

KartoSlam 在 turtlebot2 上的使用说明

器件说明

turtlebot2: 可移动机器人, 提供里程计信息

激光雷达: 放置在 turtlebot2 最上方, 型号为 RPLIDAR A2

上网本: 放置在 turtlebot2 上, 用于处理核心算法, 型号为小米(MI)Air 13.3 (i7, 银灰色)

工作站: 用于远程操作上网本, 以及返回地图, 型号为小米(MI)Air 13.3 (i5, 银白色)

在工作站上连接上网本

- 1、使上网本和工作站连接同一个 wifi, 确保

上网本的 IP 为 192.168.0.111, 工作站的 IP 为 192.168.0.222

- 2、在工作站上打开终端, 输入 ssh yang@192.168.0.111

密码 123456, 返回结果如下所示

```
yang@yang-TM1703: ~  
yang@yang-TM1613:~$ ssh yang@192.168.0.111  
yang@192.168.0.111's password:  
Welcome to Ubuntu 16.04.4 LTS (GNU/Linux 4.13.0-43-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
24 packages can be updated.  
12 updates are security updates.  
  
Last login: Tue May 29 21:28:27 2018 from 192.168.0.222  
yang@yang-TM1703:~$
```

以后只要涉及到 上网本相关指令, 都是在工作站上开启一个终端, 输入 ssh yang@192.168.0.111

上网本新开端口, 打开 roscore (下面为输入到终端的指令, 下同)

roscore

```
Last login: Thu May 31 16:06:02 2018 from 192.168.0.222  
yang@yang-TM1703:~$ roscore  
... logging to /home/yang/.ros/log/b8c3d95c-64a9-11e8-bb29-d46d6d775fe2/roslaunch  
h-yang-TM1703-4292.log  
Checking log directory for disk usage. This may take awhile.  
Press Ctrl-C to interrupt  
Done checking log file disk usage. Usage is <1GB.  
  
started roslaunch server http://192.168.0.111:43969/  
ros_comm version 1.12.13  
  
SUMMARY  
=====  
  
PARAMETERS  
* /roscdistro: kinetic  
* /rosversion: 1.12.13  
  
NODES  
  
auto-starting new master  
process[master]: started with pid [4302]  
ROS_MASTER_URI=http://192.168.0.111:11311/  
  
setting /run_id to b8c3d95c-64a9-11e8-bb29-d46d6d775fe2  
process[rosout-1]: started with pid [4315]  
started core service [/rosout]  
|
```

打开 **turtlebot** 的开关，这时可以听到 turtlebot 开机的提示音

上网本新开端口，启动 **turtlebot**

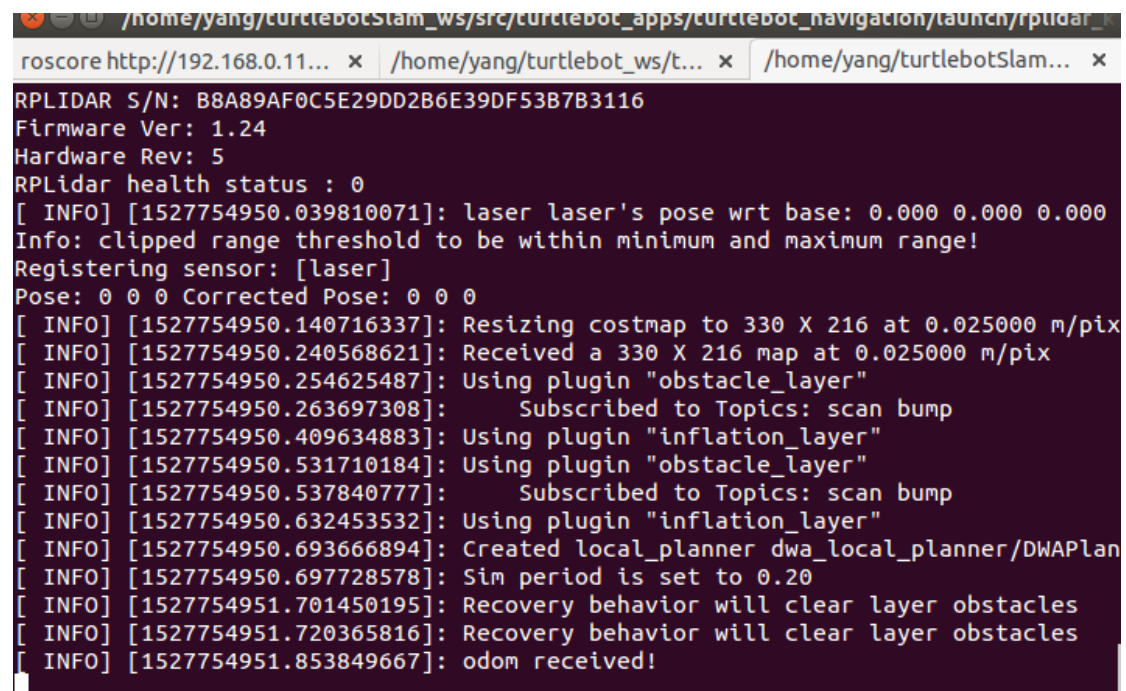
```
roslaunch turtlebot_bringup minimal.launch
```

连接后可以听到连接提示音，启动 karto 时，该终端，会有红色错误提示，不管

上网本新开端口，启动 **karto**,用于构建地图

```
roslaunch turtlebot_navigation rplidar_karto_demo.launch
```

这时可以看到激光雷达开始转动，终端返回如下：



```
roscore http://192.168.0.11... x /home/yang/turtlebot_ws/t... x /home/yang/turtlebotSlam... x
RPLIDAR S/N: B8A89AF0C5E29DD2B6E39DF53B7B3116
Firmware Ver: 1.24
Hardware Rev: 5
RPLidar health status : 0
[ INFO] [1527754950.039810071]: laser laser's pose wrt base: 0.000 0.000 0.000
Info: clipped range threshold to be within minimum and maximum range!
Registering sensor: [laser]
Pose: 0 0 0 Corrected Pose: 0 0 0
[ INFO] [1527754950.140716337]: Resizing costmap to 330 X 216 at 0.025000 m/pix
[ INFO] [1527754950.240568621]: Received a 330 X 216 map at 0.025000 m/pix
[ INFO] [1527754950.254625487]: Using plugin "obstacle_layer"
[ INFO] [1527754950.263697308]: Subscribed to Topics: scan bump
[ INFO] [1527754950.409634883]: Using plugin "inflation_layer"
[ INFO] [1527754950.531710184]: Using plugin "obstacle_layer"
[ INFO] [1527754950.537840777]: Subscribed to Topics: scan bump
[ INFO] [1527754950.632453532]: Using plugin "inflation_layer"
[ INFO] [1527754950.693666894]: Created local_planner dwa_local_planner/DWAPlan
[ INFO] [1527754950.697728578]: Sim period is set to 0.20
[ INFO] [1527754951.701450195]: Recovery behavior will clear layer obstacles
[ INFO] [1527754951.720365816]: Recovery behavior will clear layer obstacles
[ INFO] [1527754951.853849667]: odom received!
```

遥控 **turtlebot** 运动，有两种方法，一种是游戏杆控制，另一种是键盘控制，二选一。

游戏杆控制

新终端设置设备并启动游戏杆遥控支持

```
rosparam set /joystick/dev "/dev/input/js0"
```

```
roslaunch turtlebot_teleop xbox360_teleop.launch
```

注意

- 1、安装与连接见 <https://www.ncnynl.com/archives/201610/916.html> 主
要看最后一部分 **Linux 下 xbox 无线游戏杆的使用步骤**
- 2、jsx 中的 x 根据西瓜键中灯亮的位置而定，西瓜键中有四个数字，1,2,3,4 分别对应 0,1,2,3

键盘控制

工作机或上网本新开端口，启动键盘操作 Turtlebot

roslaunch turtlebot_teleop keyboard_teleop.launch

工作机或上网本新开端口，启动 rviz，实时查看建图情况

roslaunch turtlebot_rviz_launchers view_navigation.launch

返回如下

