

## 7. Web page real-time monitoring

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#### 7.1. Environment Construction

#### 7.2. modify the launch file

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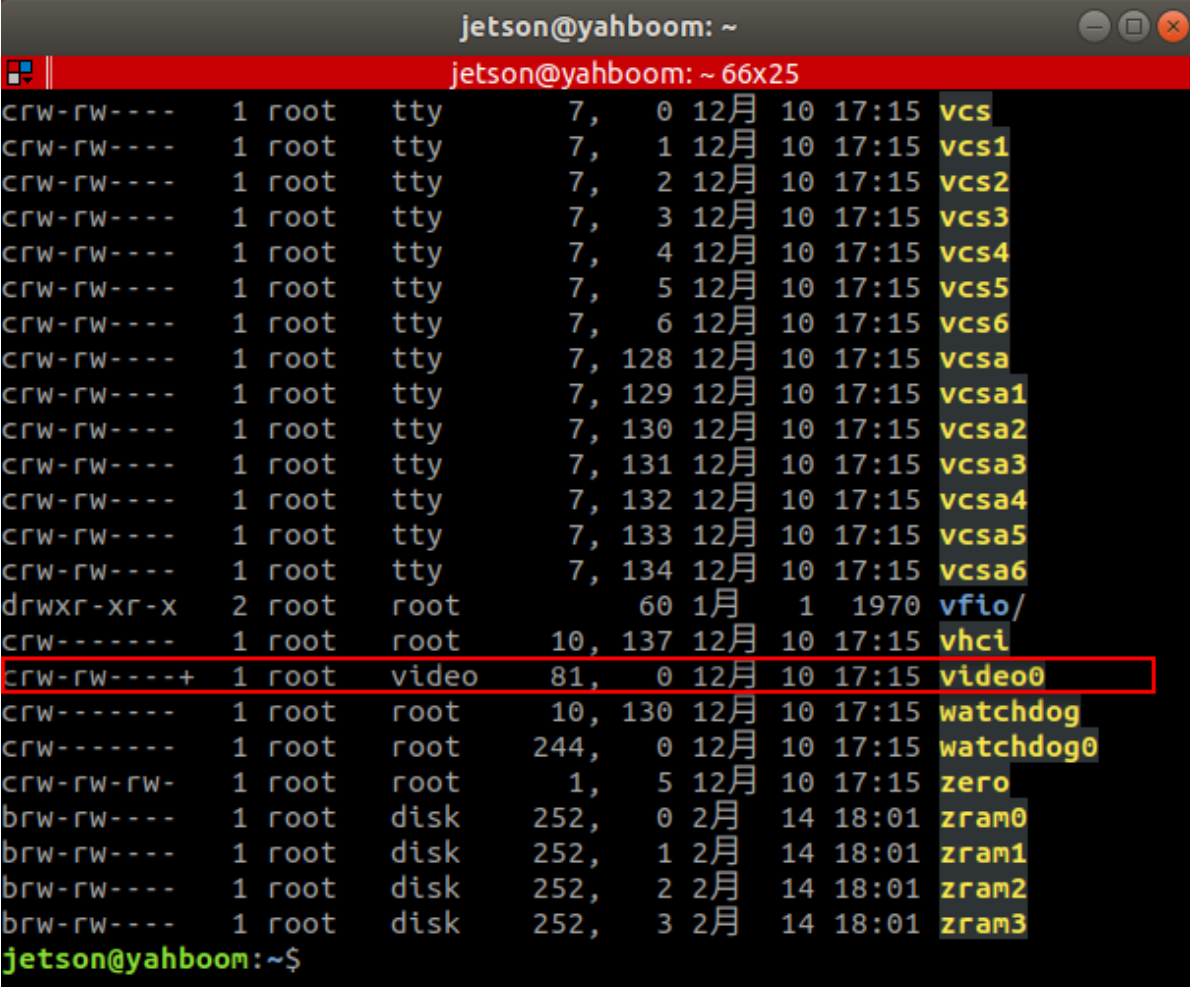
## 7.1. Environment Construction

```
#Raspberry Pi 5 master needs to enter docker first, please perform this step  
#If running the script into docker fails, please refer to the ROS/07.Docker  
tutorial  
~/run_docker.sh
```

```
sudo apt-get install ros-melodic-async-web-server-cpp ros-melodic-web-video-  
server ros-melodic-usb-cam
```

First make sure that the USB camera link is correct, enter the following command to check that the USB device number exists and is video0

```
11 /dev
```



```
jetson@yahboom: ~  
jetson@yahboom: ~ 66x25  
crw-rw---- 1 root tty 7, 0 12月 10 17:15 vcs  
crw-rw---- 1 root tty 7, 1 12月 10 17:15 vcs1  
crw-rw---- 1 root tty 7, 2 12月 10 17:15 vcs2  
crw-rw---- 1 root tty 7, 3 12月 10 17:15 vcs3  
crw-rw---- 1 root tty 7, 4 12月 10 17:15 vcs4  
crw-rw---- 1 root tty 7, 5 12月 10 17:15 vcs5  
crw-rw---- 1 root tty 7, 6 12月 10 17:15 vcs6  
crw-rw---- 1 root tty 7, 128 12月 10 17:15 vcsa  
crw-rw---- 1 root tty 7, 129 12月 10 17:15 vcsa1  
crw-rw---- 1 root tty 7, 130 12月 10 17:15 vcsa2  
crw-rw---- 1 root tty 7, 131 12月 10 17:15 vcsa3  
crw-rw---- 1 root tty 7, 132 12月 10 17:15 vcsa4  
crw-rw---- 1 root tty 7, 133 12月 10 17:15 vcsa5  
crw-rw---- 1 root tty 7, 134 12月 10 17:15 vcsa6  
drwxr-xr-x 2 root root 60 1月 1 1970 vfio/  
crw----- 1 root root 10, 137 12月 10 17:15 vhci  
crw-rw----+ 1 root video 81, 0 12月 10 17:15 video0  
crw----- 1 root root 10, 130 12月 10 17:15 watchdog  
crw----- 1 root root 244, 0 12月 10 17:15 watchdog0  
crw-rw-rw- 1 root root 1, 5 12月 10 17:15 zero  
brw-rw---- 1 root disk 252, 0 2月 14 18:01 zram0  
brw-rw---- 1 root disk 252, 1 2月 14 18:01 zram1  
brw-rw---- 1 root disk 252, 2 2月 14 18:01 zram2  
brw-rw---- 1 root disk 252, 3 2月 14 18:01 zram3  
jetson@yahboom:~$
```

If the execute permission is not enough, you need to add the execute permission

```
sudo chmod 777 /dev/video*
```

## 7.2. modify the launch file

```
sudo vim /opt/ros/melodic/share/usb_cam/launch/usb_cam-test.launch
```

Keep hitting the keyboard [d] to delete everything. Click [i] on the keyboard to enter the edit mode, and write the following content into it.

```
< launch >
  < arg name = "open_view" default = "false" />
  < node name = "usb_cam" pkg = "usb_cam" type = "usb_cam_node" output =
"screen" >
    < param name = "video_device" value = "/dev/video0" />
    < param name = "image_width" value = "640" />
    < param name = "image_height" value = "480" />
    < param name = "pixel_format" value = "yuyv" />
    < param name = "camera_frame_id" value = "usb_cam" />
    < param name = "io_method" value = "mmap" />
  </ node >
  <!-- web_video_server -->
  < node pkg = "web_video_server" type = "web_video_server" name =
"web_video_server" output = "screen" />
  <!-- image_view -->
  < group if = "$(arg open_view)" >
    < node name = "image_view" pkg = "image_view" type = "image_view"
respawn = "false" output = "screen" >
      < remap from = "image" to = "/usb_cam/image_raw" />
      < param name = "autosize" value = "true" />
    </ node >
  </ group >
</ launch >
```

Click the [ESC] key twice (or multiple times), click the keyboard [shift plus;], enter [wq], and click the [Enter] key.

## 7.3. effect demonstration

open terminal, start

```
roslaunch usb_cam usb_cam-test.launch
```

<PI5 needs to open another terminal and enter the same docker container

1. In the above steps, a docker container has been opened. You can open another terminal on the host (car) to view:

```
docker ps -a
```

```
jetson@ubuntu:~$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
5b698ea10535   yahboomtechnology/ros-foxy:3.3.9   "/bin/bash"            3 days ago    Up 9 hours                    ecstatic_lewin
jetson@ubuntu:~$
```

2. Now enter the docker container in the newly opened terminal:

```
docker exec -it 5b698ea10535 /bin/bash
```

```
jetson@ubuntu:~$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
5b698ea10535   yahboomtechnology/ros-foxy:3.3.9   "/bin/bash"            3 days ago    Up 9 hours                    ecstatic_lewin
jetson@ubuntu:~$ docker exec -it 5b698ea10535 /bin/bash
-----
my_robot_type: x3 | my_lidar: a1 | my_camera: astrapro
-----
root@ubuntu:/#
```

After successfully entering the container, you can open countless terminals to enter the container.

Start web\_video\_server

```
roslaunch web_video_server web_video_server
```

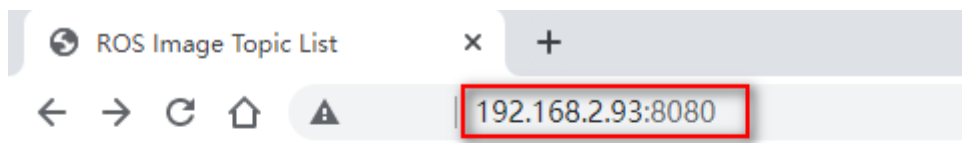
- View in local web browser

```
http://localhost:8080/
```

- View other devices (must be under the same LAN, 192.168.2.93 is the IP address of the master)

```
http://192.168.2.93:8080/
```

Note: It is recommended to use Google Chrome or mobile QQ browser, other browsers may not be able to open the image



## Available ROS Image Topics:

- /usb\_cam/
  - [image\\_raw](#) (Snapshot)

Click [image\_raw] to view the camera image in real time, and click [Snapshot] to display only one frame of image.