2、Random move

Website：http://docs.ros.org/en/melodic/api/moveit_tutorials/html/index.html

HD camera MoveIt：~/software/transbot_library/src/transbot_config_camera

Astra_MoveIt：~/software/transbot_library/src/transbot_config_astra

Robotic arm control function package：~/software/transbot_library/src/transbot_description

Before usingg this function, we need to close the APP remote control process and all the functions that have been turned on. MoveIT recommends running in a virtual machine.

(The computer must have a discrete GPU!!!)

2.1、Start up

This lesson is mainly to learn the random movement MoveIT simulation.

Taking the HD camera configuration as an example, the Astra configuration is similar.

Virtual machine side

```
roslaunch transbot_config_camera demo.launch  # HD camera
roslaunch transbot_config_astra demo.launch   # astra
rosrun transbot_description 01_random_move    # C++
rosrun transbot_description 01_random_move.py # python
```

If you need to combine the real machine, you need to configure multi-machine communication, and it is very dangerous and easy to damage the robot.
Inexperienced users are not recommended to connect to the real machine and move randomly.

2.2、Source code analysis

py file

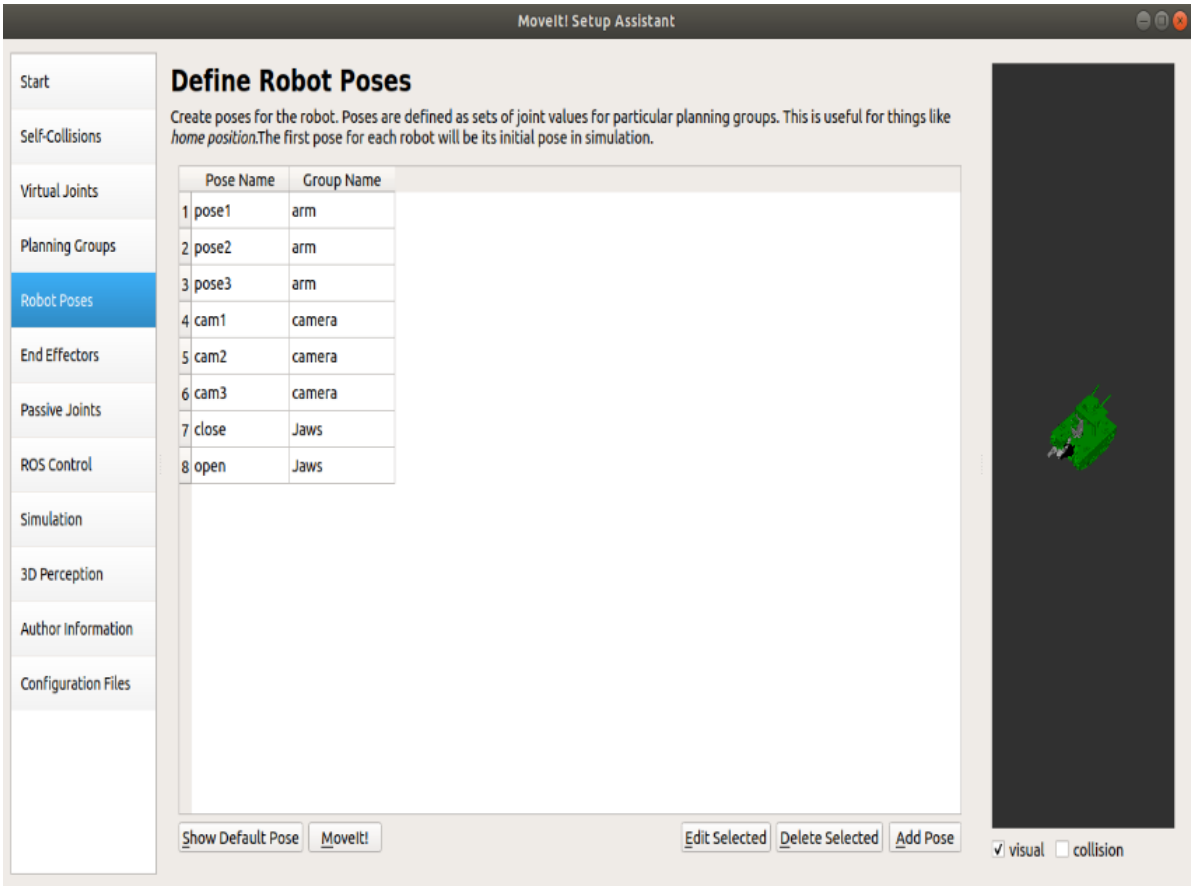
```
    # Initialize node
    rospy.init_node("transbot_set_move")
    # Initialize robotic arm
    transbot = MoveGroupCommander("arm")
    # When motion planning fails, re-planning is allowed
    transbot.allow_replanning(True)
    transbot.set_planning_time(5)
    # Number of planning attempts
    transbot.set_num_planning_attempts(10)
    # Set the allowable target position error
    transbot.set_goal_position_tolerance(0.01)
    # Set the allowable target attitude error
    transbot.set_goal_orientation_tolerance(0.01)
    # Set the allowable target error
    transbot.set_goal_tolerance(0.01)
    # Set maximum speed
    transbot.set_max_velocity_scaling_factor(1.0)
    # Set maximum acceleration
```

```
    transbot.set_max_acceleration_scaling_factor(1.0)
    while not rospy.is_shutdown():
        # Set random target points
        transbot.set_random_target()
        # Start
        transbot.go()
        sleep(0.5)
```

- Set "pose1" as the target point ([pose1], [pose2], [pose3] are similar).

```
    #transbot.set_named_target("pose1")
    #transbot.go()
    #sleep(0.5)
```

[Pose1], [pose2], and [pose3] are the positions where MoveIT is configured.
[Arm] in the code is the motion planning group configured in MoveIT, as shown below.



C++ file

```
    //ROS Node initialization
    ros::init(argc, argv, "random_move_cpp");
    //Create node handle
    ros::NodeHandle n;
    // Set thread
    ros::AsyncSpinner spinner(1);
    // Start thread
    spinner.start();
    //Initialize the robotic arm
    moveit::planning_interface::MoveGroupInterface transbot("arm");
    //Set maximum speed
```

```
    transbot.setMaxVelocityScalingFactor(1.0);
    //Set maximum acceleration
    transbot.setMaxAccelerationScalingFactor(1.0);
    while (not ros::isShuttingDown()){
        //Set random target points
        transbot.setRandomTarget();
        //Start moving
        transbot.move();
        sleep(0.5);
    }
```

- Set the target point

```
//    transbot.setNamedTarget("pose1");
      //start
//    transbot.move();
//    sleep(0.1);
```