MoveIt Cartesian Path

1. Usage Environment

Board: Jetson Orin Nano/Nx

ROS2: Humble

2. Drive Real Robot

Driving the real robot is done by subscribing to MoveIt2's `/joint_states` topic and converting the robotic arm's joint state information into control of the real robotic arm.

Note: Since the real robotic arm does not have obstacle avoidance functionality, some poses may collide with obstacles; therefore, try to make the planned robotic arm motions reasonable and avoid positions with obstacles

(It is recommended to use preset poses for driving the real robot demonstration)

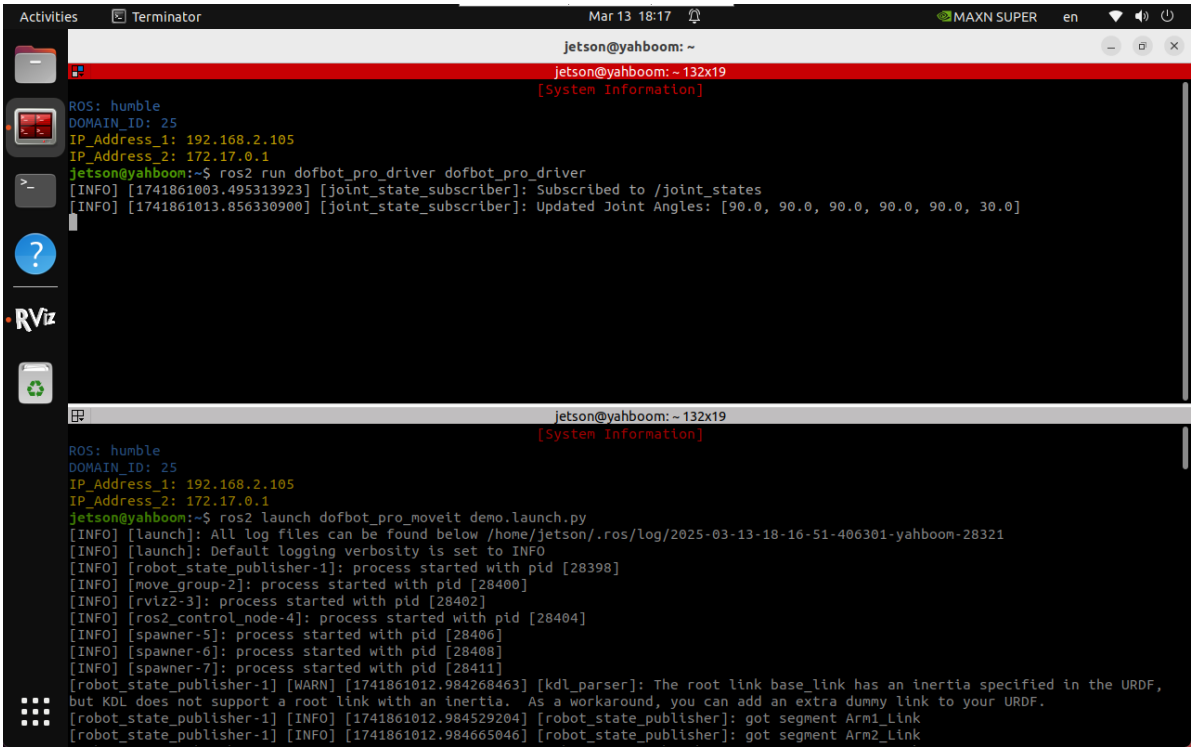
2.1. Start Real Robot

Without driving the real robot, perform simulation demonstration of robotic arm motion in MoveIt:

```
ros2 run dofbot_pro_driver dofbot_pro_driver
```

2.2. Launch MoveIt2

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



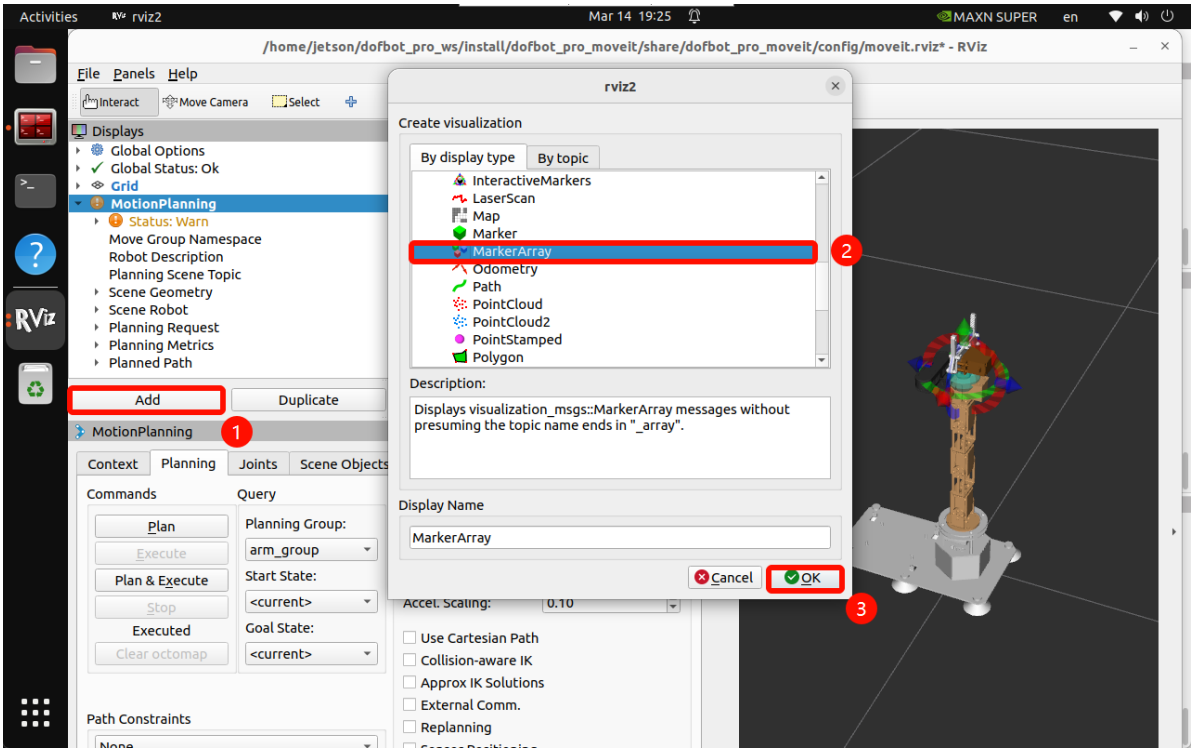
3. Cartesian Path

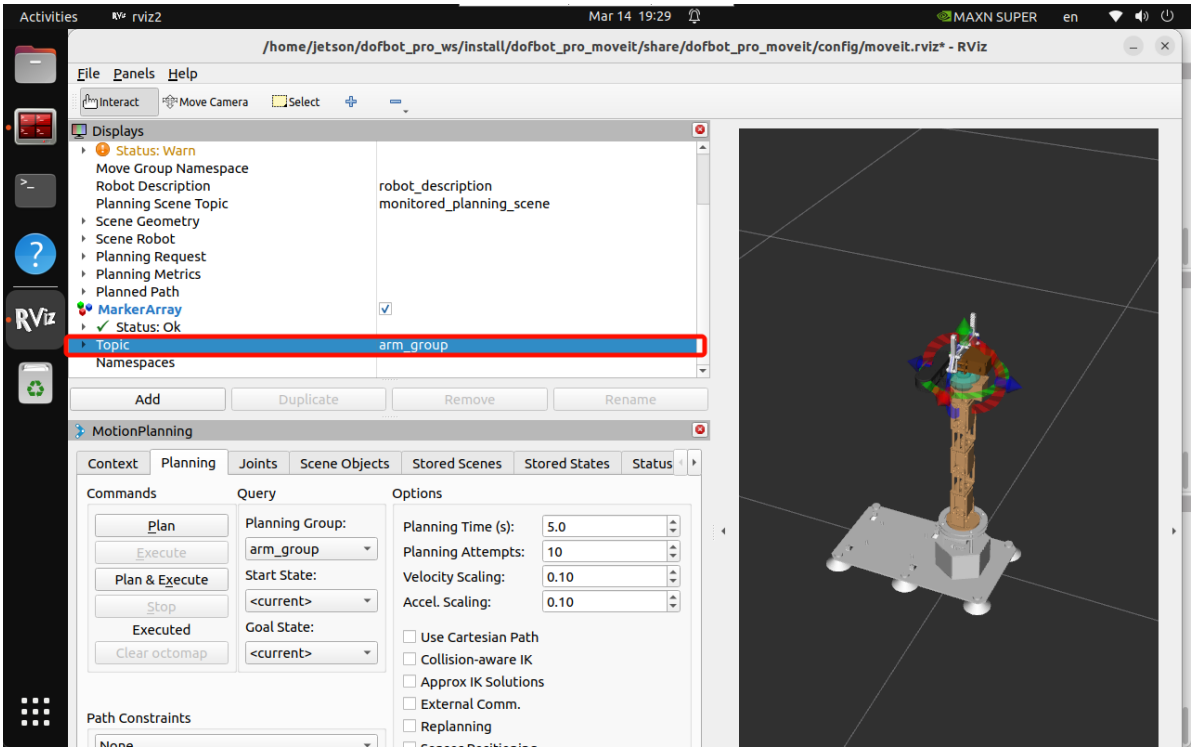
Cartesian Path refers to the linear motion path of the robotic arm's end effector in the Cartesian coordinate system.

```
Due to the limitations of the robotic arm's degrees of freedom and structure,
Cartesian path points are very difficult to find
```

3.1. Visualization

Before running the launch command, you need to add the `MarkerArray` plugin in `RViz2` to display the straight-line path of Cartesian planning: `MarkerArray` needs to select the `arm_group` topic





3.2. Launch Command

The robotic arm needs to be successfully loaded in MoveIt and `You can start planning now!` appears before running the following command: The robotic arm will plan the Cartesian path by itself

```
ros2 run dofbot_pro_moveit cartesian_path
```