# MoveIt Collision Detection

# 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. Collision Detection

After the program runs, RViz2 will add a rectangular obstacle next to the robotic arm. The robotic arm will plan to the program's target position, and the entire planning and execution process will automatically avoid the obstacle.

## 3.1. Visualization

Before running the launch command, you need to add the `MarkerArray` plugin in `RViz2` to display the planned path: `MarkerArray` needs to select the `arm_group` topic
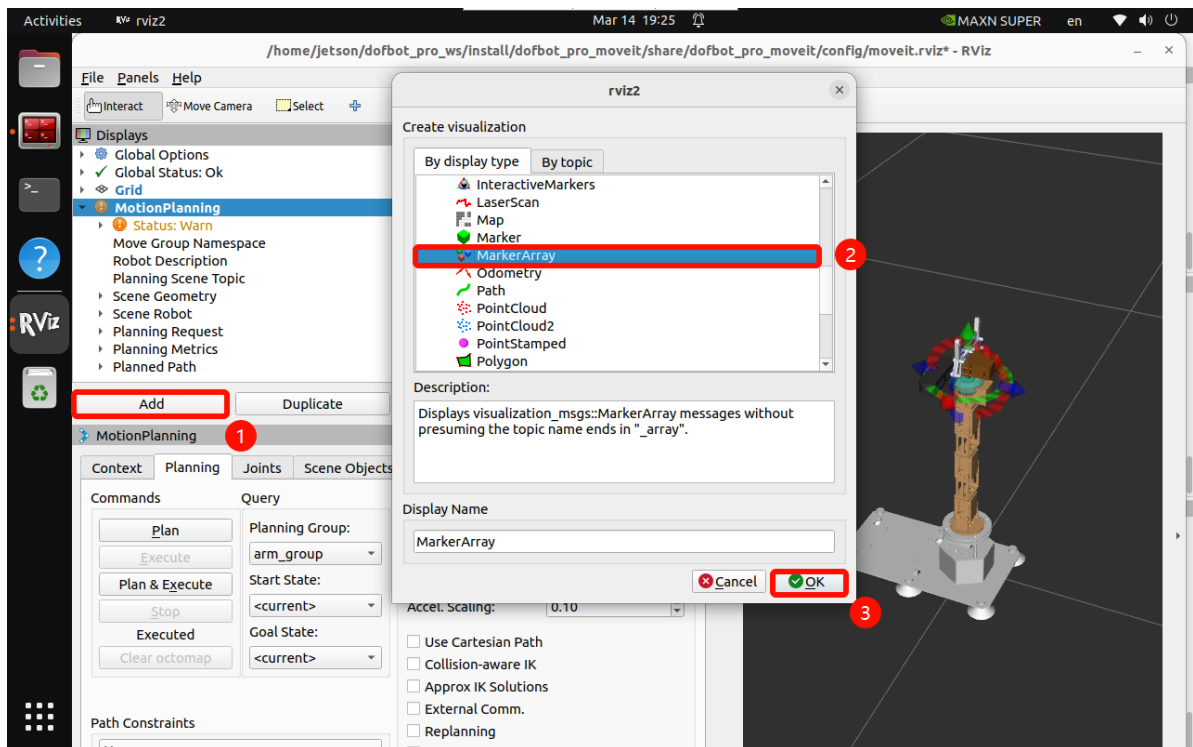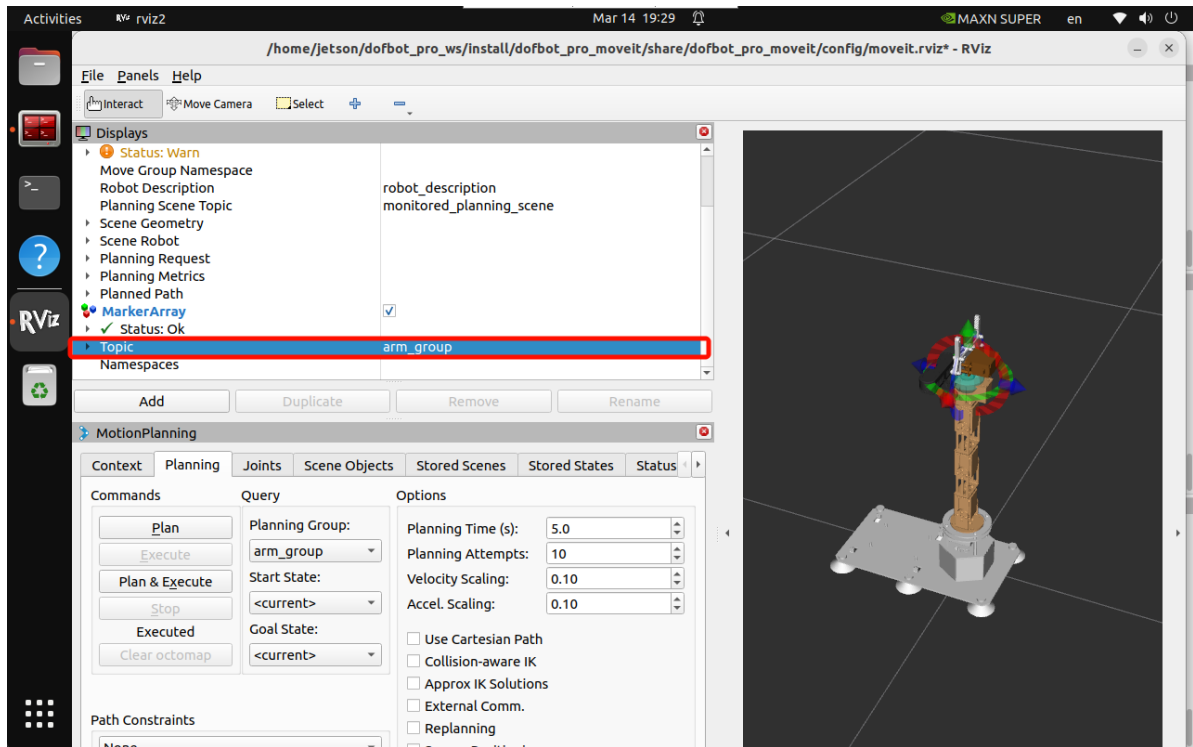
## 3.2. Launch Command

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 automatically avoid the
rectangular obstacle and plan and execute to the specified position

```
ros2 run dofbot_pro_moveit obstacle_avoidance
```