

# 7. MoveIt scene design

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7.3.1. Import

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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

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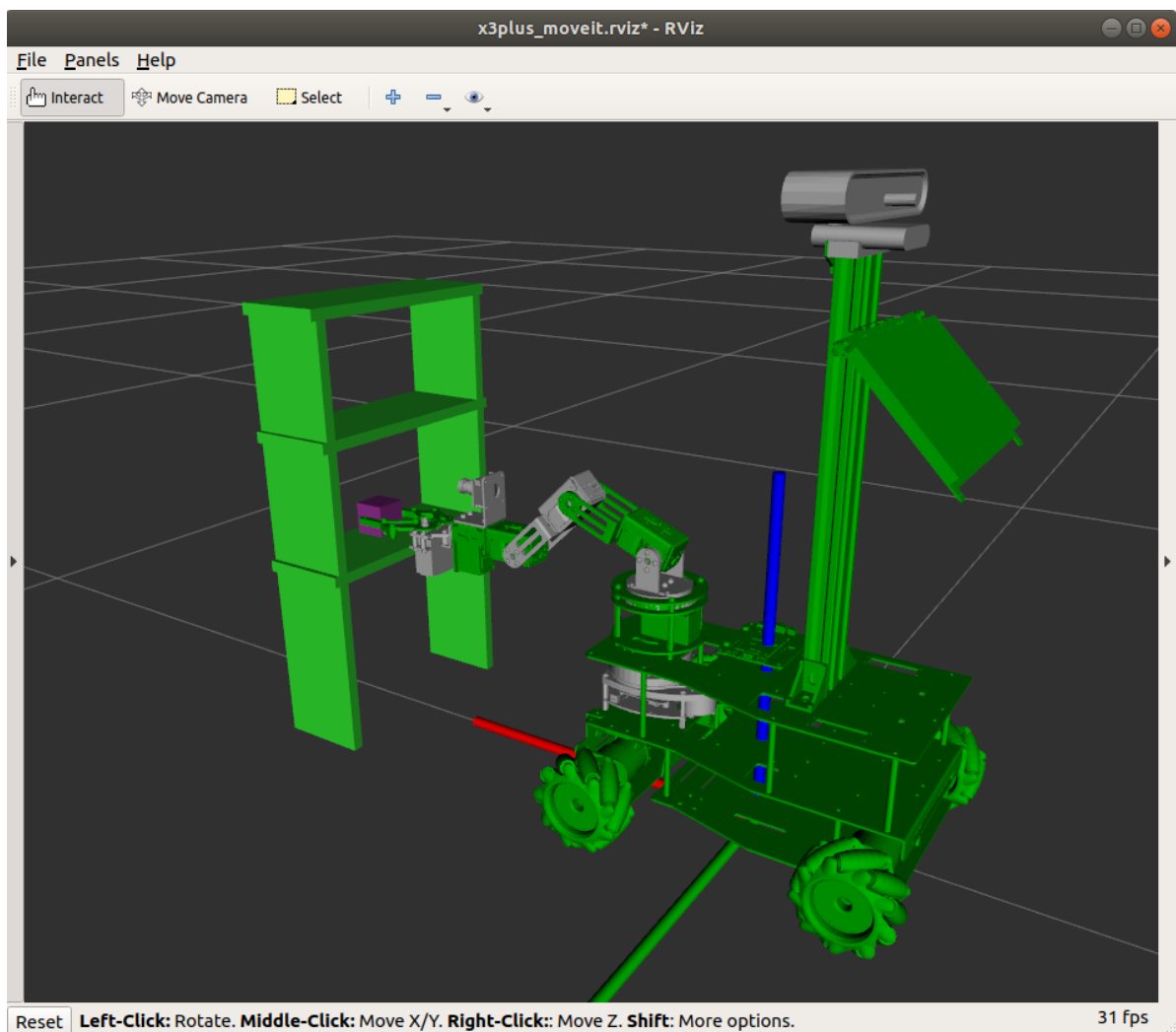
Start the MoveIT

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

Start scene design node

```
roslaunch arm_moveit_demo 06_set_scene.py
```

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

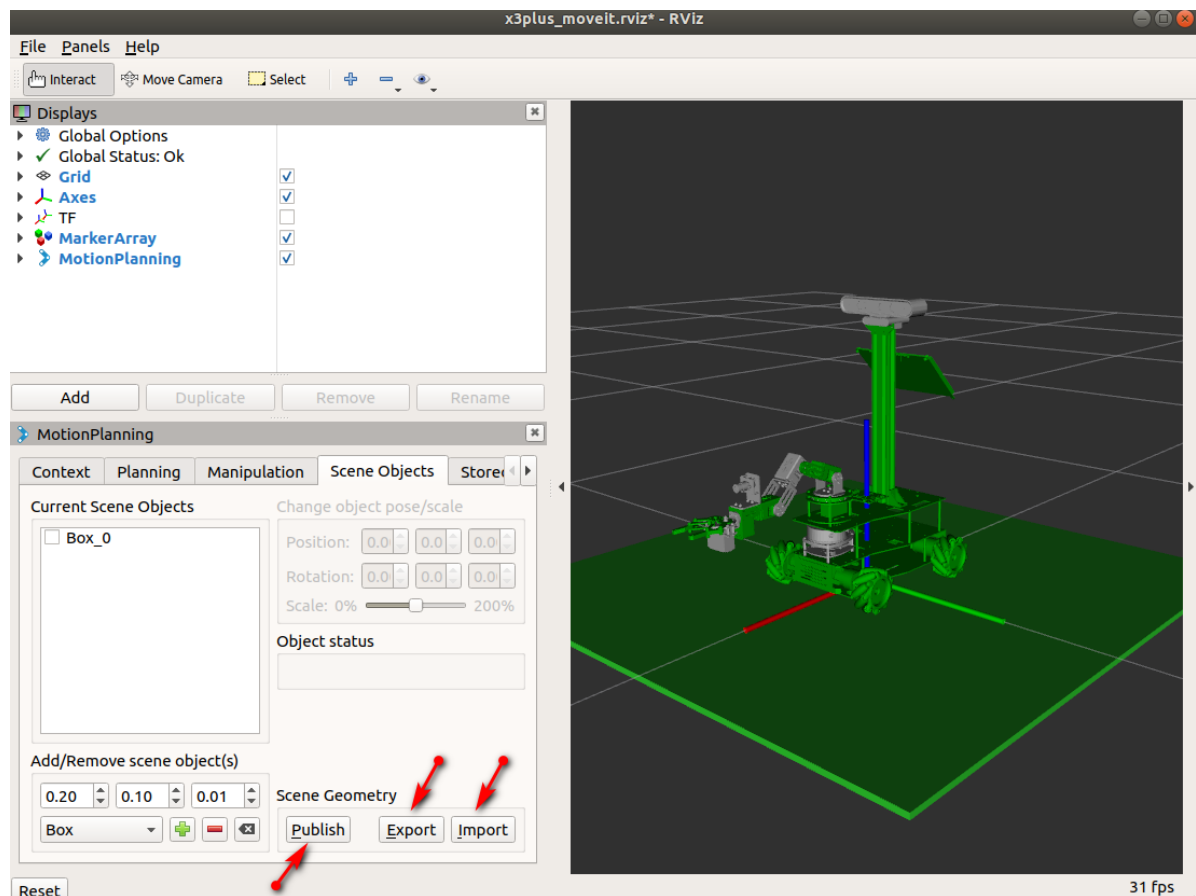
```

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

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### 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.