

# Movelt Trajectory Planning

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## Movelt Trajectory Planning

1. Usage Environment
2. Drive Real Robot
  - 2.1. Start Real Robot
  - 2.2. Launch Movelt2
3. Trajectory Planning
  - 3.1. Visualization
  - 3.2. Launch Command

## 1. Usage Environment

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Board: Jetson Orin Nano/Nx

ROS2: Humble

## 2. Drive Real Robot

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Driving the real robot is done by subscribing to Movelt2'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 Movelt:

```
ros2 run dofbot_pro_driver dofbot_pro_driver
```

### 2.2. Launch Movelt2

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

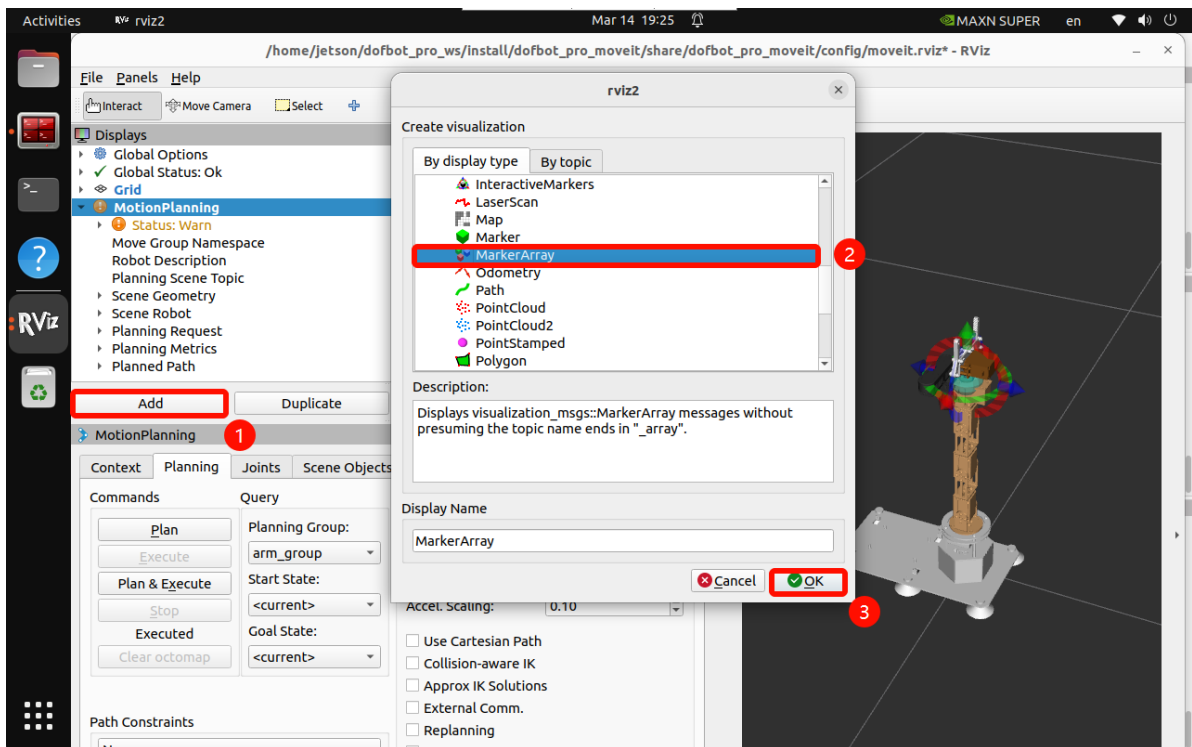
```
jetson@yahboom: ~  
jetson@yahboom: ~ 132x19  
[System Information]  
  
ROS: humble  
DOMAIN_ID: 25  
IP_Address_1: 192.168.2.105  
IP_Address_2: 172.17.0.1  
jetson@yahboom:~$ ros2 run dofbot_pro_driver dofbot_pro_driver  
[INFO] [1741861003.495313923] [joint_state_subscriber]: Subscribed to /joint_states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

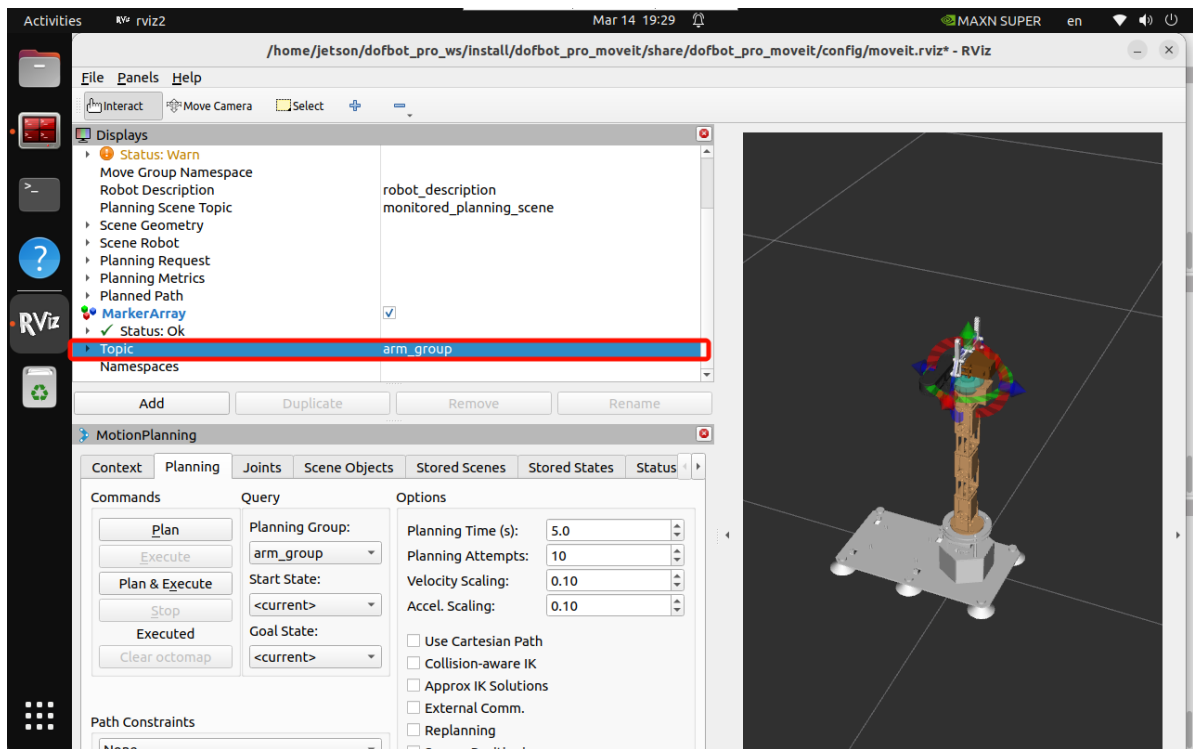
## 3. Trajectory Planning

After the program runs, the robotic arm will plan the trajectory to the target position, and the robotic arm's end effector will draw the motion trajectory in RViz2.

### 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 draw the planned path trajectory

```
ros2 run dofbot_pro_moveit multi_track_motion
```

