

Lesson 23 Introducing the Warning Light

In this lesson, we will learn how to use warning light function.

23.1 Function Overview

This tutorial is about how to use multi-threading to achieve some effects related to WS2812 LED lights. Multi-threading is common in robot projects, since robots have high requirements for real-time response. For each task performing, try not to block the main thread communication.

Multi-threading is similar to executing multiple different programs or tasks at the same time.

Multi-threaded operation has the following advantages:

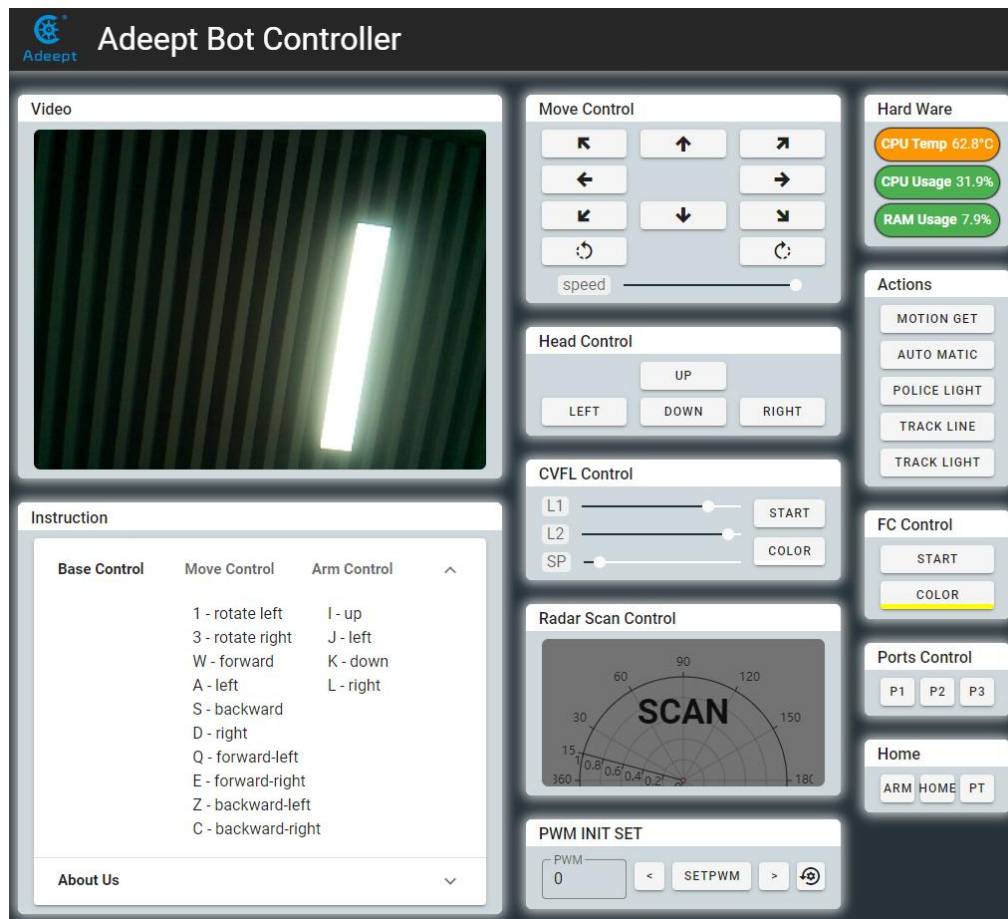
1. Using threads to put time-consuming tasks in the background for processing.
2. Improving the efficiency of the program. In the subsequent real-time video and OpenCV processing video frames, multi-threading is used to greatly increase the frame rate.
3. It's more convenient to call an encapsulated multi-threaded task, similar to the non-blocking control method – in other words, the control of the servo is encapsulated by multi-threading.

23.2 Running the Warning Light Program

1. Start the Smart_Car. It may take about 30-50s to boot.

2. After Smart_Car is turned on, open the Chrome browser on your mobile or computer, enter the IP address of your Raspberry Pi and access port ":5000" into the IP address bar, like this:

192.168.3.130:5000. The web controller will then be displayed on the browser.



3. Click "POLICE LIGHT", and Smart_Car will flash lights of different colors.

4. Click "POLICE LIGHT" again to stop the function.

23.3 Main Code

For the complete code, please refer to the file [RobotLight.py](#).

```
01 def policeProcessing(self):
02     while self.lightMode == 'police':
03         for i in range(0,3):
```

```
04         self.set_all_led_color_data(0,0,255)
05         self.show()
06         time.sleep(0.05)
07         self.set_all_led_color_data(0,0,0)
08         self.show()
09         time.sleep(0.05)
10     if self.lightMode != 'police':
11         break
12     time.sleep(0.1)
13     for i in range(0,3):
14         self.set_all_led_color_data(255,0,0)
15         self.show()
16         time.sleep(0.05)
17         self.set_all_led_color_data(0,0,0)
18         self.show()
19         time.sleep(0.05)
20     time.sleep(0.1)
```