HT01 四轮四转底盘

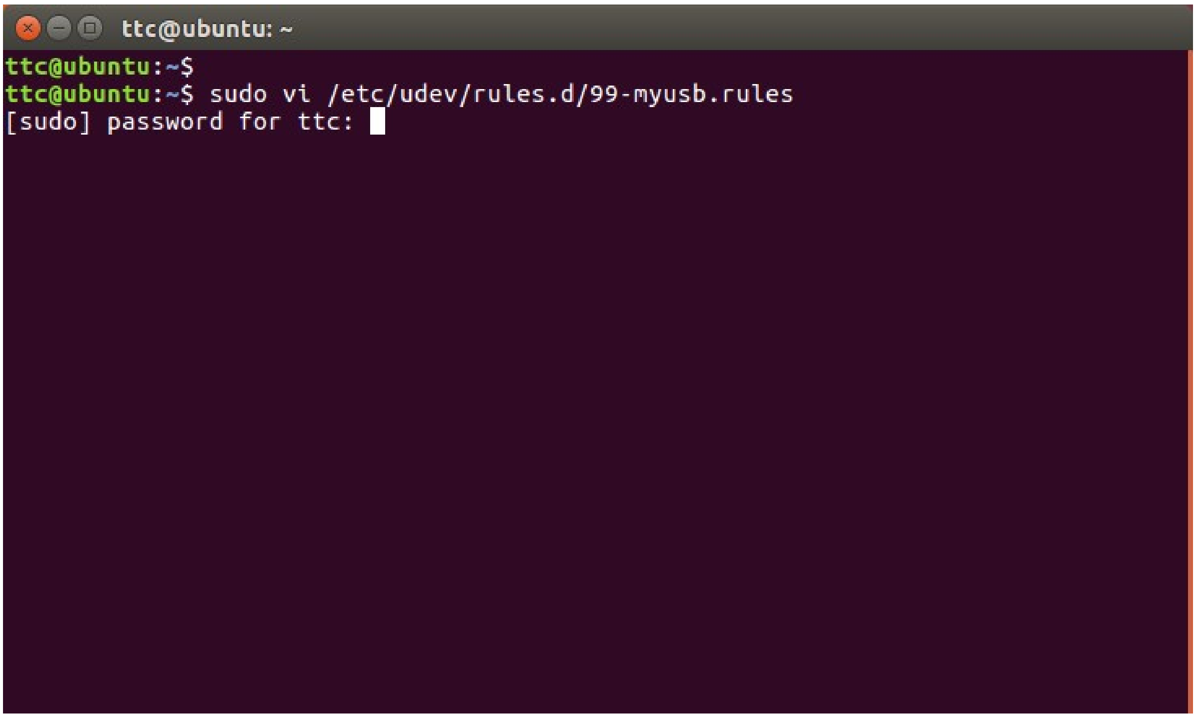
1. 将功能包 ros_ht_msg 解压放进工作空间并在终端中执行 catkin_make 编译

2. 因 Linux 系统下将涉及到 usb 底层驱动的调用,运行时,一定要加 sudo 获取权限运行,否则 USB 设备没有权限操作。具体操作:

a.创建一个新的 udev 规则。名称取为:99-myusb.rules

sudo vi /etc/udev/rules.d/99-myusb.rules

注意: 数字 99 最好不要改动,否则可能设置失败、要加 sudo

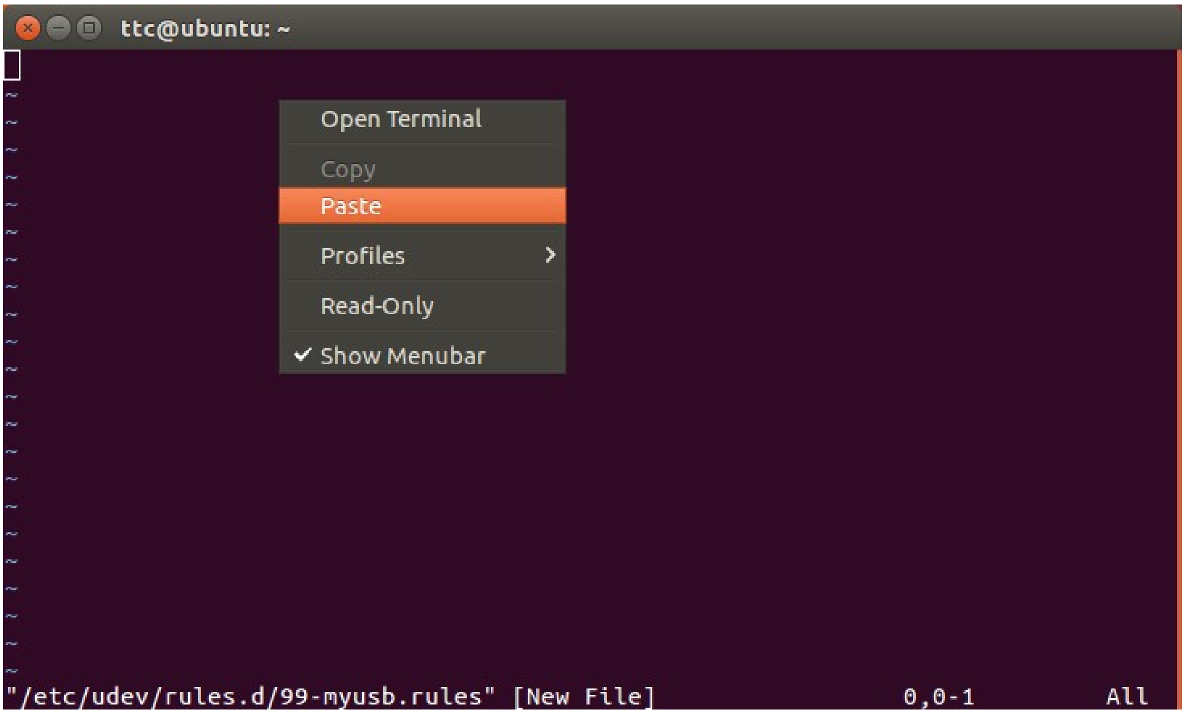


```
ttc@ubuntu:~$
ttc@ubuntu:~$ sudo vi /etc/udev/rules.d/99-myusb.rules
[sudo] password for ttc:
```

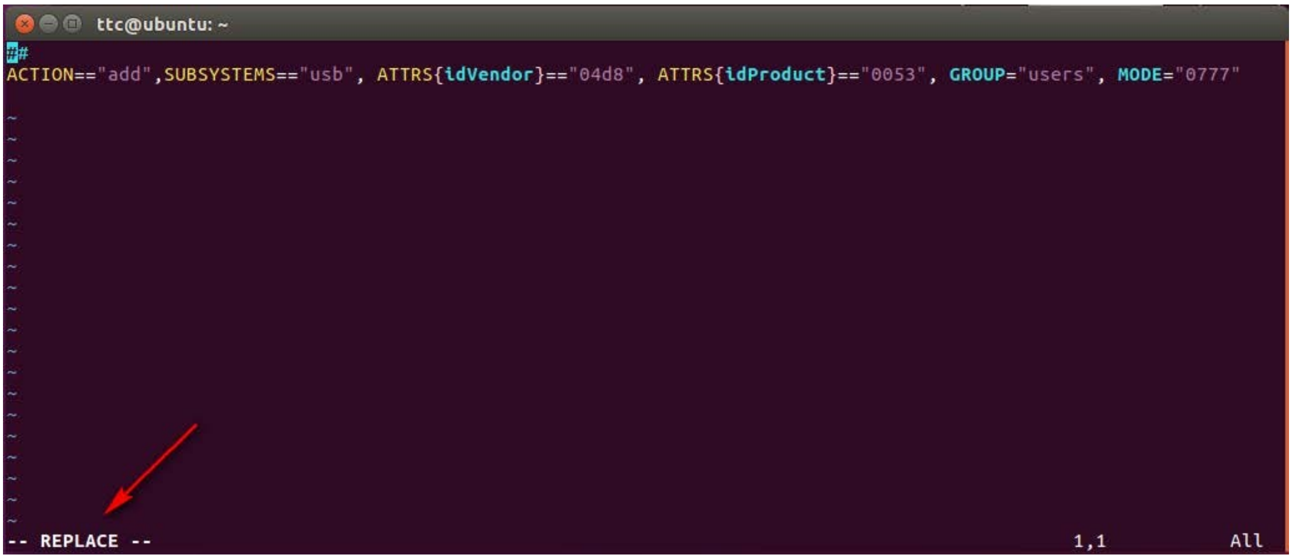
b.把以下两行代码复制到新建的 99-myusb.rules 文件中

注意:按键盘上 Insert 键切换到“REPLACE”输入模式

##
ACTION=="add",SUBSYSTEMS=="usb", ATTRS{idVendor}=="04d8",
ATTRS{idProduct}=="0053",
GROUP="users", MODE="0777"

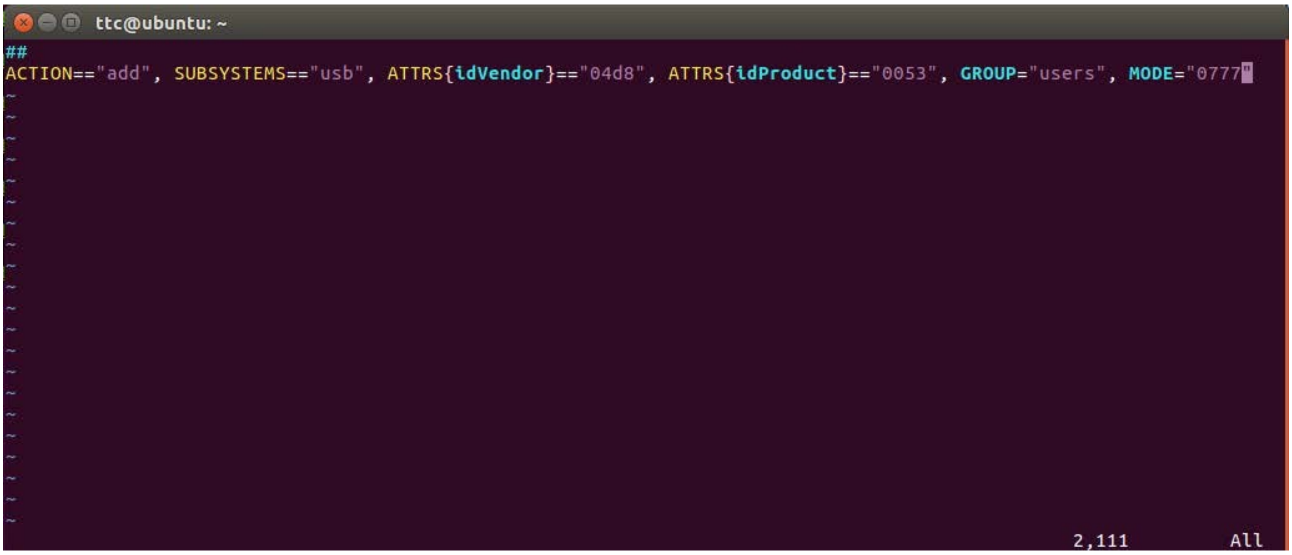


```
"/etc/udev/rules.d/99-myusb.rules" [New File]                    0,0-1          All
```



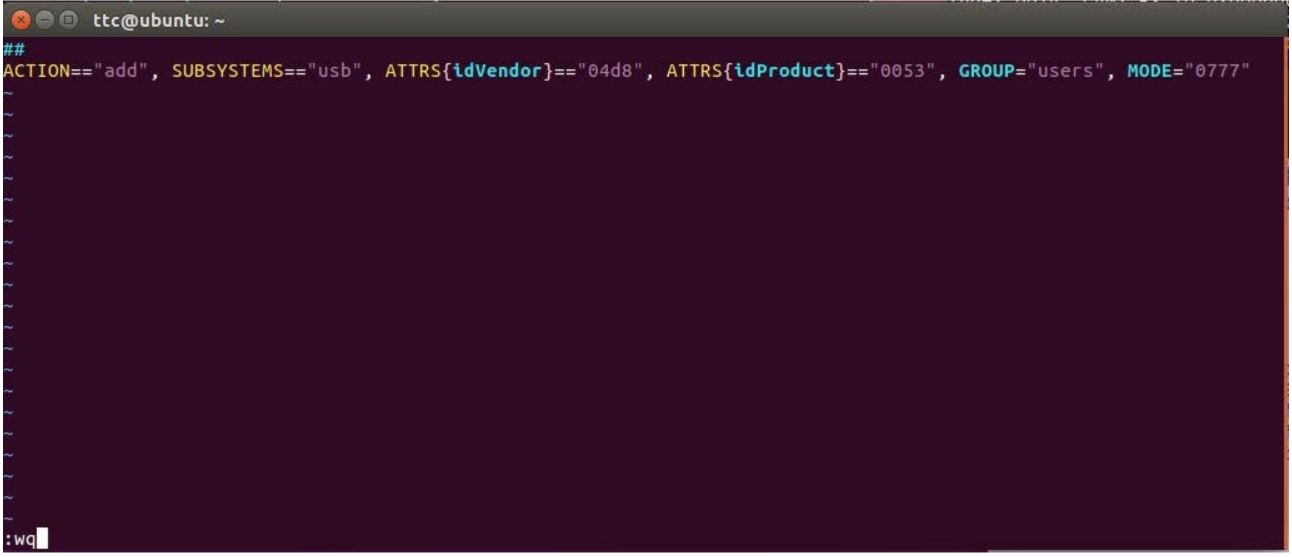
```
ttc@ubuntu: ~
##
ACTION=="add",SUBSYSTEMS=="usb", ATTRS{idVendor}=="04d8", ATTRS{idProduct}=="0053", GROUP="users", MODE="0777"
~
-- REPLACE --                                                                          1,1           All
```

c.按“Esc”键一次



```
ttc@ubuntu: ~
##
ACTION=="add", SUBSYSTEMS=="usb", ATTRS{idVendor}=="04d8", ATTRS{idProduct}=="0053", GROUP="users", MODE="0777"
~
                                                                                       2,111         All
```

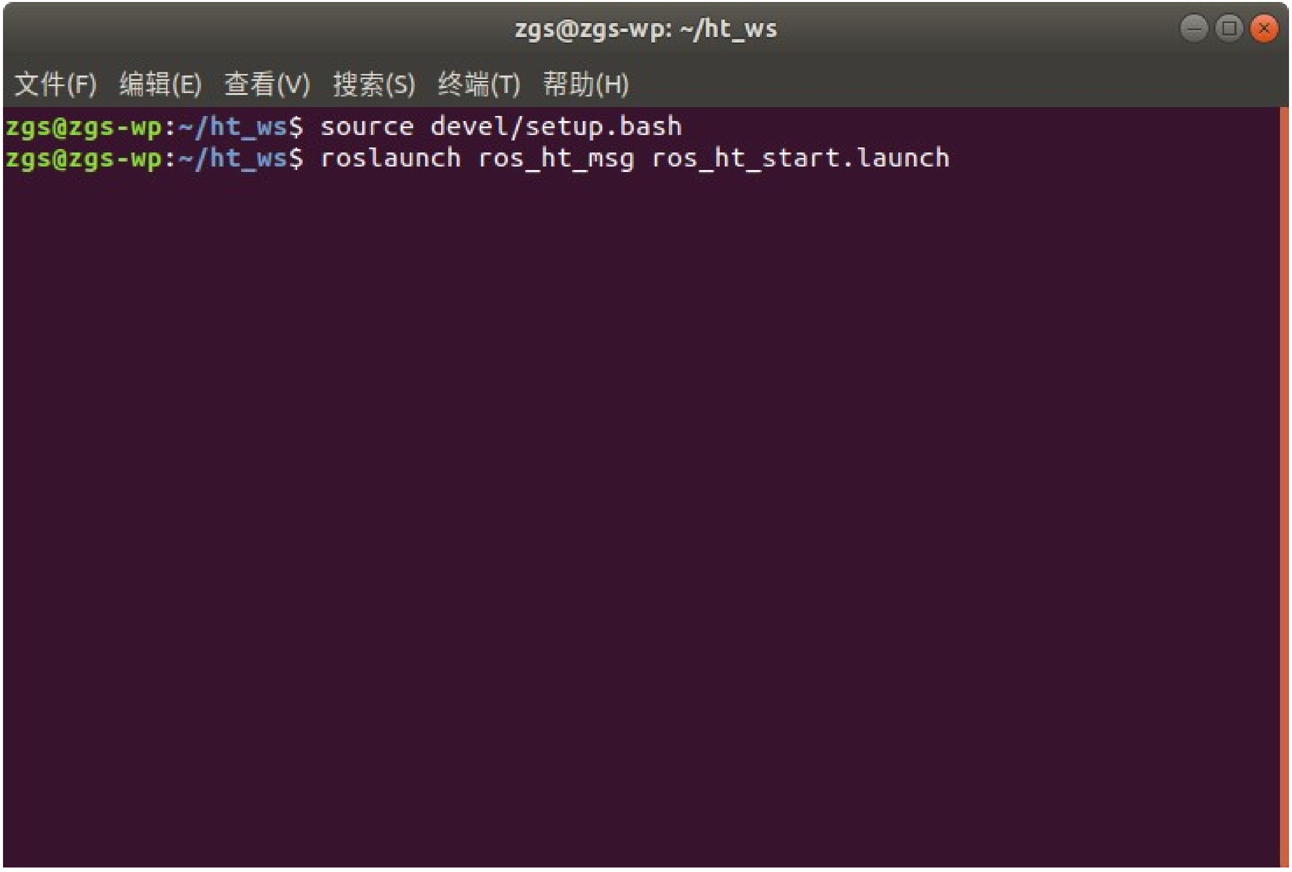
d.直接输入“:wq”回车,即保存退出



```
ttc@ubuntu: ~
##
ACTION=="add", SUBSYSTEMS=="usb", ATTRS{idVendor}=="04d8", ATTRS{idProduct}=="0053", GROUP="users", MODE="0777"
~
:wq
```

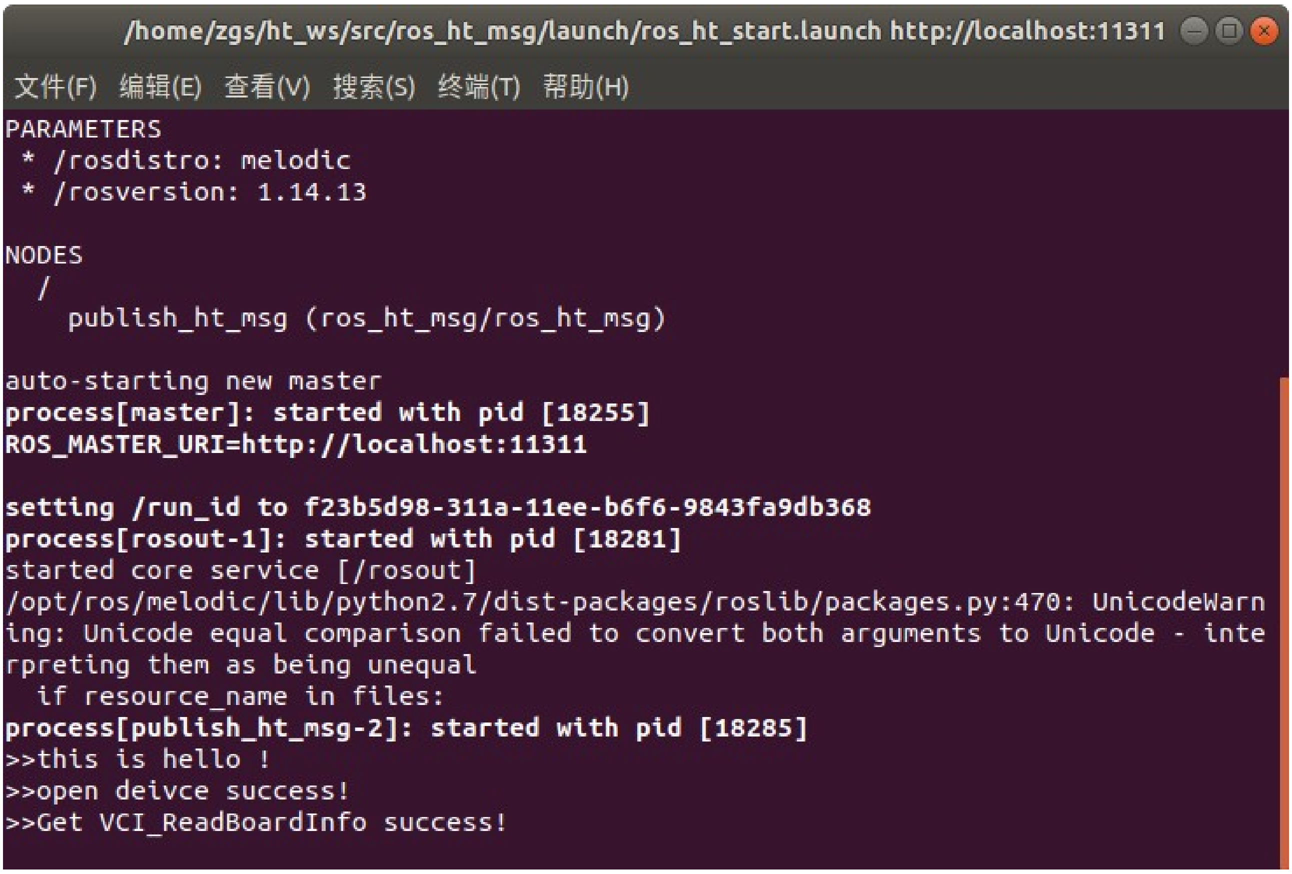
e.插拔一下 USBCAN 设备或重启一下电脑后,即可不加 sudo 权限运行程序了

3. 执行 source devel/setup.bash 再执行 roslaunch ros_ht_msg ros_ht_start.launch 调用功能包



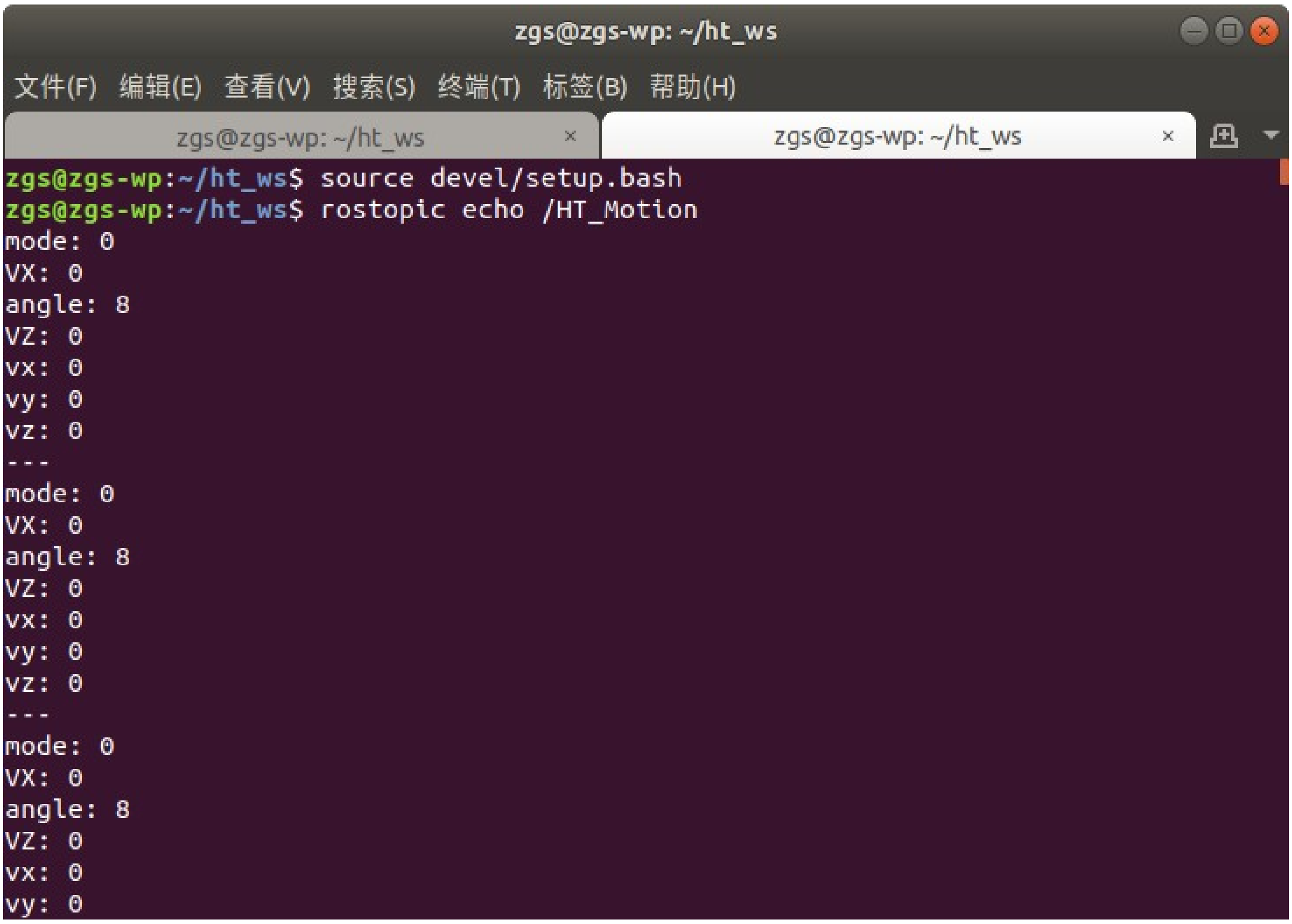
```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ roslaunch ros_ht_msg ros_ht_start.launch
```

如下图所示为调用成功


/home/zgs/ht_ws/src/ros_ht_msg/launch/ros_ht_start.launch http://localhost:11311
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)

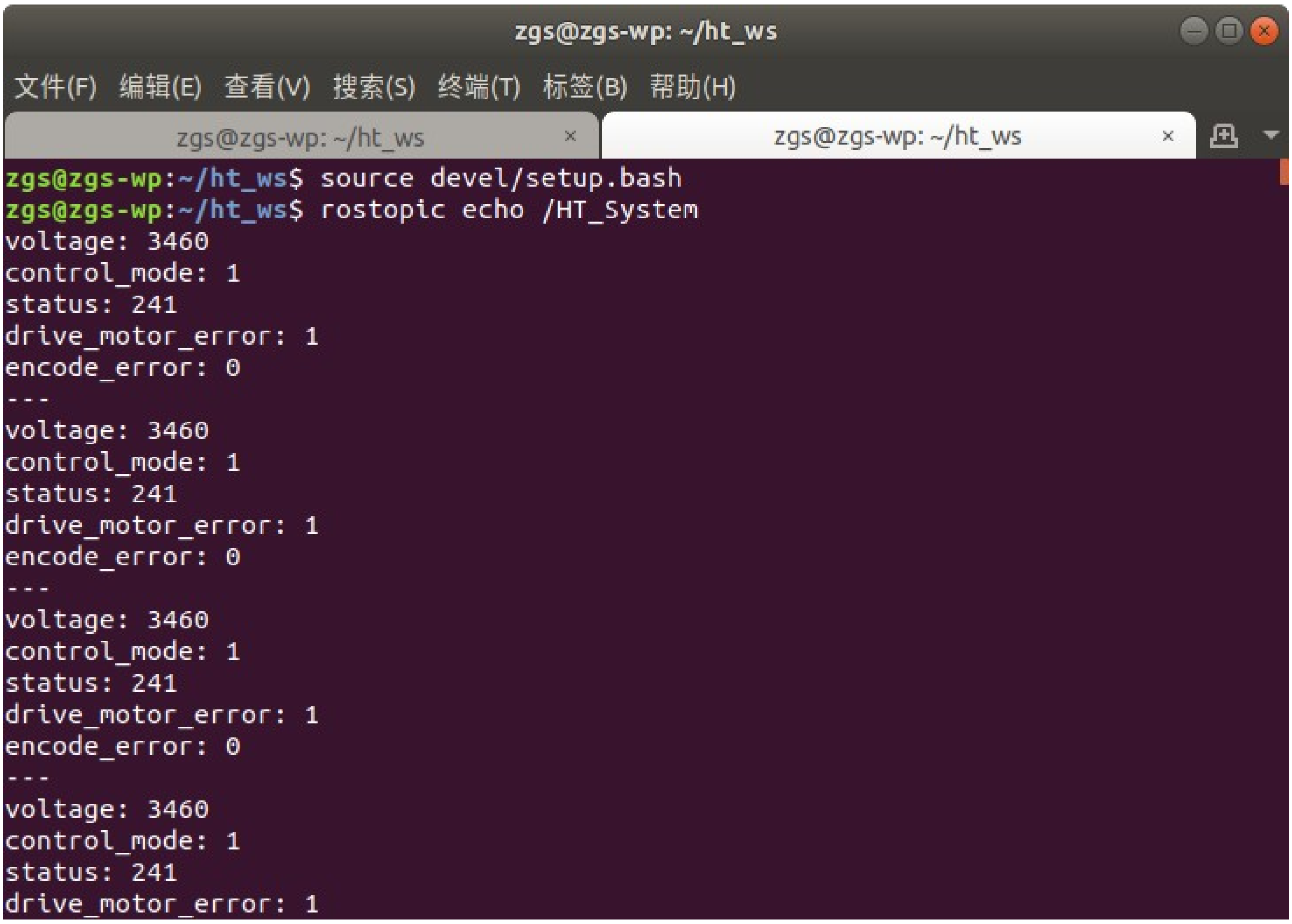
```
PARAMETERS
 * /rosdistro: melodic
 * /rosversion: 1.14.13

NODES
  /
    publish_ht_msg (ros_ht_msg/ros_ht_msg)

auto-starting new master
process[master]: started with pid [18255]
ROS_MASTER_URI=http://localhost:11311

setting /run_id to f23b5d98-311a-11ee-b6f6-9843fa9db368
process[rosout-1]: started with pid [18281]
started core service [/rosout]
/opt/ros/melodic/lib/python2.7/dist-packages/roslib/packages.py:470: UnicodeWarn
ing: Unicode equal comparison failed to convert both arguments to Unicode - inte
rpreting them as being unequal
  if resource_name in files:
process[publish_ht_msg-2]: started with pid [18285]
>>this is hello !
>>open deivce success!
>>Get VCI_ReadBoardInfo success!
```

4.可以新开一个终端并执行 source devel/setup.bash 和 rostopic echo /HT_Motion 查看运动状态反馈



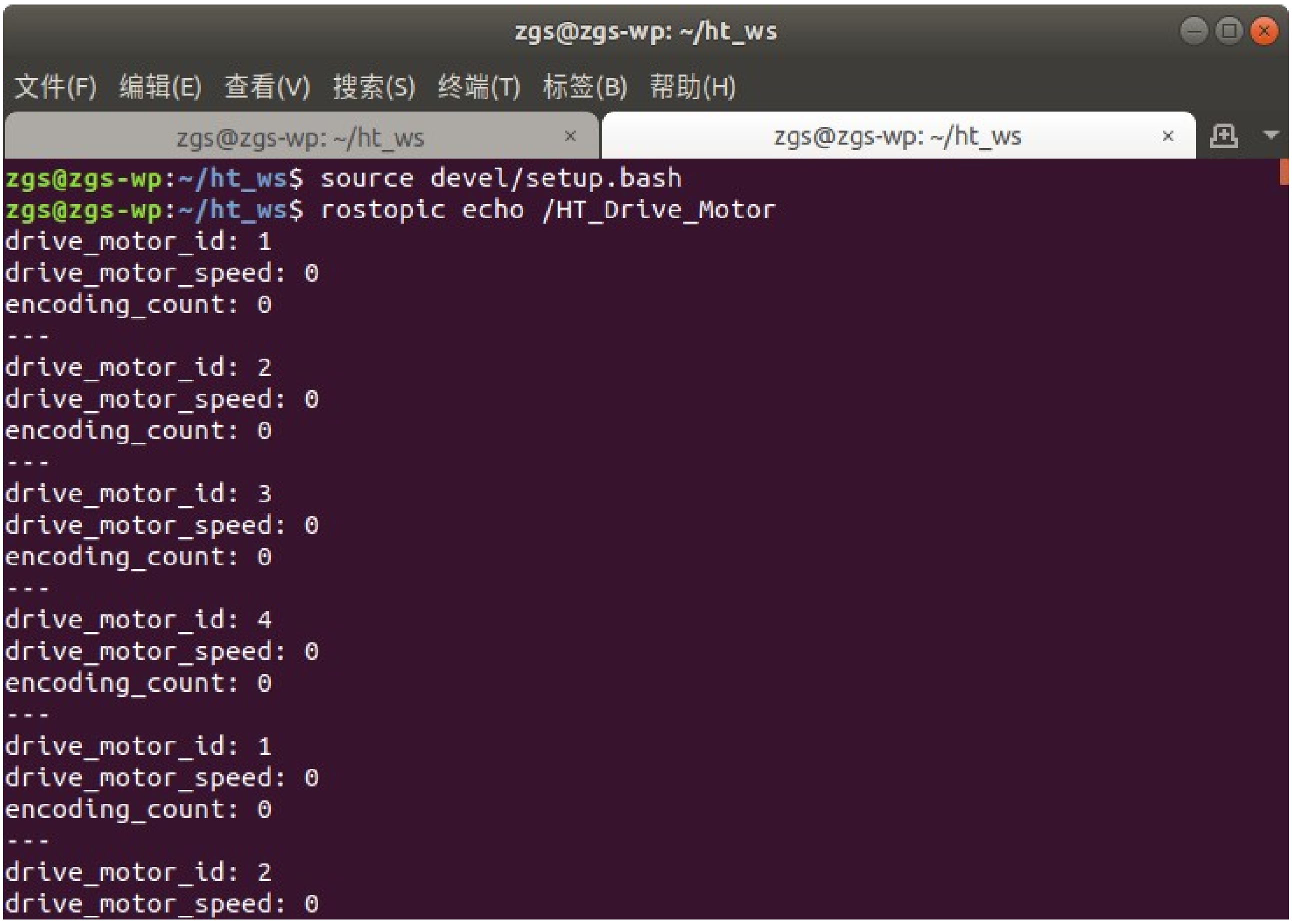
```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ rostopic echo /HT_Motion
mode: 0
VX: 0
angle: 8
VZ: 0
vx: 0
vy: 0
vz: 0
---
mode: 0
VX: 0
angle: 8
VZ: 0
vx: 0
vy: 0
vz: 0
---
mode: 0
VX: 0
angle: 8
VZ: 0
vx: 0
vy: 0
```

5. 执行 rostopic echo /HT_Motion 查看系统状态反馈



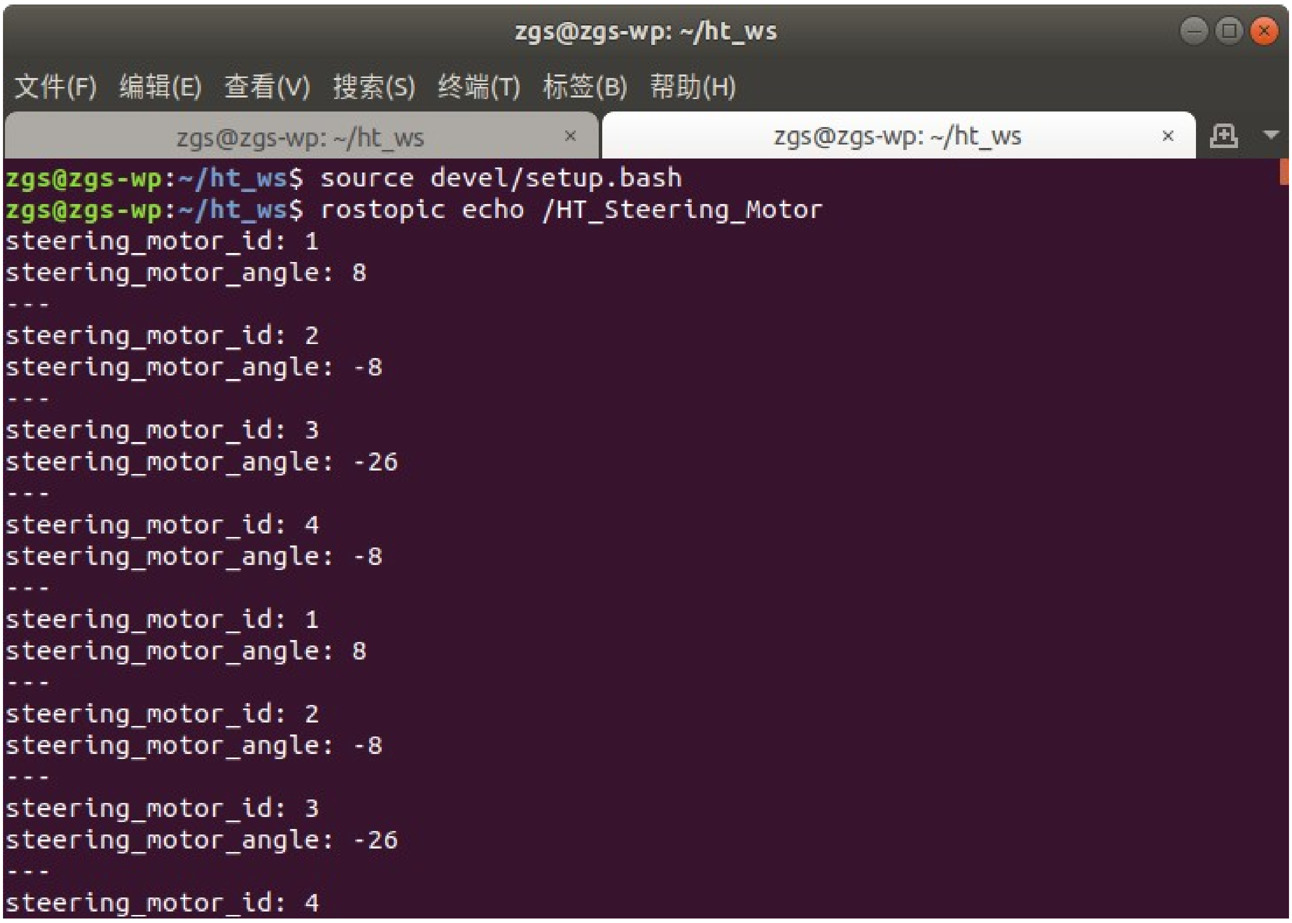
```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ rostopic echo /HT_System
voltage: 3460
control_mode: 1
status: 241
drive_motor_error: 1
encode_error: 0
---
voltage: 3460
control_mode: 1
status: 241
drive_motor_error: 1
encode_error: 0
---
voltage: 3460
control_mode: 1
status: 241
drive_motor_error: 1
encode_error: 0
---
voltage: 3460
control_mode: 1
status: 241
drive_motor_error: 1
```

6. 执行 rostopic echo /HT_Drive_Motor 查看驱动电机状态反馈



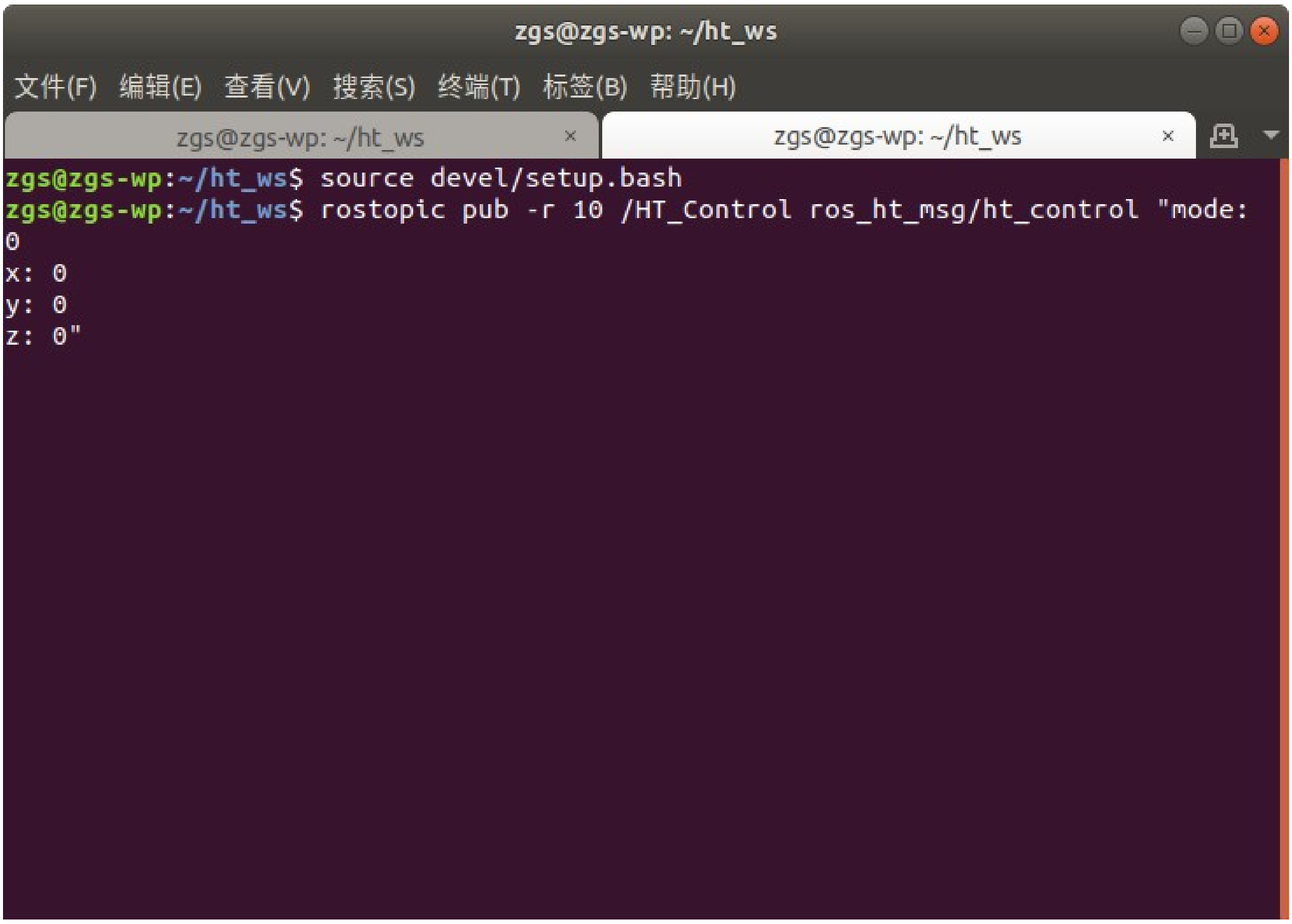
```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ rostopic echo /HT_Drive_Motor
drive_motor_id: 1
drive_motor_speed: 0
encoding_count: 0
---
drive_motor_id: 2
drive_motor_speed: 0
encoding_count: 0
---
drive_motor_id: 3
drive_motor_speed: 0
encoding_count: 0
---
drive_motor_id: 4
drive_motor_speed: 0
encoding_count: 0
---
drive_motor_id: 1
drive_motor_speed: 0
encoding_count: 0
---
drive_motor_id: 2
drive_motor_speed: 0
```

7. 执行 rostopic echo /HT_Steering_Motor 查看转向电机状态反馈



```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ rostopic echo /HT_Steering_Motor
steering_motor_id: 1
steering_motor_angle: 8
---
steering_motor_id: 2
steering_motor_angle: -8
---
steering_motor_id: 3
steering_motor_angle: -26
---
steering_motor_id: 4
steering_motor_angle: -8
---
steering_motor_id: 1
steering_motor_angle: 8
---
steering_motor_id: 2
steering_motor_angle: -8
---
steering_motor_id: 3
steering_motor_angle: -26
---
steering_motor_id: 4
```

8. 可以新开一个终端并执行 source devel/setup.bash 和 rostopic pub -r 10 /HT_Control ros_ht_msg/control1 “mode: 0 x: 0 y: 0 z: 0”并确保**关闭遥控器**，来控制底盘移动，当 mode 为 0 时，代表阿克曼模式，则 x 为线速度、y 为角度、z 为角速度；1 代表 FTFD 模式，则 x 为 x 轴方向上的速度、y 为 y 轴方向上的速度、z 为角速度。



```
zgs@zgs-wp:~/ht_ws$ source devel/setup.bash
zgs@zgs-wp:~/ht_ws$ rostopic pub -r 10 /HT_Control ros_ht_msg/ht_control "mode:
0
x: 0
y: 0
z: 0"
```