1、Environment build

This course takes **Ubuntu20.04+ros-foxy** as an example to explain how to build an environment to use Gemini2 cameras in the ros2 environment.

1、Install related dependencies

Enter the command in the system terminal,

```
sudo apt install libgflags-dev nlohmann-json3-dev libgoogle-glog-dev ros-foxy-image-transport ros-foxy-image-publisher
```

Here foxy （**it is modified according to the actual ros2 version**）, if it is galactic, it can be replaced with galactic.

2、Compile feature pack

1）、create workspace

Take the creation of a workspace named orbbec_ws in the ~ directory as an example,

```
mkdir orbbec_ws
cd orbbec_ws
mkdir src
```

2）、Copy feature pack to workspace

Unzip the file, copy and paste the folder (function package) under src to the ~/orbbec_ws/src directory you just created.

3）、compile

Type in terminal,

```
cd ~/orbbec_ws
colcon build
```

4）、Add environment variables

Type in terminal,

```
echo "source ~/orbbec_ws/install/setup.bash" >> ~/.bashrc
```

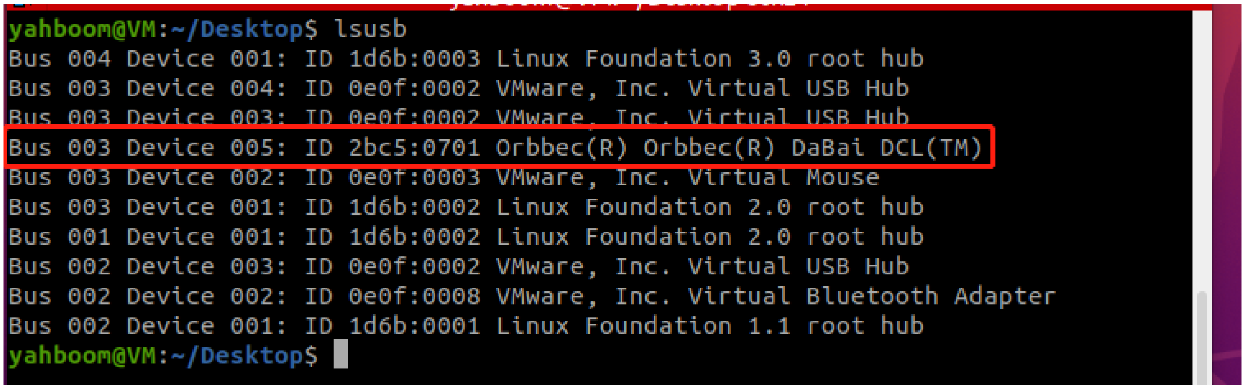
3、Install udev rules

Type in terminal,

```
cd ~/orbbec_ws/src/orbbec_camera/scripts
sudo sh install.sh
sudo udevadm control --reload-rules && sudo udevadm trigger
```

After connecting the camera, enter the following command to check whether the camera is detected,

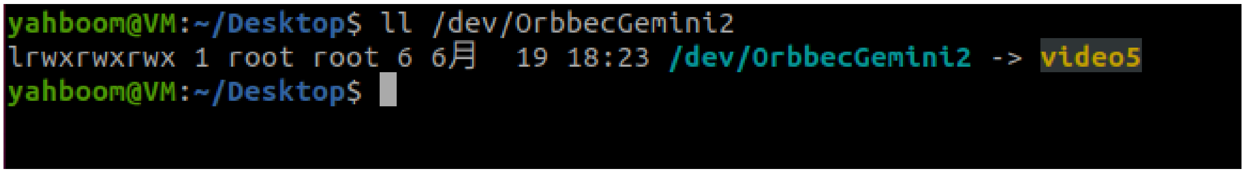
```
lsusb
```



```
yahboom@VM:~/Desktop$ lsusb
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 004: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 003 Device 003: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 003 Device 005: ID 2bc5:0701 Orbbec(R) Orbbec(R) DaBai DCL(TM)
Bus 003 Device 002: ID 0e0f:0003 VMware, Inc. Virtual Mouse
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 003: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 002 Device 002: ID 0e0f:0008 VMware, Inc. Virtual Bluetooth Adapter
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
yahboom@VM:~/Desktop$
```

If the above picture appears, it means that the device is connected successfully. Then, enter the following command to check whether the rule file is successfully loaded and the camera is bound.

```
ll /dev/OrbbecGemini2
```



```
yahboom@VM:~/Desktop$ ll /dev/OrbbecGemini2
lrwxrwxrwx 1 root root 6 6月  19 18:23 /dev/OrbbecGemini2 -> video5
yahboom@VM:~/Desktop$
```

If the above picture appears, it means success. Note that this is not necessarily video5, as long as it is mounted to the device, it will be successful.

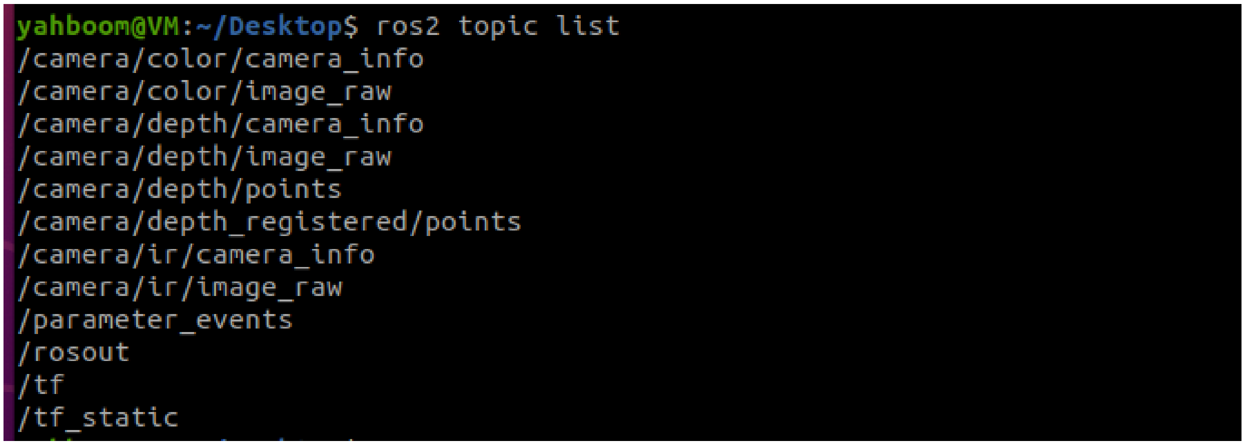
4、Run the camera and view the image

Enter the following command in the terminal,

```
ros2 launch orbbec_camera gemini2.launch.xml
```

Enter the following command to view topic information,

```
ros2 topic list
```

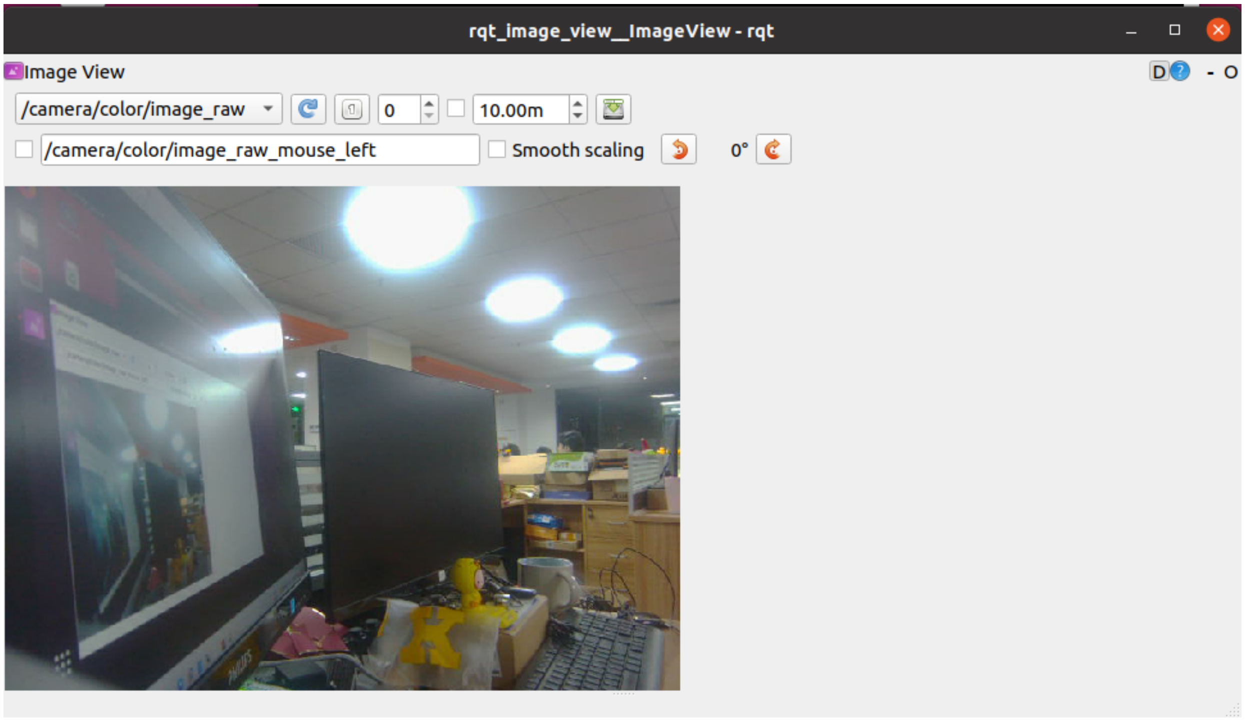


```
yahboom@VM:~/Desktop$ ros2 topic list
/camera/color/camera_info
/camera/color/image_raw
/camera/depth/camera_info
/camera/depth/image_raw
/camera/depth/points
/camera/depth_registered/points
/camera/ir/camera_info
/camera/ir/image_raw
/parameter_events
/rosout
/tf
/tf_static
```

Use the rqt_image_view tool to view images, terminal input,

```
ros2 run rqt_image_view rqt_image_view
```

color map



/camera/color/image_raw

0

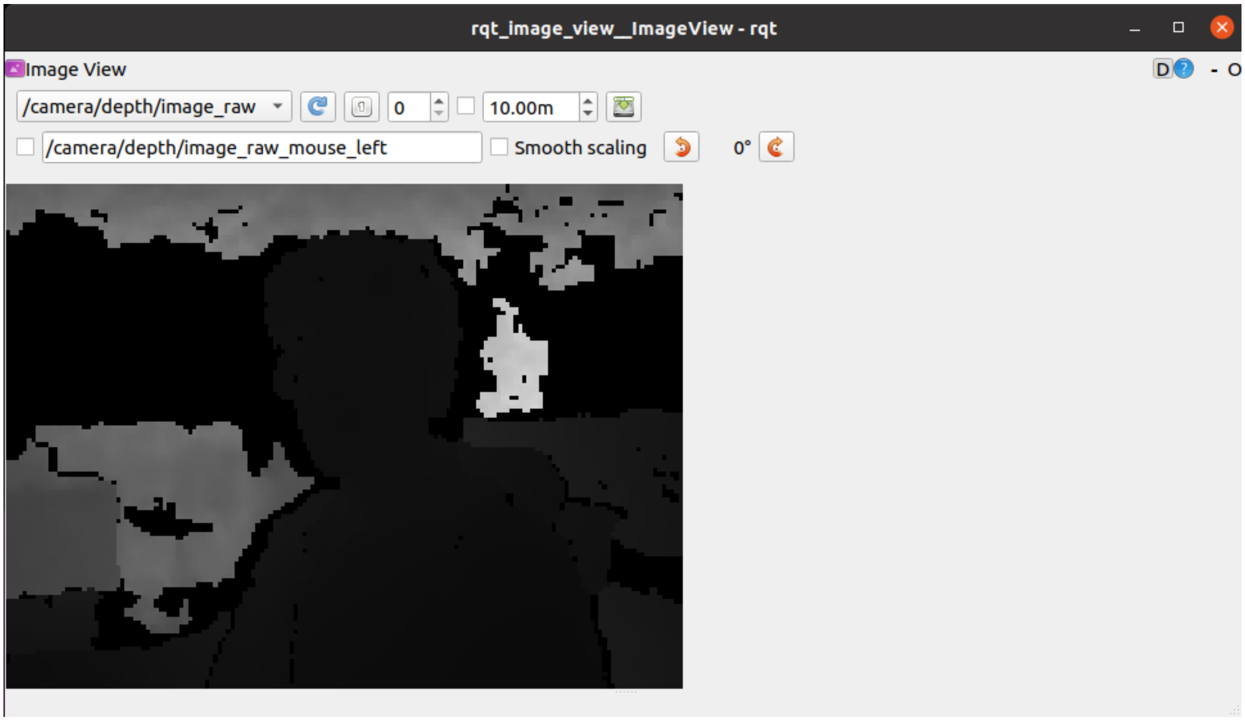
□ 10.00m

□ /camera/color/image_raw_mouse_left

□ Smooth scaling

0°

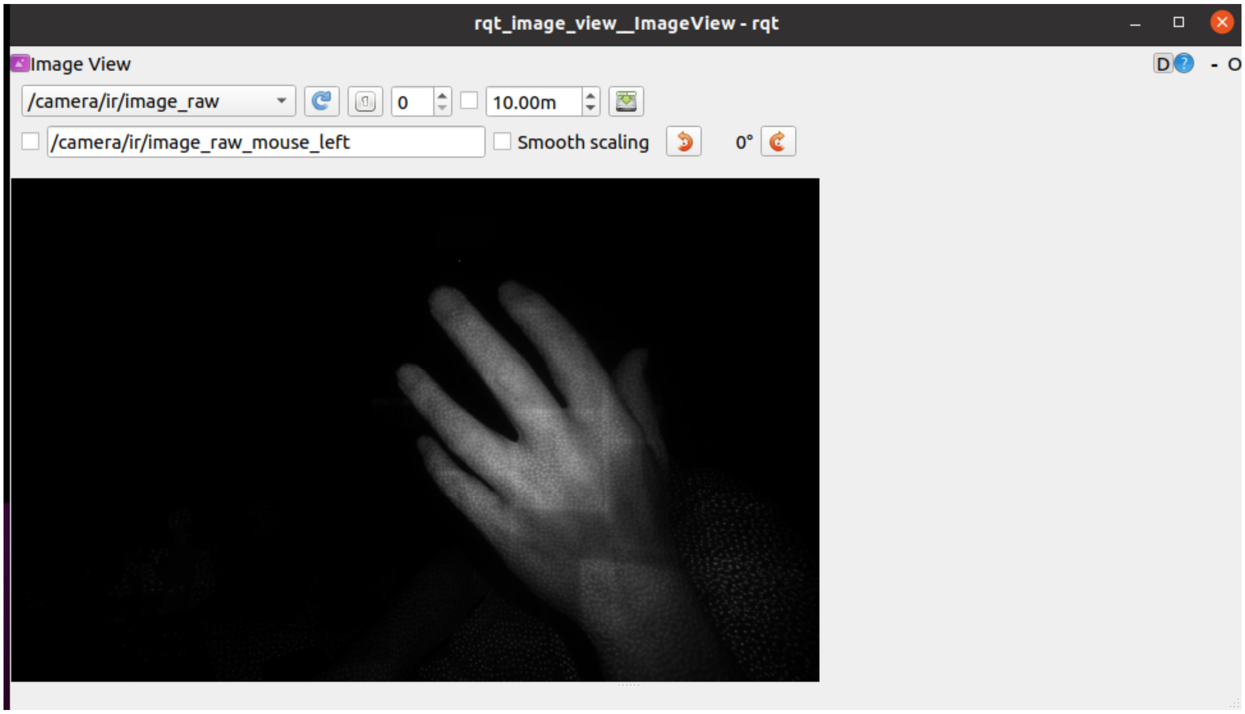
depth map



/camera/depth/image_raw 0 □ 10.00m

□ /camera/depth/image_raw_mouse_left □ Smooth scaling

Infrared IR diagram



/camera/ir/image_raw 0 □ 10.00m

□ /camera/ir/image_raw_mouse_left □ Smooth scaling

Just select the topic in the upper left corner.

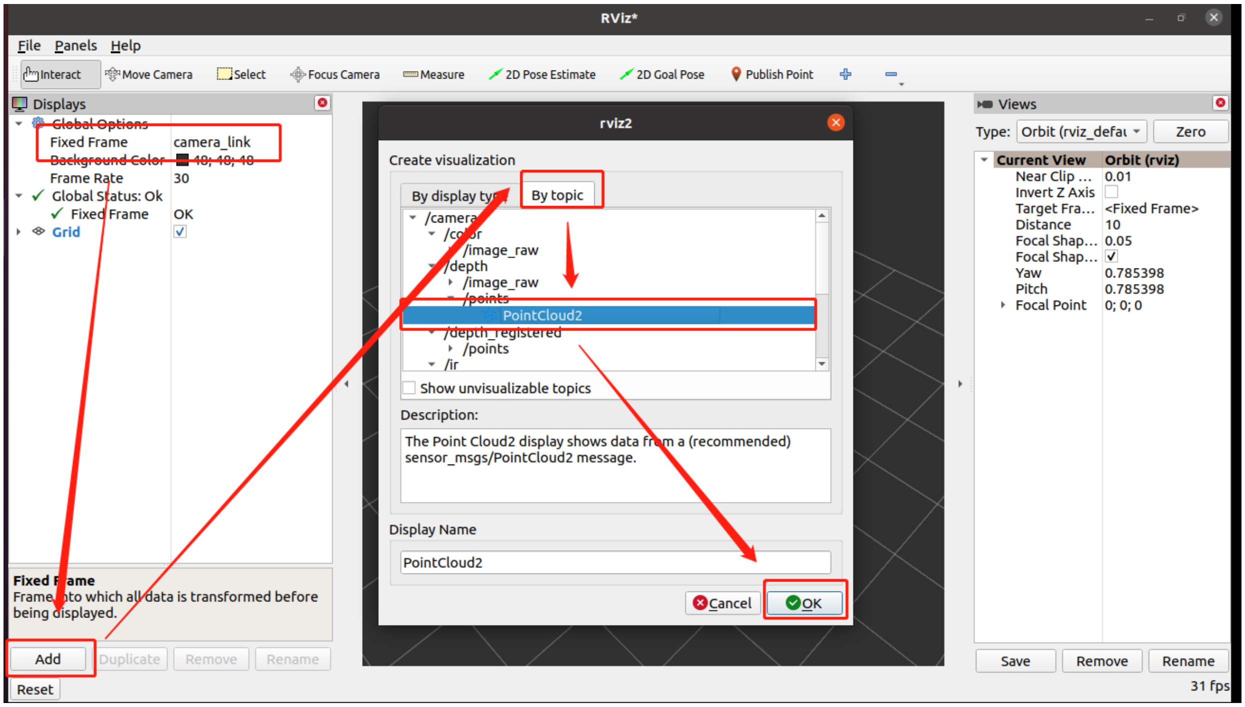
5、Run the camera and view the point cloud image

Enter the following command in the terminal,

```
ros2 launch orbbec_camera gemini2.launch.xml
```

You can see the point cloud data released by the camera in rviz, terminal input,

```
rviz2
```



Global Options
Fixed Frame camera_link
Background Color 48; 48; 48
Frame Rate 30
Global Status: Ok
Fixed Frame OK
Grid ☑

Create visualization

By display type | By topic

/camera
/color
/image_raw
/depth
/image_raw
/points
PointCloud2
/depth_registered
/points
/ir

□ Show unvisualizable topics

Description:
The Point Cloud2 display shows data from a (recommended) sensor_msgs/PointCloud2 message.

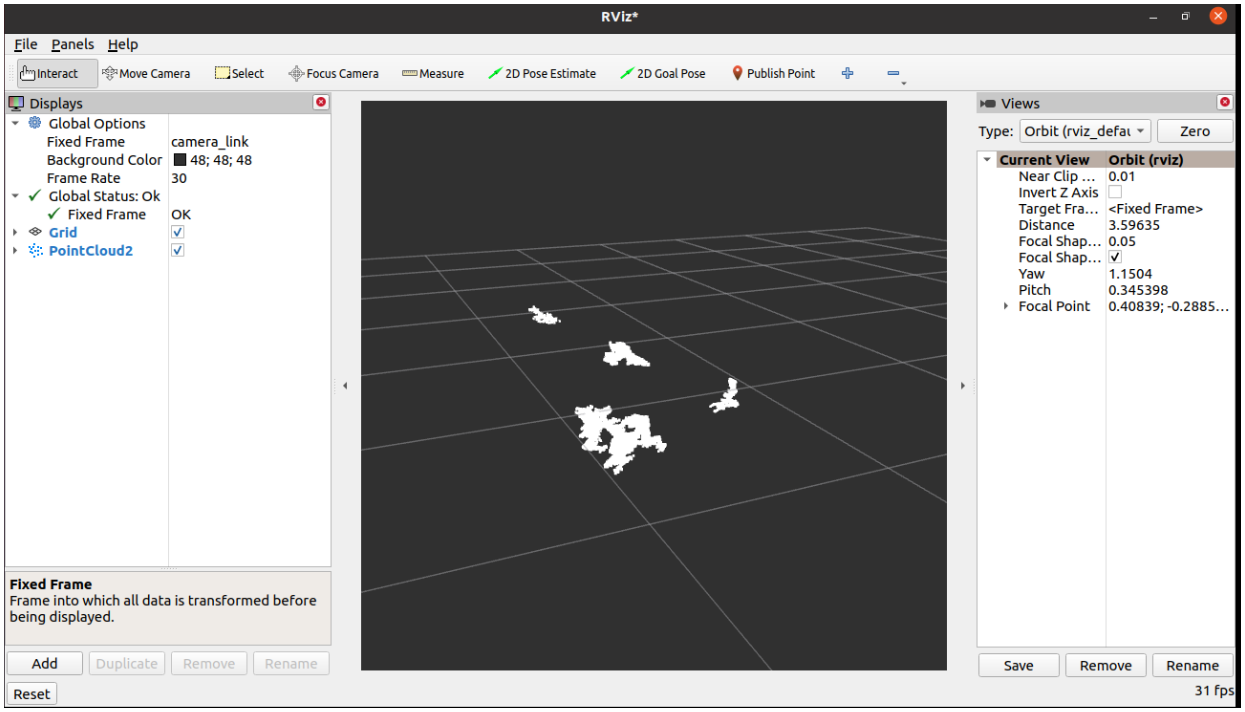
Display Name
PointCloud2

Fixed Frame
Frame into which all data is transformed before being displayed.

Type: Orbit (rviz_defau

Current View	Orbit (rviz)
Near Clip ...	0.01
Invert Z Axis	□
Target Fra...	<Fixed Frame>
Distance	10
Focal Shap...	0.05
Focal Shap...	☑
Yaw	0.785398
Pitch	0.785398
Focal Point	0; 0; 0

After turning on rviz, set the visualized point cloud data as shown in the figure above.



Global Options
Fixed Frame camera_link
Background Color 48; 48; 48
Frame Rate 30
Global Status: Ok
Fixed Frame OK
Grid ☑
PointCloud2 ☑

Fixed Frame
Frame into which all data is transformed before being displayed.

Type: Orbit (rviz_defau

Current View	Orbit (rviz)
Near Clip ...	0.01
Invert Z Axis	□
Target Fra...	<Fixed Frame>
Distance	3.59635
Focal Shap...	0.05
Focal Shap...	☑
Yaw	1.1504
Pitch	0.345398
Focal Point	0.40839; -0.2885...