7. MoveIt scene design

This lesson takes the MoveIT simulation as an example. If you need to set the synchronization between the real machine and the simulation, please refer to the lesson [02, MoveIt Precautions and Controlling the Real Machine]. ! ! ! be careful! ! !

The effect demonstration is a virtual machine, and other masters are running (related to the performance of the master, depending on the actual situation).

7.1. Start

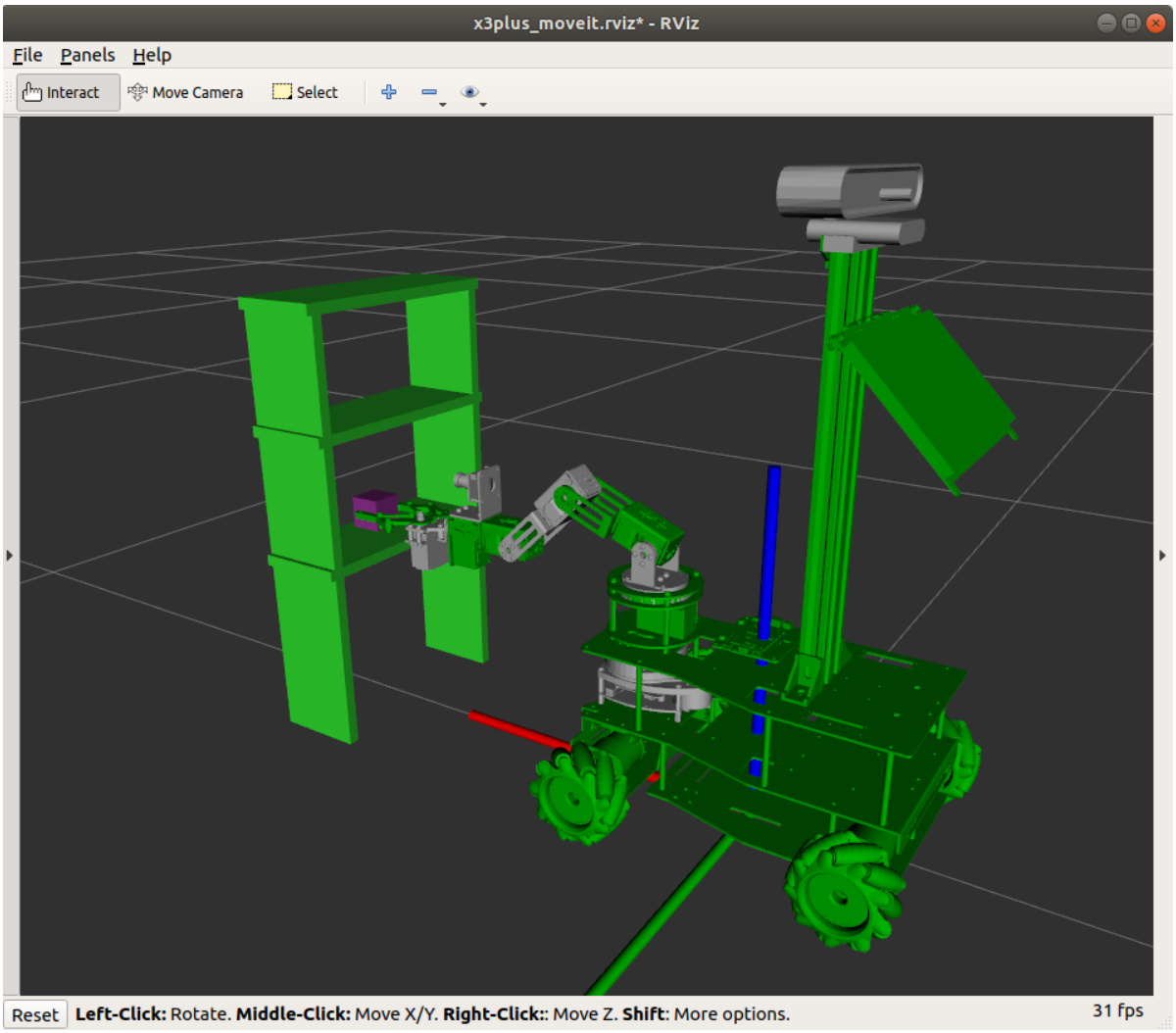
Start the MoveIT

```
roslaunch arm_moveit_demo x3plus_moveit_demo.launch sim:=true
```

Start scene design node

```
rosrun arm_moveit_demo 06_set_Scene
```

The effect diagram is as follows



7.2. Source code

Open gripper

```
    #Simulation
    pub_joint = rospy.Publisher("/move_group/fake_controller_joint_states",
JointState, queue_size=1000)
    #Real machine
    pub_Arm = rospy.Publisher("TargetAngle", ArmJoint, queue_size=1000)
    arm_joint = ArmJoint()
    arm_joint.id = 6
    arm_joint.angle = 180 - 0.55 * 180 / pi
    joint_state = JointState()
    joint_state.name = ["grip_joint"]
    joint_state.position = [-0.58]
    for i in range(10):
        pub_joint.publish(joint_state)
        pub_Arm.publish(arm_joint)
        sleep(0.1)
```

Add end-of-arm clamps

```
    p = PoseStamped()
    p.header.frame_id = end_effector_link
    p.pose.orientation.w = 1
    #Add tool
    scene.attach_box(end_effector_link, 'tool', p, [0.03, 0.03, 0.03])
```

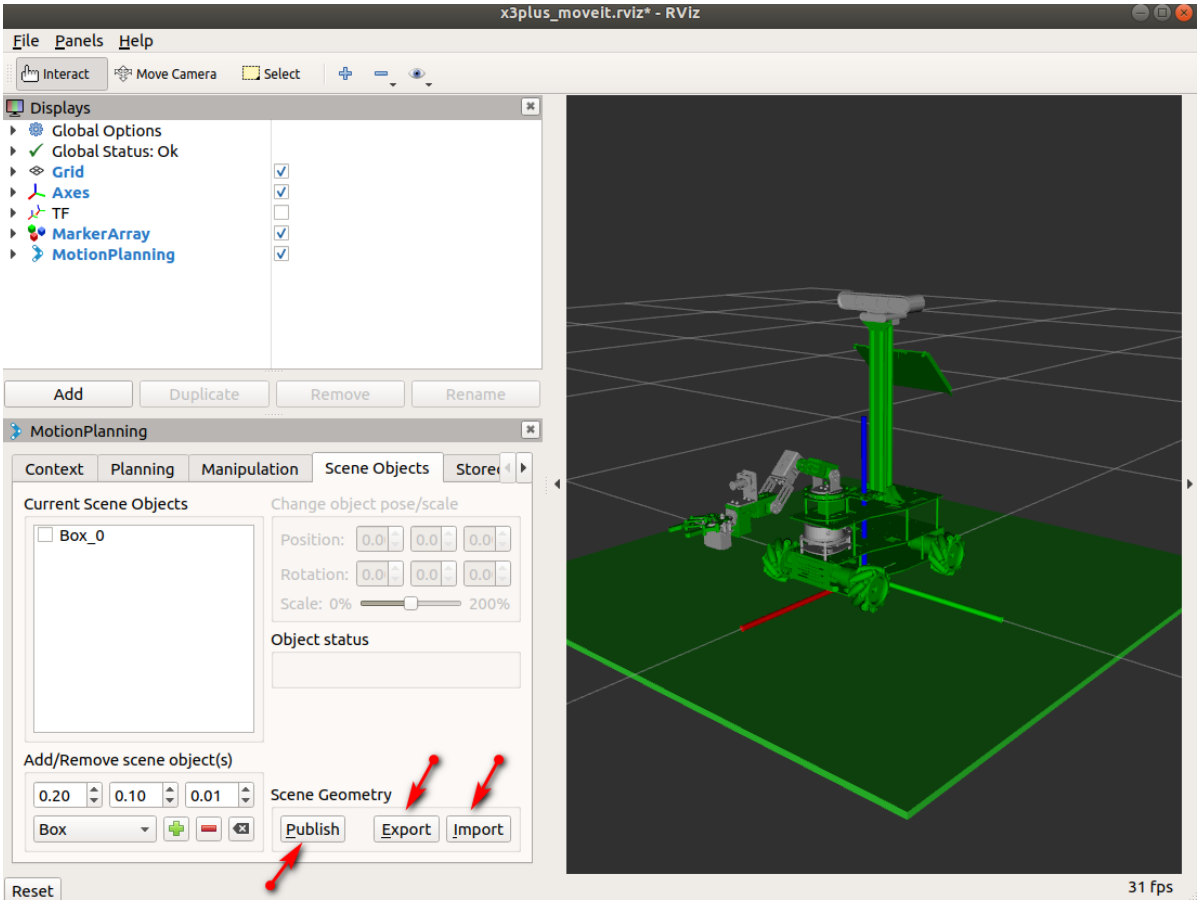
Add a stand

```
    table_list = {
        "obj0": [[0.08, 0.01, 0.4], [0.4, -0.1, 0.2]],
        "obj1": [[0.08, 0.01, 0.4], [0.4, 0.1, 0.2]],
        "obj2": [[0.08, 0.22, 0.01], [0.4, 0, 0.4]],
        "obj3": [[0.08, 0.22, 0.01], [0.4, 0, 0.29]],
        "obj4": [[0.08, 0.22, 0.01], [0.4, 0, 0.17]],
    }
    #Add obj
    for i in range(len(table_list)):
        add_obj(p, table_list.keys()[i], table_list[table_list.keys()[i]][0],
                table_list[table_list.keys()[i]][1])
```

Cycle planning between two points

```
    i = 0
    while i < 5:
        yahboomcar.set_joint_value_target(target_joints1)
        yahboomcar.go()
        yahboomcar.set_joint_value_target(target_joints2)
        yahboomcar.go()
        i += 1
        print ("Plan {}th time!!!".format(i))
```

7.3. Scene import and export



7.3.1. Import

As shown above, click the [Import] button, select the [arm_moveit_demo/scene/floor.scene] file, and then import it after confirmation.

Be sure to click [Publish], or it will not work.

7.3.2. Export

Click the [Export] button as shown above, select the path to be saved, and modify the name to be saved, which will be used for the next import and release.