Visual tracking + crossing obstacle

1. Introduction

Dogzilla visual line patrol + obstacle crossing function is to add obstacle crossing function on the basis of line patrol function. When the color is detected to be horizontal and close to the bottom of the camera, it will automatically switch to obstacle crossing mode. After switching to obstacle crossing mode, it will not automatically switch back to line patrol mode.

2. Code analysis

On the basis of visual line patrol, modify the execute function to increase the size of the image in the visual judgment. If the point_ If the y value is greater than 300 and the radius is greater than 150, it means that the horizontal pattern is in the front, and it means that an obstacle is encountered, and it is immediately switched to the obstacle crossing mode.

```
# 执行命令 executive command
def execute(self, point_x, point_y, radius):
    print("point_x:%d, point_y:%d, radius:%d" % (point_x, point_y, radius))
    if point_y > 300 and radius > 150:
        if self.cross_state == 0:
            self.dog_crossing()
            self.cross_state = 1
    if self.cross_state == 0:
        [z_Pid, _] = self.PID_controller.update([(point_x - 320), 0])
        # print("point_x:%d, point_y:%d, radius:%d, z_Pid:%d" % (point_x, point_y, radius, int(z_Pid)))
        self.dog.forward(25)
        self.dog.turn(int(z_Pid))
```

Call gait_ The type ("high_walk") function modifies the robot dog's gait to the high walking obstacle mode and keeps moving forward.

```
# 开启越障模式 Enable obstacle crossing mode
def dog_crossing(self):
    self.dog.stop()
    time.sleep(.01)
    self.dog.gait_type("high_walk")
    time.sleep(.01)
    self.dog.forward(25)
```

1.3 Steps

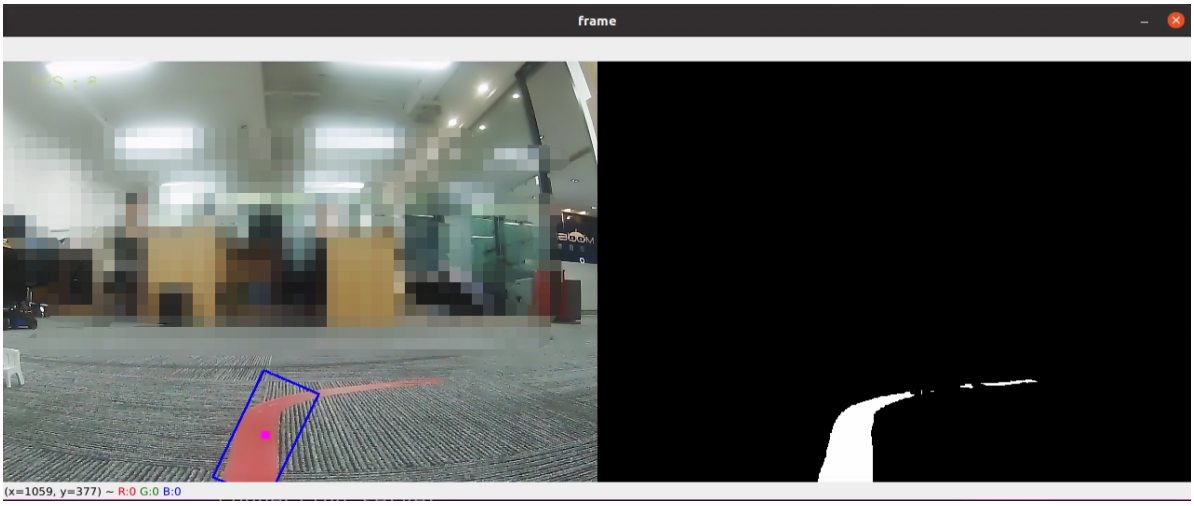
Note: since the desktop window needs to be opened for visual display, you need to log in to the raspberry pie desktop with remote VNC before performing the following:

Open the system terminal, then enter the visual line patrol game directory, and then run the program.

```
cd ~/DOGZILLA/Samples/3_AI_Visual/11_12.followline/
python3 crossing.py
```

When the system is opened for the first time, only one camera screen window will be displayed. Put the robot dog on the line of color to be inspected, press the R key of the keyboard to put the robot dog into the ready state, and then draw a small rectangle on the line to be inspected with the mouse.

After release, the system will add another window to display the processing effect, and set the recognized color to white and other colors to black.



At this time, press the space bar once, and the robot dog starts to walk along a straight line.

If it stops, press the R key to reset, and then press the I key to recall the processing result image.

If you need to leave, press Q to exit the program.

Note: all keyboard inputs can only be input when the camera display window is active.

When the obstacle (with recognized color) is detected to be in the front, the obstacle crossing mode is started. After turning on the obstacle crossing mode, it will not automatically switch back to the line patrol mode. Please press the R key to reset and turn on the line patrol mode.