Garbage recognition

By testing the trained model, the trained object names can be recognized.

Code path:

```
~/jetcobot_ws/src/jetcobot_garbage_yolov5/Garbage_identification.ipynb
```

The specific code can be viewed in the code path.

Import various libraries

```
import cv2 as cv
import threading
from time import sleep
import ipywidgets as widgets
from IPython.display import display
from single_garbage_identify import single_garbage_identify
model = attempt_load(model_path, map_location=device)
```

The camera shows the garbage identification screen

```
def camera():
    # 打开摄像头 Open camera
    capture = cv.VideoCapture(0)
    capture.set(cv.CAP_PROP_FRAME_WIDTH, 640)
    capture.set(cv.CAP_PROP_FRAME_HEIGHT, 480)
    # 当摄像头正常打开的情况下循环执行
    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()
```

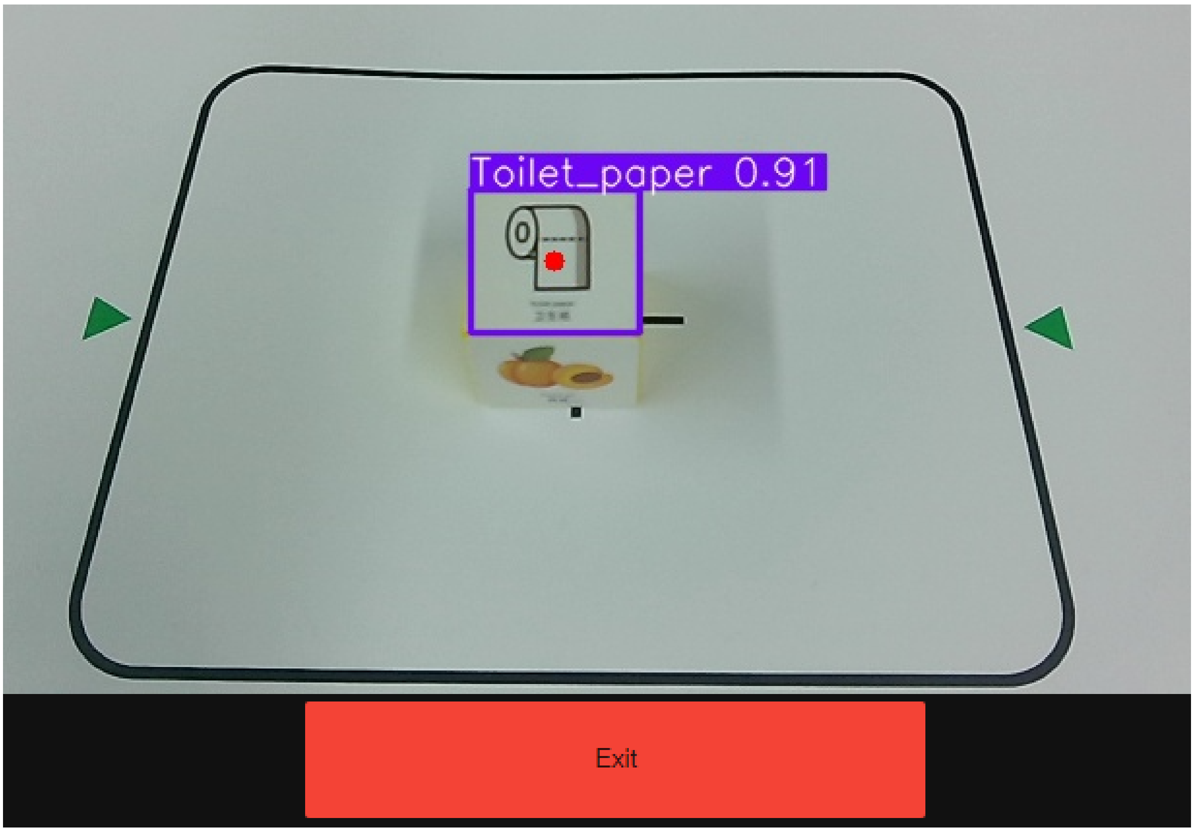
Garbage identification function

```
def single_garbage_run(self, image):
    self.frame = cv.resize(image, (640, 480))
    try:
    self.garbage_getName()
    except Exception:
    print("sqaure_pos empty")
    return self.frame
```

List of junk 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')
```

Click the toolbar of jupyterlab to run all program blocks, then pull to the bottom of the program to view the camera image, place the building block facing the camera, and the image will automatically recognize the corresponding garbage name.



Note: The building block needs to be facing the camera so that the camera screen can see the picture and name directly as shown in the picture above. If the direction difference is too large, it will affect the recognition rate.