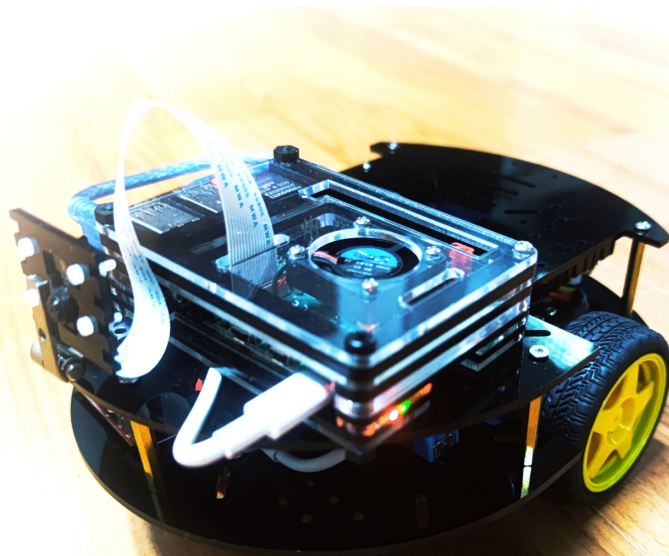
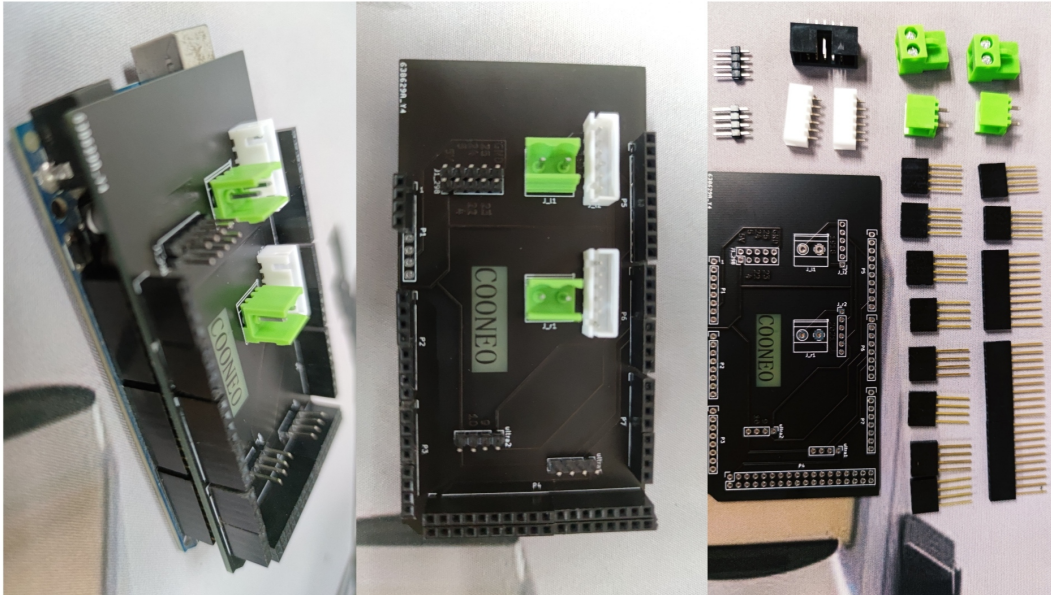


Arduino_Raspberry_ROS_Car Tutorials

ROS



chapter 1: Construction A ROS Car



Download codes from Git:

[git clone https://github.com/COONEO/Arduino_Raspberry_ROS_Car.git](https://github.com/COONEO/Arduino_Raspberry_ROS_Car.git)

Step One: Download programs for Arduino Mega 2560

Install Arduino IDE in your computer and add library where in Arduino_mega_2560_code/relative_library folder.than,download the code into your Arduino_mega_2560 board.

```

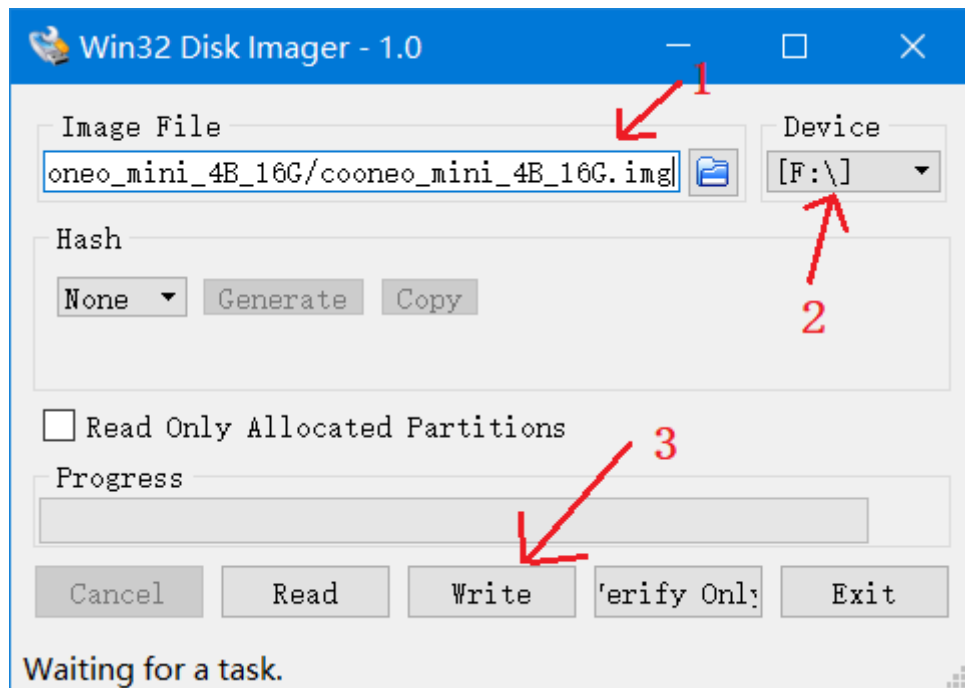
RobotPIDDriver | Arduino 1.8.15
文件 编辑 项目 工具 帮助
RobotPIDDriver RobotPIDInfo.cpp Make4x2ndChassis.h commands.h encoder_driver.h encoder_driver.h motor_driver.h motor_driver.h sensor.h sensor.h
1 #include "encoder_driver.h"
2 #include "motor_driver.h"
3 #include "Make4x2ndChassis.h"
4 #include "commands.h"
5 #include <PID_v1.h>
6
7 typedef struct
8 {
9     double target;
10    double currentEncoder;
11    double lastEncoder;
12    double error;
13    double input;
14    double output;
15 }
16 PIDInfo;
17 PIDInfo leftInfo, rightInfo;
18
19 //车轮配置
20 double wheelDiameter = 0.064; //车轮直径
21 double encoderResolution = 2496.0; //编码器输出脉冲数/圈 13*2*48*2 = 2496
22
23 //PID参数配置
24 double Kp_L = 2.0, Ki_L = 5.0, Kd_L = 0.003; //2.0 5.0 0.003
25 double Kp_R = 2.0, Ki_R = 5.0, Kd_R = 0.003; //2.0 5.0 0.003
26 double Sum_count_L = 0;
27 double Sum_count_R = 0;
28
29
30 PID leftPID(leftInfo.input, leftInfo.output, leftInfo.target, Kp_L, Ki_L, Kd_L, DIRECT);
31 PID rightPID(rightInfo.input, rightInfo.output, rightInfo.target, Kp_R, Ki_R, Kd_R, DIRECT);
32 double pid_rate = 60.0; // default is 30 Hz
33 double pidInterval = 1000.0 / pid_rate; // PID每次运算结果的执行时间
34 long nextAction;
35 int moving;
36
37 // A pair of variables to help parse serial commands (thanks Fergs)
38 int arg = 0;
39 int index = 0;
40
41 // Variable to hold an input character

```

Step Two: FLASH OS and LAUNCH ROS NODE

1. flash Ubuntu OS into your Pi 4B board (By Win32DiskImager.exe)

The OS img can be finding in our **Wechat Official Account COONEO**. Process like this:



2. launch ROS node in Raspberry Pi

```
#connect Raspberry Pi and Arduino
sudo chmod 0777 /dev/ttyACM0

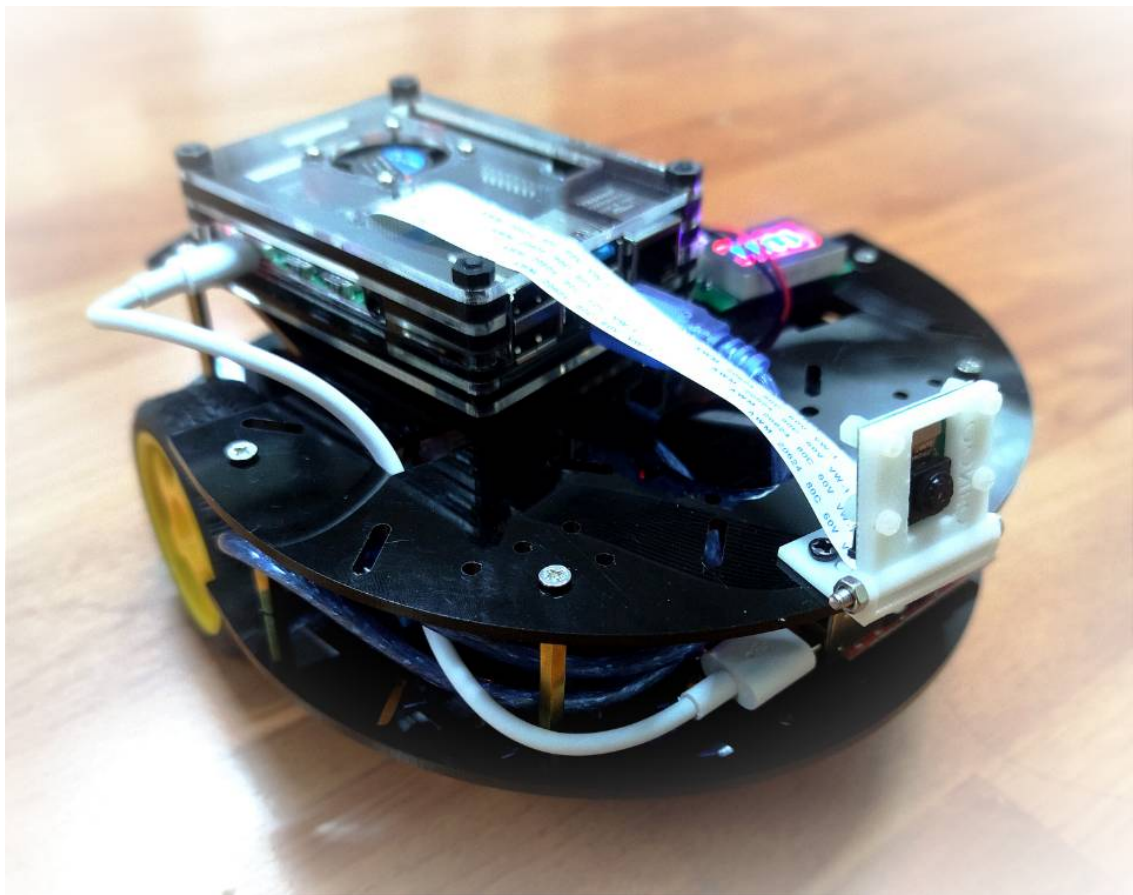
#open a Terminal && download codes
git clone https://github.com/COONEO/Arduino_Raspberry_ROS_Car.git

# copy ROS node in your home folder
cp -r Arduino_Raspberry_ROS_car/Raspberry_Pi_ROS_Node/catkin_ws ~/

# change *.py file's permission
sudo chmod 0777
Arduino_Raspberry_ROS_car/Raspberry_Pi_ROS_Node/catkin_ws/src/ros_arduino_bridge/ros_ard
uino_python/src/ros_arduino_python/*

cd catkin_ws
catkin_make
source devel/setup.bash
roslaunch ros_arduino_python arduino.launch
```

In the end, you can publish Topic "cmd_vel" msg to control ROS car running.



2021.05.31

author:ZhaoXiang Lee

COONEO Co.,Ltd

Web:<http://cooneo.cc>

E: cooneo@outlook.com

For more details,you can search "COONEO" in your WeChat.



微信搜一搜



COONEO