

18.ROS-rqt tool usage

The ros desktop version provides some graphical interface tools for viewing data and debugging information. This course explains what commonly used rqt tools are and how to use them.

18.1 rqt_image_view

This tool is used to view image data. Enter `rqt_image_view` in the terminal to open the tool, and then select the image topic you want to view. For example, suppose you connect the camera to the motherboard/virtual machine, and then download and install the `usb_cam` function package. If you have not downloaded it, you can enter the following command:

```
sudo apt install ros-noetic-usb_cam -y
```

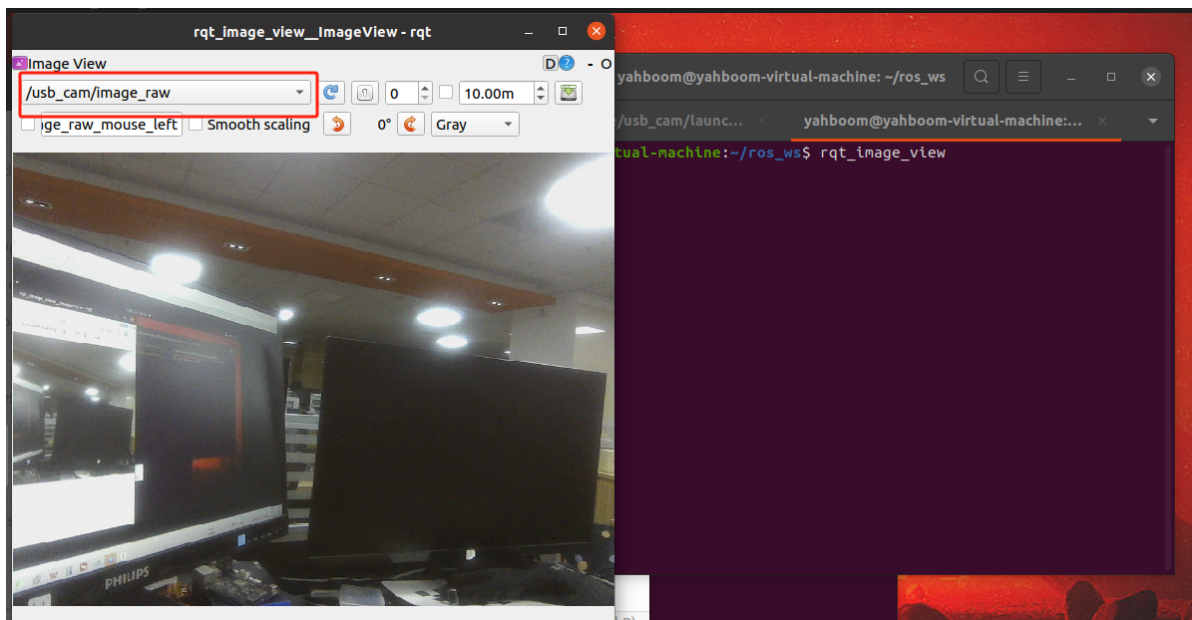
The noetic here is modified according to the ros version actually installed by the individual.

After the installation is completed and the camera is connected successfully, enter in the terminal,

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

Then, enter in another terminal,

```
rqt_image_view
```



As shown in the picture above, select the image topic in the upper left corner. Under normal operation of the camera, the image data can be transmitted and then displayed in the `rqt_image_view` interface.

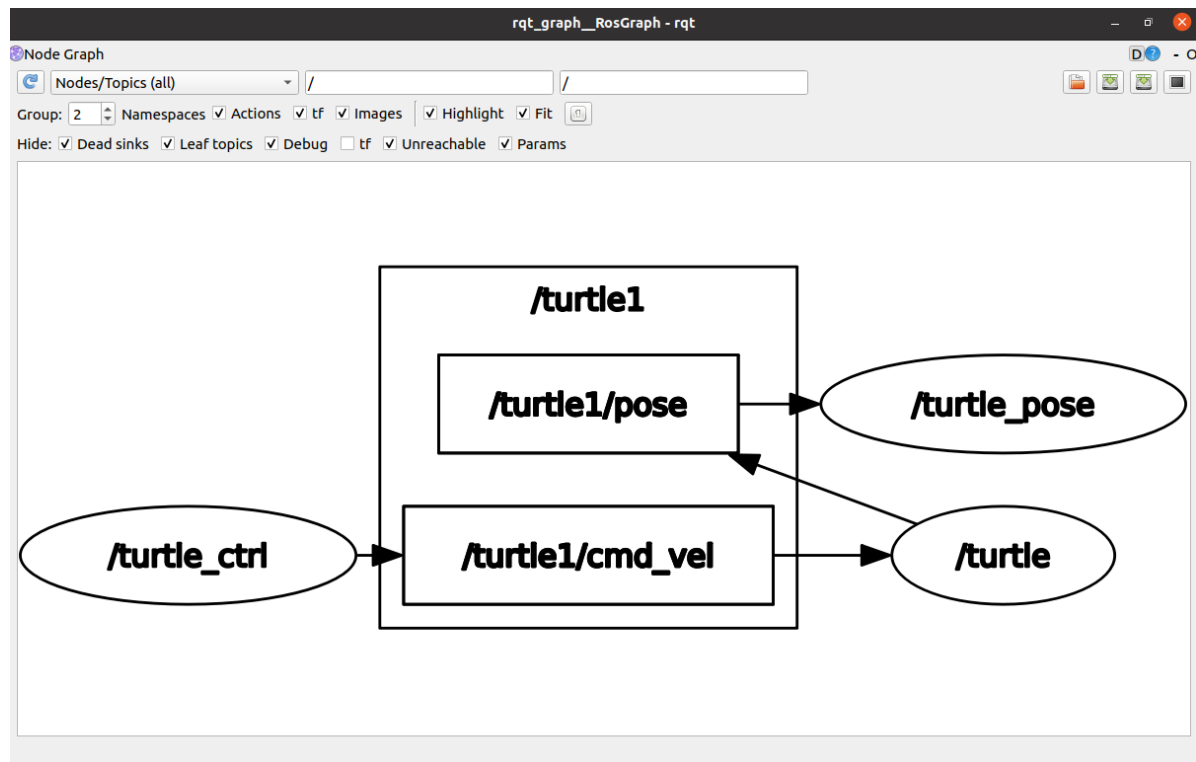
18.2 rqt_graph

This tool allows us to clearly see which nodes are started and what the topic communication between nodes is like. Enter `rqt_graph` in the terminal to open this tool. for example. Let's run the `listen_turtle_pose.launch` file written in the previous launch file lesson to see what the topic communication between the nodes is like. Enter the terminal.

```
roslaunch learn_launch listen_turtle_pose.launch
```

After running successfully, open another terminal and enter,

```
rqt_graph
```



Select Node/Topics(all) in the upper left corner to display all current node and topic information. The oval box is the node, and the rectangular box is the topic.

18.3 rqt_reconfigure

When debugging a program, we often hope to be able to dynamically adjust parameters in real time without having to change a parameter and run the program once. The `rqt_reconfigure` dynamic parameter adjuster provided by ros can be used by typing in the terminal and `roslaunch rqt_reconfigure rqt_reconfigure`. After starting, select the node on the left and click, and then modify the parameters. Take the following as an example for reference.

Dynamic Reconfigure

Filter key:

- camera
- driver_node
- imu_filter_madgwick
- move_base
 - DWAPlanerROS**
 - global_costmap
 - local_costmap

/move base/DWAPlanerROS

max_vel_trans	0.0	<input type="range"/>	inf	<input type="text" value="1.0"/>
min_vel_trans	0.0	<input type="range"/>	inf	<input type="text" value="0.01"/>
max_vel_x	-inf	<input type="range"/>	inf	<input type="text" value="0.6"/>
min_vel_x	-inf	<input type="range"/>	inf	<input type="text" value="-0.6"/>
max_vel_y	-inf	<input type="range"/>	inf	<input type="text" value="0.3"/>
min_vel_y	-inf	<input type="range"/>	inf	<input type="text" value="-0.3"/>
max_vel_theta	0.0	<input type="range"/>	inf	<input type="text" value="2.0"/>
min_vel_theta	0.0	<input type="range"/>	inf	<input type="text" value="0.1"/>
acc_lim_x	0.0	<input type="range"/>	20.0	<input type="text" value="10.0"/>
acc_lim_y	0.0	<input type="range"/>	20.0	<input type="text" value="10.0"/>
acc_lim_theta	0.0	<input type="range"/>	20.0	<input type="text" value="20.0"/>
acc_lim_trans	0.0	<input type="range"/>	inf	<input type="text" value="0.1"/>
prune_plan	<input type="checkbox"/>			
xy_goal_tolerance	-inf	<input type="range"/>	inf	<input type="text" value="0.1"/>
yaw_goal_tolerance	-inf	<input type="range"/>	inf	<input type="text" value="0.1"/>
trans_stopped_vel	-inf	<input type="range"/>	inf	<input type="text" value="0.1"/>
theta_stopped_vel	-inf	<input type="range"/>	inf	<input type="text" value="0.4"/>
sim_time	0.0	<input type="range"/>	inf	<input type="text" value="1.0"/>
sim_granularity	0.0	<input type="range"/>	inf	<input type="text" value="0.025"/>
angular_sim_granularity	0.0	<input type="range"/>	inf	<input type="text" value="0.1"/>
path_distance_bias	0.0	<input type="range"/>	inf	<input type="text" value="10.0"/>
goal_distance_bias	0.0	<input type="range"/>	inf	<input type="text" value="20.0"/>
occdist_scale	0.0	<input type="range"/>	inf	<input type="text" value="0.5"/>
building_scale	0.0	<input type="range"/>	inf	<input type="text" value="0.5"/>