Garbage identification

Test according to the trained model, and the trained object name can be recognized.

1. Main code

Code path:/root/Dofbot/6.AI_Visuall/7.Garbage identification.ipynb

The following code content needs to be executed according to the actual step. It cannot be run all at once. Running the last unit will directly exit the thread. The specific code can be viewed in the code path.

Import various libraries and model files

```
#!/usr/bin/env python3
# coding: utf-8
import time
import torch
import rospy
import Arm_Lib
import cv2 as cv
import numpy as np
from time import sleep
from numpy import random

from utils.torch_utils import select_device

from models.experimental import attempt_load

from utils.general import non_max_suppression, scale_coords, xyxy2xywh,
plot_one_box

model_path = '/root/Dofbot/6.AI_Visual/model0.pt'
#Initialize
device = select_device()
# Load model
model = attempt_load(model_path, map_location=device)
```

garbage identification function

```
def single_garbage_run(self, image):
        '''
        Execute the garbage identification function
        Execute garbage identification function
        :param image: The original image
        :return: Recognized image, identification information (name, pos)
Recognized image, identification information (name, pos)
        '''
        while 1:
            self.frame = cv.resize(image, (640, 480))
            try: self.garbage_getName()
            except Exception: print("sqaure_pos empty")
            return self.frame
```

List of garbage names:

```
  def garbage_getName(self):
        name = "None"
        if self.status == 'waiting':
            self.frame, msg = self.garbage_identify.garbage_run(self.frame)
            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')
```

Main thread:

```
def camera():
    # Open camera Open camera
    capture = cv.VideoCapture(0)
    # Loop execution when the camera is turned on normally
    while capture.isOpened():
        try:
            _, img = capture.read()
            img = cv.resize(img, (640, 480))
            img = single_garbage.single_garbage_run(img)
            if model == 'Exit':
                cv.destroyAllWindows()
```

```
                capture.release()
                break
            imgbox.value = cv.imencode('.jpg', img)[1].tobytes()
        except KeyboardInterrupt:capture.release()
```

After the program block is run, you can see the following interface to identify the corresponding garbage.