Color Recognition and Grasping with Voice Broadcast

Before running the function, you need to close the App and large programs. For the closing method, refer to [4.Preparation] - [1. Manage APP control services].

Orin board users can directly open the terminal and enter the tutorial commands to run. Jetson-Nano board users need to enter the docker container first, then enter the tutorial commands in the docker to start the program.

1. Function Description

The voice module broadcasts the recognized block color, and the robotic arm grabs the corresponding color block and places it in the set position.

2. Startup and Operation

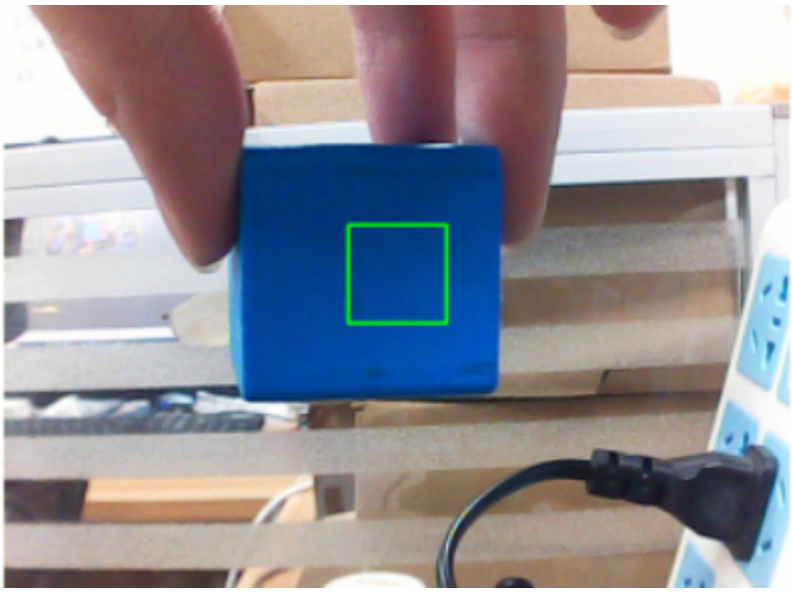
2.1. Startup

Open the terminal and enter the following command to start:

```
python3 ~/dofbot_voice/scripts/color_grab_broadcast.py
```

2.2. Operation Steps

After the program runs successfully, hold a color block and place the green square in the image on the color block, as shown in the figure below:



The program will recognize the block color, the voice module will broadcast the recognized block color, and after the buzzer beeps once, it will grab a block of the same color and place it in the center area. Finally, the voice module will broadcast "Placement complete".

3. Core Code Analysis

Jetson-Nano users need to enter the docker container to view

`Source code path: ~/dofbot_voice/scripts/color_grab_broadcast.py`

```
#Call get_color to recognize the current color block color
frame, color_name = get_color(frame)
#According to the recognized color block color, pass the corresponding parameters
to the start_move_arm function. This function will pass the recognized color
block color,
if len(color_name)==1:
    if color_name['name'] == 'yellow':
        start_move_arm(1)
    elif color_name['name'] == 'red':
        start_move_arm(2)
    elif  color_name['name'] == 'green':
        start_move_arm(3)
    elif color_name['name'] == 'blue':
        start_move_arm(4)

#Number function definition
def number_action(index):
    if index == 1:
        # Grab yellow building block
        arm_move(p_top, 1000)
        arm_move(p_Yellow, 1500)
    elif index == 2:
        # Grab red building block
        arm_move(p_top, 1000)
        arm_move(p_Red, 1500)
    elif index == 3:
        # Grab green building block
        arm_move(p_top, 1000)
        arm_move(p_Green, 1500)
    elif index == 4:
        # Grab blue building block
        arm_move(p_top, 1000)
        arm_move(p_Blue, 1500)
    arm_clamp_block(1)
    arm_move(p_top, 1500)

def ctrl_arm_move(index):
    arm_clamp_block(0)
    if index == 1:
        print("Yellow")
        mySpeech.void_write(66)
        time.sleep(0.1)
        Arm.Arm_Buzzer_On(1)
        time.sleep(.5)
        number_action(index)
        put_down_block()
        mySpeech.void_write(65)
        time.sleep(0.1)
    elif index == 2:
        print("Red")
        mySpeech.void_write(69)
```

```
        time.sleep(0.1)
        Arm.Arm_Buzzer_On(1)
        time.sleep(.5)
        number_action(index)
        put_down_block()
        mySpeech.void_write(65)
        time.sleep(0.1)
    elif index == 3:
        print("Green")
        mySpeech.void_write(67)
        time.sleep(0.1)
        Arm.Arm_Buzzer_On(1)
        time.sleep(.5)
        number_action(index)
        put_down_block()
        mySpeech.void_write(65)
        time.sleep(0.1)
    elif index == 4:
        print("Blue")
        mySpeech.void_write(67)
        time.sleep(0.1)
        Arm.Arm_Buzzer_On(1)
        time.sleep(.5)
        number_action(index)
        put_down_block()
        mySpeech.void_write(65)
        time.sleep(0.1)
```