Face positioning

The principle of the face positioning experiment is to determine the position information of the face relative to the camera, and to determine the face positioning by calculating the coordinates of the center point of the face in the camera image. The experimental results show that the center point of the face will be found, the center point coordinates will be printed, and a box will be drawn on the face.

Code path:

```
~/dofbot_ws/src/dofbot_face_follow/scripts/Face_position.ipynb
```

1. Main code

- Import header file

```python
import cv2 as cv
import threading
from time import sleep
import ipywidgets as widgets
from IPython.display import display
from face_position import Face_Position
from dofbot_utils.robot_controller import Robot_Controller
from dofbot_utils.fps import FPS
from dofbot_utils.dofbot_config import *
```

- Create an instance and initialize parameters

```python
robot = Robot_Controller()
robot.move_init_pose()
fps = FPS()
face = Face_Position()
model = 'General'
```

- Main Process

```python
def camera():
    global model
    # 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)
    while capture.isOpened():
        try:
            _, img = capture.read()
            fps.update_fps()
            img, pos = face.process(img)
            if pos is not None:
                print("x={}, y={}".format(pos[0], pos[1]))
```

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

- start up

```
display(controls_box,output)
threading.Thread(target=camera, ).start()
```
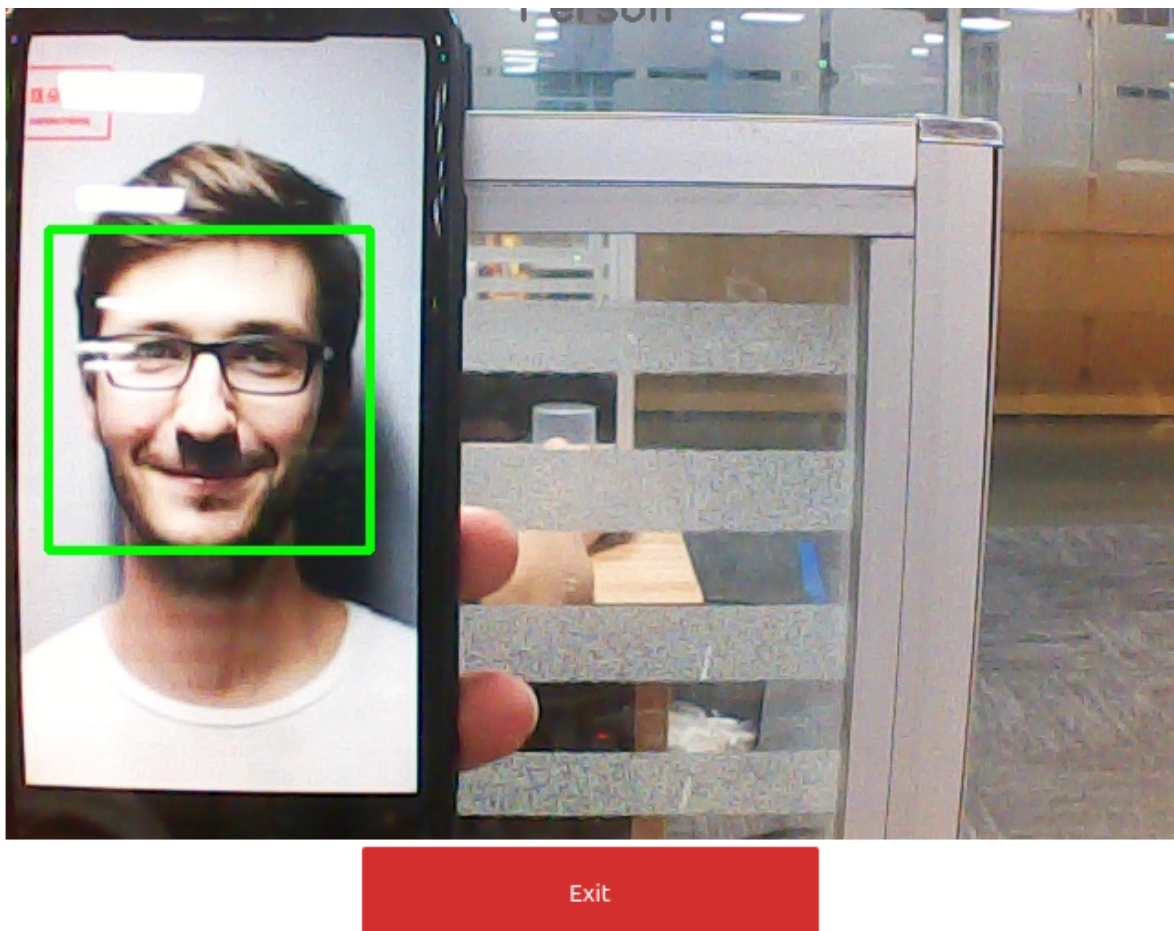
2. Run the program

Click the Run the entire program button on the jupyterlab toolbar, and then scroll to the bottom.

After the program starts, put the face picture into the camera screen, you can see the face in the green box, move the face image, and the box will move with the face.

Open the Log information, select Log Level as Info, and you can see the position coordinates of the face printed out.

```
Log: dofbot_ws/src/dofbot  ✕

+ Add Checkpoint   ⊘ Clear Log   Log Level:  Info          ⌄

4:57:52 PM    x=312, y=263
              x=308, y=270
              x=305, y=276
              x=299, y=282
              x=304, y=285
              x=304, y=287
              x=309, y=286
              x=310, y=285
              x=312, y=283
              x=323, y=231
```

If you need to end the program, please click [Exit] to avoid affecting other programs calling resources.