Installing and operating the arm package in the system (ROS)

Running a robotic arm by cloning an existing project from GitHub, from this calculation Smart Methods:

1-run this instruction inside your workspace:

$ rosdep install --from-paths src --ignore-src -r -y

make sure you installed all these packages:

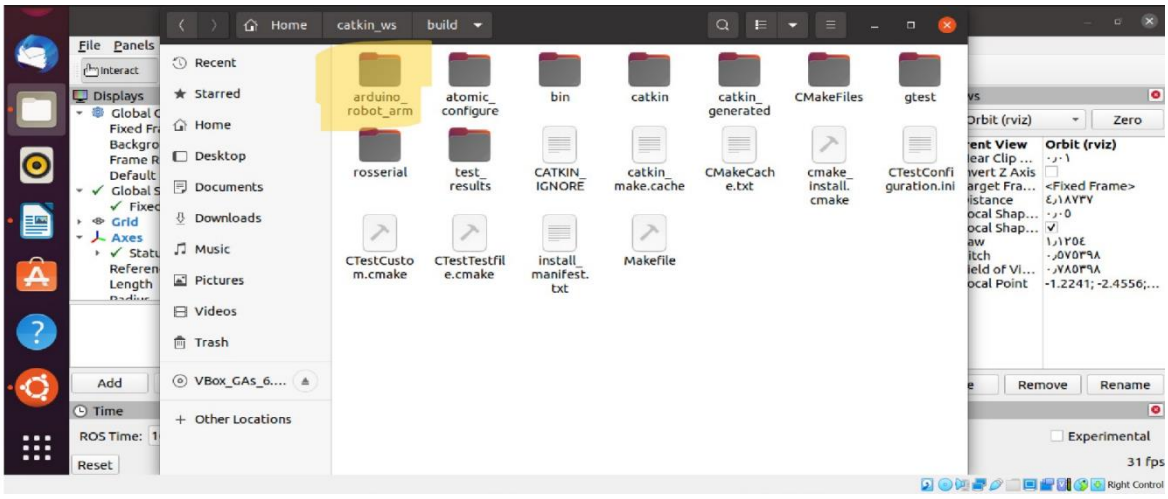
melodic distro

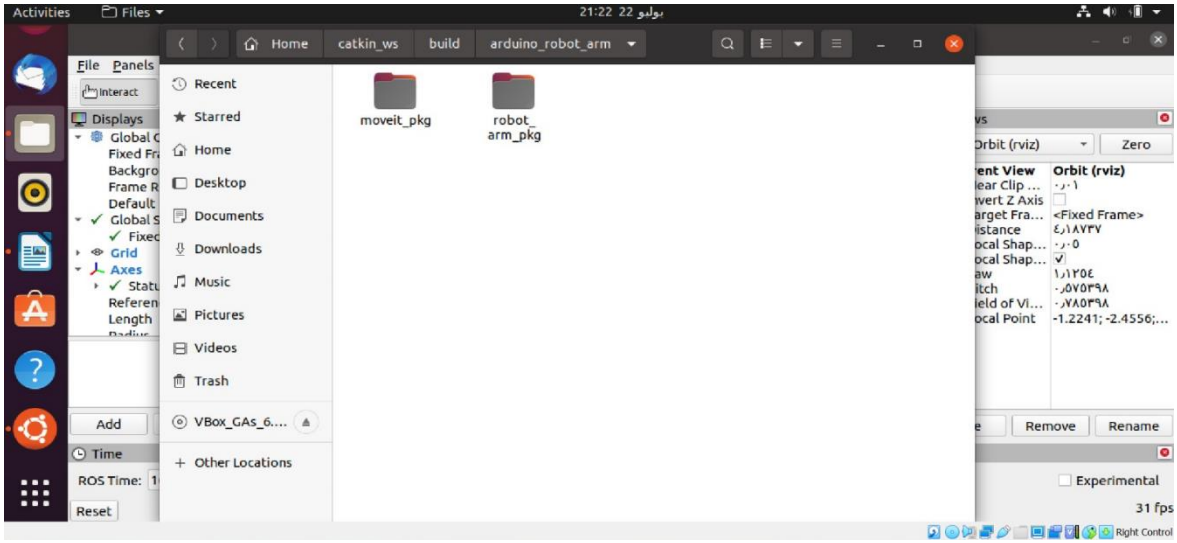
$ sudo apt-get install ros-melodic-moveit

$ sudo apt-get install ros-melodic-joint-state-publisher ros-melodic-joint-state-publisher-gui

$ sudo apt-get install ros-melodic-gazebo-ros-control joint-state-publisher

$ sudo apt-get install ros-melodic-ros-controllers ros-melodic-ros-control





Configuring Arduino with ROS

Install Arduino IDE in Ubuntu https://www.arduino.cc/en/software to install run $ sudo ./install.sh after unzipping the folder

Launch the Arduino IDE

Install the arduino package and ros library

http://wiki.ros.org/rosserial_arduino/Tutorials/Arduino%20IDE%20Setup

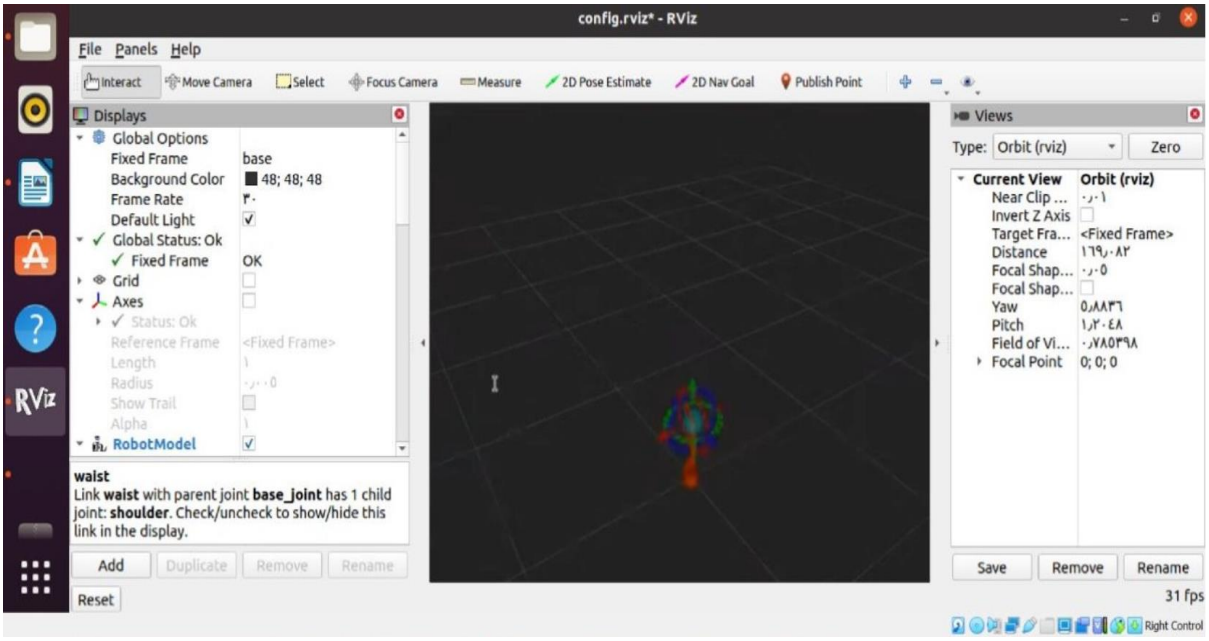
Make sure to change the port permission before uploading the Arduino code `$ sudo chmod 777 /dev/ttyUSB0`

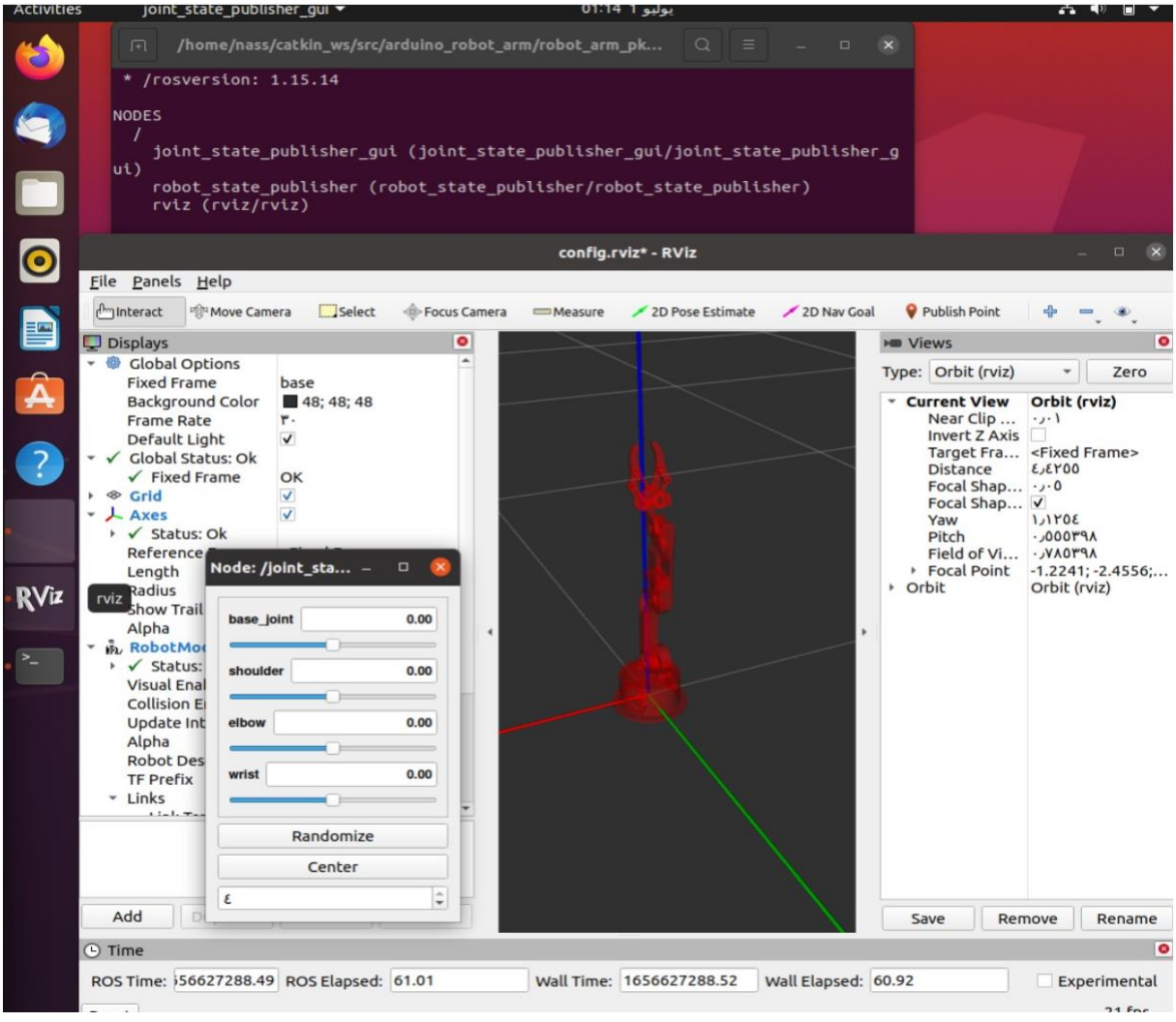
Controlling the robot arm by joint_state_publisher

$ roslaunch robot_arm_pkg check_motors.launch

Controlling the robot arm by Moveit and kinematics

$ roslaunch moveit_pkg demo.launch


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
Radius
Show Trail
Alpha
RobotModel
waist
Link waist with parent joint base_joint has 1 child joint: shoulder. Check/uncheck to show/hide this link in the display.
Add Duplicate Remove Rename
Reset
Views
Type: Orbit (rviz) Zero
Current View Orbit (rviz)
Near Clip ... ٠٫٠١
Invert Z Axis
Target Fra... <Fixed Frame>
Distance ١٦٩٫٠٨٢
Focal Shap... ٠٫٠٥
Focal Shap...
Yaw ٥٫٨٨٤٦
Pitch ١٫٢٠٤٨
Field of Vi... ٠٫٧٨٥٣٩٨
Focal Point 0; 0; 0
Save Remove Rename
31 fps
Right Control


Activities
joint_state_publisher_gui
/home/nass/catkin_ws/src/arduino_robot_arm/robot_arm_pk...
* /rosversion: 1.15.14
NODES
/
joint_state_publisher_gui (joint_state_publisher_gui/joint_state_publisher_gui)
robot_state_publisher (robot_state_publisher/robot_state_publisher)
rviz (rviz/rviz)
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
Node: /joint_sta...
base_joint 0.00
shoulder 0.00
elbow 0.00
wrist 0.00
Randomize
Center
Views
Type: Orbit (rviz) Zero
Current View Orbit (rviz)
Near Clip ... ٠٫٠١
Invert Z Axis
Target Fra... <Fixed Frame>
Distance ٤٫٤٢٥٥
Focal Shap... ٠٫٠٥
Focal Shap...
Yaw ١٫١٢٥٤
Pitch ٠٫٠٥٥٣٩٨
Field of Vi... ٠٫٧٨٥٣٩٨
Focal Point -1.2241; -2.4556;...
Orbit Orbit (rviz)
Save Remove Rename
Time
ROS Time: 1656627288.49 ROS Elapsed: 61.01 Wall Time: 1656627288.52 Wall Elapsed: 60.92 Experimental