Voice control color recognition

Experimental Objective

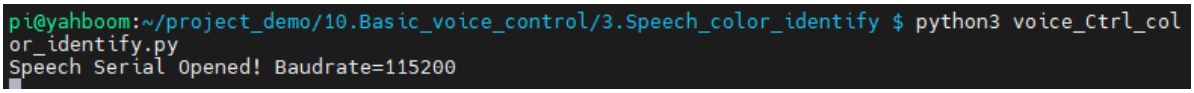
Understand and learn basic semantics to enable the robot to recognize the color selected in the box.

Experimental Procedure and Results

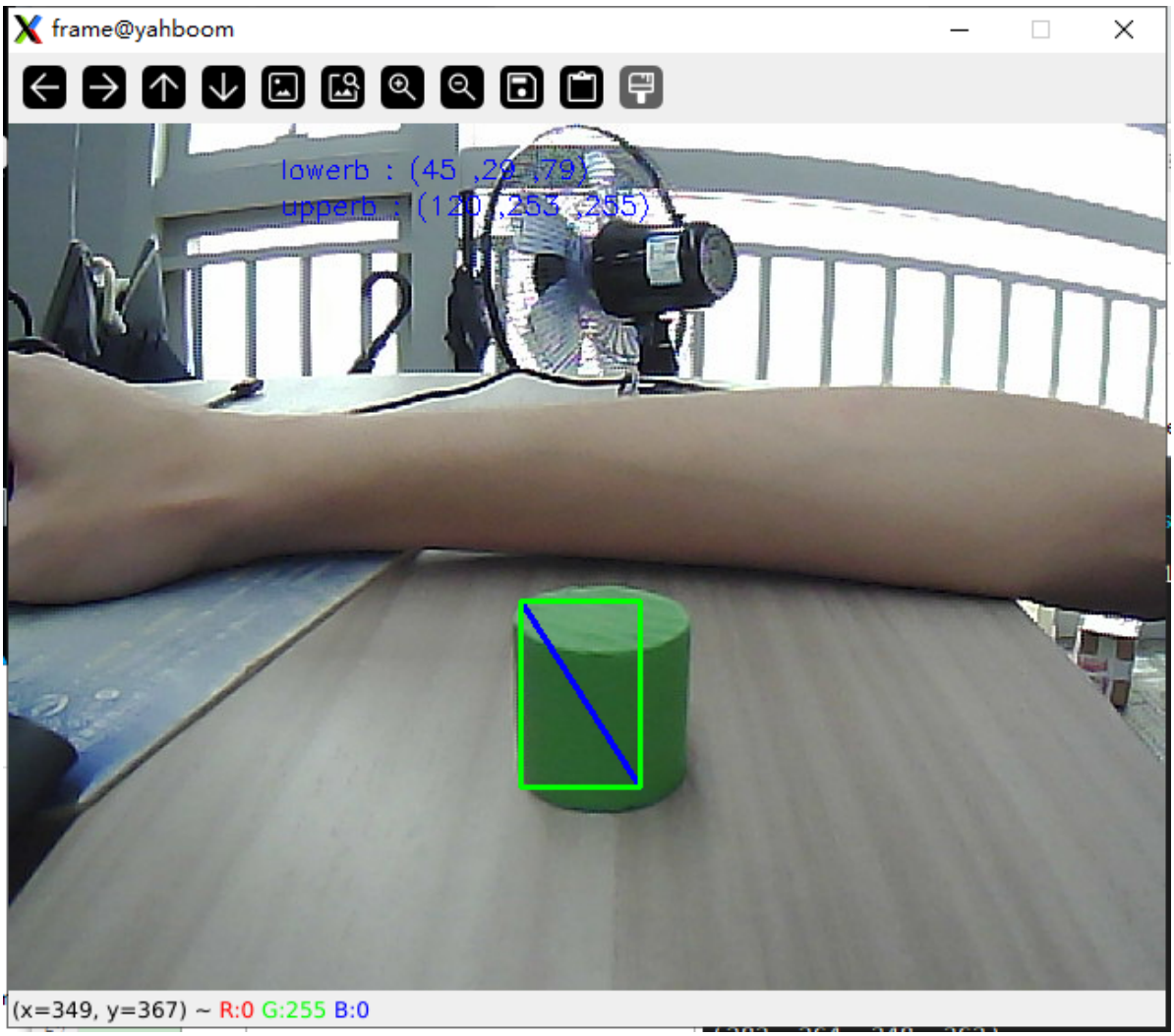
1. First, enter the following command in the terminal:

```
cd /home/pi/project_demo/10.Basic_voice_control/3.Speech_color_identify/
python3 voice_Ctrl_color_identify.py
```

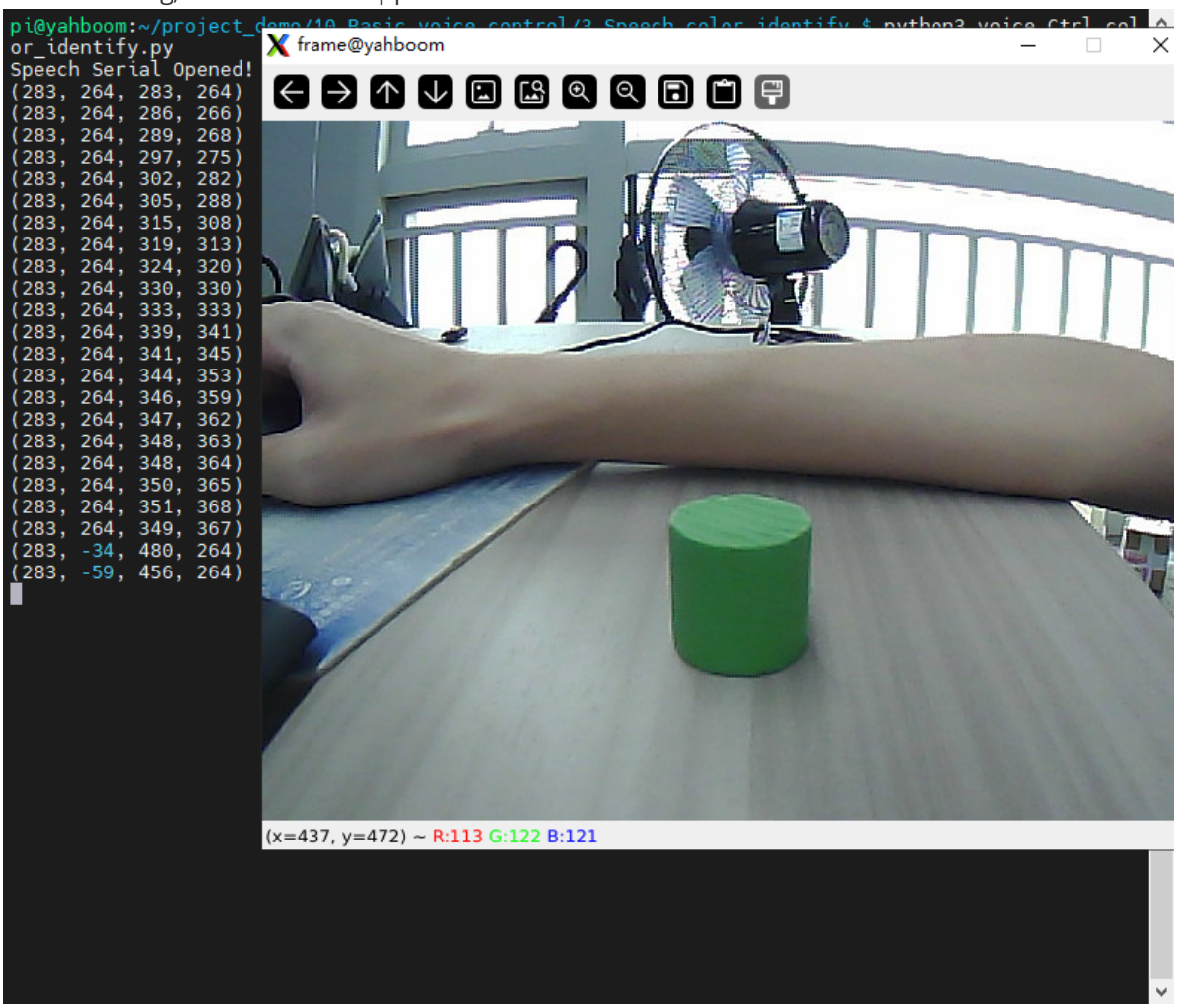
2. After entering this interface, wake up the robot using the wake-up phrase: Hi, Yahboom in English.



3. After successfully waking up, the robot responds: "Hi, I'm here" in English.
4. Use the mouse to select the color area to be recognized, then control the robot using fixed commands to recognize the corresponding color.


frame@yahboom
lowerb : (45 ,29 ,79)
upperb : (120 ,253 ,255)
(x=349, y=367) ~ R:0 G:255 B:0

After selecting, the box will disappear. This is normal.



Fixed statement table

Wake-up phrase (international users)	Operation phenomenon	Answers by Car (English version)
What color is this?	The car will identify the color area selected and answer the corresponding color. If it is red	This is red
What color is this?	The car will identify the selected color area and answer the corresponding color. If it is blue	This is blue
What color is this?	The car will identify the color area selected and answer the corresponding color. If it is green	This is green
What color is this?	The car will identify the color area selected and answer the corresponding color. If it is yellow	This is yellow

Main source code analysis

```
color_identify = Color_identify()
capture = cv.VideoCapture(0)
cv_edition = cv.__version__
if cv_edition[0]=='3': capture.set(cv.CAP_PROP_FOURCC,
cv.VideoWriter_fourcc(*'XVID'))
else: capture.set(cv.CAP_PROP_FOURCC, cv.VideoWriter.fourcc('M', 'J', 'P', 'G'))
```

```
capture.set(cv.CAP_PROP_FRAME_WIDTH, 640)
capture.set(cv.CAP_PROP_FRAME_HEIGHT, 480)
cv.namedWindow("frame",cv.WINDOW_AUTOSIZE)
imshow_num = 0

#Start the speech recognition thread
action_thread = threading.Thread(target=start_action)
action_thread.daemon = True
action_thread.start()

while capture.isOpened():
    start = time.time()
    ret, frame = capture.read()
    #cv.imshow("frame", frame)
    action = cv.waitKey(10) & 0xFF
    rgb_img = color_identify.process(frame)
    imshow_num +=1

    if imshow_num%2==0:
        cv.imshow("frame", rgb_img)
        imshow_num = 0

    if action == ord('q') or action == 113: break
```

start_action: The color of the mouse selection based on fixed semantic recognition
Color_identify: The color of the selected area