

Movelt positive kinematics design

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 arm into the control of the real robot arm 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 obstacles

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

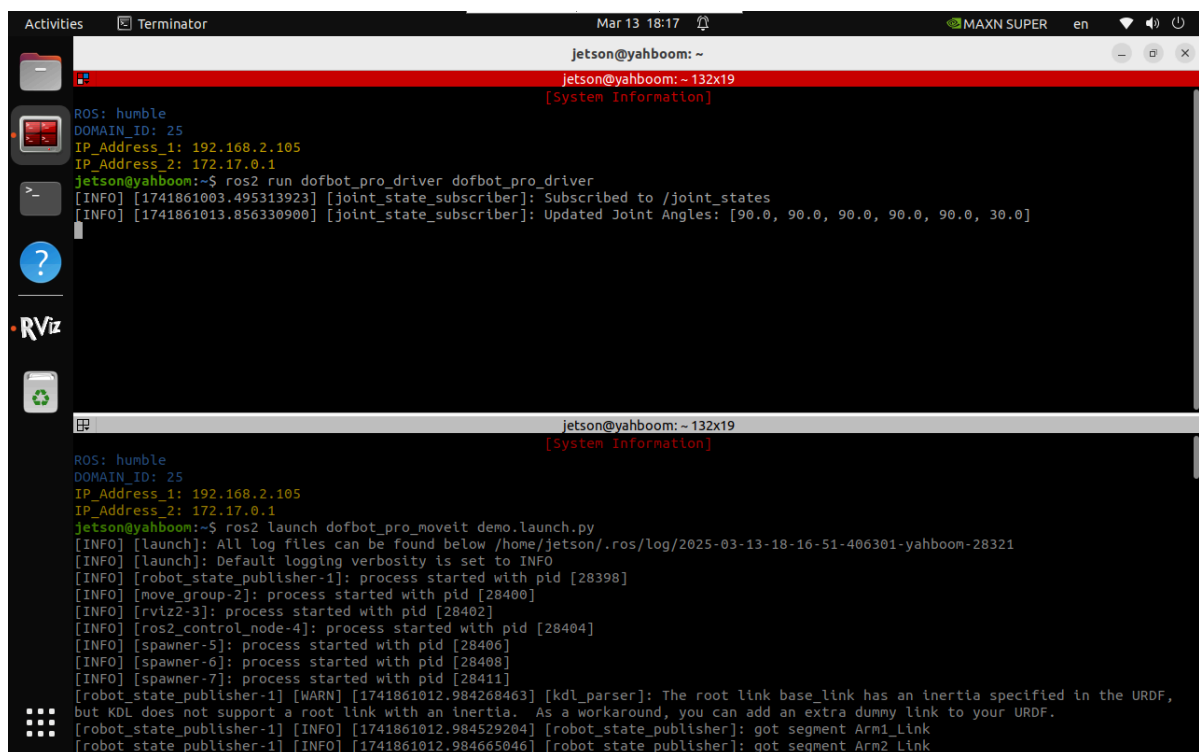
2.1. Start the real machine

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

```
ros2 run dofbot_pro_driver dofbot_pro_driver
```

2.2. Start Moveit2

```
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. Forward kinematics design

Forward kinematics (Forward Kinematics refers to the target pose (angles of each joint) of the given robot arm, and then MoveIt plans to the target pose by itself.

Start command

The robot arm needs to be successfully loaded in MoveIt and `You can start planning now!` appears. Run the following command: The robot arm will plan to the target pose by itself

```
ros2 run dofbot_pro_moveit set_target_joints
```

