

## 9. App mapping and Navigation

### 9.1 Program function description

After the programs of the virtual machine side and the car side are started, the mobile phone downloads the ROS2 Robot software, and opens the IP on the connected car, you can control the car movement, drawing and navigation.

### 9.2. Program Launch

#### 1. Startup process of app mapping code

After SSH connects to the car, terminal input,

```
ros2 launch yahboomcar_nav map_gmapping_app_launch.xml
```

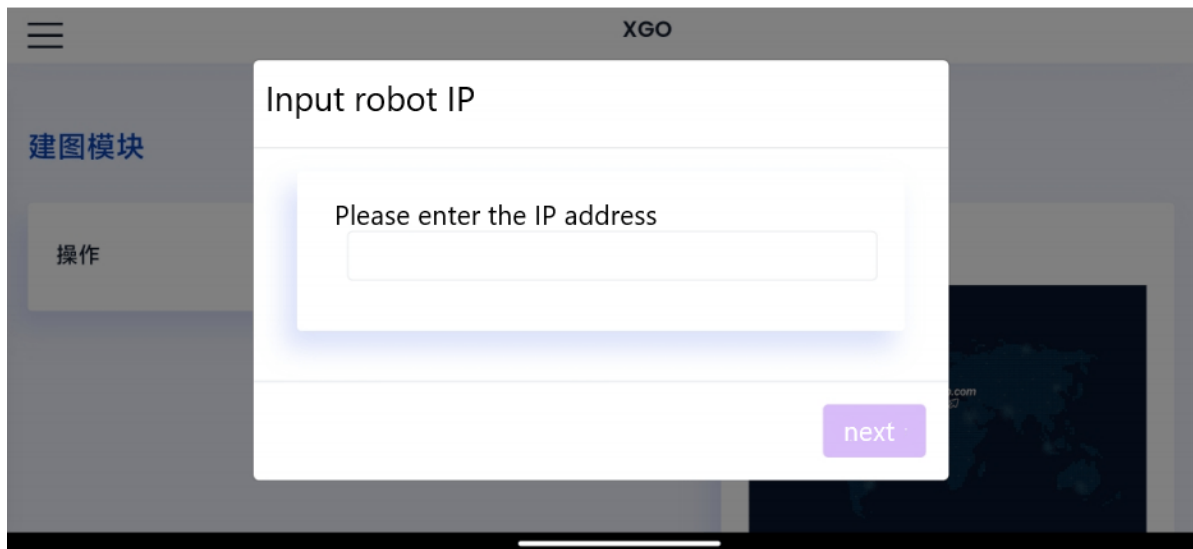
Another terminal input

```
ros2 launch yahboom_app_save_map yahboom_app_save_map.launch.py
```

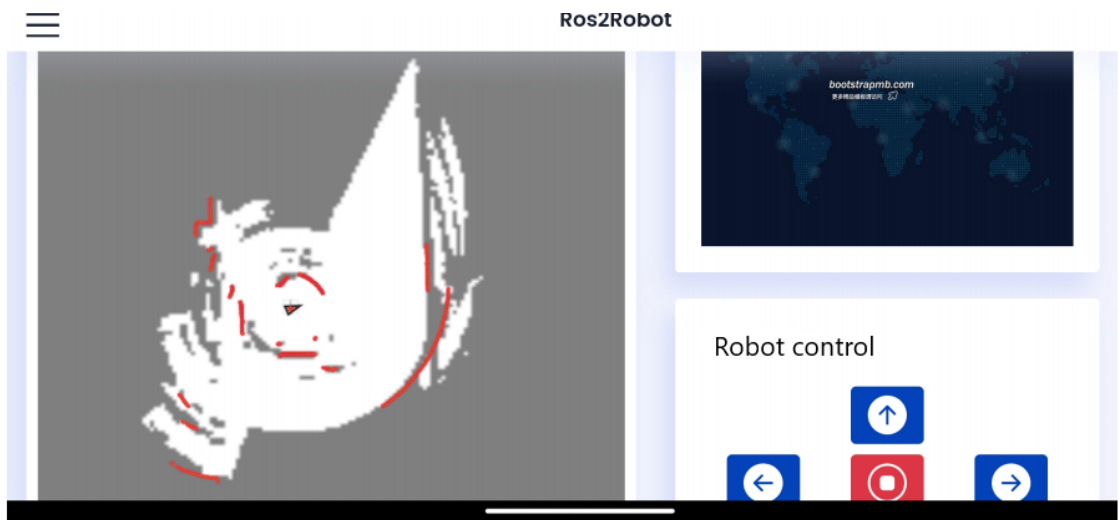
Start drawing.

#### 2. Mobile APP terminal operation (drawing)

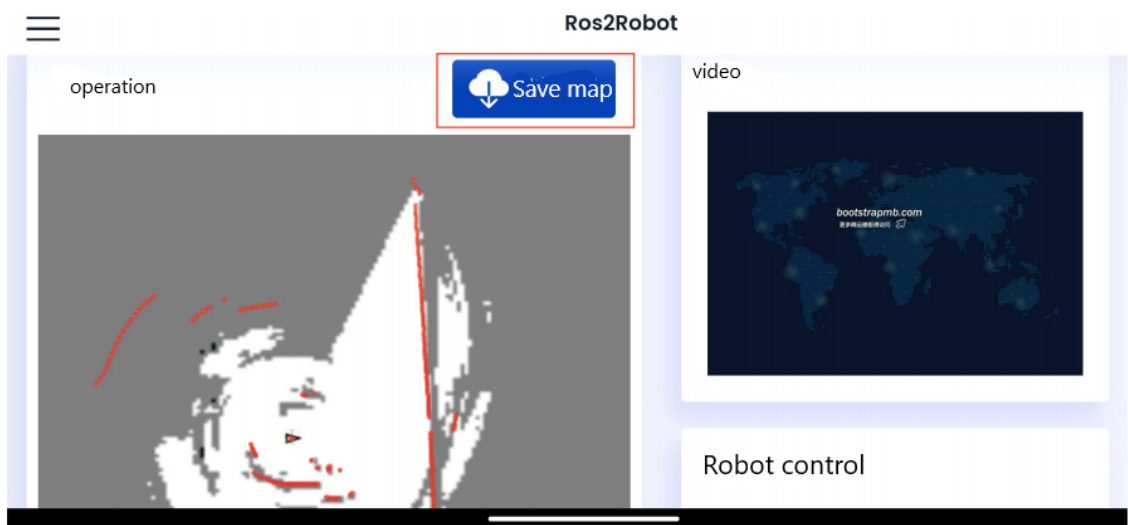
- Connect the car and enter the car IP



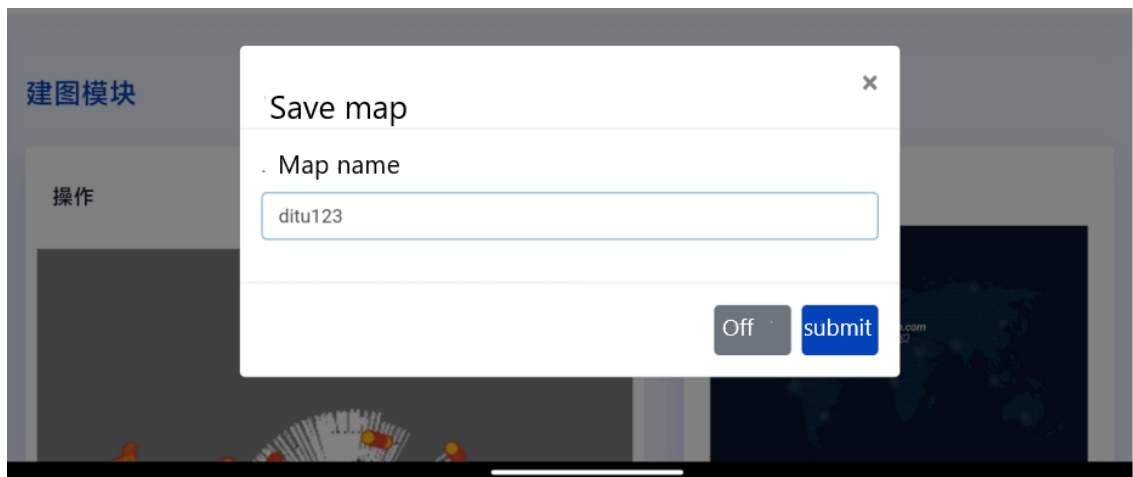
- Control robot movement, control area on the right



- Save map



- Then enter the name of the save in the pop-up box and click Submit



After the drawing is completed, click "Save map", and the map saving path is as follows:

```
/root/yahboomcar_ws/src/yahboomcar_nav/maps
```

### 3. Startup process of app navigation code

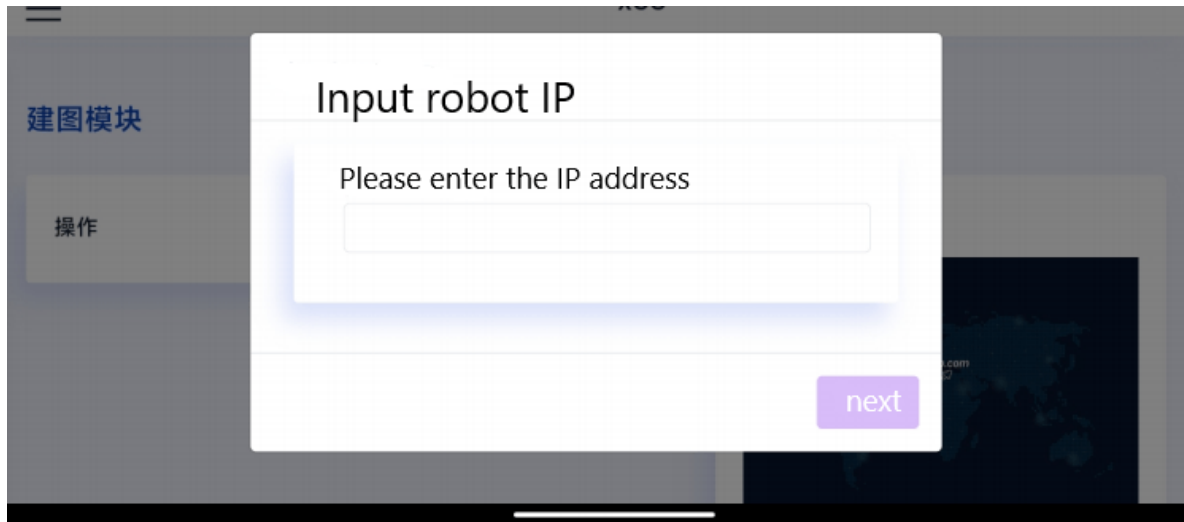
Assume that the map name input is [test], the terminal input

```
ros2 launch yahboomcar_nav navigation_dwb_app_launch.xml
map:=/root/yahboomcar_ws/src/yahboomcar_nav/maps/test.yaml
```

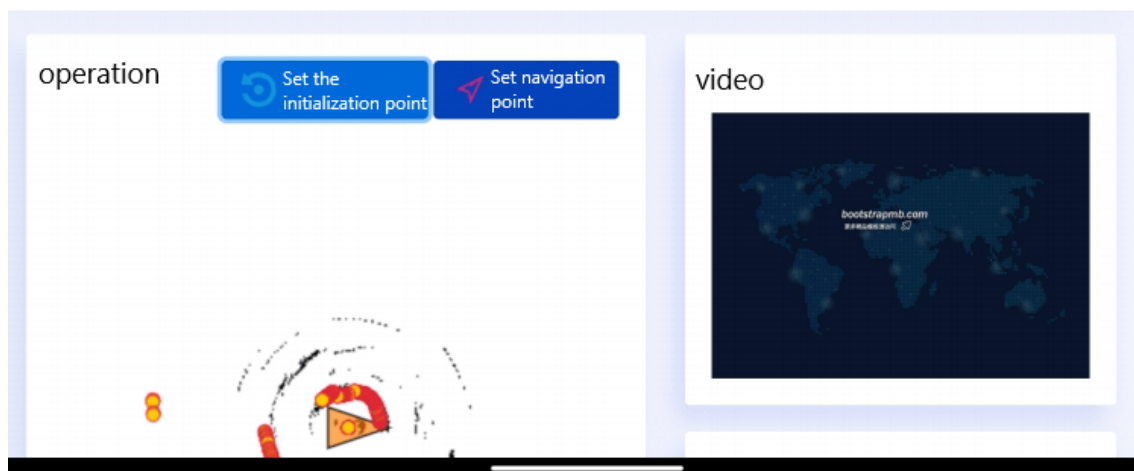
Replace [test] with the name you entered when saving.

#### 4. Mobile APP operation (navigation)

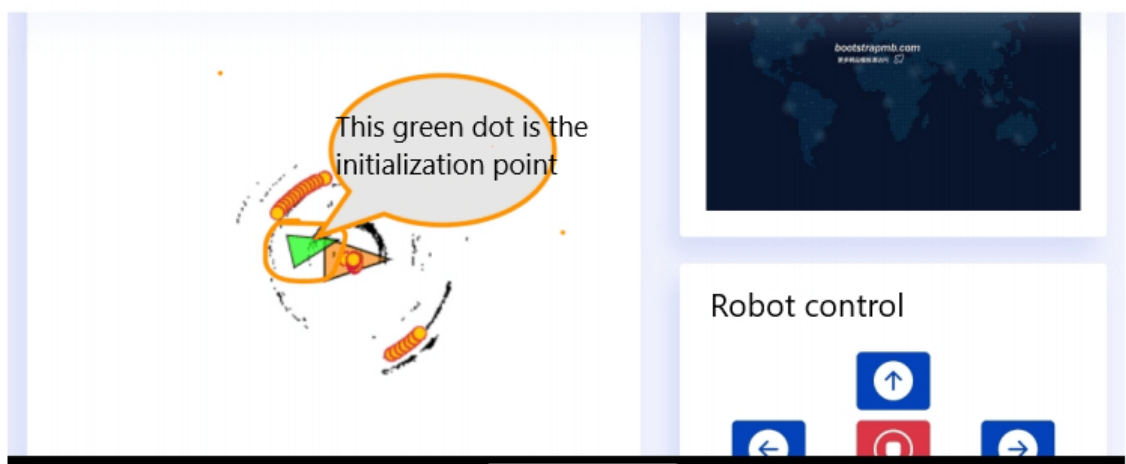
- Connect the car and enter the car IP



- After starting, you can see the current position of the car and the laser point cloud. The initialization point is set before navigation. Click the Set initialization point button.



- Then click on a point on the map and rotate it in the desired direction, setting it as the initialization point.



- To set the target point, click the Set Navigation Point button. After the interface is loaded, set a target point on the map interface, wait for the car to automatically plan the route, and run to the target point.

