

Lesson 2 Introducing the Warning Light

In this lesson, we will learn how to use PiCar-b's warning light function.

2.1 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.

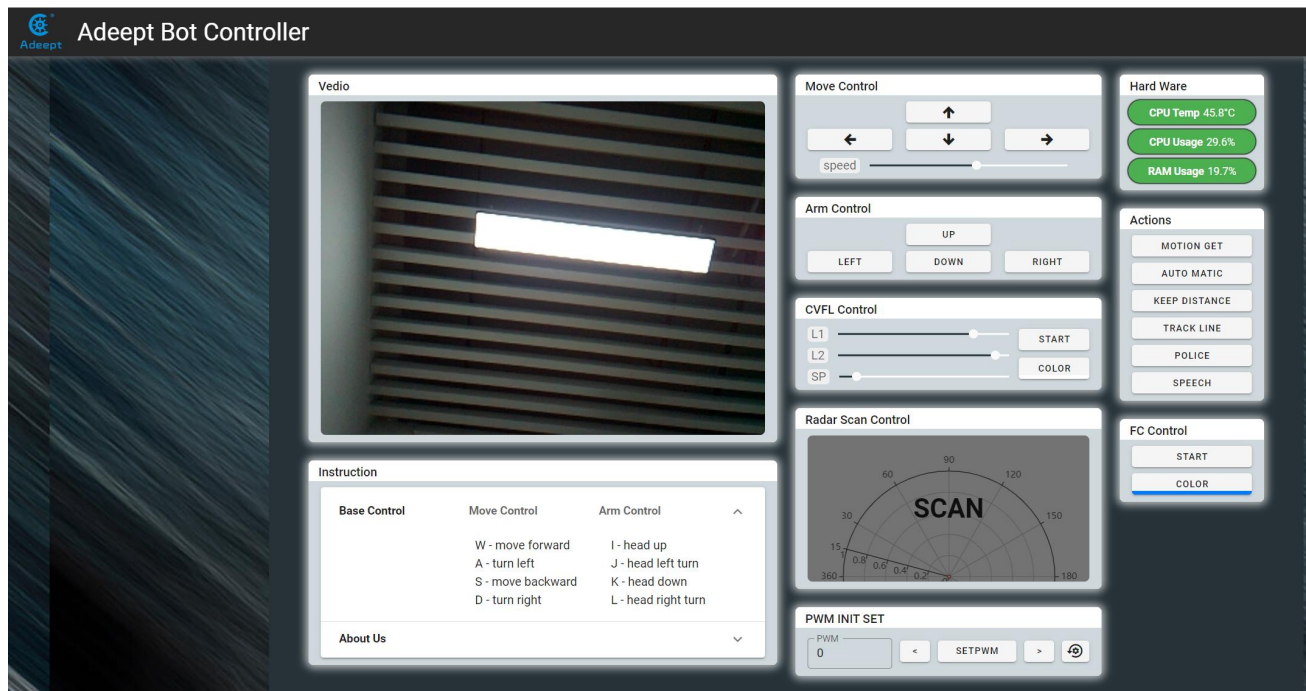
We use Python's threading library to provide thread-related work, and thread is the smallest unit of work in an application. For the current version of Python, there are no priorities, no thread groups, and threads cannot be stopped, suspended, resumed, or interrupted.

2.2 Running the Warning Light Program

1. Start the PiCar-B Robot. It may take about 30-50s to boot.

2. After PiCar-B 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:

192.168.3.44:5000. The web controller will then be displayed on the browser.



3. Click "POLICE", and PiCar-B will flash lights of different colors.

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

2.3 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.setSomeColor(0,0,255,[0,1,2,3,4,5,6,7,8,9,10,11])
05             self.set_all_led_color_data(0,0,255)
06             time.sleep(0.05)
07             self.setSomeColor(0,0,0,[0,1,2,3,4,5,6,7,8,9,10,11])
08             self.set_all_led_color_data(0,0,0)
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.setSomeColor(255,0,0,[0,1,2,3,4,5,6,7,8,9,10,11])
15         self.set_all_led_color_data(255,0,0)
16         time.sleep(0.05)
17         self.setSomeColor(0,0,0,[0,1,2,3,4,5,6,7,8,9,10,11])
18         self.set_all_led_color_data(0,0,0)
19         time.sleep(0.05)
20     time.sleep(0.1)
```