File   Edit   View   Search   Terminal   Help

```
noorubuntu@noorubuntu-VirtualBox:~$ source /opt/ros/melodic/setup.bash
noorubuntu@noorubuntu-VirtualBox:~$ mkdir -p ~/catkin_ws/src
noorubuntu@noorubuntu-VirtualBox:~$ cd ~/catkin_ws/
noorubuntu@noorubuntu-VirtualBox:~/catkin_ws$ catkin_make
Base path: /home/noorubuntu/catkin_ws
Source space: /home/noorubuntu/catkin_ws/src
Build space: /home/noorubuntu/catkin_ws/build
Devel space: /home/noorubuntu/catkin_ws/devel
Install space: /home/noorubuntu/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/noorubuntu/catki
n_ws/build"
####
####
#### Running command: "make -j1 -l1" in "/home/noorubuntu/catkin_ws/build"
####
[  0%] Built target _rosserial_arduino_generate_messages_check_deps_Adc
[  0%] Built target _rosserial_arduino_generate_messages_check_deps_Test
[  5%] Built target rosserial_arduino_generate_messages_eus
[  9%] Built target rosserial_arduino_generate_messages_cpp
[ 12%] Built target rosserial_arduino_generate_messages_lisp
[ 20%] Built target rosserial_arduino_generate_messages_py
[ 24%] Built target rosserial_arduino_generate_messages_nodejs
[ 24%] Built target rosserial_arduino_generate_messages
    |$ source /opt/ros/melodic/setup.bash
```
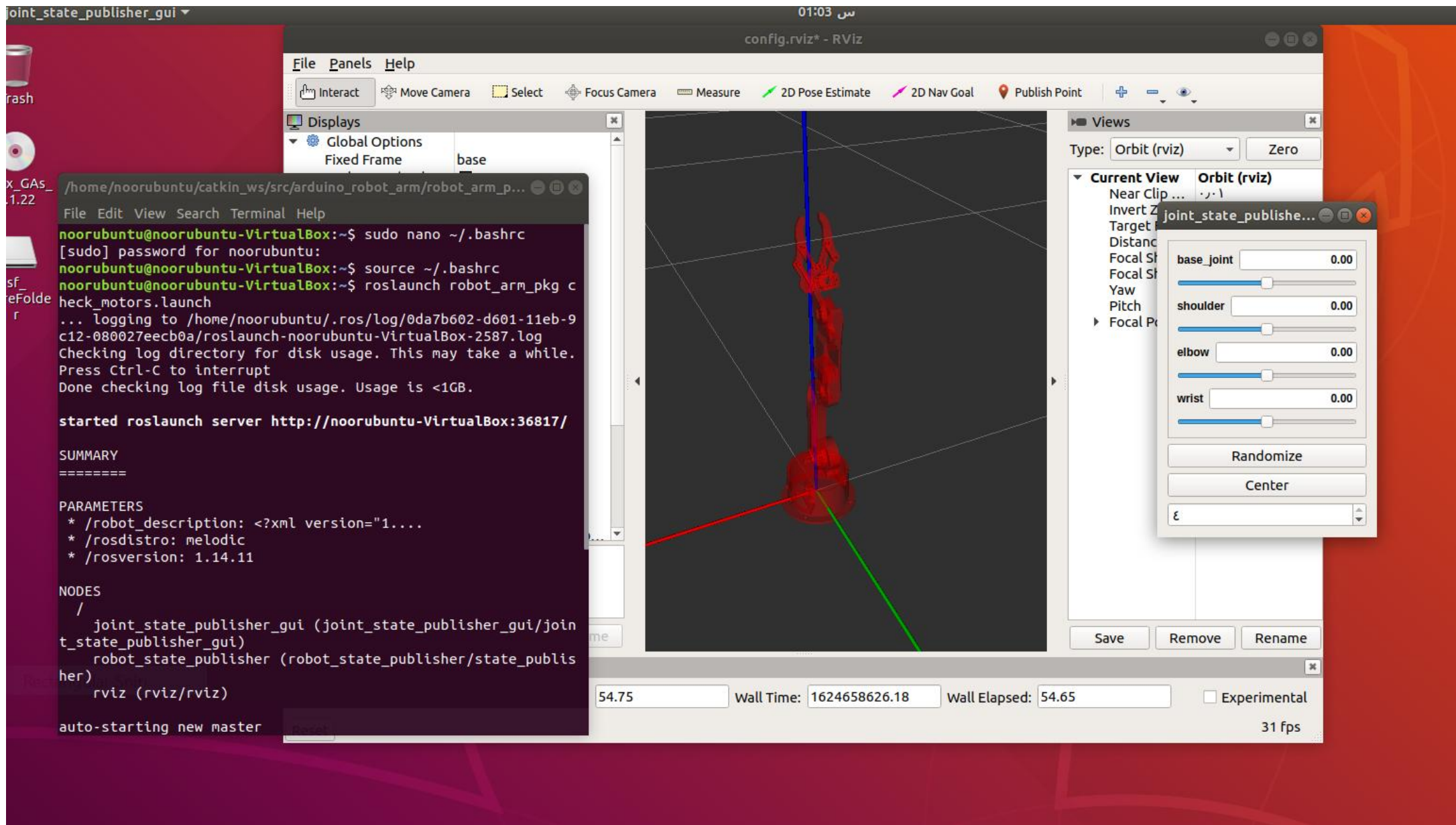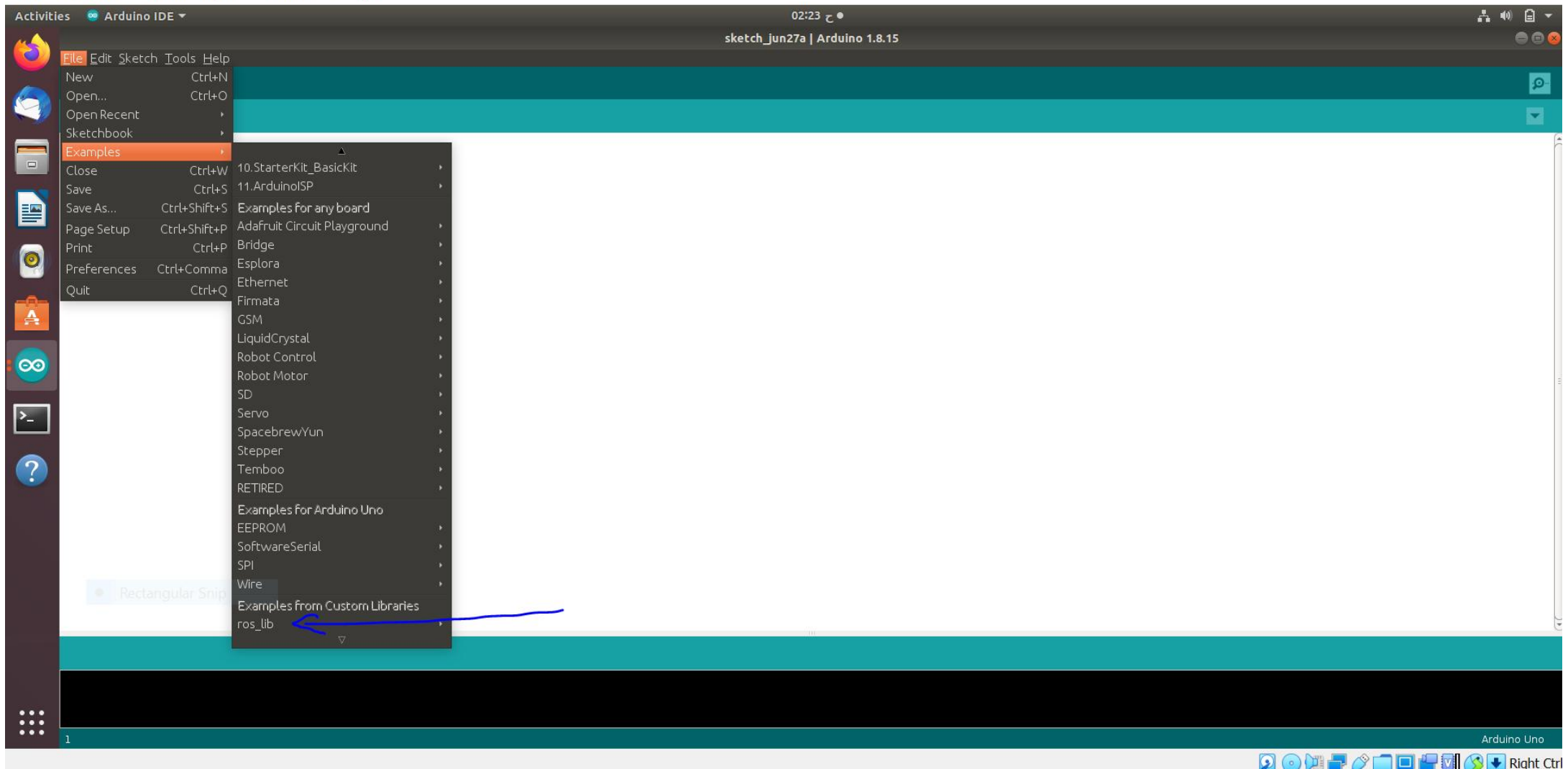
01:03 س

config.rviz* - RViz

File Panels Help

Interact | Move Camera | Select | Focus Camera | Measure | 2D Pose Estimate | 2D Nav Goal | Publish Point

Displays

Global Options
    Fixed Frame   base

/home/noorubuntu/catkin_ws/src/arduino_robot_arm/robot_arm_p...

File Edit View Search Terminal Help

```
noorubuntu@noorubuntu-VirtualBox:~$ sudo nano ~/.bashrc
[sudo] password for noorubuntu:
noorubuntu@noorubuntu-VirtualBox:~$ source ~/.bashrc
noorubuntu@noorubuntu-VirtualBox:~$ roslaunch robot_arm_pkg c
heck_motors.launch
... logging to /home/noorubuntu/.ros/log/0da7b602-d601-11eb-9
c12-080027eecb0a/roslaunch-noorubuntu-VirtualBox-2587.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://noorubuntu-VirtualBox:36817/

SUMMARY
========

PARAMETERS
 * /robot_description: <?xml version="1....
 * /rosdistro: melodic
 * /rosversion: 1.14.11

NODES
  /
    joint_state_publisher_gui (joint_state_publisher_gui/join
t_state_publisher_gui)
    robot_state_publisher (robot_state_publisher/state_publis
her)
    rviz (rviz/rviz)

auto-starting new master
```

Views

Type: Orbit (rviz) ▼   Zero

Current View   Orbit (rviz)
    Near Clip ...   ٠,٠١
    Invert Z
    Target
    Distance
    Focal Sh
    Focal Sh
    Yaw
    Pitch
  ▸ Focal Po

joint_state_publishe...

base_joint   0.00

shoulder   0.00

elbow   0.00

wrist   0.00

Randomize

Center

ε

Save | Remove | Rename

54.75   Wall Time: 1624658626.18   Wall Elapsed: 54.65   ☐ Experimental

31 fps

HelloWorld | Arduino 1.8.15
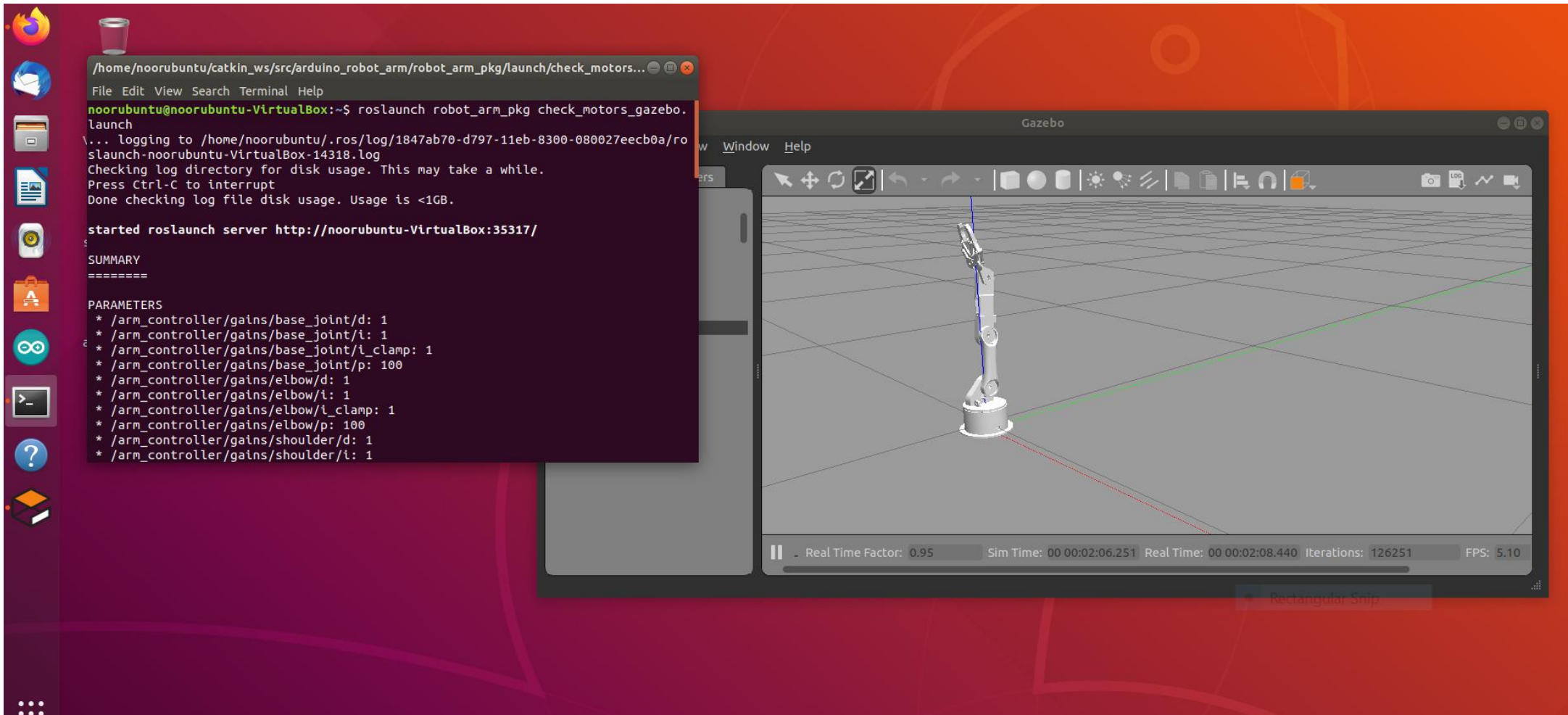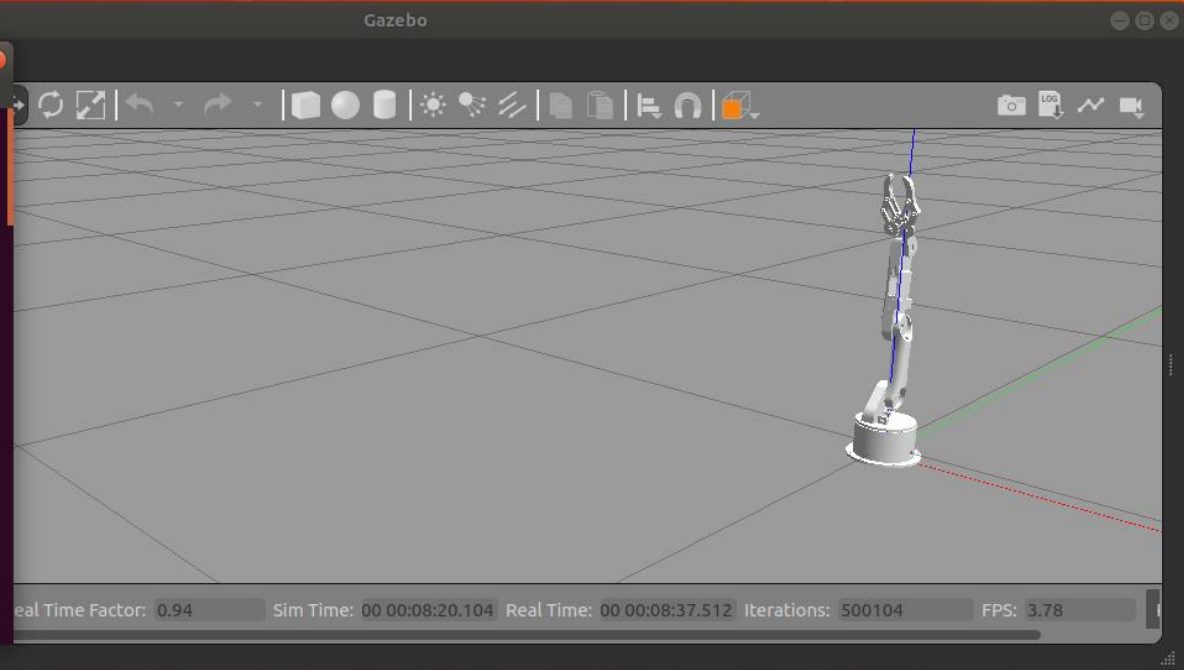
File Edit Sketch Tools Help

HelloWorld

```cpp
/*
 * rosserial Publisher Example
 * Prints "hello world!"
 */

#include <ros.h>
#include <std_msgs/String.h>

ros::NodeHandle  nh;

std_msgs::String str_msg;
ros::Publisher chatter("chatter", &str_msg);

char hello[13] = "hello world!";

void setup()
{
  nh.initNode();
  nh.advertise(chatter);
}

void loop()
{
  str_msg.data = hello;
  chatter.publish( &str_msg );
  nh.spinOnce();
  delay(1000);
}
```

1

File   Edit   View   Search   Terminal   Help

noorubuntu@noorubuntu-VirtualBox:~$ cd catkin_ws
noorubuntu@noorubuntu-VirtualBox:~/catkin_ws$ source devel/setup.bash
noorubuntu@noorubuntu-VirtualBox:~/catkin_ws$ roslaunch robot_arm_pkg check_moto
rs_gazebo.launch
... logging to /home/noorubuntu/.ros/log/694e711a-d860-11eb-a15b-080027eecb0a/ro
slaunch-noorubuntu-VirtualBox-2839.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://noorubuntu-VirtualBox:38145/

SUMMARY
========

PARAMETERS
 * /arm_controller/gains/base_joint/d: 1
 * /arm_controller/gains/base_joint/i: 1
 * /arm_controller/gains/base_joint/i_clamp: 1
 * /arm_controller/gains/base_joint/p: 100
 * /arm_controller/gains/elbow/d: 1
 * /arm_controller/gains/elbow/i: 1
 * /arm_controller/gains/elbow/i_clamp: 1
 * /arm_controller/gains/elbow/p: 100

Gazebo

Real Time Factor: 0.94   Sim Time: 00 00:08:20.104   Real Time: 00 00:08:37.512   Iterations: 500104   FPS: 3.78

Rectangular Snip

01:47

noorubuntu@noorubuntu-VirtualBox: ~/catkin_ws

File Edit View Search Terminal Help

```
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920449.649120, 836.867000]: position updated
[INFO] [1624920449.748169, 836.941000]: /states_4024_1624920388263I heard (0.071
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920449.750011, 836.941000]: position updated
[INFO] [1624920449.847670, 837.015000]: /states_4024_1624920388263I heard (0.071
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920449.848941, 837.015000]: position updated
[INFO] [1624920449.948335, 837.095000]: /states_4024_1624920388263I heard (0.071
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920449.949831, 837.095000]: position updated
[INFO] [1624920450.047853, 837.170000]: /states_4024_1624920388263I heard (0.071
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920450.049326, 837.170000]: position updated
[INFO] [1624920450.148174, 837.234000]: /states_4024_1624920388263I heard (0.071
32340000000026, 0.0, 0.0, 0.0)
[INFO] [1624920450.149620, 837.234000]: position updated
[INFO] [1624920450.247727, 837.316000]: /states_4024_1624920388263I heard (0.071
```

config.rviz* - RViz

File Panels Help

Interact   Move Camera   Select   Focus Camera   Measure   2D Pose Estimate   2D Nav Goal   Publish Point

Displays

Global Options
  Fixed Frame   base
  Background Color   48; 48; 48
  Frame Rate   ٣٠
  Default Light   ✓
Global Status: Ok
  ✓ Fixed Frame   OK
Grid   ✓
Axes   ✓
  ✓ Status: Ok
  Reference Frame   <Fixed Frame>
  Length   ١

Views

Type: Orbit (rviz)   ▼   Zero

Current View   Orbit (rviz)
  Near Clip ...   ٠٫٠١
  Invert Z Axis
  Target Fra...   <Fixed Frame>
  Distance   ٤٫١٨٧٣٧
  Focal Shap...   ٠٫٠٥
  Focal Shap...   ✓
  Yaw   ١٫١٢٥٤
  Pitch   ٠٫٥٧٥٣٩٨
  Focal Point   -1.2241; -2.4556;.

Save   Remove   Rename

Gazebo

ew Window Help

name

Wall Time: 1624920450.41   Wall Elapsed: 1031.83   Experimental

ve X/Y. **Right-Click/Mouse Wheel:**: Zoom. **Shift**: More options.   31 fps

Rectangular Snip

II . Real Time Factor: 0.61   Sim Time: 00 00:13:57.115   Real Time: 00 00:14:31.231   Iterations: 837115   FPS: 2.03

File   Edit   View   Search   Terminal   Help

noorubuntu@noorubuntu-VirtualBox:~$ roslaunch moveit_setup_assistant setup_assi
stant.launch
... logging to /home/noorubuntu/.ros/log/3f6f2bce-d79c-11eb-8300-080027eecb0a/ro
slaunch-noorubuntu-VirtualBox-16275.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

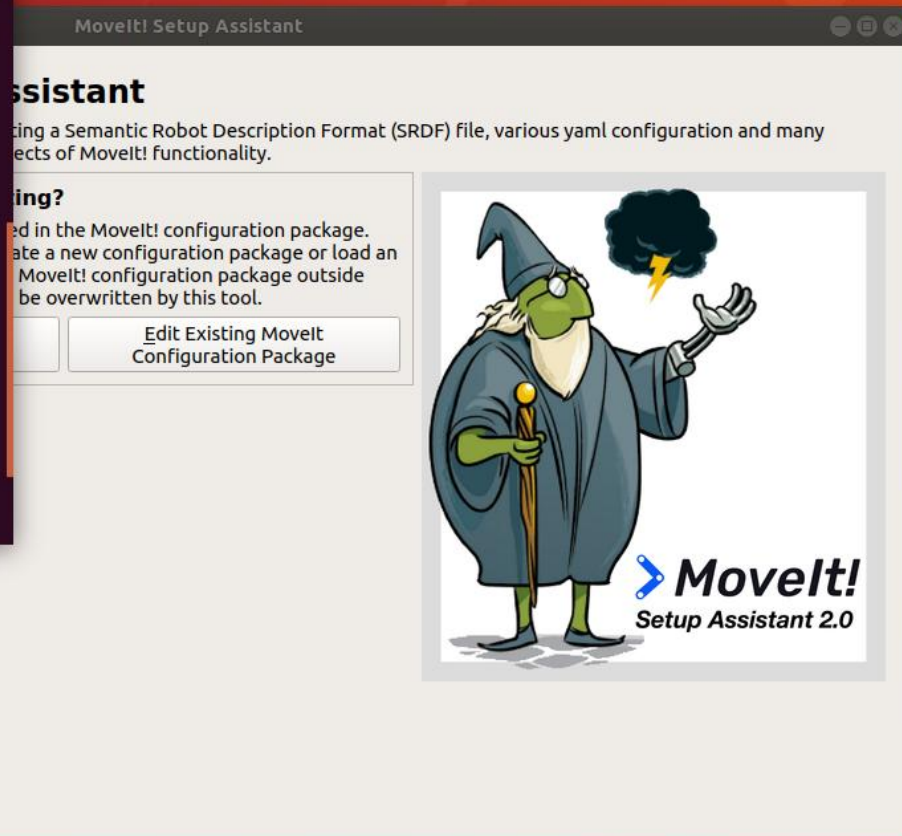started roslaunch server http://noorubuntu-VirtualBox:40567/

SUMMARY
========

PARAMETERS
 * /rosdistro: melodic
 * /rosversion: 1.14.11

NODES
  /
     moveit_setup_assistant (moveit_setup_assistant/moveit_setup_assistant)

auto-starting new master
process[master]: started with pid [16285]
ROS MASTER URI=http://localhost:11311

MoveIt! Setup Assistant

ssistant

ting a Semantic Robot Description Format (SRDF) file, various yaml configuration and many
ects of MoveIt! functionality.

ing?

ed in the MoveIt! configuration package.
ate a new configuration package or load an
MoveIt! configuration package outside
be overwritten by this tool.

| Edit Existing MoveIt
| Configuration Package

Simulation

3D Perception

Author Information

Configuration Files

MoveIt!
Setup Assistant 2.0

File   Edit   View   Search   Terminal   Help

noorubuntu@noorubuntu-VirtualBox:~$ roslaunch moveit_pkg demo_gazebo.launch
... logging to /home/noorubuntu/.ros/log/113b56d6-d933-11eb-b2fe-080027eecb0a/ro
slaunch-noorubuntu-VirtualBox-3308.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://noorubuntu-VirtualBox:43873/

SUMMARY
========

PARAMETERS
 * /arm_controller/gains/base_joint/d: 1
 * /arm_controller/gains/base_joint/i: 1
 * /arm_controller/gains/base_joint/i_clamp: 1
 * /arm_controller/gains/base_joint/p: 100
 * /arm_controller/gains/elbow/d: 1
 * /arm_controller/gains/elbow/i: 1
 * /arm_controller/gains/elbow/i_clamp: 1
 * /arm_controller/gains/elbow/p: 100
 * /arm_controller/gains/shoulder/d: 1
 * /arm_controller/gains/shoulder/i: 1
 * /arm_controller/gains/shoulder/i_clamp: 1