
g. Setting at the bottom of the home page: This function only supports the portrait version of the robot, and is used to set the video pictures played in the advertising area of the home page.
h. Screensaver Settings: This function only supports the landscape version of the robot, used to set the face recognition hibernation when playing advertising pictures video.

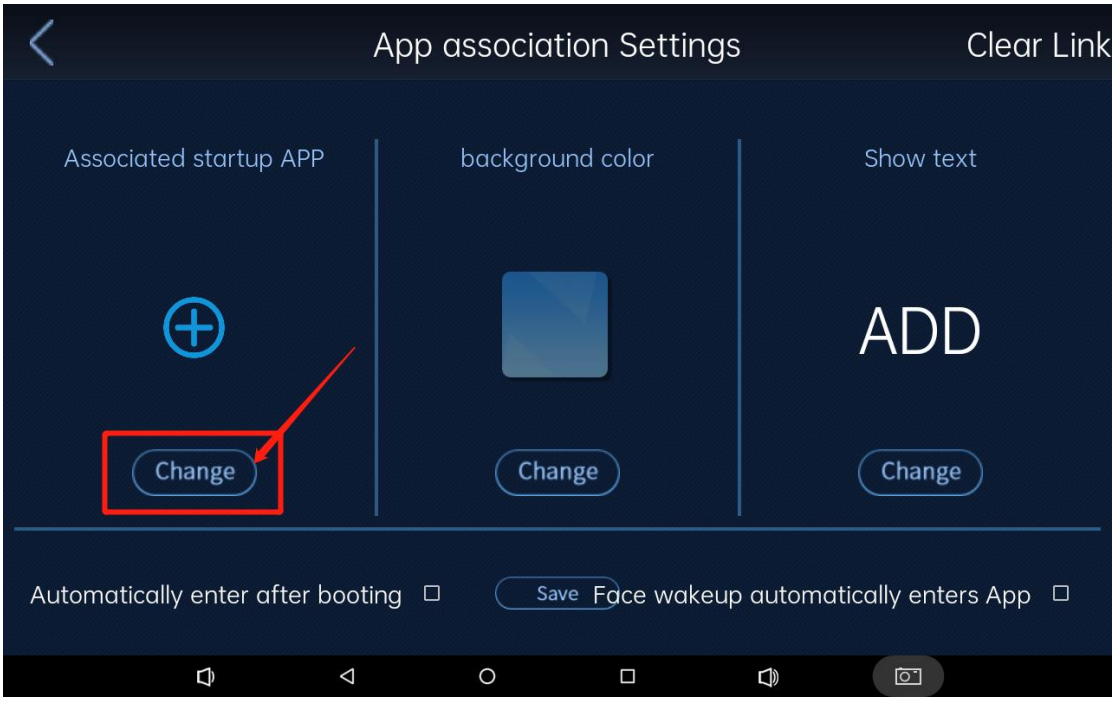
6、Setting of home page.



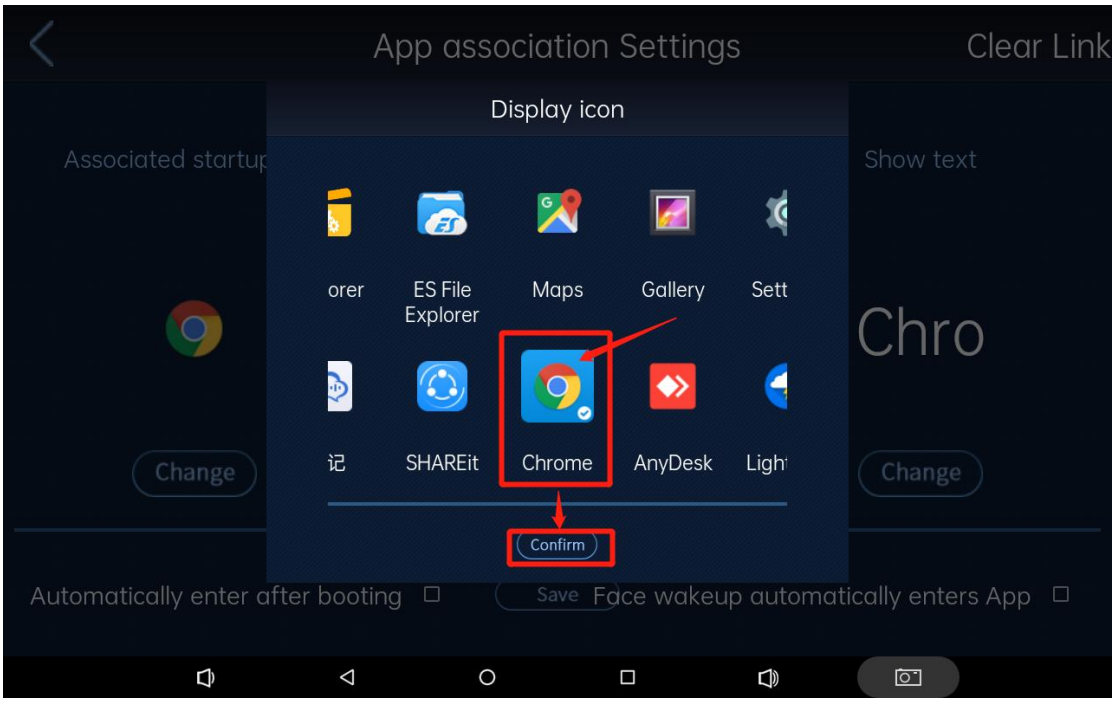
Click the white plus sign to add system functions, third-party apps, pictures and videos

a. Adding a Third-Party APP



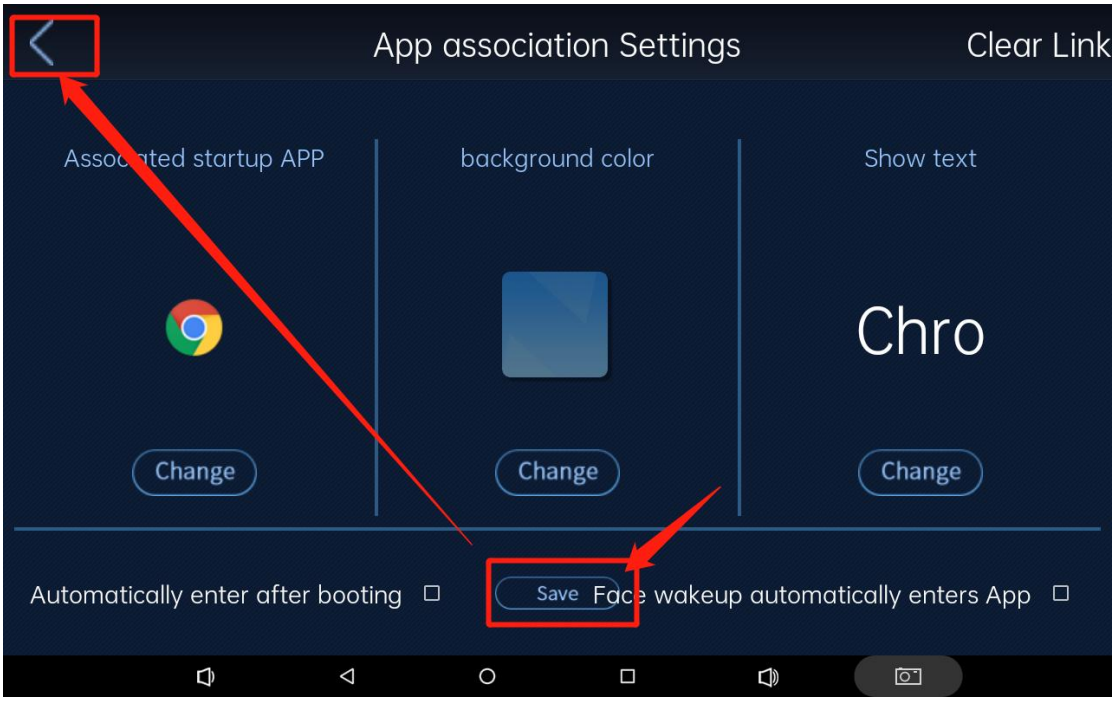


Click the Change button.

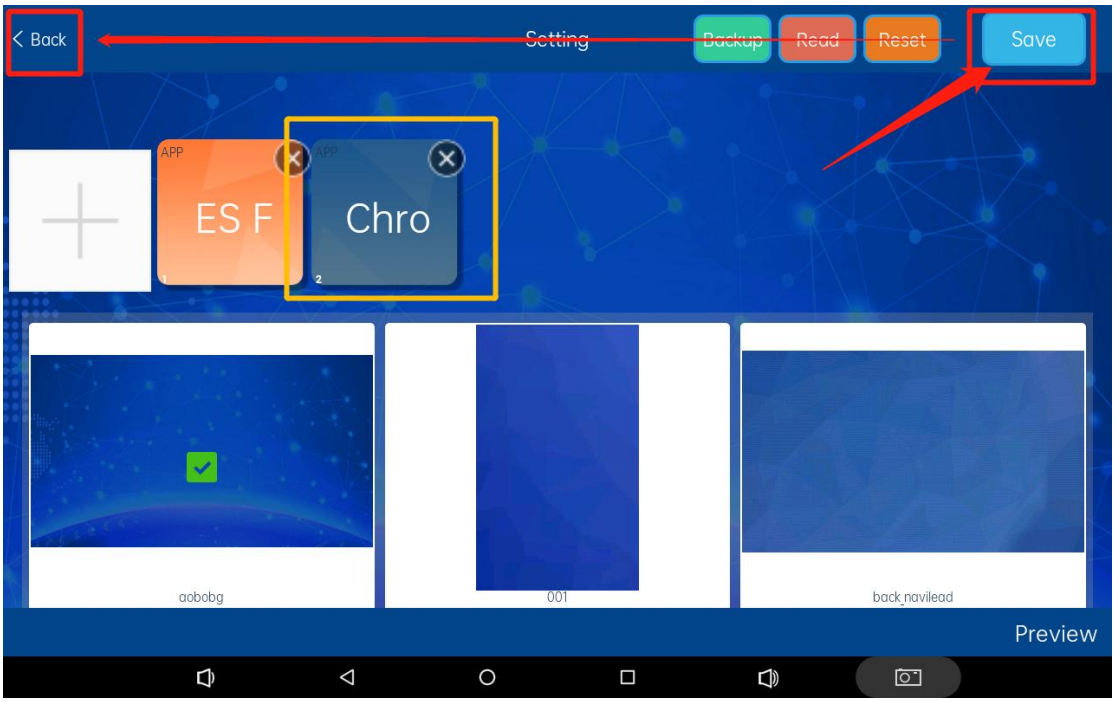


Swipe left and right to select the third-party APP you want to add,

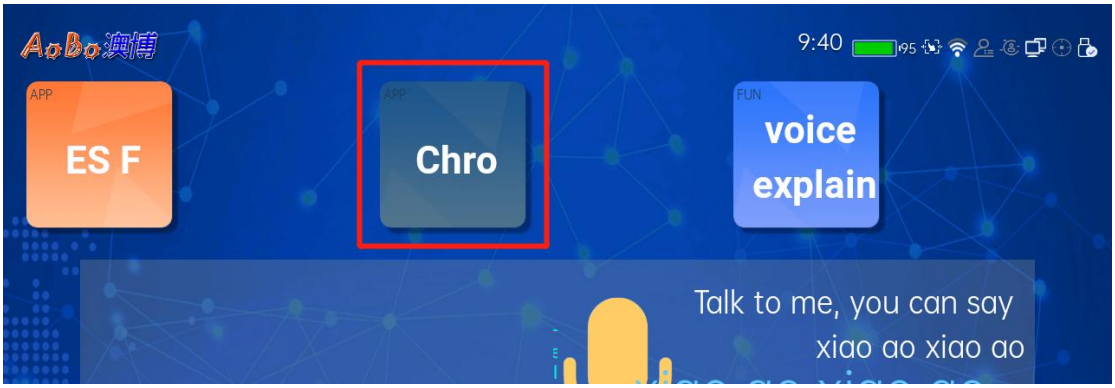
then click Confirm button.



Save and then return to the adding page.

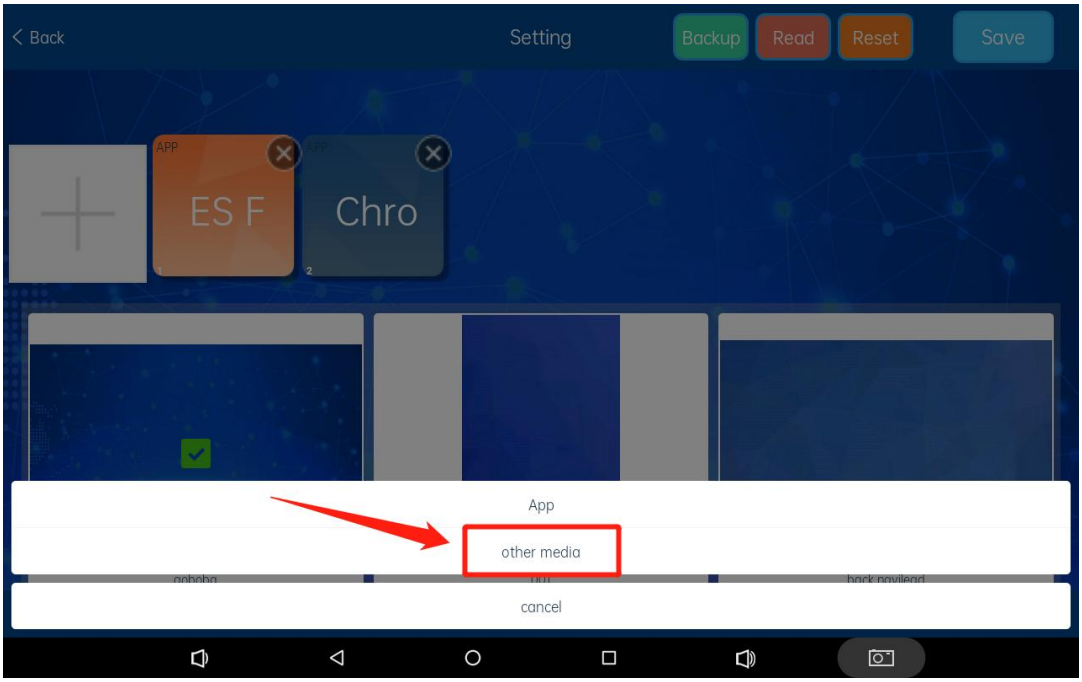


After returning to the adding page, click the upper right corner to save the Settings.



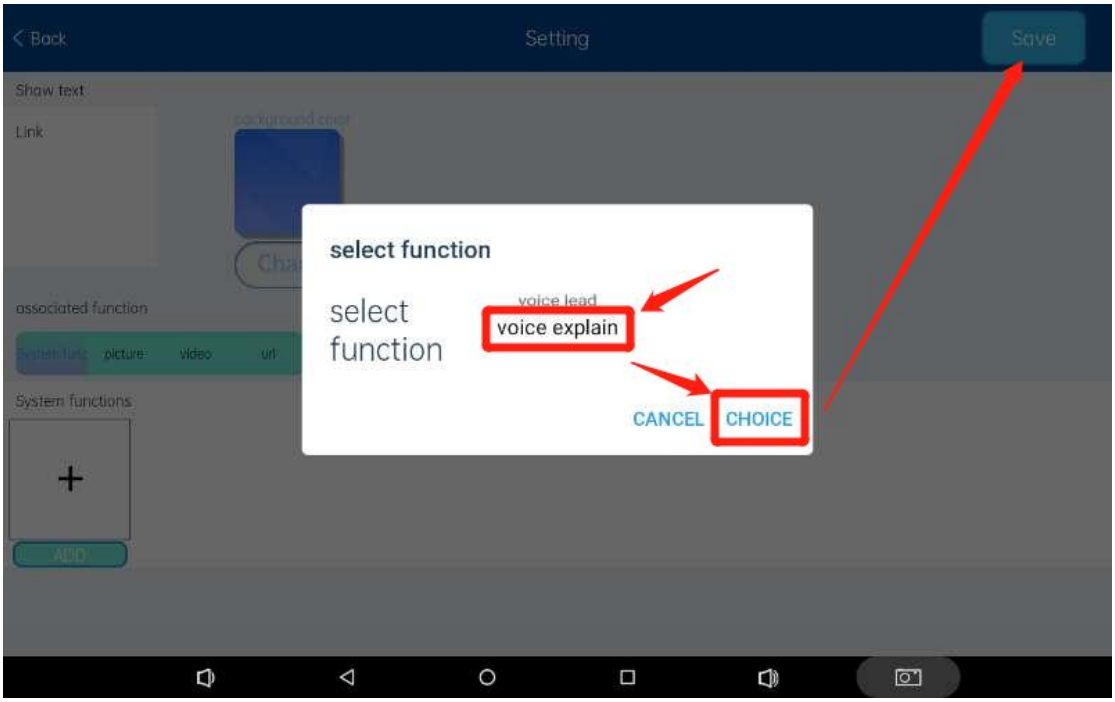
The software will appear on the home page and you can click on it to use.

b. Add System Functions on the home page .

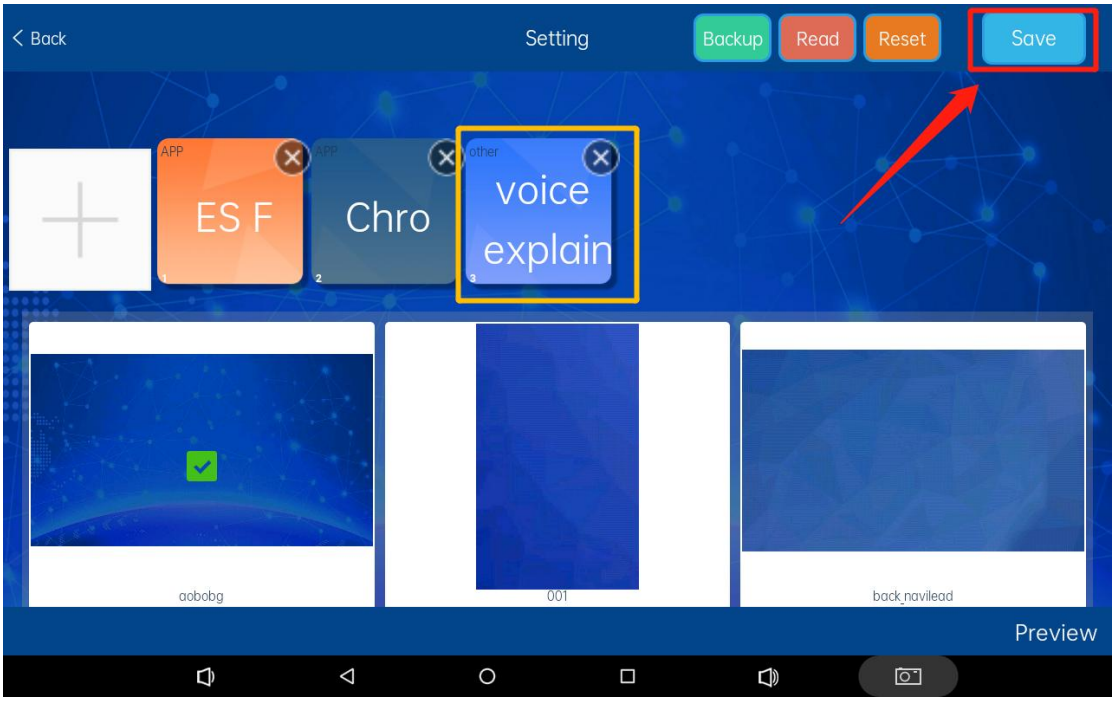


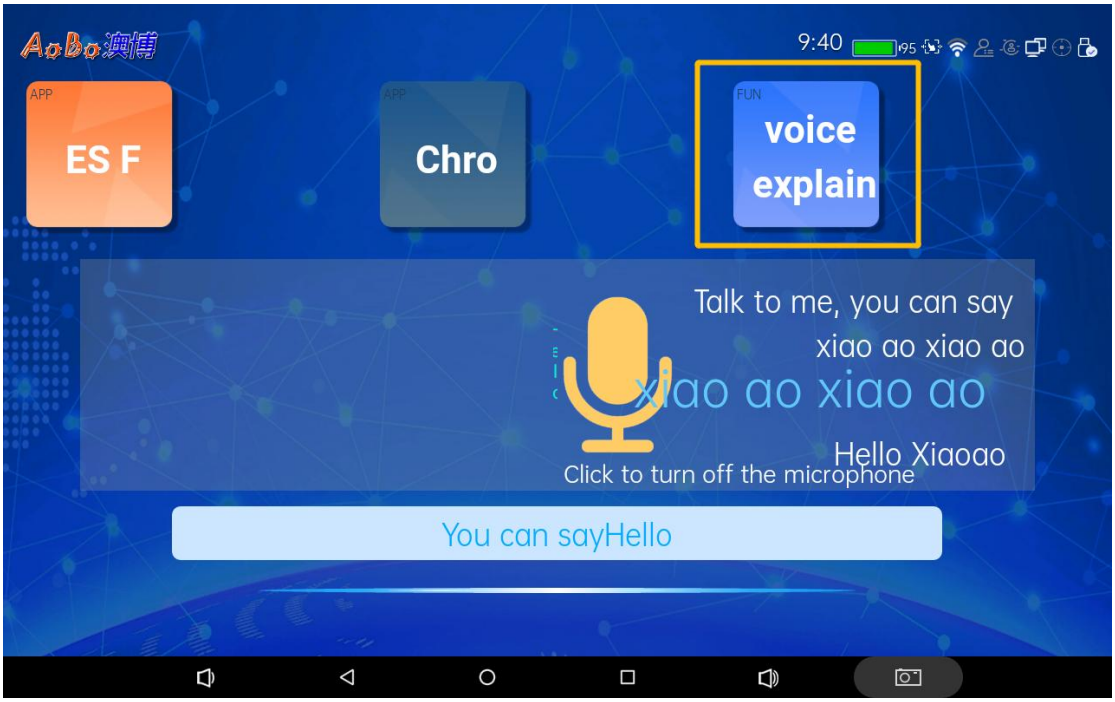
Click to select System Function, and then select the plus sign below.

Slide up and down to select function module, like voice guide or voice explanation.



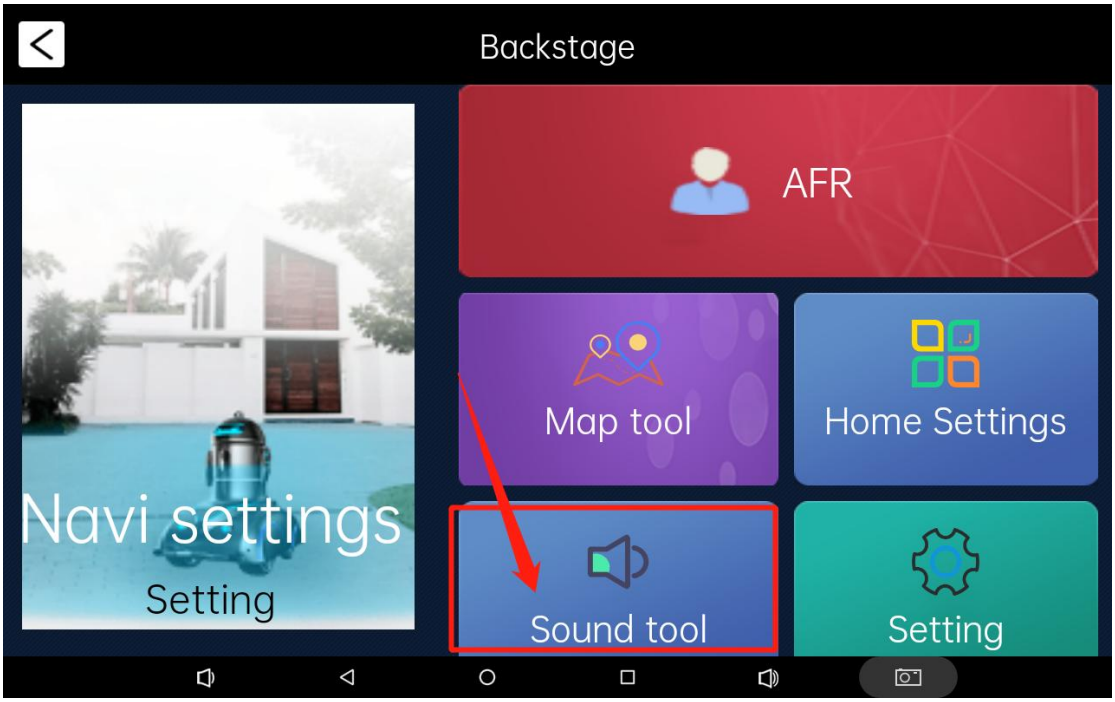
Select the function module and click the upper right corner to save it.



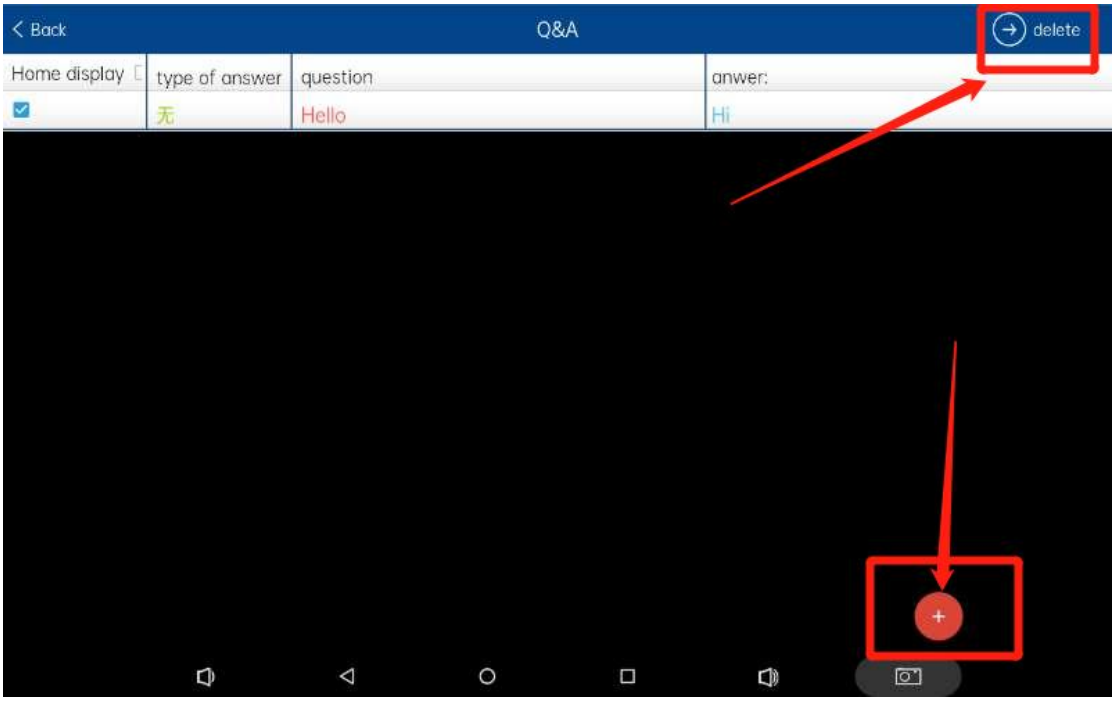


After returning to the adding page, click the upper right corner to save the Settings

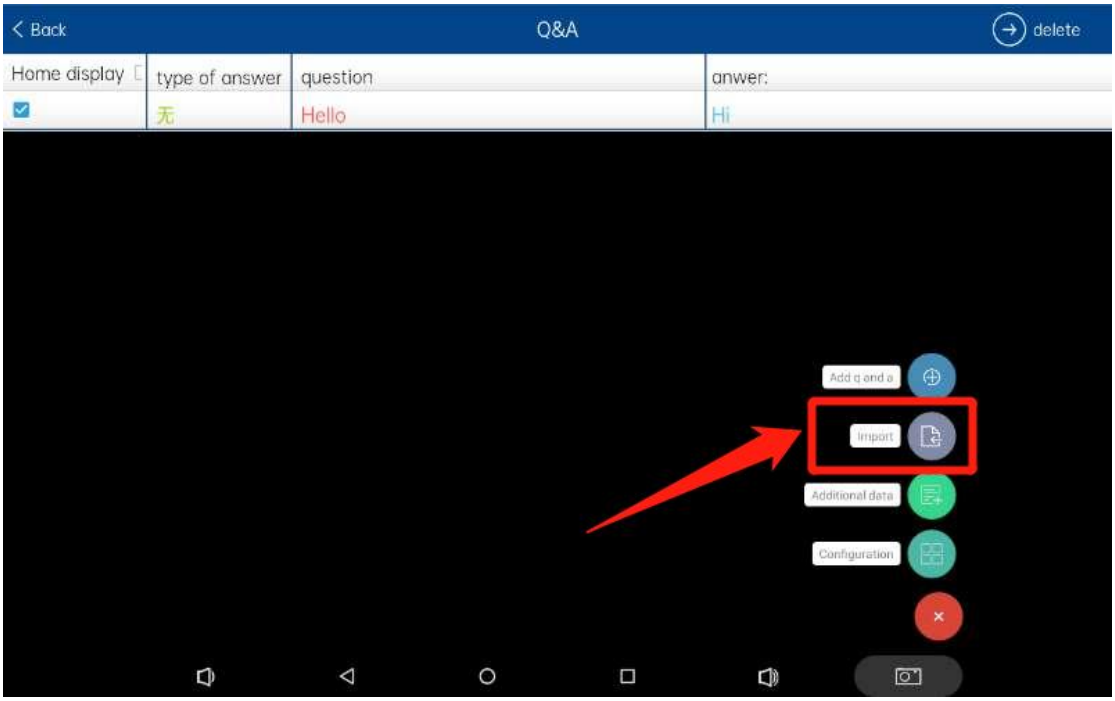
7、Local voice



This page displays imported voice conversations, and you can also manually add some questions and answers on this page.

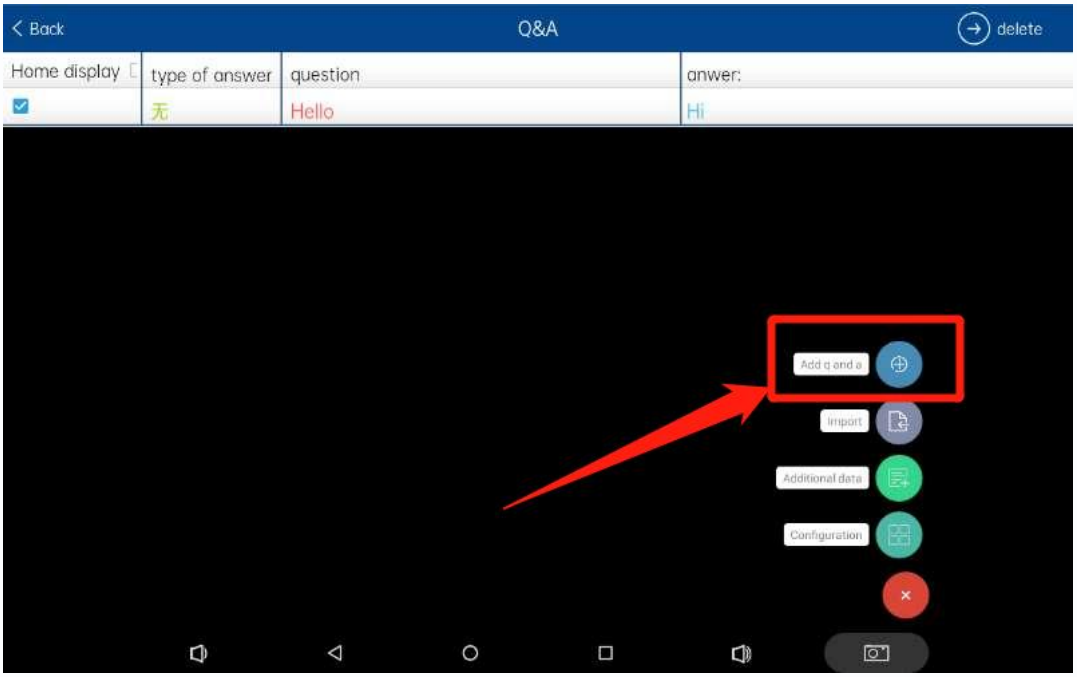


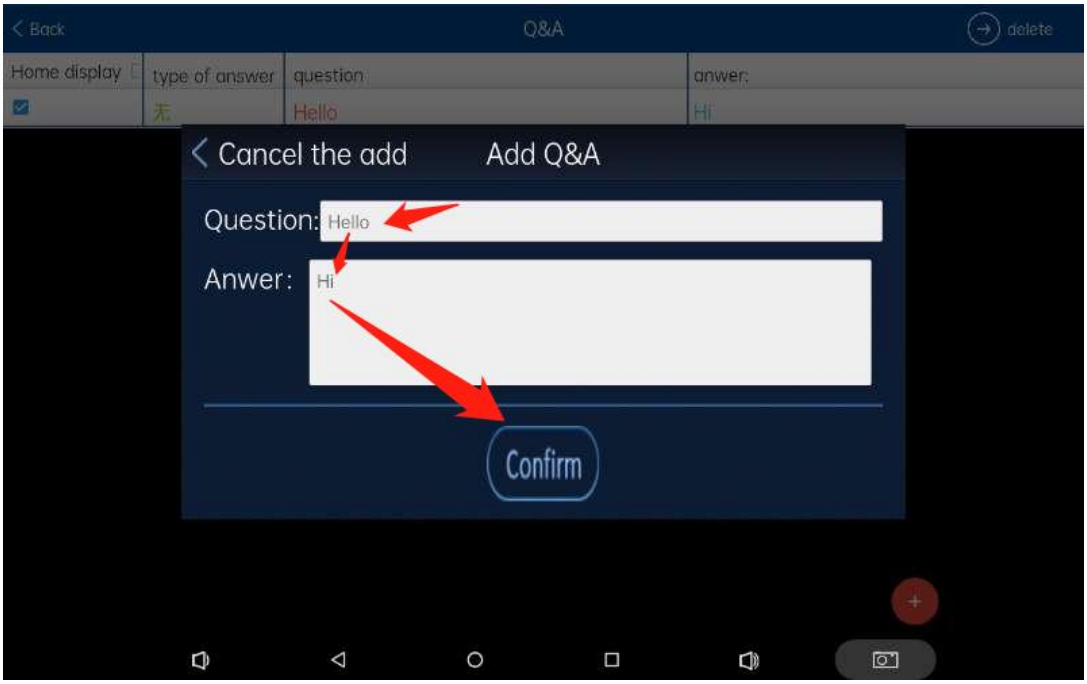
Batch import ,we needs click the delete key in the upper right corner to delete the original dialogue, and then click the red + sign in the lower right corner.



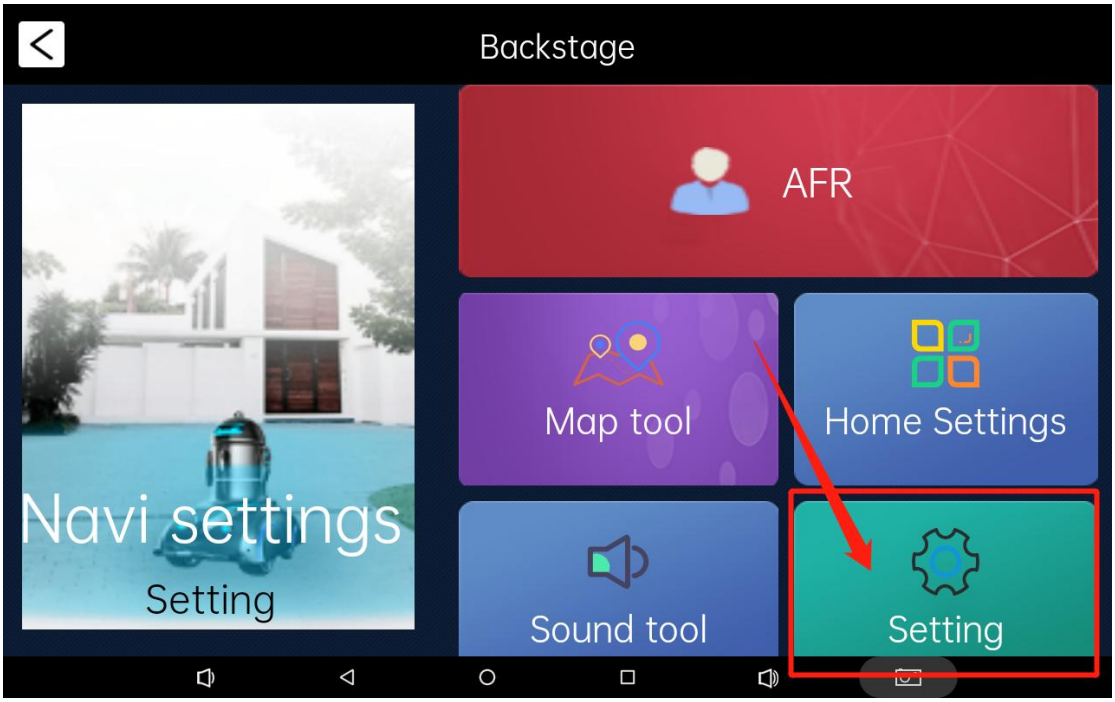
To select import button，that can import the questions and answers in the prepared folder in batches.

But you can also add questions and answers one by one

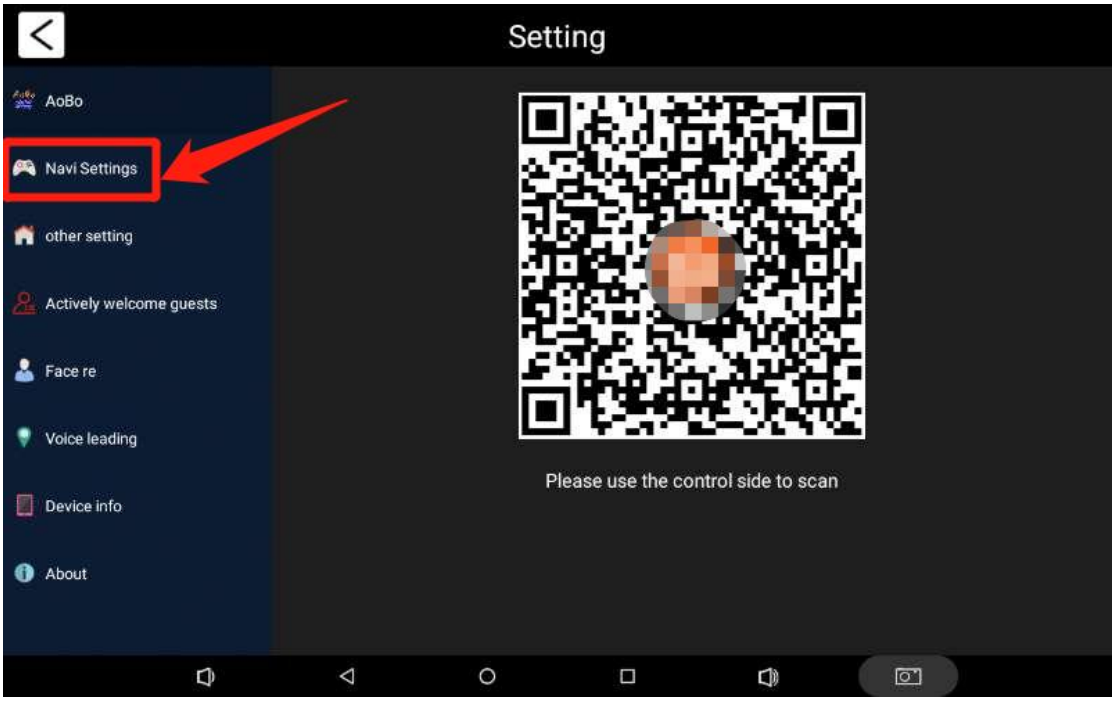


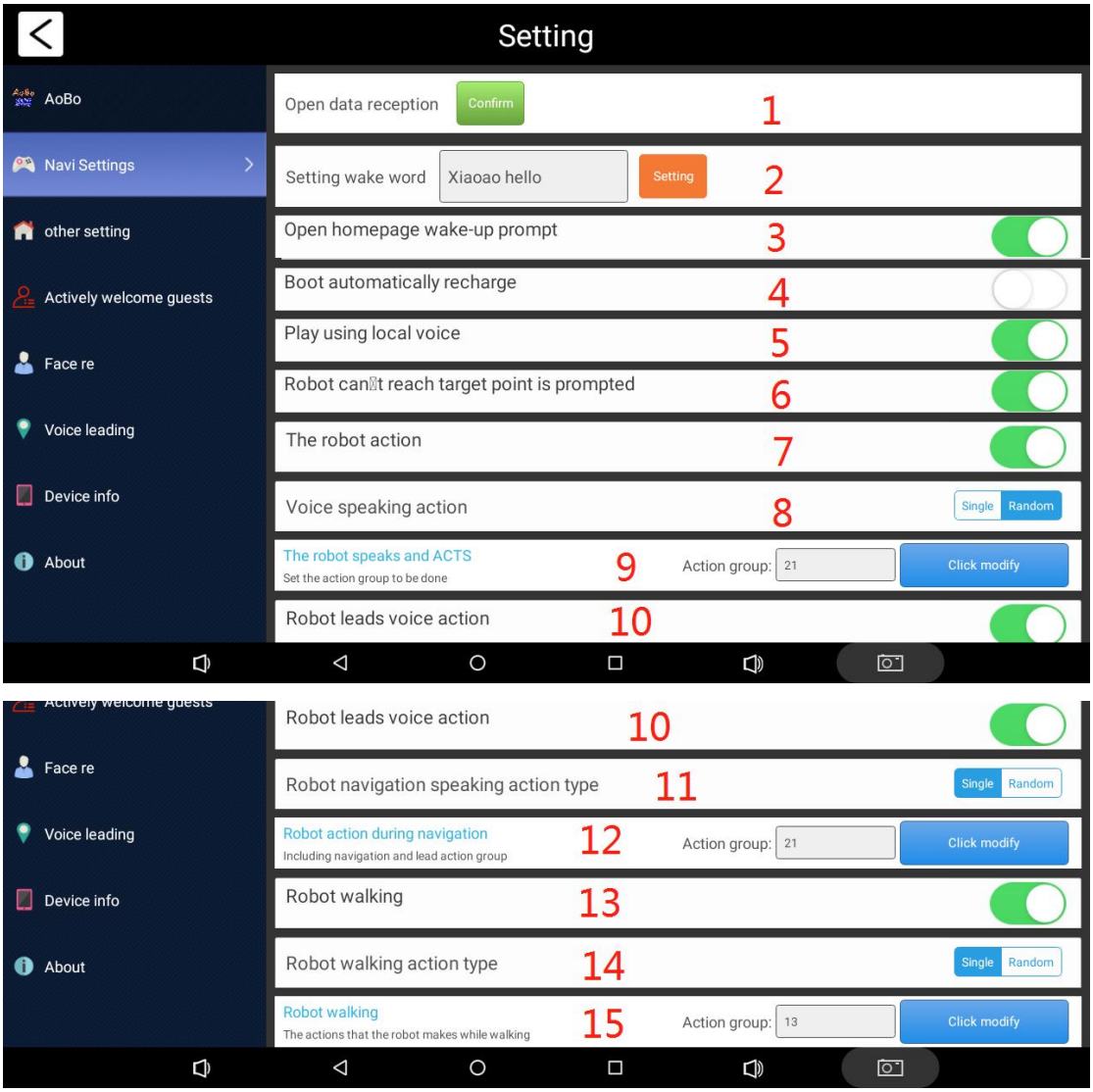

Back
Q&A
delete
Home display
type of answer
question
anwer:
无
Hello
Hi
Cancel the add
Add Q&A
Question:
Hello
Anwer:
Hi
Confirm

8、Setting



A. Navi Setting



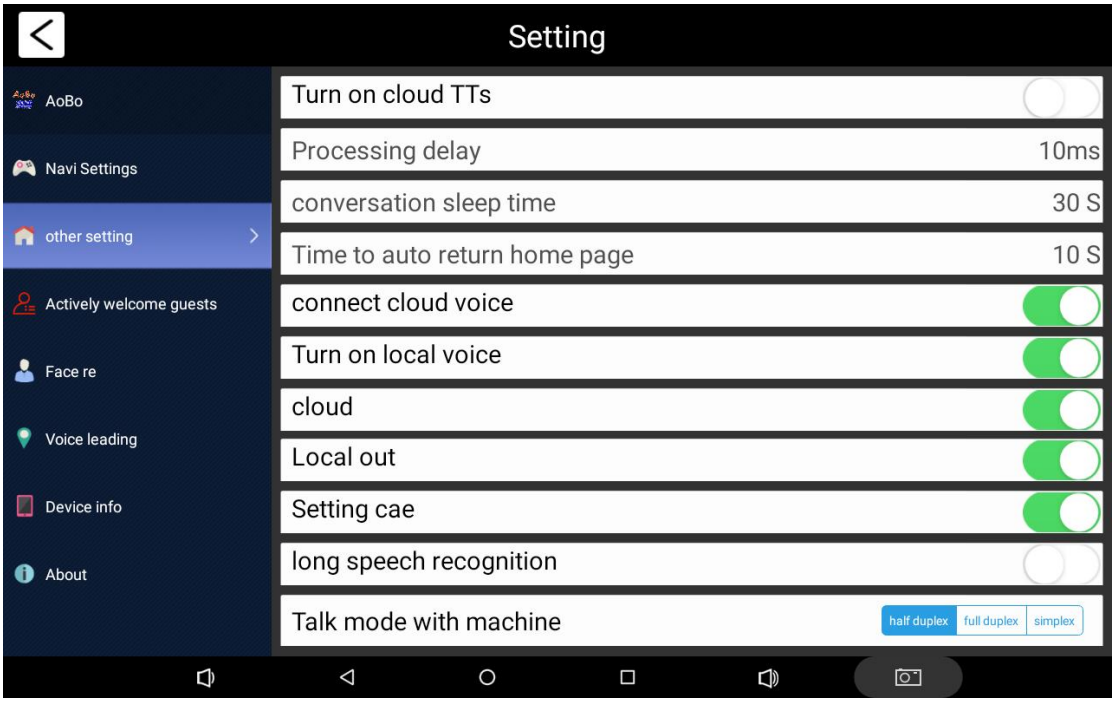


1. This function is not available yet
2. The wake marked word is only to be modified. But the words you say when you wake up the robot cannot be changed
3. Home page wake-up prompt word switch.
4. This function is not available yet
5. Local voice is used for offline playback.
6. Robot can `t reach target point is prompted

The following models will only be used if the arm can move

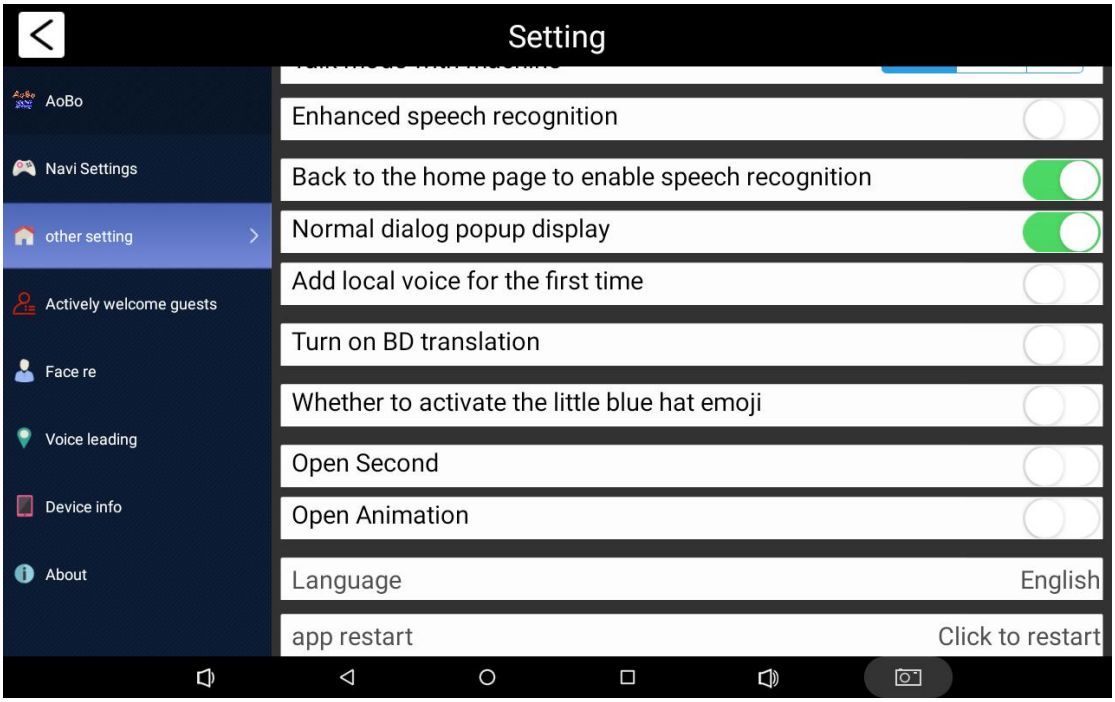
7. Action switch during robot voice dialogue.
8. Action types during robot voice dialogue: loop single action/random action.
9. Action selection of cyclic single action during robot voice dialogue.
10. Action switch when the robot is led by voice.
11. Action types when the robot is led by voice: cycle single action/random action.
12. Action selection of a single cyclic action when the robot is led by voice.
13. Action switch when the robot walks.
14. Movement type of robot walking: cycle single action/random action.
15. Action selection of cyclic single action when the robot walks.

B. Other Setting



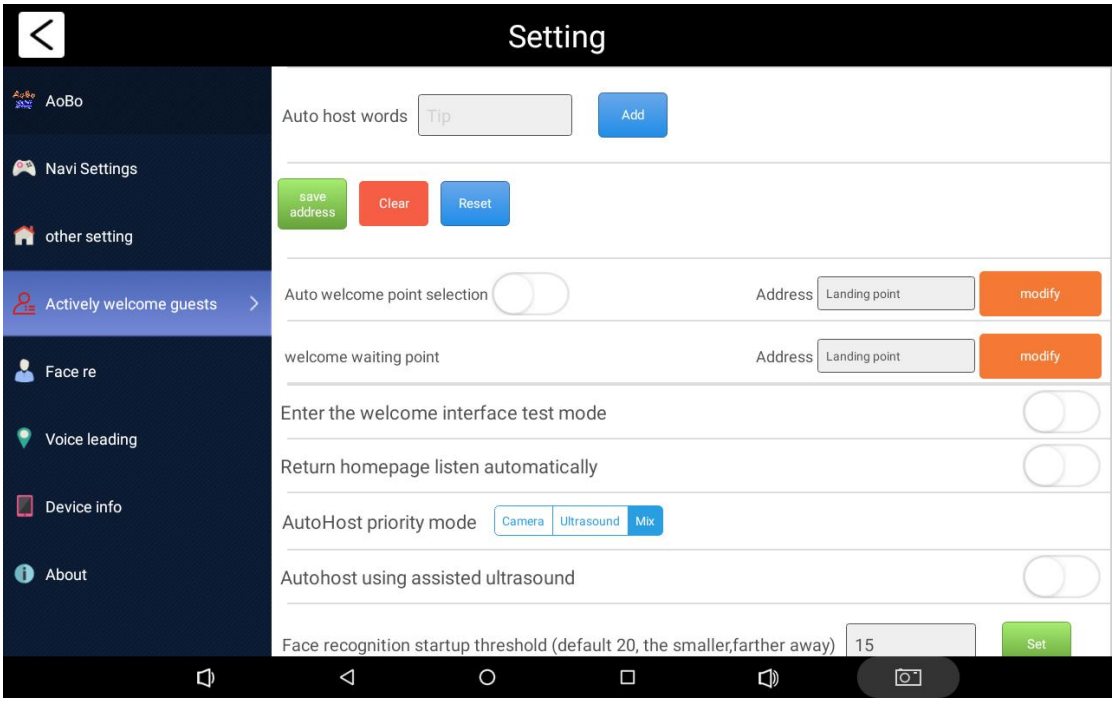
This information cannot be altered at will.

These Settings should be modified under the guidance of after-sales.

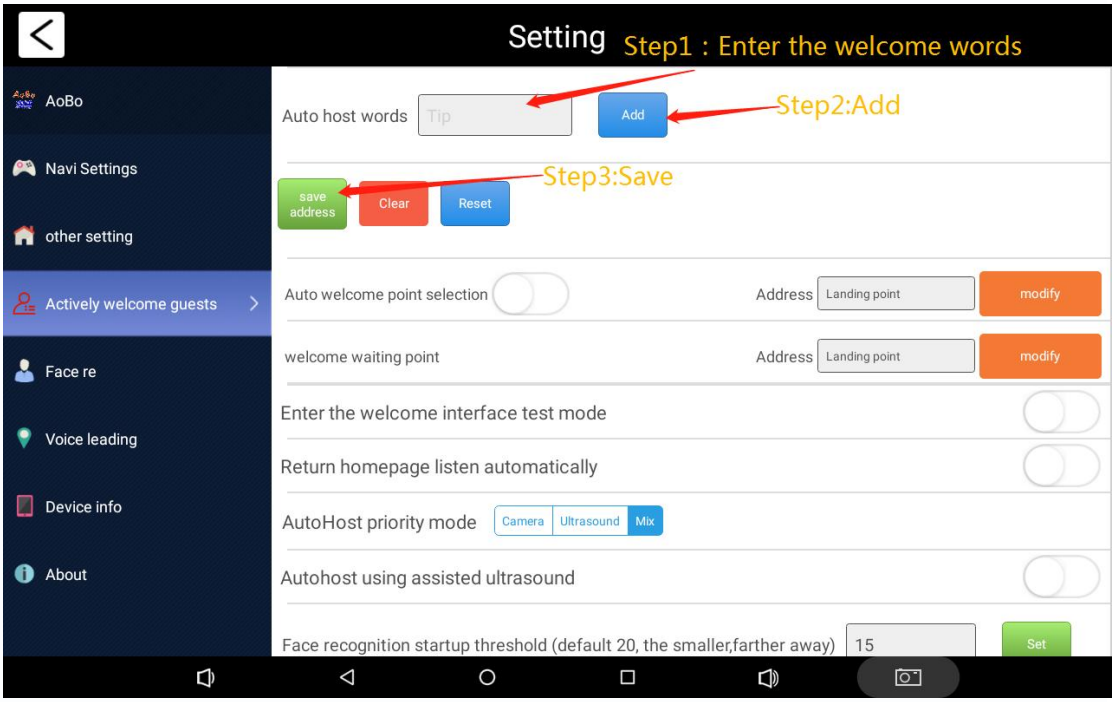


If you need to restart the application, please click here to restart the application

C. Welcome function



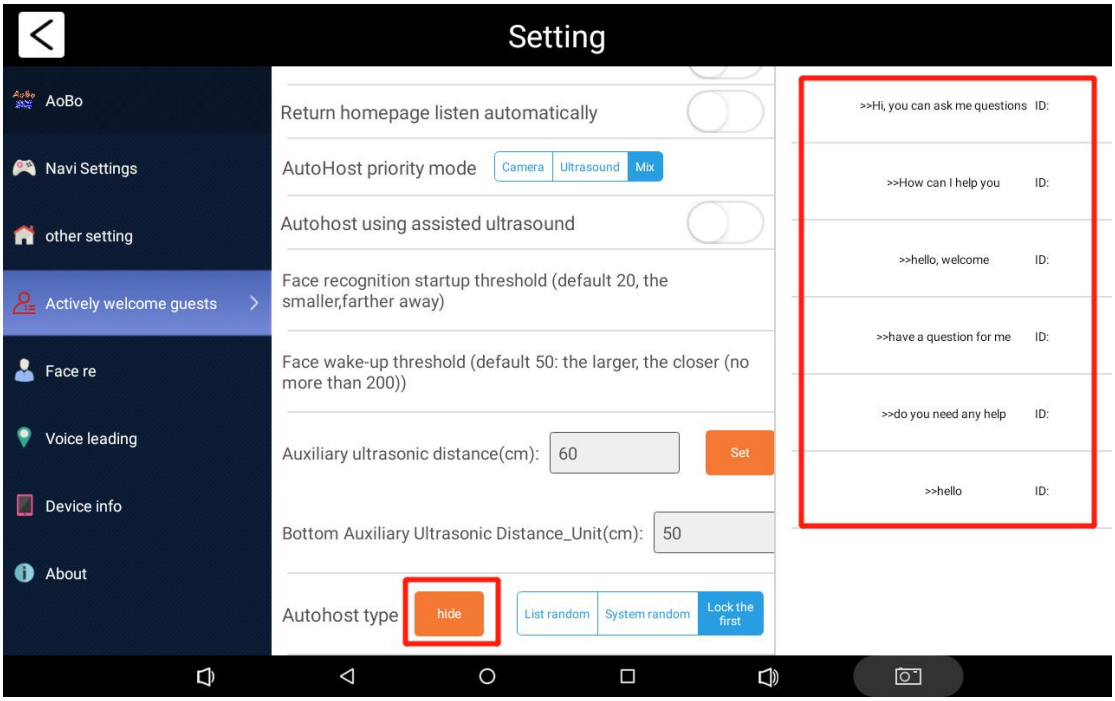
The page we can set up the robot to recognize some faces and say welcome`s words at the same time.



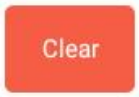
Step1:Enter the welcome`s words in the box

Step2:Click the Add button.

Step3:Then click save button.



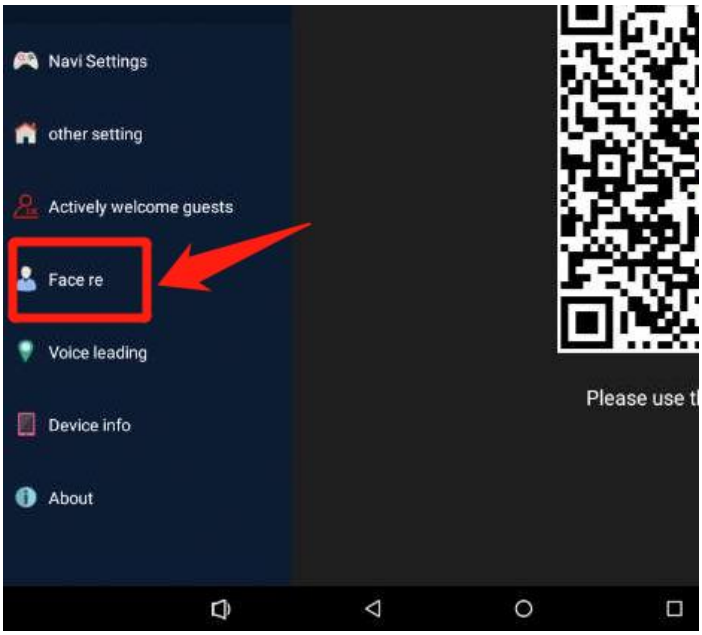
These welcome sentences can be hidden.

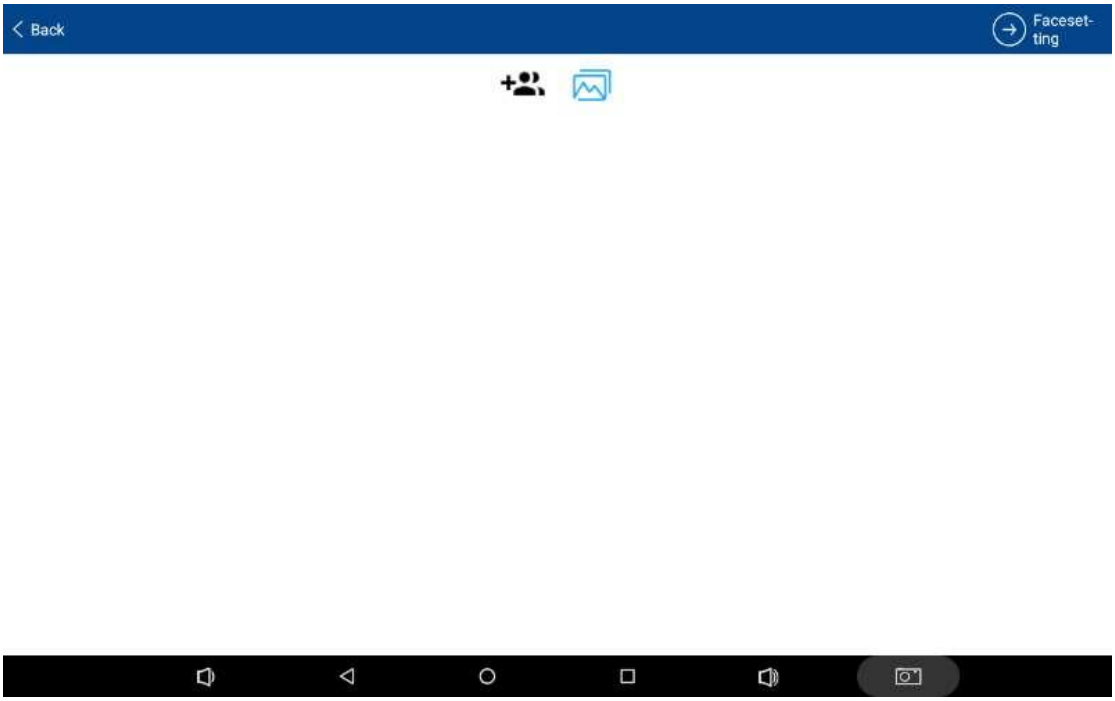


This button means to clear all welcome statements

Reset the welcome statements to the factory default.

D.Face recognition

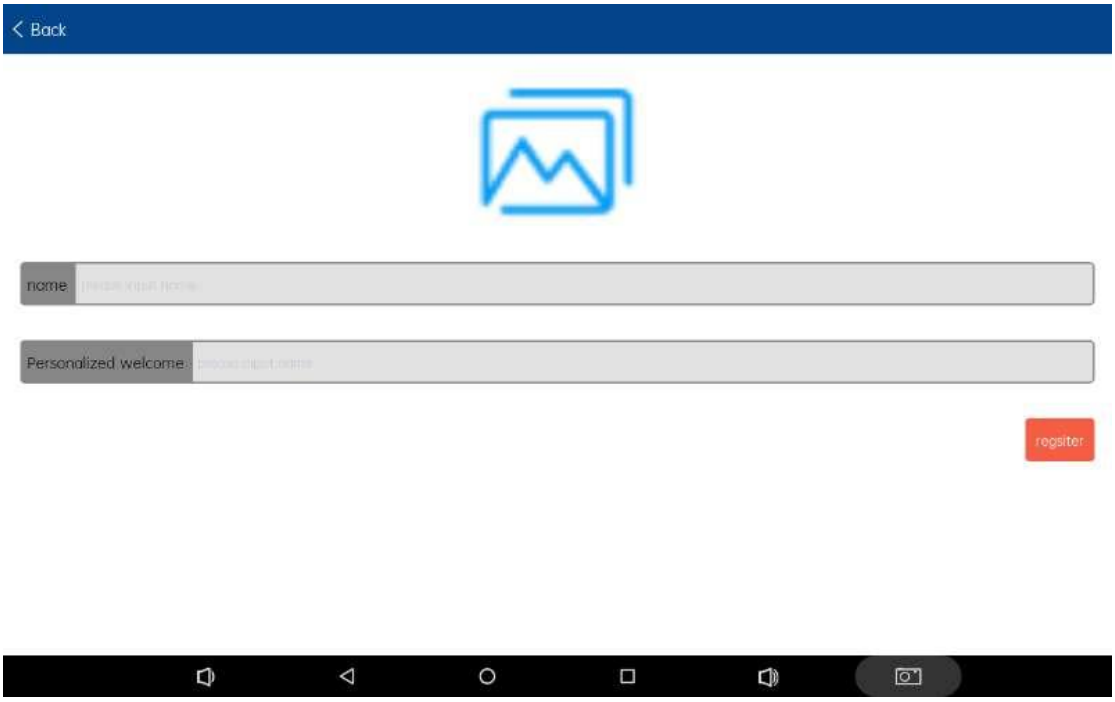




a. Face registered

Click this sign to register, when the face is recognized the robot will play the set statement.

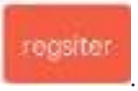
The following figure shows the registration page.



Click the sign to take or select a photo.

Enter name. After recognizing the face , the name will be displayed on the screen.

Enter the welcome sentence , it will be played after recognizing .

When you are finished ,please click the Register button 

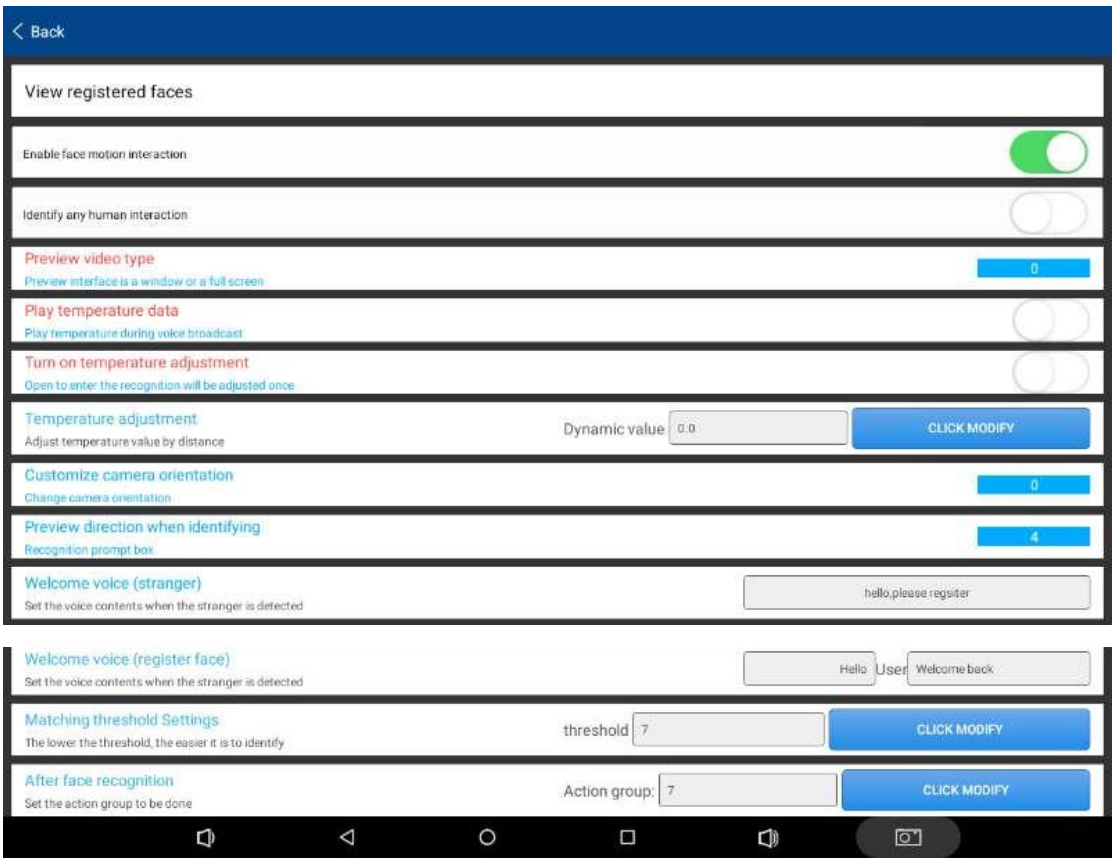
.

b. Face setting

This information cannot be altered at will.

These Settings should be modified under the guidance of after-sales.

Click the top right button to enter setting page.



Open facial action interaction: When the software is in standby state, will start face recognition wake up function.
Recognize anyone interaction: After opening, you can recognize anyone to wake up the dialogue; If it is closed, only registered faces can be recognized.
Preview video type: Set this parameter to 0
Play temperature data (temperature measuring robot) : The detected temperature data will be broadcast when it is turned on, but not when it is turned off.
Open the temperature adjustment (temperature measuring machine) : after opening the identification will be adjusted once.
Temperature adjustment (temperature measuring machine) : The accuracy of temperature detection can be adjusted by this dynamic value.
Customize camera direction: Set this parameter to 0.
Preview direction during identification: Set this parameter to 1.
Welcome Voice (stranger) : Set the voice content that detects strangers.
Welcome voice (registered face) : Set to detect the voice content of the registered face.
Matching threshold Settings: The lower the threshold, the easier it is to identify.
Action after recognizing a face: This feature is not yet available

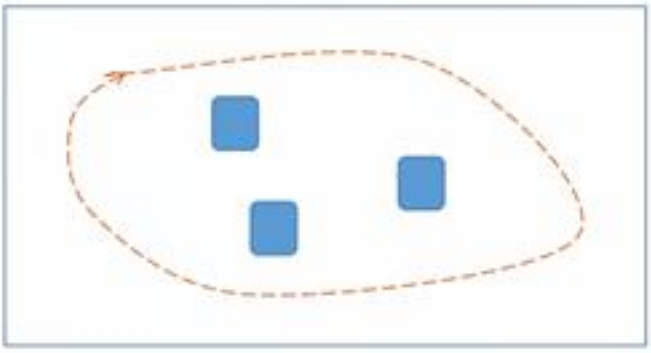
Creating a Map Appendix

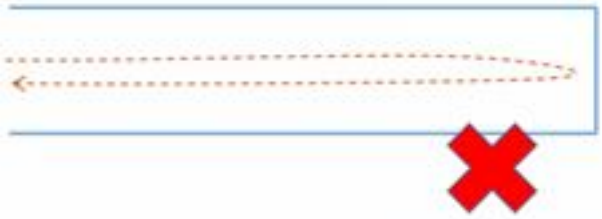
When creating a map, follow the following rules:

- Each time the robot is ready to create a new map, it must lean on the charging pile and be restarted. After being restarted, we does not operate the screen.
- Use a low speed, recommended less than 0.5m/s, the speed depends on the current platform function.
- Multiple loops generate a closed loop.
- After the n loop returns to the origin, keep the robot moving and take more overlapping paths. Do not stop moving immediately.
- Loop back to the origin, such as the map is not closed, then continue to let the robot walk until closed.
- For closed areas, avoid old paths and reduce memory consumption.
- Do not click the " Pause drawing" button during drawing construction. Please do not edit the map, do not add virtual wall, virtual track and do not use eraser function before the completion of map building. After the completion of map building, please select "pause map building" or click Save button to save the map in the navigation page of the robot screen and then do map editing related operations.

1. 1. Tip

a) Let the robot take more closed-loop to walk. As shown below:

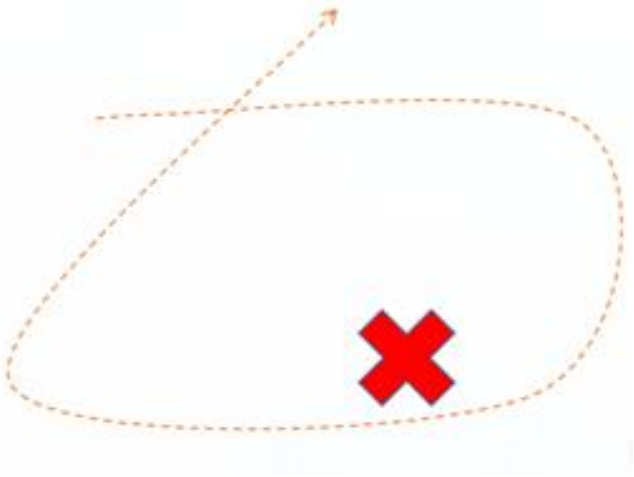




Incorrect demonstration

* The beginning and the end do not coincide

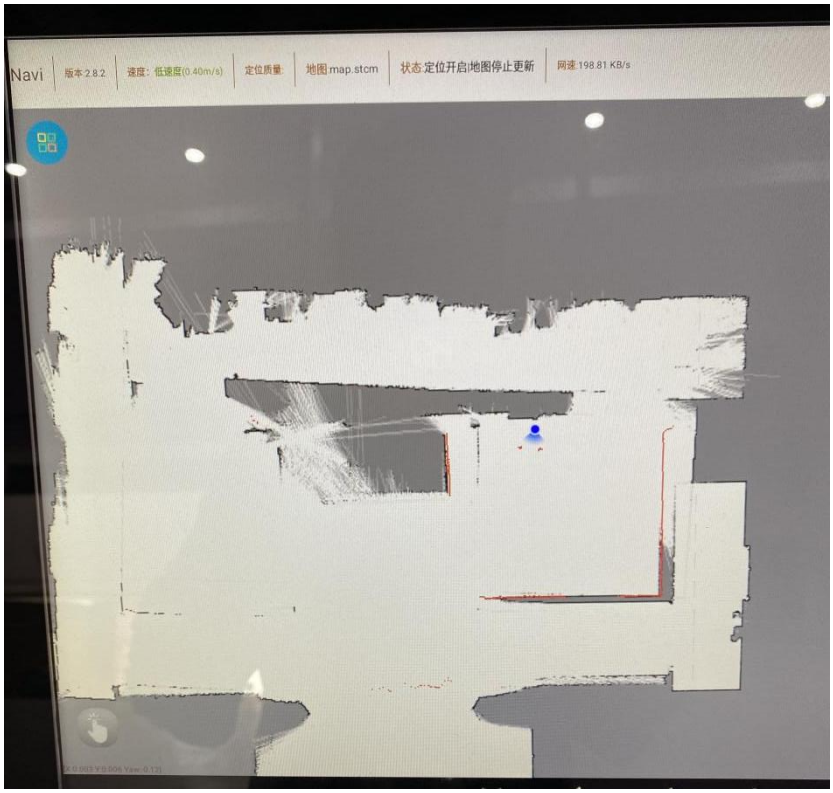
When the start and end of the robot coincide, it has to continue to walk for some distance.



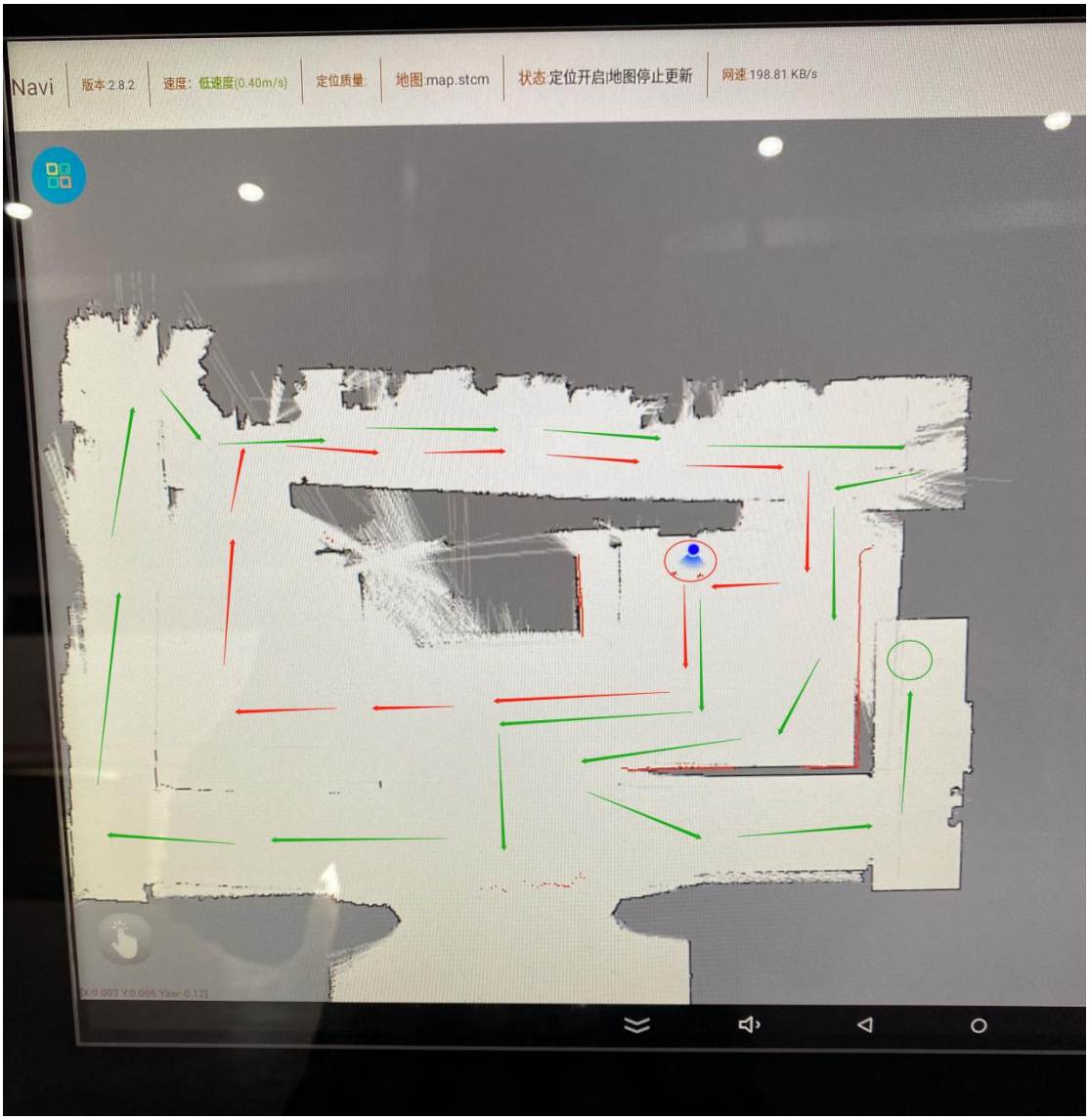
Incorrect demonstration

Practical example

If the map is not scanned according to the requirements of the above points, it can be seen that the boundary is obviously blurred and the position is overlapping. Such the robot can not run to the target point and navigation in the map, and the robot is easy to have positioning deviation.



For the recommended scanning route, the red circle (the charge pile) is the starting point of the red and green scanning routes. Take the red route first, and the starting point of the red route is the end point. Then take the green route and end up in the green area. After coming to the green end, take the shortest route and return to the front of the charging pile. The map will be regarded as complete.



A re-scanned map following the route described above

Questions and solutions

1. The robot cannot connect to WiFi or the network is unstable

A: Please check whether the superior network relayed by the robot is stable and the signal is strong or weak. At present, the router of the robot only supports relay ordinary encrypted SSID, enter the password to access the Internet. Requires mobile phone authentication, interface authentication, app authentication and other public networks are not supported. It is suggested to build a dedicated network environment for the robot.

2. The robot skidded.

A: Please check whether the ground is too greasy and whether the universal wheel is damaged.

3. Inaccurate positioning, and unable to reach the target point.

A： There are three possibilities: First, the environment changes too much; Second, the scanning and mapping effect is not ideal. It is recommended to scan the map again and try not to change the site environment after the map is built. If there is glass, please stick it with light - proof adhesive paper, the height of the stick should not be lower than the laser head.Third, the "track navigation" mode is used. Obstacles near the machine, too narrow aisle, and disconnection of virtual track will cause the target point to be unreachable.

4. When scanning the map, there is a mismatch or the map is inconsistent with the actual situation

A: Please check whether there are mirrors and glass in the environment , and try to rescan a new map following the closed-loop route .Please refer to the Appendix of the scanning

5. Detour or go a long way.

A:The laser-guided route planning changes in real time. If the system determines that the nearest route is blocked by an obstacle, it will plan another route. If someone gets in the way, they will avoid rezoning. If you need to reduce the number of detours, consider using "virtual track" navigation

6. How to change the voice of the robot?

A:Please contact after-sales engineers to change

7. What does a virtual orbit do?

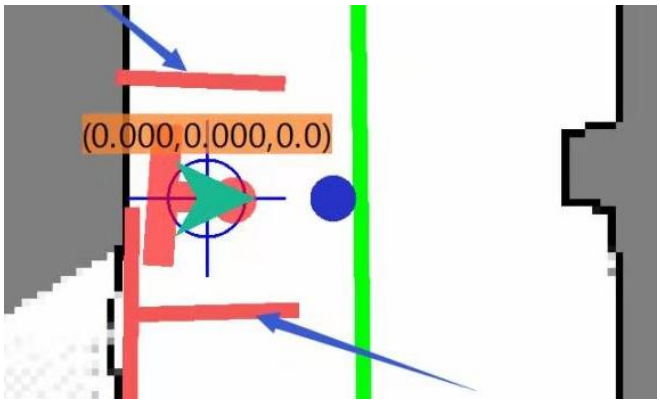
A:Can make the robot follow a prescribed path.

8. Why can't the robot get back to the charging pile?

A:First of all, it must be powered on the pile when we turned on the robot , otherwise the system defaults to "no base" state. Then check whether the metal bar of the pile is at the same height as the charging contact of the robot, and whether the charger is "red light" after contact. The pile must be glued to the ground, and the pile is backed against the wall. About 5cm distance from the

wall is appropriate.

In order to prevent the robot from stringing into the side of the base when charging back, resulting in insufficient distance to adjust the posture when the robot backs up, a "virtual wall" can be added on both sides of the pile, as shown in the following figure：



9. Why did the robot fuse blow out and how to replace it?

Causes of insurance burn generally include the following conditions:

a. The selection of fuse is wrong. The current insurance specification of the machine is 5*20mm 5A, and 8A may be used in some models

b. The motor is blocked, and a foreign body is stuck in the driving wheel, resulting in excessive current.

c. When charging automatically, the robot cannot match the pile, which leads to the robot backing up and the driving wheel is stuck after hitting the obstacle. Please contact the after-sales service.

d. Abnormal operation, such as in the case of non-autonomous navigation, control the robot by remote control or PC software to hit obstacles quickly.

Change the insurance method

(please operate under the guidance of after-sales personnel)

a. When the main power switch is off, open the back cover of the lower body of the robot with the suction cup and lift the acrylic on the motherboard.

b. Locate the fuse and replace the fuse of the same specification.

c. Reinstall the acrylic sheet

10. The robot cannot be awakened.

A: Check the icon in the upper right corner of the robot software home page. If the icon is ×, the software communication is abnormal and you need to restart the software. After restarting the software, it is still ×. Please contact the after-sales service to solve the problem.

11. The robot can be awakened, but the conversation cannot be recognized.

A:Check whether the trunk network of the machine is normal. If there is no network, the robot can be waked up but cannot recognize the dialogue.

12. When the software starts, the bar reading interface is stuck at 0%

A: For network reasons, the verification information between the software and the server does not pass. Please contact the after-sales service to solve.

13. When the software starts, the bar reading interface is stuck at about 40%

A: Because the screen and the robot internal USB communication page is not properly connected, need to check the screen USB cable.

14. When scanning computer direction key control the robot does not go

A: The red emergency stop button at the back of the machine has been pressed and not unscrewed.

15. The robot shall not leave the charging pile during autonomous navigation.

A: There are obstacles in front of the charging pile or insufficient reserved positions in front of the charging pile, so that the robot cannot get out of the pile.