

Moveit Collision Detection

1. Usage Environment

Motherboard: Jetson Orin Nano/Nx

ROS2: Humble

2. Driving the Real Machine

Driving the real machine is to convert the joint state information of the robot into the control of the real robot by subscribing to the `/joint_states` topic of Moveit2.

Note: Since the real robot arm does not have an obstacle avoidance function, some positions may encounter obstacles; so the planned robot arm movements should be as reasonable as possible and avoid positions with obstacles

(It is recommended to use preset positions to demonstrate driving the real machine)

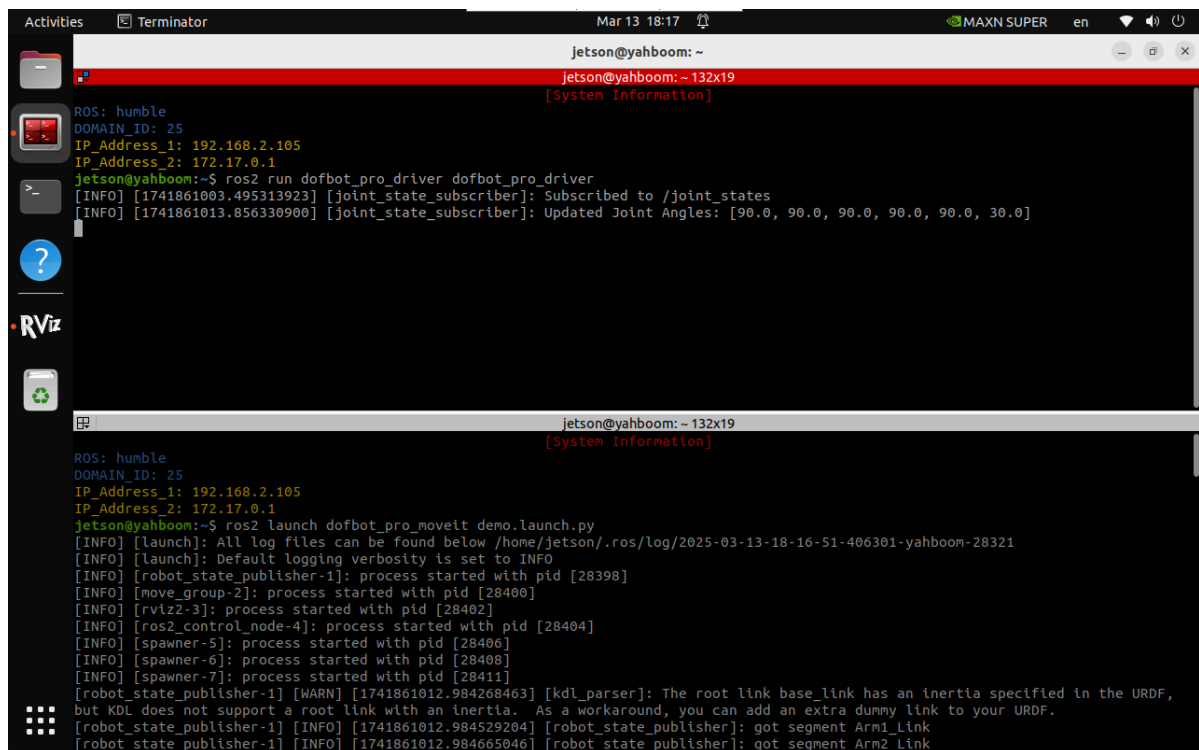
2.1. Start the real machine

If you do not drive the real machine, simulate the robot arm movements in Moveit:

```
ros2 run dofbot_pro_driver dofbot_pro_driver
```

2.2. Start Moveit2

```
ros2 launch dofbot_pro_moveit demo.launch.py
```



```
Activities Terminator Mar 13 18:17 MAXN SUPER en
jetson@yahboom: ~
jetson@yahboom: ~ 132x19
[System Information]
ROS: humble
DOMAIN_ID: 25
IP_Address_1: 192.168.2.105
IP_Address_2: 172.17.0.1
jetson@yahboom:~$ ros2 run dofbot_pro_driver dofbot_pro_driver
[INFO] [1741861003.495313923] [joint_state_subscriber]: Subscribed to /joint_states
[INFO] [1741861013.856330900] [joint_state_subscriber]: Updated Joint Angles: [90.0, 90.0, 90.0, 90.0, 90.0, 30.0]

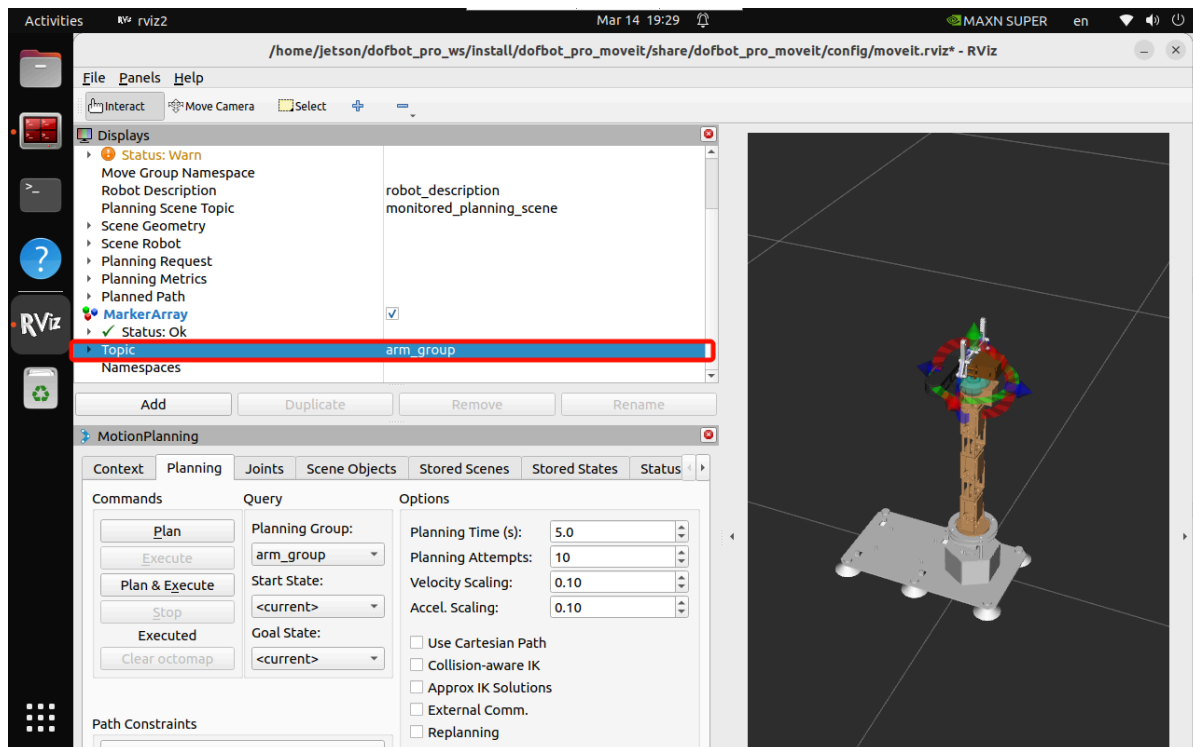
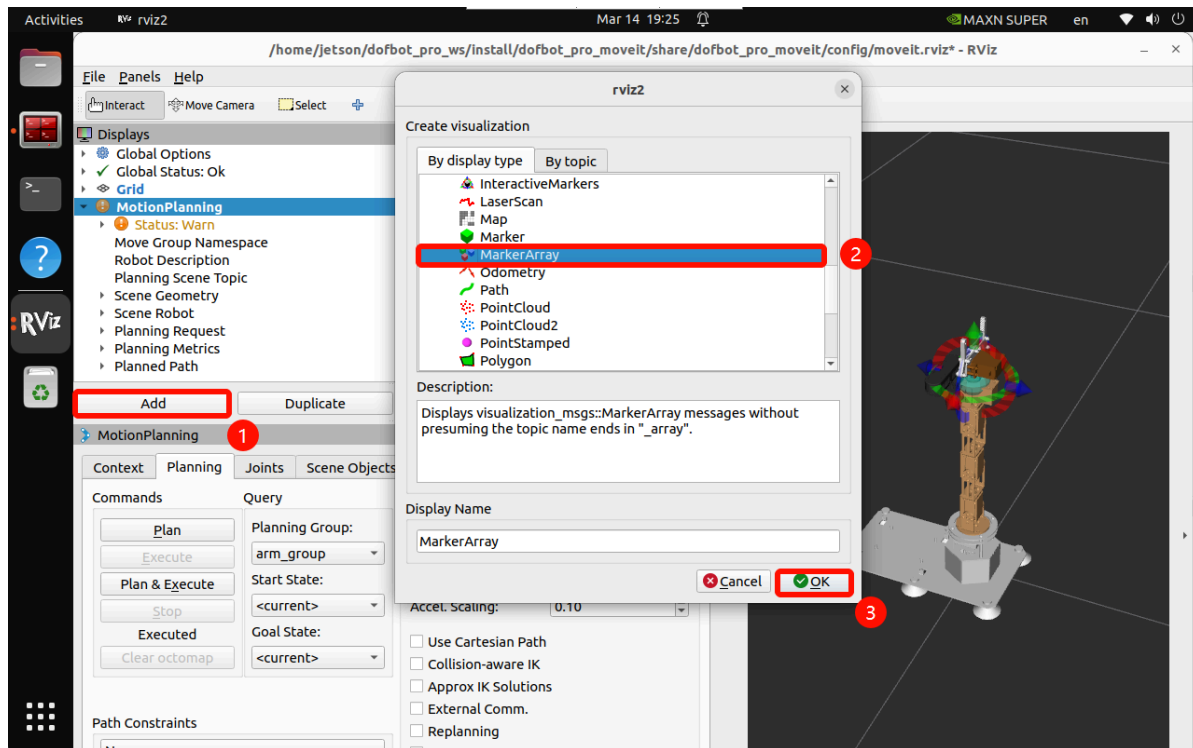
jetson@yahboom: ~ 132x19
[System Information]
ROS: humble
DOMAIN_ID: 25
IP_Address_1: 192.168.2.105
IP_Address_2: 172.17.0.1
jetson@yahboom:~$ ros2 launch dofbot_pro_moveit demo.launch.py
[INFO] [launch]: All log files can be found below /home/jetson/.ros/log/2025-03-13-18-16-51-406301-yahboom-28321
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [robot_state_publisher-1]: process started with pid [28398]
[INFO] [move_group-2]: process started with pid [28400]
[INFO] [rviz2-3]: process started with pid [28402]
[INFO] [ros2_control_node-4]: process started with pid [28404]
[INFO] [spawner-5]: process started with pid [28406]
[INFO] [spawner-6]: process started with pid [28408]
[INFO] [spawner-7]: process started with pid [28411]
[robot_state_publisher-1] [WARN] [1741861012.984268463] [kdl_parser]: The root link base_link has an inertia specified in the URDF,
but KDL does not support a root link with an inertia. As a workaround, you can add an extra dummy link to your URDF.
[robot_state_publisher-1] [INFO] [1741861012.984529204] [robot_state_publisher]: got segment Arm1_Link
[robot_state_publisher-1] [INFO] [1741861012.984665046] [robot_state_publisher]: got segment Arm2_Link
```

3. Collision detection

After the program is run, RViz2 will add a rectangular obstacle next to the robot arm, and the robot arm will be planned to the program target position. The entire planning and execution process will automatically avoid obstacles.

3.1、Visualization

Before starting the command, you need to add the `MarkerArray` plug-in in `RViz2` to display the planned path: `MarkerArray` needs to select the `arm_group` topic



3.2、 Start the command

The robot needs to be successfully loaded in MoveIt and `You can start planning now!` appears to run the following command: The robot will automatically avoid the rectangular planning and execute to the specified position

```
ros2 run dofbot_pro_moveit obstacle_avoidance
```

