Yolov11 Garbage Recognition with Voice Broadcast (Jetson Orin)

This course is exclusive to Orin board users. Jetson-Nano board users please refer to the course content in [11.1 Garbage Recognition with Voice Broadcast (Jetson Nano)].

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].

1. Function Description

Voice broadcast the name and type of recognized garbage.

2. Startup and Operation

2.1. Startup

First, you need to start the ROS node service. Open the terminal and enter the following:

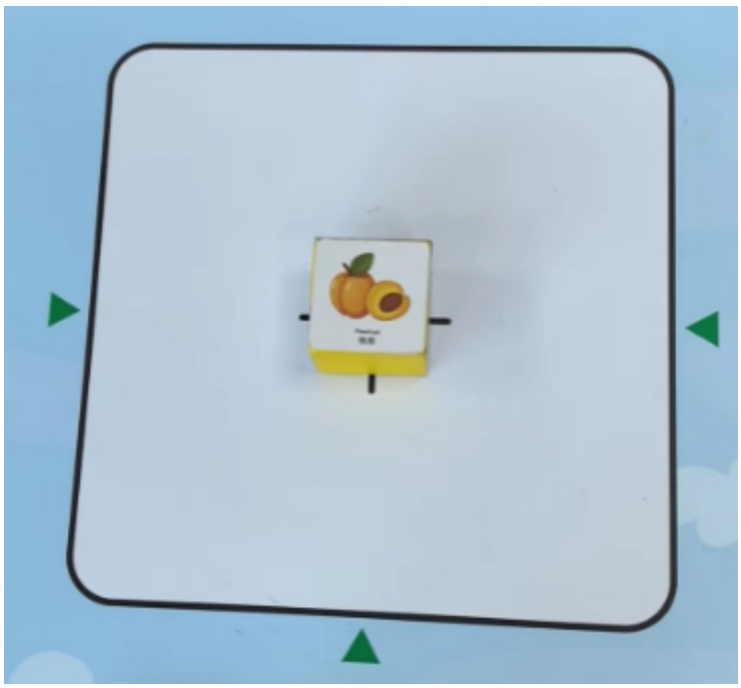
```
ros2 run dofbot_pro_info kinemarics_dofbot
```

Then open another terminal and enter the following:

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

2.2. Operation Steps

Place the garbage label code block in the center of the image, then say "Hello, yahboom" to the voice module. The voice module will reply "here" to indicate successful wake-up. Then say "What garbage is this?" to the voice module. After the program recognizes it, the voice module will reply and broadcast what this garbage is and its type. Taking the figure below as an example, according to the recognition result, it will reply "This is a peach pit, which belongs to dry garbage".



3. Core Code Analysis

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

```
# Import voice broadcast garbage type library, this library is located at
/home/jetson/dofbot_pro/dofbot_garbage_yolov11/speech_garbage.py
from speech_garbage import speech_garbage

# Mainly look at the content of this library
# Import garbage recognition library, this library is located at
/home/jetson/dofbot_pro/dofbot_garbage_yolov11/garbage_identify.py
from garbage_identify import garbage_identify

# Call the garbage recognition function, the input parameter is the current
image, then return the recognized processed image and recognition results
self.frame, msg = self.garbage_identify.garbage_run(self.frame)

# Traverse the recognition results msg, determine the number self.garbage_num and
type self.garbage_class represented by the garbage name according to the value of
name
for key, pos in msg.items():
    name = key
    if name == "Zip_top_can":              (self.garbage_num,
self.garbage_class) = ('00', '01')
    if name == "Old_school_bag":           (self.garbage_num,
self.garbage_class) = ('01', '01')
    if name == "Newspaper":                (self.garbage_num,
self.garbage_class) = ('02', '01')
    if name == "Book":                     (self.garbage_num,
self.garbage_class) = ('03', '01')
    if name == "Toilet_paper":             (self.garbage_num,
self.garbage_class) = ('04', '02')
    if name == "Peach_pit":                (self.garbage_num,
self.garbage_class) = ('05', '02')
    if name == "Cigarette_butts":          (self.garbage_num,
self.garbage_class) = ('06', '02')
    if name == "Disposable_chopsticks":    (self.garbage_num,
self.garbage_class) = ('07', '02')
    if name == "Egg_shell":                (self.garbage_num,
self.garbage_class) = ('08', '03')
    if name == "Apple_core":               (self.garbage_num,
self.garbage_class) = ('09', '03')
    if name == "Watermelon_rind":          (self.garbage_num,
self.garbage_class) = ('10', '03')
    if name == "Fish_bone":                (self.garbage_num,
self.garbage_class) = ('11', '03')
    if name == "Expired_tablets":          (self.garbage_num,
self.garbage_class) = ('12', '04')
    if name == "Expired_cosmetics":        (self.garbage_num,
self.garbage_class) = ('13', '04')
    if name == "Used_batteries":           (self.garbage_num,
self.garbage_class) = ('14', '04')
    if name == "Syringe":                  (self.garbage_num,
self.garbage_class) = ('15', '04')
    if name == "None":                     (self.garbage_num,
self.garbage_class) = ('None', 'None')
```

```
#Get voice recognition result
result = mySpeech.speech_read()
#If the current voice recognition result is 94, it means asking what the current
garbage is
if result == 94:
    #Reply and broadcast the current garbage name and type according to
self.garbage_num
    if self.garbage_num == '00':
        mySpeech.void_write(94)

    elif self.garbage_num == '01':
        mySpeech.void_write(95)

    elif self.garbage_num == '02':
        mySpeech.void_write(96)

    elif self.garbage_num == '03':
        mySpeech.void_write(97)

    elif self.garbage_num == '04':
        mySpeech.void_write(109)

    elif self.garbage_num == '05':
        mySpeech.void_write(108)

    elif self.garbage_num == '06':
        mySpeech.void_write(107)

    elif self.garbage_num == '07':
        mySpeech.void_write(106)

    elif self.garbage_num == '08':
        mySpeech.void_write(105)

    elif self.garbage_num == '09':
        mySpeech.void_write(104)

    elif self.garbage_num == '10':
        mySpeech.void_write(103)

    elif self.garbage_num == '11':
        mySpeech.void_write(102)

    elif self.garbage_num == '12':
        mySpeech.void_write(101)

    elif self.garbage_num == '13':
        mySpeech.void_write(100)

    elif self.garbage_num == '14':
        mySpeech.void_write(99)

    elif self.garbage_num == '15':
        mySpeech.void_write(98)
```