

1. Environment Construction

Note: The environment of the supporting virtual machine has been built, so there is no need to build it again. Here is the work that needs to be done on a new motherboard or a new virtual machine.

The configuration of the virtual machine environment is as follows:

Ubuntu20.04 + ROS-Noetic+ OpenCV 4.2+Python3.8

1.1. Install related dependencies

Terminal input,

```
sudo apt install libgflags-dev ros-$ROS_DISTRO-image-geometry ros-$ROS_DISTRO-  
camera-info-manager ros-$ROS_DISTRO-image-transport ros-$ROS_DISTRO-image-  
publisher libgoogle-glog-dev libusb-1.0-0-dev libeigen3-dev
```

1.2. Create a ROS workspace

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

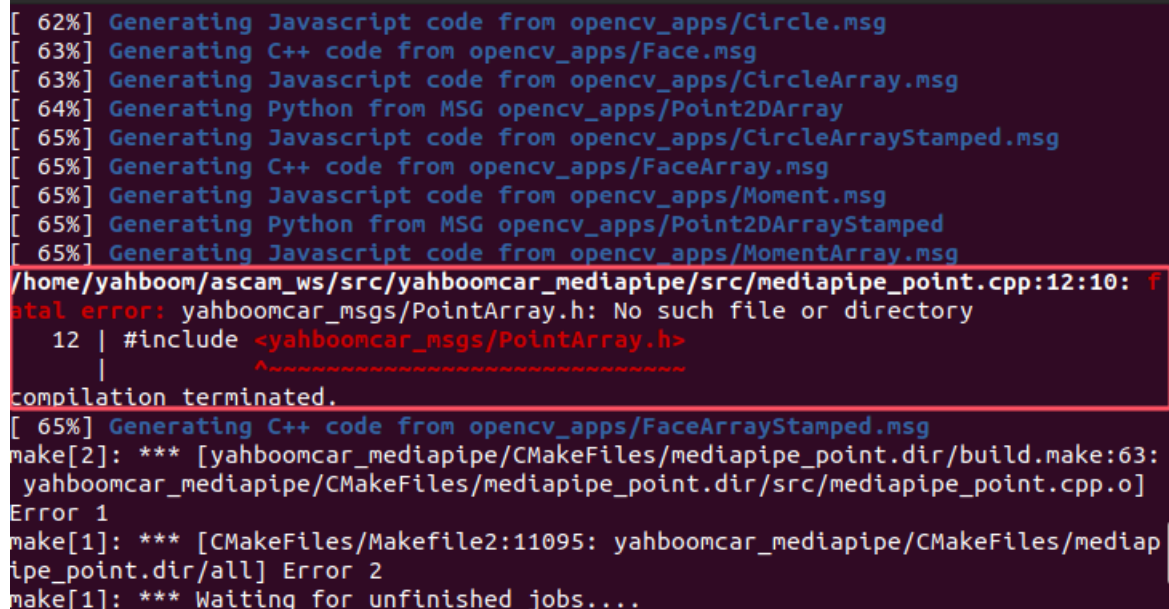
Input in terminal,

```
mkdir -p ~/ascam_ws/src
```

Unzip the source code folder, copy the folder in src to ~/ascam_ws/src, and then input the following command to compile,

```
cd ~/ascam_ws  
catkin_make
```

If the following error appears during compilation, please run the compilation command several times. Until the compilation is successful.



```
[ 62%] Generating Javascript code from opencv_apps/Circle.msg  
[ 63%] Generating C++ code from opencv_apps/Face.msg  
[ 63%] Generating Javascript code from opencv_apps/CircleArray.msg  
[ 64%] Generating Python from MSG opencv_apps/Point2DArray  
[ 65%] Generating Javascript code from opencv_apps/CircleArrayStamped.msg  
[ 65%] Generating C++ code from opencv_apps/FaceArray.msg  
[ 65%] Generating Javascript code from opencv_apps/Moment.msg  
[ 65%] Generating Python from MSG opencv_apps/Point2DArrayStamped  
[ 65%] Generating Javascript code from opencv_apps/MomentArray.msg  
/home/yahboom/ascam_ws/src/yahboomcar_mediapipe/src/mediapipe_point.cpp:12:10: f  
atal error: yahboomcar_msgs/PointArray.h: No such file or directory  
12 | #include <yahboomcar_msgs/PointArray.h>  
    |  
compilation terminated.  
[ 65%] Generating C++ code from opencv_apps/FaceArrayStamped.msg  
make[2]: *** [yahboomcar_mediapipe/CMakeFiles/mediapipe_point.dir/build.make:63:  
yahboomcar_mediapipe/CMakeFiles/mediapipe_point.dir/src/mediapipe_point.cpp.o] Error 1  
make[1]: *** [CMakeFiles/Makefile2:11095: yahboomcar_mediapipe/CMakeFiles/mediap  
ipe_point.dir/all] Error 2  
make[1]: *** Waiting for unfinished jobs....
```

After the compilation is complete, enter the following command to open and edit the ~/.bashrc file,

```
echo "source ~/ascam_ws/devel/setup.bash" >> ~/.bashrc
```

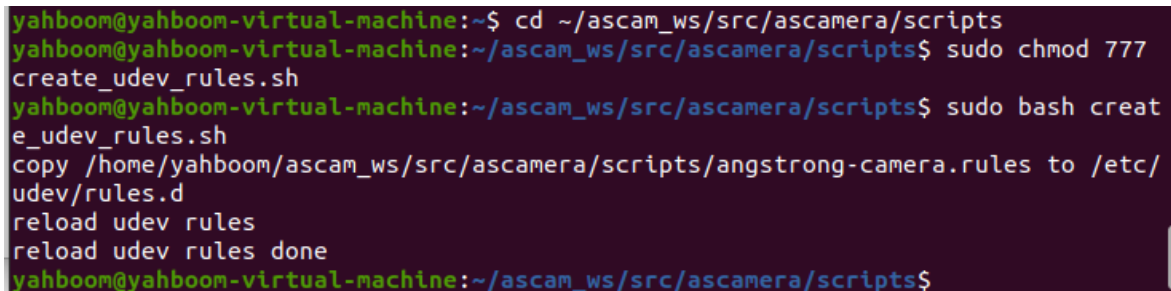
Refresh the environment,

```
source ~/.bashrc
```

1.3, Install the camera udev rule file

Terminal input,

```
cd ~/ascam_ws/src/ascamera/scripts  
sudo chmod 777 create_udev_rules.sh  
sudo bash create_udev_rules.sh
```

A terminal window screenshot showing the execution of the installation script. The prompt is 'yahboom@yahboom-virtual-machine:~\$'. The user enters 'cd ~/ascam_ws/src/ascamera/scripts'. The prompt changes to 'yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts\$'. The user enters 'sudo chmod 777 create_udev_rules.sh'. The prompt changes to 'yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts\$'. The user enters 'sudo bash create_udev_rules.sh'. The script outputs: 'copy /home/yahboom/ascam_ws/src/ascamera/scripts/angstrong-camera.rules to /etc/udev/rules.d', 'reload udev rules', and 'reload udev rules done'. The final prompt is 'yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts\$'.

```
yahboom@yahboom-virtual-machine:~$ cd ~/ascam_ws/src/ascamera/scripts  
yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts$ sudo chmod 777  
create_udev_rules.sh  
yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts$ sudo bash creat  
e_udev_rules.sh  
copy /home/yahboom/ascam_ws/src/ascamera/scripts/angstrong-camera.rules to /etc/  
udev/rules.d  
reload udev rules  
reload udev rules done  
yahboom@yahboom-virtual-machine:~/ascam_ws/src/ascamera/scripts$
```

The above picture indicates that the installation is successful. After the installation is complete, it is best to restart.

1.4, Use the camera

Terminal input,

```
#start the camera  
roslaunch ascamera hp60c.launch
```

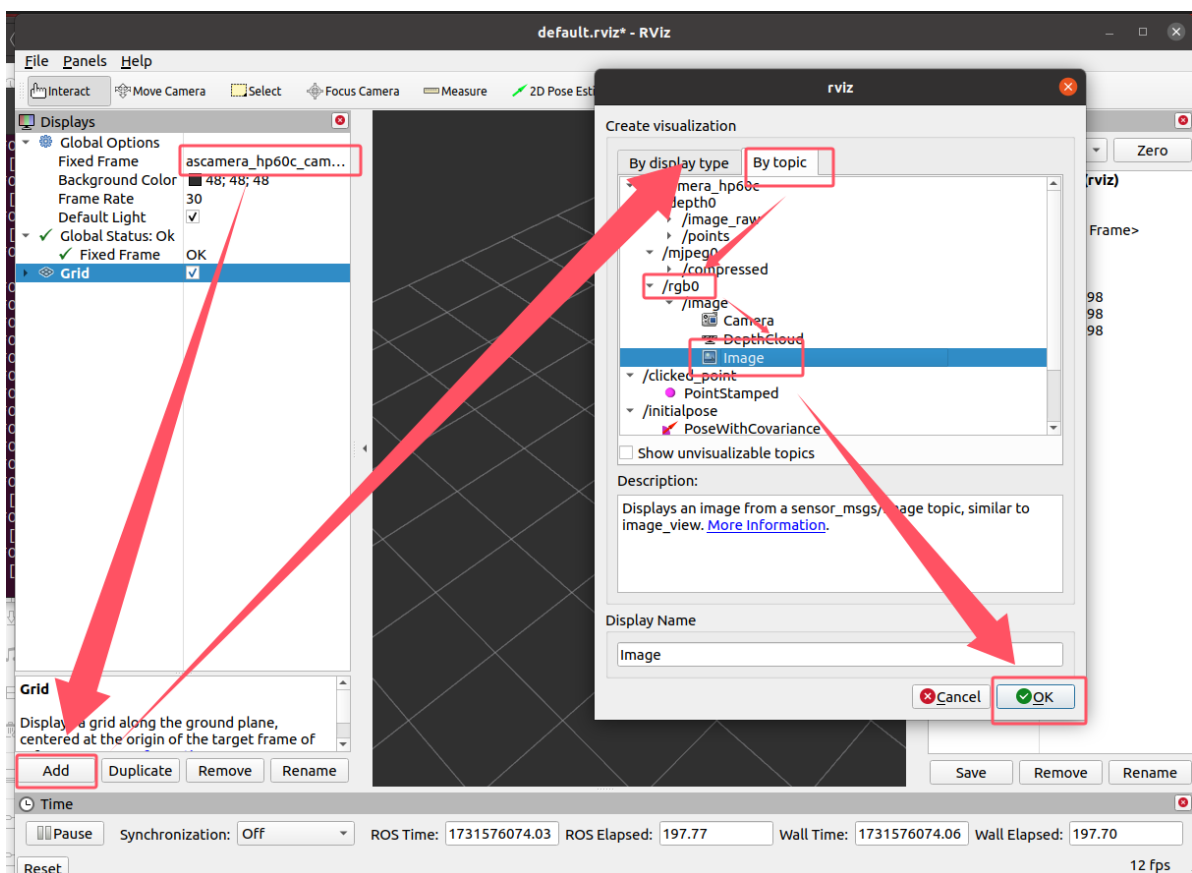
```
/home/yahboom/ascam_ws/src/ascamera/launch/hp60c.l...
[ INFO] [1731575676.256975154]: 2024-11-14 17:14:36[INFO] [CameraHp60c.cpp] [
1535] [parseConfigFileParameter] moduleName:AS_CAM_HP60C
[ INFO] [1731575676.257058360]: 2024-11-14 17:14:36[INFO] [CameraHp60c.cpp] [
1562] [parseConfigFileParameter] Parsing config file /home/yahboom/ascam_ws/s
rc/ascamera/configurationfiles/hp60c_v2_00_20230704_configEncrypt.json
[ INFO] [1731575676.257183342]: 2024-11-14 17:14:36[INFO] [CameraHp60c.cpp] [
1627] [parseConfigFileParameter] configuration protocol Version: v2.x
[ INFO] [1731575676.257213398]: 2024-11-14 17:14:36[INFO] [CameraHp60c.cpp] [
1638] [parseConfigFileParameter] configuration Version: v2.0.0.20230704
[ INFO] [1731575676.293492281]: 2024-11-14 17:14:36[INFO] [CameraHp60c.cpp] [
1803] [setParametersAfterOpenCam] Camera confiParaEnable true, setting configur
ation parameter
[ INFO] [1731575677.781459522]: 2024-11-14 17:14:37[INFO] [XuCmdCameraHp60c.c
pp] [458] [getMjpegSize] mjpeg size:640x480
[ INFO] [1731575677.781517004]: camera opened
[ INFO] [1731575677.781537247]: get config info, ret 0, is_Registration 1
[ INFO] [1731575677.782525734]: #camera[0x559ac83cfe10] SN[ASC60CE17000933]'s
firmware version: DLS_VERcaafaf=V01.06_2024010416:V01.18_2024010416:L01:002
[ INFO] [1731575677.783235211]: set depth resolution: 640x480@30fps
[ INFO] [1731575677.783616288]: set rgb resolution: 640x480@30fps
[ INFO] [1731575677.789425219]: 2024-11-14 17:14:37[INFO] [CameraHp60c.cpp] [
259] [startStreaming] start streaming
[ INFO] [1731575677.789481693]: attached end
[ INFO] [1731575678.790828584]: 2024-11-14 17:14:38[INFO] [CameraHp60c.cpp] [
278] [stopStreaming] stop streaming
```

Use rviz to view the image, then open a terminal and input,

```
rviz
```

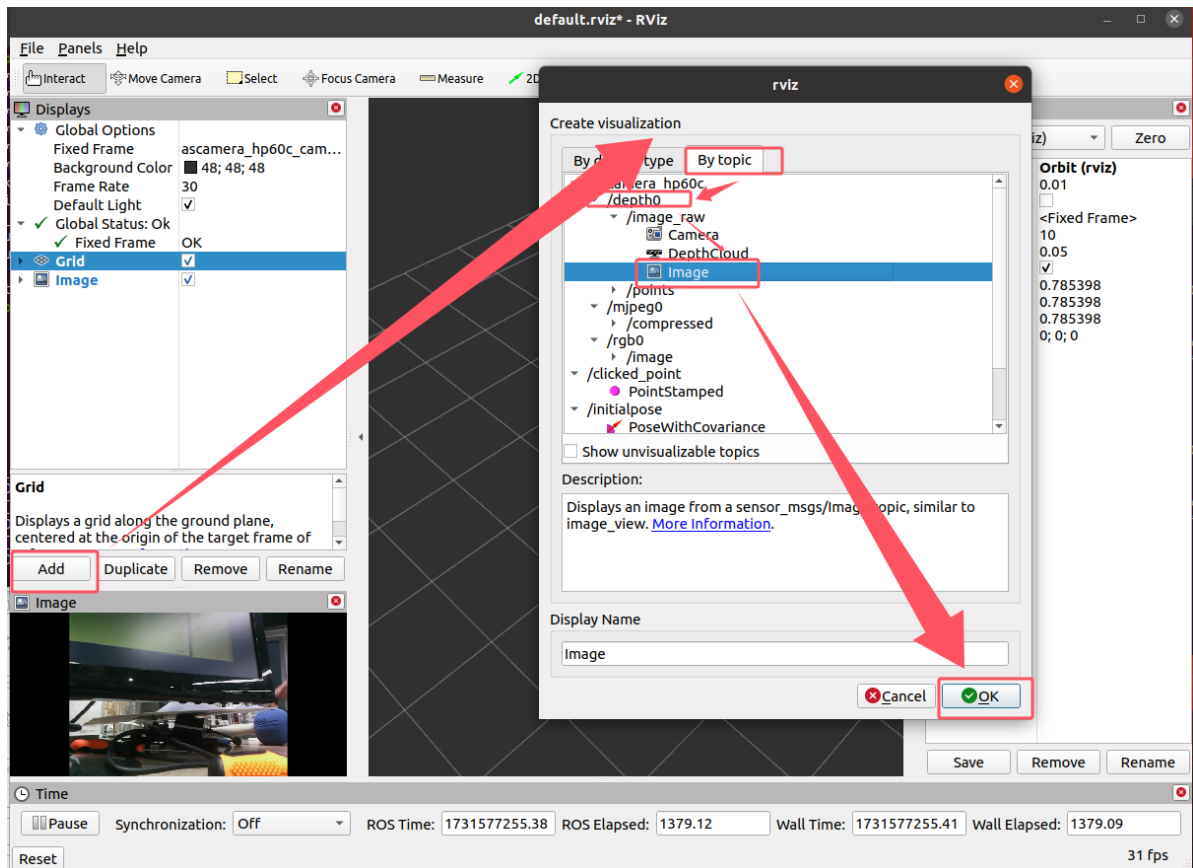
Change Fixed Frame to ascamera_hp60c_camera_link_0, then add the Image display plug-in as shown in the figure below, and select the color image display in the Image Topic column:

/ascamera_hp60c/rgb0/image



As shown below, also in Image Select the depth image to be displayed in the Topic column:

/ascamera_hp60c/depth/image_raw



View the depth point cloud

