3. AR vision

3.1. Overview

Augmented Reality, referred to as "AR", is a technology that cleverly integrates virtual information with the real world. It widely uses multimedia, three-dimensional modeling, real-time tracking and registration, intelligent interaction, sensing and other technologies. It simulates computer-generated text, images, three-dimensional models, music, videos and other virtual information and then applies it to the real world. The two types of information complement each other, thereby achieving "enhancement" of the real world.

The AR system has three outstanding features:

-Integration of information in the real world and virtual world;

- Real-time interactivity;
- Add positioning virtual objects in three-dimensional scale space.

Augmented reality technology includes new technologies and methods such as multimedia, three-dimensional modeling, real-time video display and control, multi-sensor fusion, real-time tracking and registration, and scene fusion.

This case has a total of 12 AR effects, namely,

```
["Triangle", "Rectangle",
"Parallelogram","WindMill","TableTennisTable","Ball","Arrow", "Knife",
"Desk","Bench", "Stickman", "ParallelBars"]
```

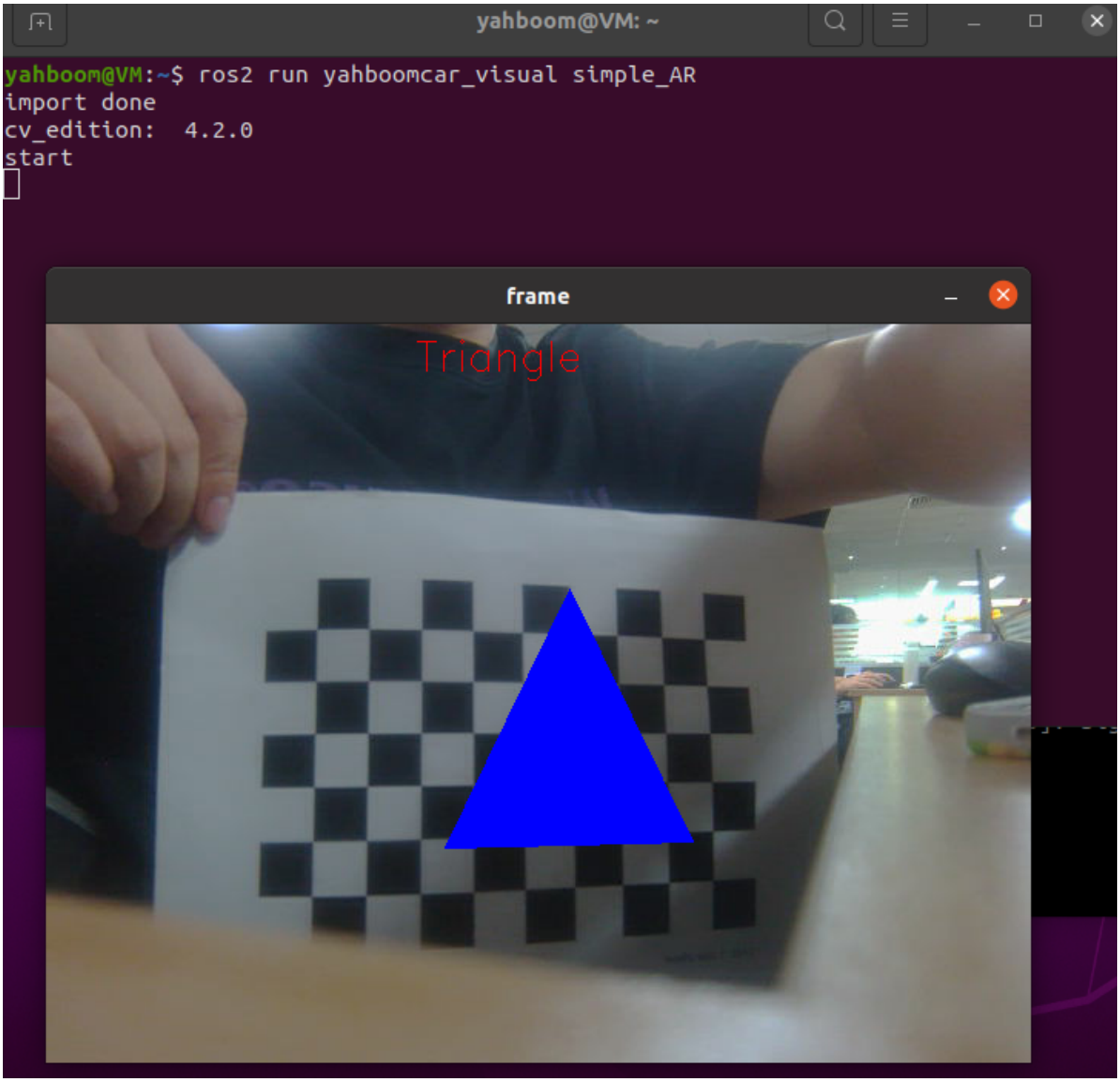
3.2. Start command

Code reference path,

```
~/orbbec_ws/src/yahboomcar_visual/yahboomcar_visual/simple_AR.py
```

Enter the following command in the terminal to start,

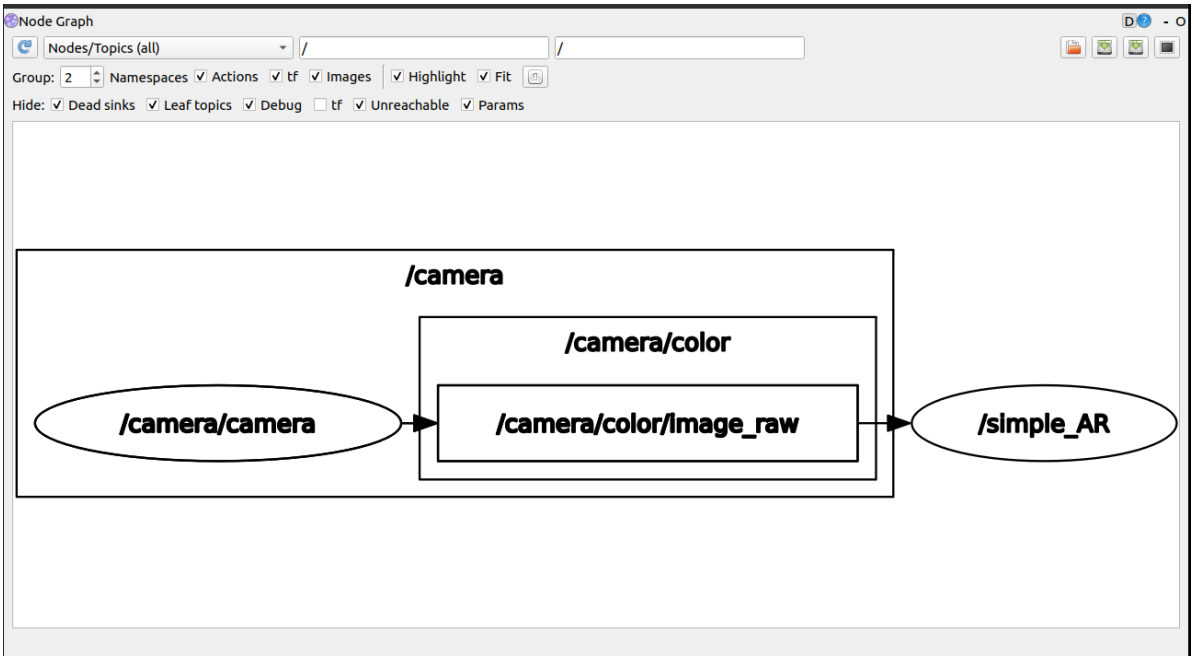
```
ros2 launch orbbec_camera gemini2.launch.py
ros2 run yahboomcar_visual simple_AR
```



【f】Switch different effects.

View communication between topics, terminal input,

```
ros2 run rqt_graph rqt_graph
```



View topic data list, terminal input,

```
ros2 topic list
```

```
yahboom@VM:~$ ros2 topic list
/Graphics_topic
/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
/simpleAR/camera
/tf
/tf_static
```

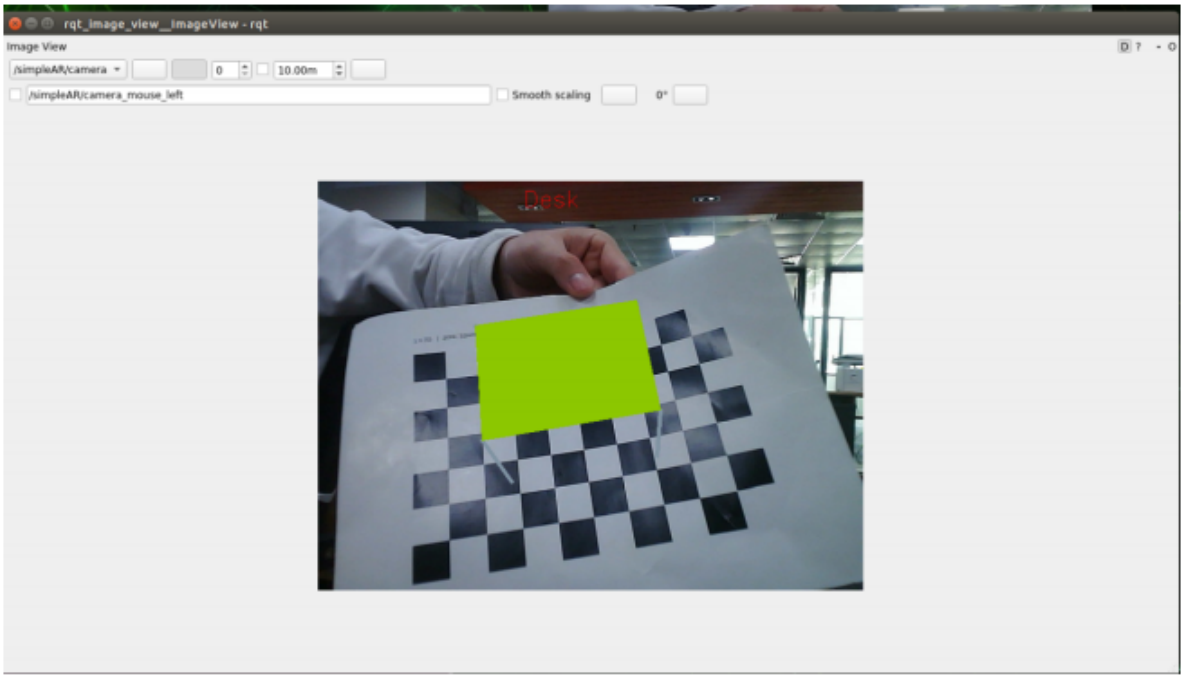
- /Graphics_topic: The topic name of the effect, the effect that needs to be identified when subscribing.
- /simpleAR/camera: The topic name of the image, publish the image.

The modification effect can be modified through the following command, for example, modify it to Desk and enter in the terminal,

```
ros2 topic pub /Graphics_topic std_msgs/msg/String "data: Desk"
```

To view the published image, you can use rqt_image_view to view it and enter it in the terminal.

```
ros2 run rqt_image_view rqt_image_view
```



Select the topic /simpleAR/camera in the upper left corner to view the image.