Camera driver

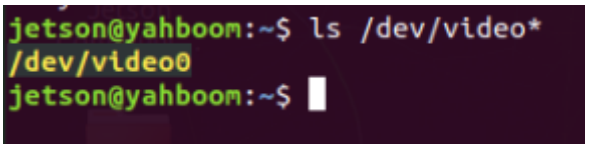
1 Experimental purpose

This course mainly uses the camera of the mainboard to obtain the camera image and display it on the jupyterlab control.

2 Experimental preparation

Check the device number of the USB camera, as shown in the figure below, and get the device number /dev/video0

```
ls /dev/video*
```



3 Experimental process

Open the jupyterLab client and find the code path:

```
jetcobot_ws/src/jetcobot_ai_basic/scripts/1.Camera_Show.ipynb
```

Import the opencv library and jupyter lab display control.

```
import cv2
import ipywidgets.widgets as widgets
```

Open the camera, the default configuration device is /dev/video0, the display resolution is 640*480, and the frame rate is 30 frames. If the device number of the camera in the system is not /dev/video0, please modify the configuration information according to the actual device number.

```
image_widget = widgets.Image(format='jpeg', width=640, height=480)
image = cv2.VideoCapture(0)
image.set(3, 640)
image.set(4, 480)
image.set(5, 30)
```

Read a frame of the camera image, ret=True if the read is successful, ret=False if the read fails, frame represents the current read image, and calculates the FPS, and displays the image on the control.

```
while g_camera.isOpened():
    ret, frame = g_camera.read()
    if not ret:
    print("Camera Read Fail")
    break

    m_fps = m_fps + 1
```

```
    fps = m_fps / (time.time() - t_start)
    if (time.time() - t_start) >= 2:
    m_fps = fps
    t_start = time.time() - 1

    text="FPS:" + str(int(fps))
    cv2.putText(frame, text, (10, 20), cv2.FONT_HERSHEY_SIMPLEX, 0.5, (0, 255,
255), 1)
    image_widget.value = bgr8_to_jpeg(frame)
```

If you do not need to use it, please release the camera to avoid errors caused by other routines accessing the camera at the same time. Select the cell that displays the camera and click the stop button to automatically stop and call the camera release program.


```
g_camera.release()
```

4 Experimental summary

This time, JupyterLab controls are used to display the camera screen. If the default device /dev/video0 device number cannot be driven, please check the device number of the current system or re-plug the camera cable.