RIS LAB 1

Participants:

Sohaib Salman – **contribution (33.33%)**

Haseeb Ahmad – **contribution (33.33%)**

Qasim Rashid – **contribution (33.33%)**

All the project files are in the folder "RIS-Project". The other two zip files are just supporting packages for the project to run.

TASK 1

1. Launch uuv_gazebo/rexrov_default.launch and inspect the nodes, topics, services it launches and the message/service types they use to communicate.

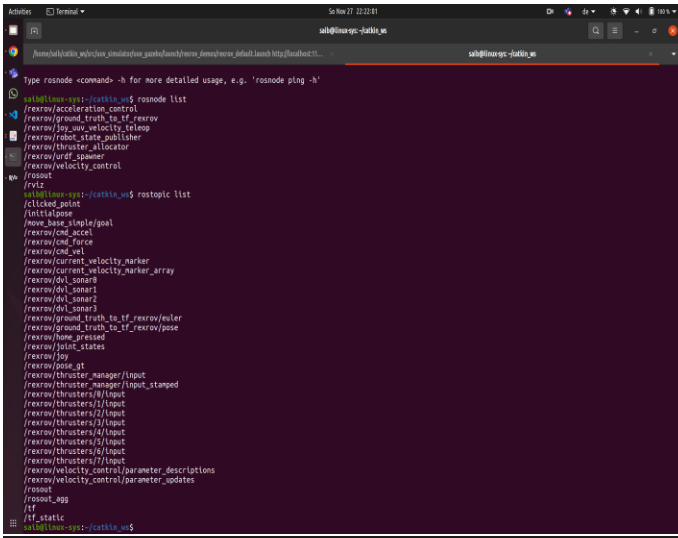
a. Write a short report describing these nodes, topics, services and messages including screenshots of rqt or the terminal output from which you collected this information. (15 pts) — contribution (33.33% each)

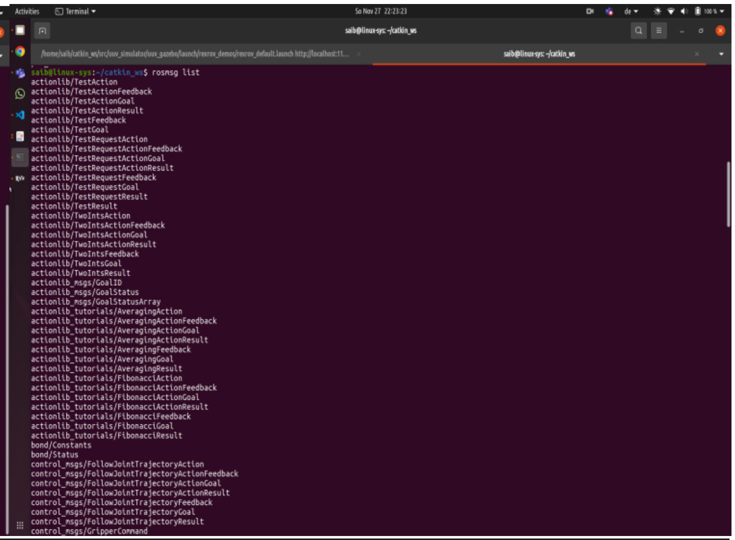
After launching *rexrov_default.launch* file, we get a rviz screen. In the terminal we can see all the nodes, topics, services and messages in the terminal as well as the rqt_graph.

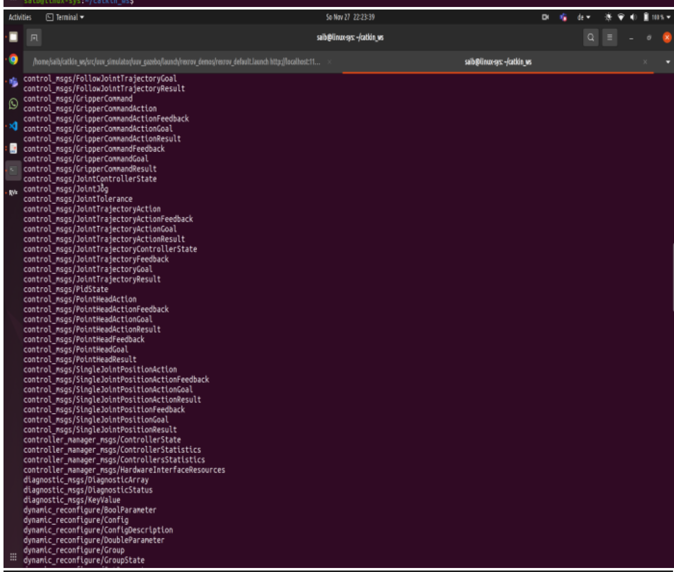
By looking at the screenshots attached and the rqt_graph attached we can see all the nodes and topics along with other messages generated. We have 9 nodes, all of which have different purposes and functions. For example, */rexrov/joystick* node is used for controlling the robot, */rexrov/urdf_spawner* is to spawn the robot and */rexrov/velocity_control* is to control the velocity of the robot. We also have many topics such as /*rexrov/ground_truth_to_tf_rexrov/euler and /rexrov/joint_states.* As seen from the rqt_graph the nodes (in circles) are not only communicating with themselves but are also connected with topics (in squares) in exchange of information. For example, the node *'rexrov/joy_uuv_velocity_teleop'* is subscribing to the topic called '*/rexrov/joy*' and data(messages) transmitted by the node *'/rexrov/joystick'* is received by the subscribing topic.

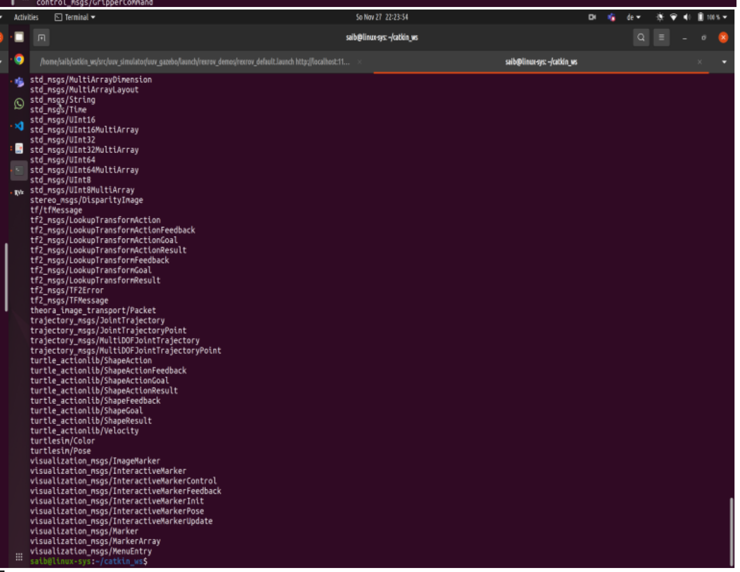
We can also see ros messages in the launch file as well (as shown below) such as *control_msgs/FollowJointTrajectoryAction*, *control_msgs/FollowJointTrajectoryActionFeedback*, *sensor_msgs/NavSatFix and sensor_msgs/NavSatStatus.* These messages are published by nodes and carry their description.

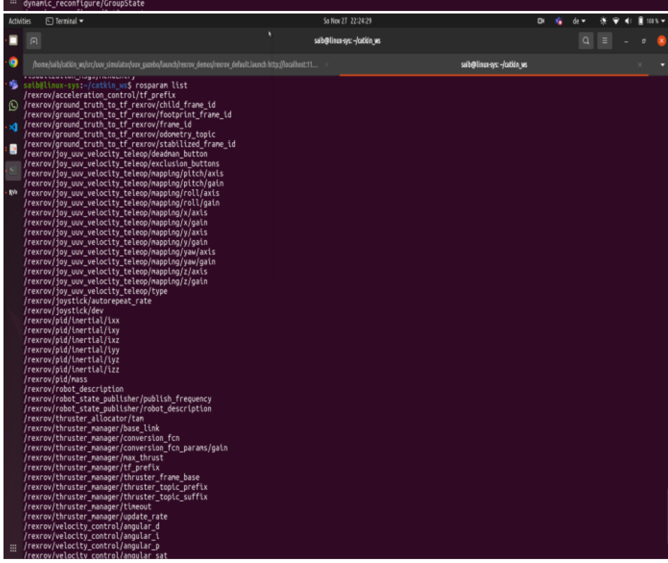
We also have services as srv files and parameters (as shown below). Services are sometimes used to request and reply to between nodes. They allow one node to call a function being executed in another node.

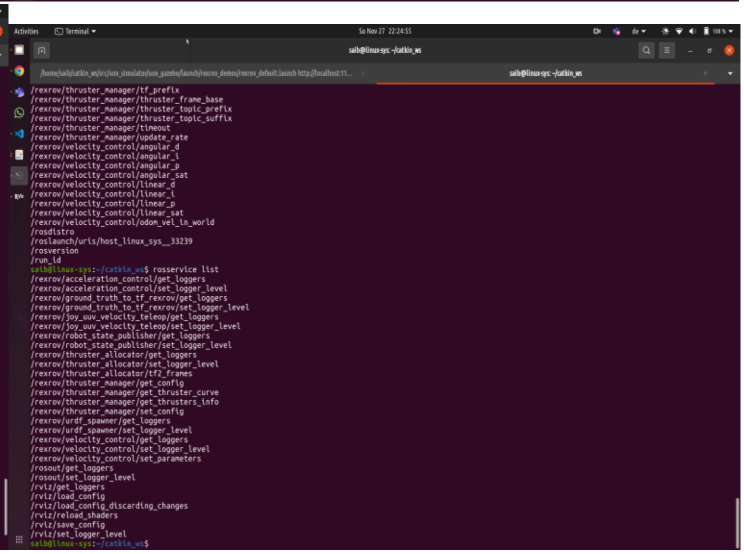

Type rosnode <command> -h for more detailed usage, e.g. 'rosnode ping -h'
saib@linux-sys:~/catkin_ws$ rosnode list
/rexrov/acceleration_control
/rexrov/ground_truth_to_tf_rexrov
/rexrov/joy_uuv_velocity_teleop
/rexrov/robot_state_publisher
/rexrov/thruster_allocator
/rexrov/urdf_spawner
/rexrov/velocity_control
/rosout
/rviz
saib@linux-sys:~/catkin_ws$ rostopic list
/clicked_point
/initialpose
/move_base_simple/goal
/rexrov/cmd_accel
/rexrov/cmd_force
/rexrov/cmd_vel
/rexrov/current_velocity_marker
/rexrov/current_velocity_marker_array
/rexrov/dvl_sonar0
/rexrov/dvl_sonar1
/rexrov/dvl_sonar2
/rexrov/dvl_sonar3
/rexrov/ground_truth_to_tf_rexrov/euler
/rexrov/ground_truth_to_tf_rexrov/pose
/rexrov/home_pressed
/rexrov/joint_states
/rexrov/joy
/rexrov/pose_gt
/rexrov/thruster_manager/input
/rexrov/thruster_manager/input_stamped
/rexrov/thrusters/0/input
/rexrov/thrusters/1/input
/rexrov/thrusters/2/input
/rexrov/thrusters/3/input
/rexrov/thrusters/4/input
/rexrov/thrusters/5/input
/rexrov/thrusters/6/input
/rexrov/thrusters/7/input
/rexrov/velocity_control/parameter_descriptions
/rexrov/velocity_control/parameter_updates
/rosout
/rosout_agg
/tf
/tf_static
saib@linux-sys:~/catkin_ws$

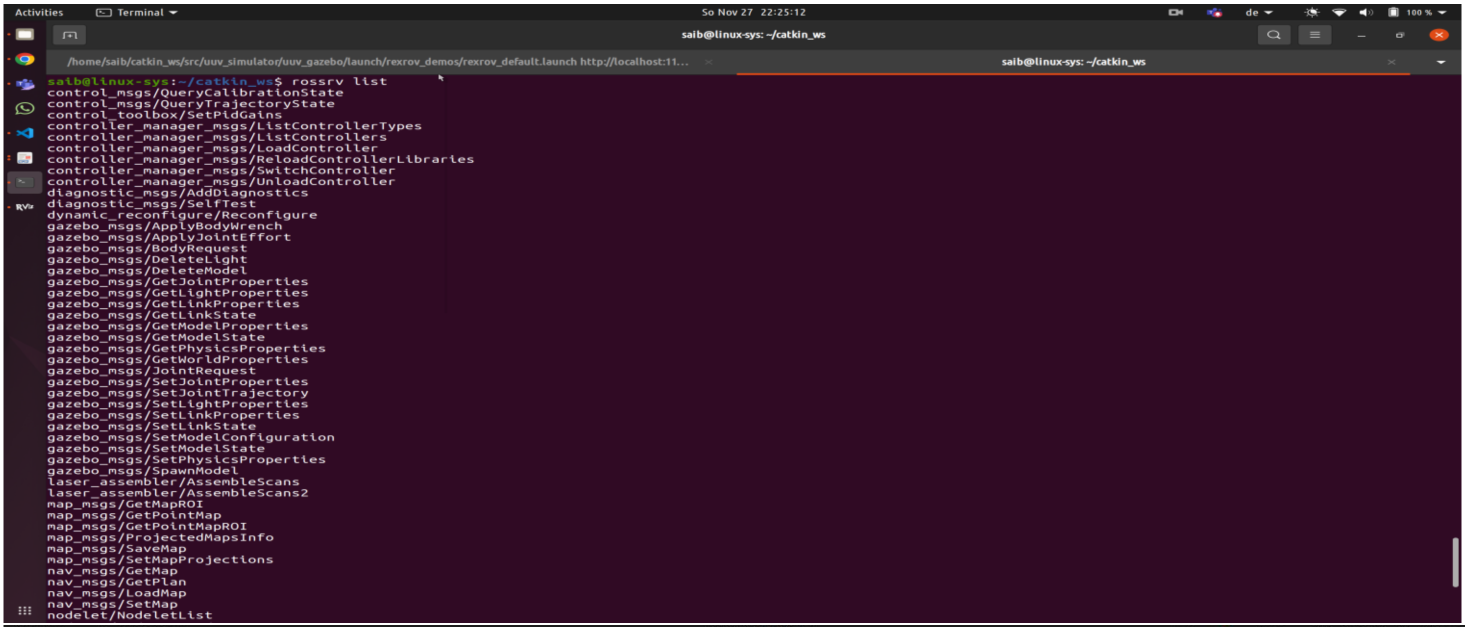

saib@linux-sys:~/catkin_ws$ rosmsg list
actionlib/TestAction
actionlib/TestActionFeedback
actionlib/TestActionGoal
actionlib/TestActionResult
actionlib/TestFeedback
actionlib/TestGoal
actionlib/TestRequestAction
actionlib/TestRequestActionFeedback
actionlib/TestRequestActionGoal
actionlib/TestRequestActionResult
actionlib/TestRequestFeedback
actionlib/TestRequestGoal
actionlib/TestRequestResult
actionlib/TestResult
actionlib/TwoIntsAction
actionlib/TwoIntsActionFeedback
actionlib/TwoIntsActionGoal
actionlib/TwoIntsActionResult
actionlib/TwoIntsFeedback
actionlib/TwoIntsGoal
actionlib/TwoIntsResult
actionlib_msgs/GoalID
actionlib_msgs/GoalStatus
actionlib_msgs/GoalStatusArray
actionlib_tutorials/AveragingAction
actionlib_tutorials/AveragingActionFeedback
actionlib_tutorials/AveragingActionGoal
actionlib_tutorials/AveragingActionResult
actionlib_tutorials/AveragingFeedback
actionlib_tutorials/AveragingGoal
actionlib_tutorials/AveragingResult
actionlib_tutorials/FibonacciAction
actionlib_tutorials/FibonacciActionFeedback
actionlib_tutorials/FibonacciActionGoal
actionlib_tutorials/FibonacciActionResult
actionlib_tutorials/FibonacciFeedback
actionlib_tutorials/FibonacciGoal
actionlib_tutorials/FibonacciResult
bond/Constants
bond/Status
control_msgs/FollowJointTrajectoryAction
control_msgs/FollowJointTrajectoryActionFeedback
control_msgs/FollowJointTrajectoryActionGoal
control_msgs/FollowJointTrajectoryActionResult
control_msgs/FollowJointTrajectoryFeedback
control_msgs/FollowJointTrajectoryGoal
control_msgs/FollowJointTrajectoryResult
control_msgs/GripperCommand

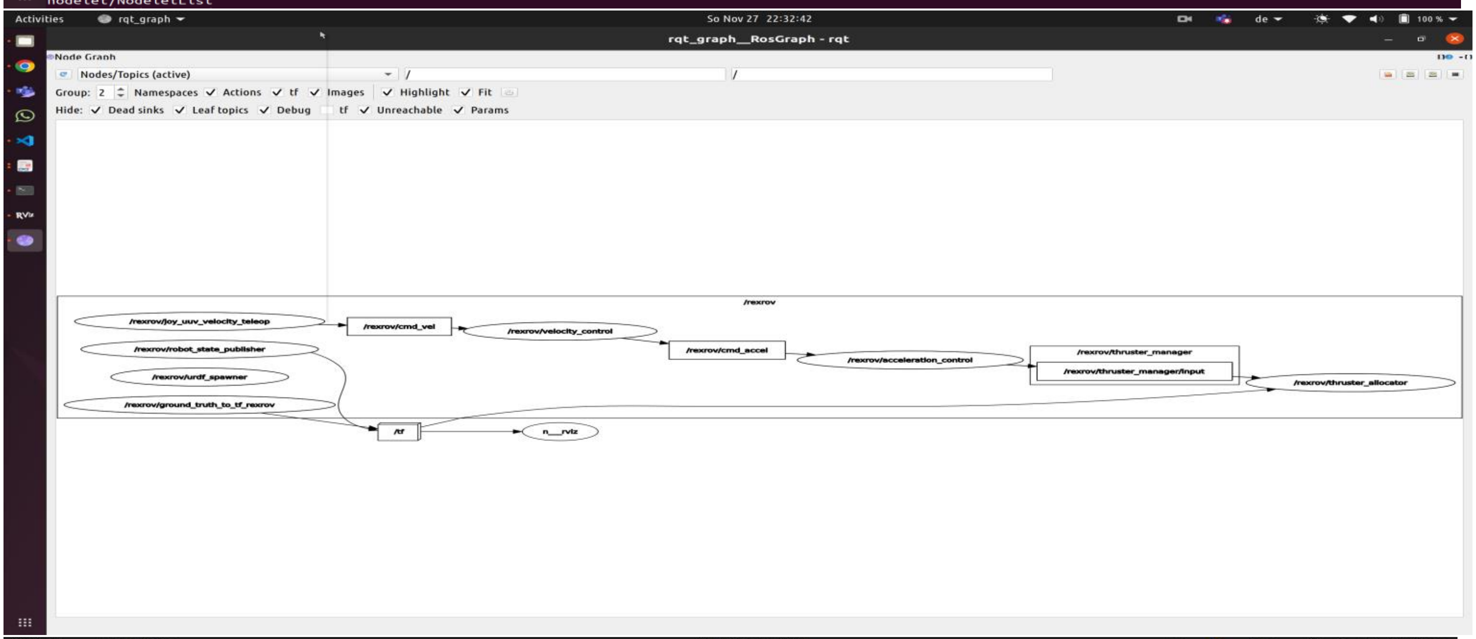

control_msgs/FollowJointTrajectoryGoal
control_msgs/FollowJointTrajectoryResult
control_msgs/GripperCommand
control_msgs/GripperCommandAction
control_msgs/GripperCommandActionFeedback
control_msgs/GripperCommandActionGoal
control_msgs/GripperCommandActionResult
control_msgs/GripperCommandFeedback
control_msgs/GripperCommandGoal
control_msgs/GripperCommandResult
control_msgs/JointControllerState
control_msgs/JointJog
control_msgs/JointTolerance
control_msgs/JointTrajectoryAction
control_msgs/JointTrajectoryActionFeedback
control_msgs/JointTrajectoryActionGoal
control_msgs/JointTrajectoryActionResult
control_msgs/JointTrajectoryControllerState
control_msgs/JointTrajectoryFeedback
control_msgs/JointTrajectoryGoal
control_msgs/JointTrajectoryResult
control_msgs/PidState
control_msgs/PointHeadAction
control_msgs/PointHeadActionFeedback
control_msgs/PointHeadActionGoal
control_msgs/PointHeadActionResult
control_msgs/PointHeadFeedback
control_msgs/PointHeadGoal
control_msgs/PointHeadResult
control_msgs/SingleJointPositionAction
control_msgs/SingleJointPositionActionFeedback
control_msgs/SingleJointPositionActionGoal
control_msgs/SingleJointPositionActionResult
control_msgs/SingleJointPositionFeedback
control_msgs/SingleJointPositionGoal
control_msgs/SingleJointPositionResult
controller_manager_msgs/ControllerState
controller_manager_msgs/ControllerStatistics
controller_manager_msgs/ControllersStatistics
controller_manager_msgs/HardwareInterfaceResources
diagnostic_msgs/DiagnosticArray
diagnostic_msgs/DiagnosticStatus
diagnostic_msgs/KeyValue
dynamic_reconfigure/BoolParameter
dynamic_reconfigure/Config
dynamic_reconfigure/ConfigDescription
dynamic_reconfigure/DoubleParameter
dynamic_reconfigure/Group
dynamic_reconfigure/GroupState

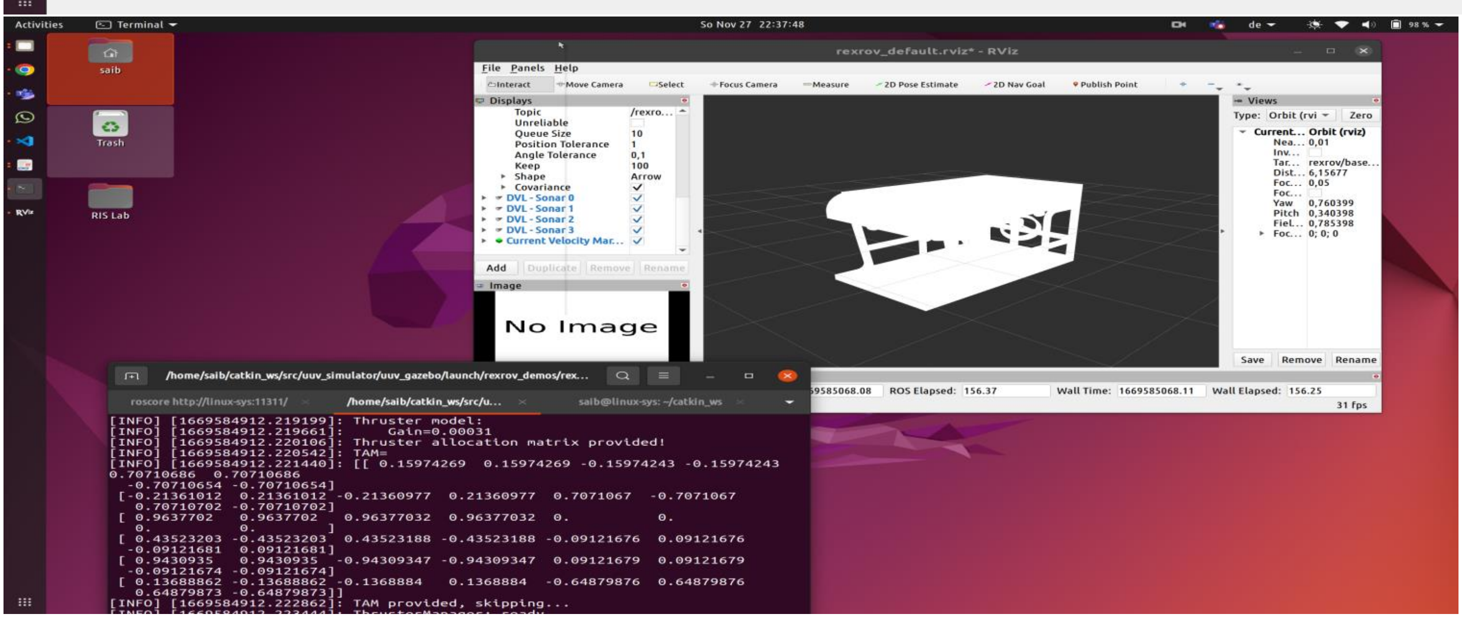

std_msgs/MultiArrayDimension
std_msgs/MultiArrayLayout
std_msgs/String
std_msgs/Time
std_msgs/UInt16
std_msgs/UInt16MultiArray
std_msgs/UInt32
std_msgs/UInt32MultiArray
std_msgs/UInt64
std_msgs/UInt64MultiArray
std_msgs/UInt8
std_msgs/UInt8MultiArray
stereo_msgs/DisparityImage
tf/tfMessage
tf2_msgs/LookupTransformAction
tf2_msgs/LookupTransformActionFeedback
tf2_msgs/LookupTransformActionGoal
tf2_msgs/LookupTransformActionResult
tf2_msgs/LookupTransformFeedback
tf2_msgs/LookupTransformGoal
tf2_msgs/LookupTransformResult
tf2_msgs/TF2Error
tf2_msgs/TFMessage
theora_image_transport/Packet
trajectory_msgs/JointTrajectory
trajectory_msgs/JointTrajectoryPoint
trajectory_msgs/MultiDOFJointTrajectory
trajectory_msgs/MultiDOFJointTrajectoryPoint
turtle_actionlib/ShapeAction
turtle_actionlib/ShapeActionFeedback
turtle_actionlib/ShapeActionGoal
turtle_actionlib/ShapeActionResult
turtle_actionlib/ShapeFeedback
turtle_actionlib/ShapeGoal
turtle_actionlib/ShapeResult
turtle_actionlib/Velocity
turtlesim/Color
turtlesim/Pose
visualization_msgs/ImageMarker
visualization_msgs/InteractiveMarker
visualization_msgs/InteractiveMarkerControl
visualization_msgs/InteractiveMarkerFeedback
visualization_msgs/InteractiveMarkerInit
visualization_msgs/InteractiveMarkerPose
visualization_msgs/InteractiveMarkerUpdate
visualization_msgs/Marker
visualization_msgs/MarkerArray
visualization_msgs/MenuEntry
saib@linux-sys:~/catkin_ws$


saib@linux-sys:~/catkin_ws$ rosparam list
/rexrov/acceleration_control/tf_prefix
/rexrov/ground_truth_to_tf_rexrov/child_frame_id
/rexrov/ground_truth_to_tf_rexrov/footprint_frame_id
/rexrov/ground_truth_to_tf_rexrov/frame_id
/rexrov/ground_truth_to_tf_rexrov/odometry_topic
/rexrov/ground_truth_to_tf_rexrov/stabilized_frame_id
/rexrov/joy_uuv_velocity_teleop/deadman_button
/rexrov/joy_uuv_velocity_teleop/exclusion_buttons
/rexrov/joy_uuv_velocity_teleop/mapping/pitch/axis
/rexrov/joy_uuv_velocity_teleop/mapping/pitch/gain
/rexrov/joy_uuv_velocity_teleop/mapping/roll/axis
/rexrov/joy_uuv_velocity_teleop/mapping/roll/gain
/rexrov/joy_uuv_velocity_teleop/mapping/x/axis
/rexrov/joy_uuv_velocity_teleop/mapping/x/gain
/rexrov/joy_uuv_velocity_teleop/mapping/y/axis
/rexrov/joy_uuv_velocity_teleop/mapping/y/gain
/rexrov/joy_uuv_velocity_teleop/mapping/yaw/axis
/rexrov/joy_uuv_velocity_teleop/mapping/yaw/gain
/rexrov/joy_uuv_velocity_teleop/mapping/z/axis
/rexrov/joy_uuv_velocity_teleop/mapping/z/gain
/rexrov/joy_uuv_velocity_teleop/type
/rexrov/joystick/autorepeat_rate
/rexrov/joystick/dev
/rexrov/pid/inertial/ixx
/rexrov/pid/inertial/ixy
/rexrov/pid/inertial/ixz
/rexrov/pid/inertial/iyy
/rexrov/pid/inertial/iyz
/rexrov/pid/inertial/izz
/rexrov/pid/mass
/rexrov/robot_description
/rexrov/robot_state_publisher/publish_frequency
/rexrov/robot_state_publisher/robot_description
/rexrov/thruster_allocator/tam
/rexrov/thruster_manager/base_link
/rexrov/thruster_manager/conversion_fcn
/rexrov/thruster_manager/conversion_fcn_params/gain
/rexrov/thruster_manager/max_thrust
/rexrov/thruster_manager/tf_prefix
/rexrov/thruster_manager/thruster_frame_base
/rexrov/thruster_manager/thruster_topic_prefix
/rexrov/thruster_manager/thruster_topic_suffix
/rexrov/thruster_manager/timeout
/rexrov/thruster_manager/update_rate
/rexrov/velocity_control/angular_d
/rexrov/velocity_control/angular_i
/rexrov/velocity_control/angular_p
/rexrov/velocity_control/angular_sat


/rexrov/thruster_manager/tf_prefix
/rexrov/thruster_manager/thruster_frame_base
/rexrov/thruster_manager/thruster_topic_prefix
/rexrov/thruster_manager/thruster_topic_suffix
/rexrov/thruster_manager/timeout
/rexrov/thruster_manager/update_rate
/rexrov/velocity_control/angular_d
/rexrov/velocity_control/angular_i
/rexrov/velocity_control/angular_p
/rexrov/velocity_control/angular_sat
/rexrov/velocity_control/linear_d
/rexrov/velocity_control/linear_i
/rexrov/velocity_control/linear_p
/rexrov/velocity_control/linear_sat
/rexrov/velocity_control/odom_vel_in_world
/rosdistro
/roslaunch/uris/host_linux_sys__33239
/rosversion
/run_id
saib@linux-sys:~/catkin_ws$ rosservice list
/rexrov/acceleration_control/get_loggers
/rexrov/acceleration_control/set_logger_level
/rexrov/ground_truth_to_tf_rexrov/get_loggers
/rexrov/ground_truth_to_tf_rexrov/set_logger_level
/rexrov/joy_uuv_velocity_teleop/get_loggers
/rexrov/joy_uuv_velocity_teleop/set_logger_level
/rexrov/robot_state_publisher/get_loggers
/rexrov/robot_state_publisher/set_logger_level
/rexrov/thruster_allocator/get_loggers
/rexrov/thruster_allocator/set_logger_level
/rexrov/thruster_allocator/tf2_frames
/rexrov/thruster_manager/get_config
/rexrov/thruster_manager/get_thruster_curve
/rexrov/thruster_manager/get_thrusters_info
/rexrov/thruster_manager/set_config
/rexrov/urdf_spawner/get_loggers
/rexrov/urdf_spawner/set_logger_level
/rexrov/velocity_control/get_loggers
/rexrov/velocity_control/set_logger_level
/rexrov/velocity_control/set_parameters
/rosout/get_loggers
/rosout/set_logger_level
/rviz/get_loggers
/rviz/load_config
/rviz/load_config_discarding_changes
/rviz/reload_shaders
/rviz/save_config
/rviz/set_logger_level
saib@linux-sys:~/catkin_ws$


Activities
Terminal
So Nov 27 22:25:12
saib@linux-sys: ~/catkin_ws
/home/saib/catkin_ws/src/uuv_simulator/uuv_gazebo/launch/rexrov_demos/rexrov_default.launch http://localhost:11...
saib@linux-sys: ~/catkin_ws
saib@linux-sys:~/catkin_ws$ rossrv list
control_msgs/QueryCalibrationState
control_msgs/QueryTrajectoryState
control_toolbox/SetPidGains
controller_manager_msgs/ListControllerTypes
controller_manager_msgs/ListControllers
controller_manager_msgs/LoadController
controller_manager_msgs/ReloadControllerLibraries
controller_manager_msgs/SwitchController
controller_manager_msgs/UnloadController
diagnostic_msgs/AddDiagnostics
diagnostic_msgs/SelfTest
dynamic_reconfigure/Reconfigure
gazebo_msgs/ApplyBodyWrench
gazebo_msgs/ApplyJointEffort
gazebo_msgs/BodyRequest
gazebo_msgs/DeleteLight
gazebo_msgs/DeleteModel
gazebo_msgs/GetJointProperties
gazebo_msgs/GetLightProperties
gazebo_msgs/GetLinkProperties
gazebo_msgs/GetLinkState
gazebo_msgs/GetModelProperties
gazebo_msgs/GetModelState
gazebo_msgs/GetPhysicsProperties
gazebo_msgs/GetWorldProperties
gazebo_msgs/JointRequest
gazebo_msgs/SetJointProperties
gazebo_msgs/SetJointTrajectory
gazebo_msgs/SetLightProperties
gazebo_msgs/SetLinkProperties
gazebo_msgs/SetLinkState
gazebo_msgs/SetModelConfiguration
gazebo_msgs/SetModelState
gazebo_msgs/SetPhysicsProperties
gazebo_msgs/SpawnModel
laser_assembler/AssembleScans
laser_assembler/AssembleScans2
map_msgs/GetMapROI
map_msgs/GetPointMap
map_msgs/GetPointMapROI
map_msgs/ProjectedMapsInfo
map_msgs/SaveMap
map_msgs/SetMapProjections
nav_msgs/GetMap
nav_msgs/GetPlan
nav_msgs/LoadMap
nav_msgs/SetMap
nodelet/NodeletList


Activities
rqt_graph
So Nov 27 22:32:42
rqt_graph__RosGraph - rqt
Node Graph
Nodes/Topics (active)
Group: 2 Namespaces Actions tf Images Highlight Fit
Hide: Dead sinks Leaf topics Debug tf Unreachable Params
/rexrov
/rexrov/joy_uuv_velocity_teleop
/rexrov/cmd_vel
/rexrov/velocity_control
/rexrov/robot_state_publisher
/rexrov/cmd_accel
/rexrov/acceleration_control
/rexrov/thruster_manager
/rexrov/thruster_manager/input
/rexrov/thruster_allocator
/rexrov/urdf_spawner
/rexrov/ground_truth_to_tf_rexrov
/tf
n__rviz


Activities
Terminal
So Nov 27 22:37:48
saib
Trash
RIS Lab
rexrov_default.rviz* - RViz
File Panels Help
Interact Move Camera Select Focus Camera Measure 2D Pose Estimate 2D Nav Goal Publish Point
Displays
Topic /rexro...
Unreliable
Queue Size 10
Position Tolerance 1
Angle Tolerance 0,1
Keep 100
Shape Arrow
Covariance
DVL - Sonar 0
DVL - Sonar 1
DVL - Sonar 2
DVL - Sonar 3
Current Velocity Mar...
Add Duplicate Remove Rename
Image
No Image
Views
Type: Orbit (rvi Zero
Current... Orbit (rviz)
Nea... 0,01
Inv...
Tar... rexrov/base...
Dist... 6,15677
Foc... 0,05
Foc...
Yaw 0,760399
Pitch 0,340398
Fiel... 0,785398
Foc... 0; 0; 0
Save Remove Rename
ROS Elapsed: 156.37 Wall Time: 1669585068.11 Wall Elapsed: 156.25
31 fps
/home/saib/catkin_ws/src/uuv_simulator/uuv_gazebo/launch/rexrov_demos/rex...
roscore http://linux-sys:11311/
/home/saib/catkin_ws/src/u...
saib@linux-sys: ~/catkin_ws
[INFO] [1669584912.219199]: Thruster model:
[INFO] [1669584912.219661]: Gain=0.00031
[INFO] [1669584912.220106]: Thruster allocation matrix provided!
[INFO] [1669584912.220542]: TAM=
[INFO] [1669584912.221440]: [[0.15974269 0.15974269 -0.15974243 -0.15974243
0.70710686 0.70710686
-0.70710654 -0.70710654]
[-0.21361012 0.21361012 -0.21360977 0.21360977 0.7071067 -0.7071067
0.70710702 -0.70710702]
[0.9637702 0.9637702 0.96377032 0.96377032 0. 0.
0. 0.]
[0.43523203 -0.43523203 0.43523188 -0.43523188 -0.09121676 0.09121676
-0.09121681 0.09121681]
[0.9430935 0.9430935 -0.94309347 -0.94309347 0.09121679 0.09121679
-0.09121674 -0.09121674]
[0.13688862 -0.13688862 -0.1368884 0.1368884 -0.64879876 0.64879876
0.64879873 -0.64879873]]
[INFO] [1669584912.222862]: TAM provided, skipping...

(b) Include the commands you used to retrieve this information and write down what these commands do. (10 pts) - contribution (33.33% each)

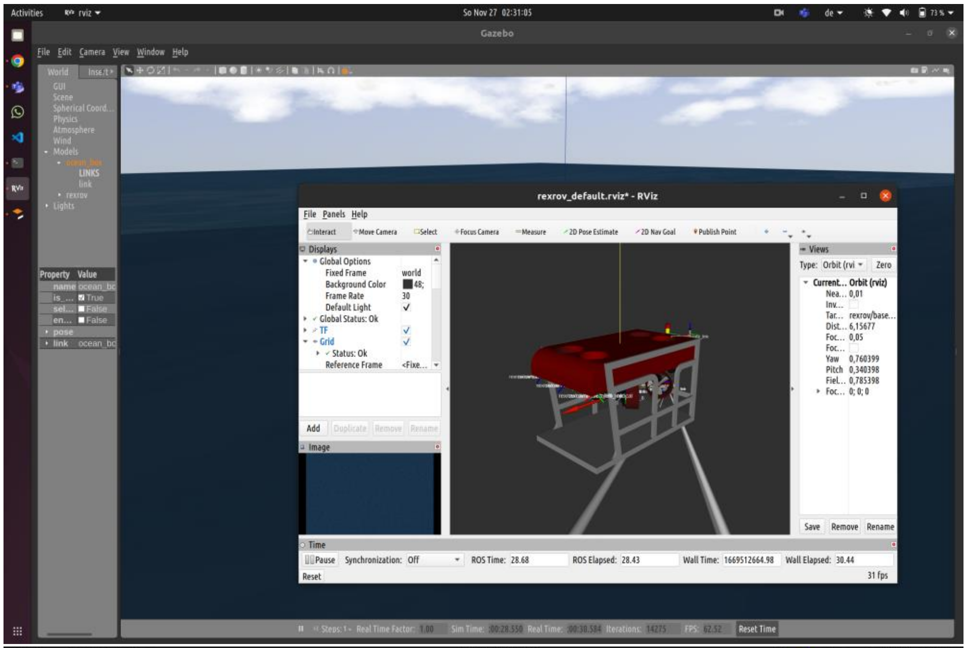
After cloning the package and building it through ***"catkin build"***, we used ***"source devel/setup.bash"*** to make sure that the path is active in the terminal. Then we used the ***"roslaunch uuv_gazebo rexrov_default.launch"*** to launch the file. We got the list of nodes by ***"rosnode list"***, topics by ***"rostopic list"***, messages by ***"rosmsg list",*** parameters by ***"rosparam list"*** and services by ***"rossrv list"***:

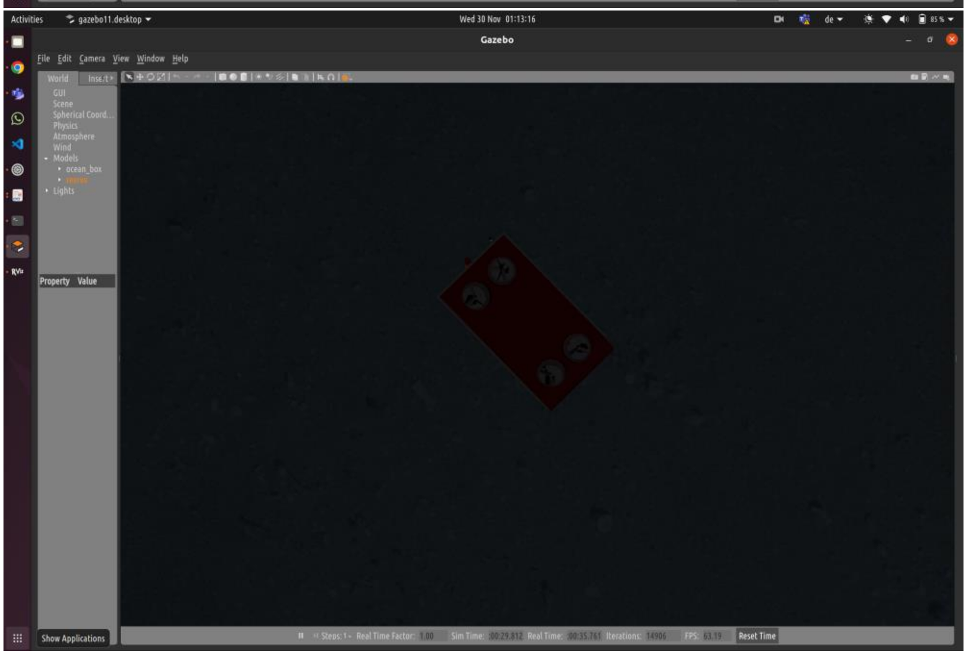
TASK 2

2. Controlling the robot using teleop_twist_keyboard:

(a) Write a launch file that launches the rexrov in uuv_gazebo/rexrov_default.launch into the world spawned by uuv_gazebo_worlds/empty_underwater_world.launch and the teleop_twist_keyboard node in such a way that you can use the teleop node to control the simulated ROV. Please include comments in this launch file to explain what each line is doing. (15 pts) — contribution (33.33% each)

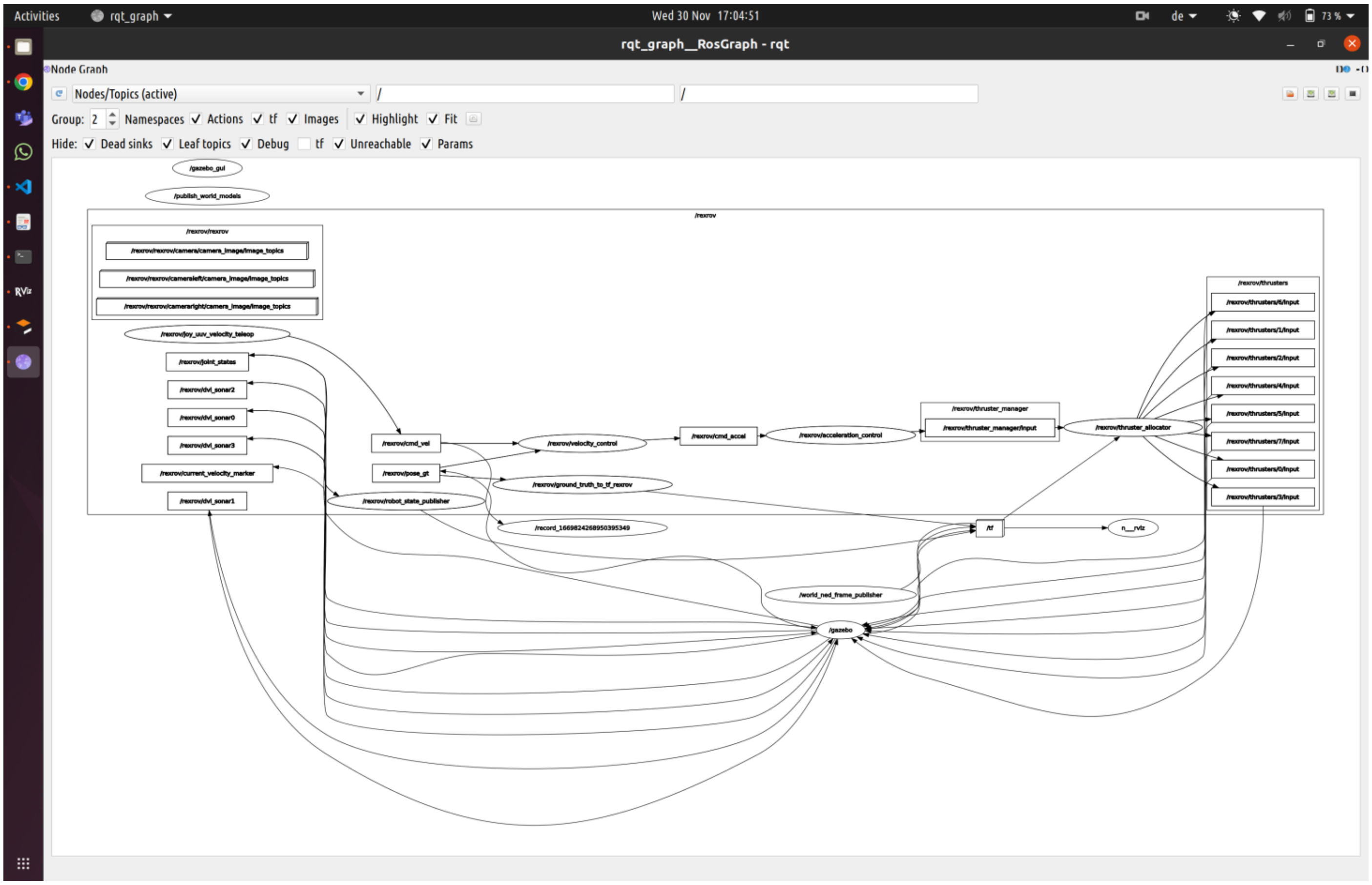
In order to see the robot launched in the gazebo world and controlled by the node *teleop_twist_keyboard*, you need to run the launch file under *q2/launch/task2.launch*. Explanations for the functioning of the launch file are provided as comments.





(b) Log the topic teleop_twist_keyboard/cmd_vel using rosbag, move the vehicle around with your key-board while rosbag is recording. Stop teleop_twist_keyboard and control the robot by replaying the generated rosbag. Create a plot of the traced trajectory of the ROV, and attach a screen shot of rqt_graph while the bag is playing (5 pts) — contribution (33.33% each)

Below you can see the rqt_graph:



This is achieved by first launching the task2 launch file and then moving to the bagfiles folder and recording by: *rosbag record rexrov/cmd_vel.* Then you can plot it by using: *rqt_plot rexrov/cmd_vel/angular:linear*

TASK 3

3. In this exercise you need to create a node that outputs forces and torques as input to control the AUV in uuv_gazebo/rexrov_wrench_control.launch based on this input. Please download this launch file from the page linked into catkin_ws/src/uuv_simulator/uuv_gazebo/launch/rexrov_demos and launch it into the world spawned by uuv_gazebo_worlds/empty_underwater_world.launch

(a) Write a node similar to teleop_twist_keyboard that publishes forces and torques to control the AUV. Your node must publish to the topic /rexrov/thruster_manager/input (15pts) — contribution (33.33% each)

(b) Write a launch file similar to the one in exercise 2 that launches the AUV and your node. (5 pts) — contribution (33.33% each)

To find the newly created node, similar to teleop_twist_keyboard, please look for the file called wrench_controller.py under *q3/src/wrench_controller.py*. The file is similar to the previous node (teleop_twist_keyboard) but publishes a different type of messages to a different topic and contains some variables not used in the previous file. The launch file is in *q3/launch/task3.launch*. The launch file launches the wrench_controller node with the gazebo world.

TASK 4

4. Creating and controlling your own robot.

(a) Create a urdf file that describes a simple ROV of your own design using the default geometric shapes (or design your own robot in Blender) (10 pts) — contribution (33.33% each)

The URDF file for the robot made can be found in *simulation/urdf/test.urdf.* In our robot we have 3 links and 3 joints. The description of every link and joints are under their respective tags.

(b) Decide on the placement of thrusters for this ROV and give your reasoning. (5 pts) — contribution (33.33% each)

The URDF file has 5 thrusters:

1. One for vertical ascend underneath the robot.
2. Two for sideways movement.
3. 3 for maximum power from behind.

This arrangement of thrusters was decided by keeping in mind that it is just a basic robot.

(c) Write your own node that takes in forces and torques as input and publishes thrust commands for your ROV. The conversion from forces/torques to thrust commands has to be called a service. (10 pts) — contribution (33.33% each)

The node can be found at: *simulation/task4c.py*

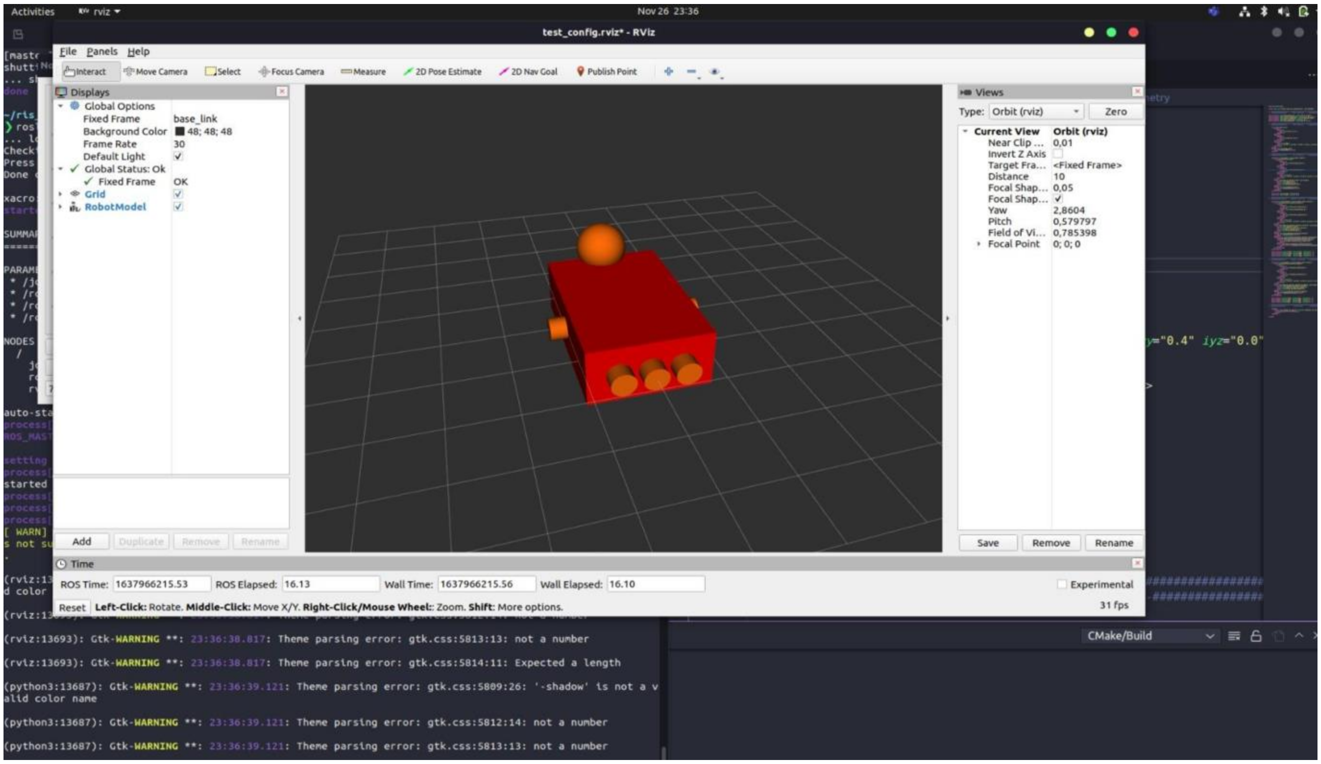
(d) Write a launch file that (10 pts) — contribution (33.33% each)

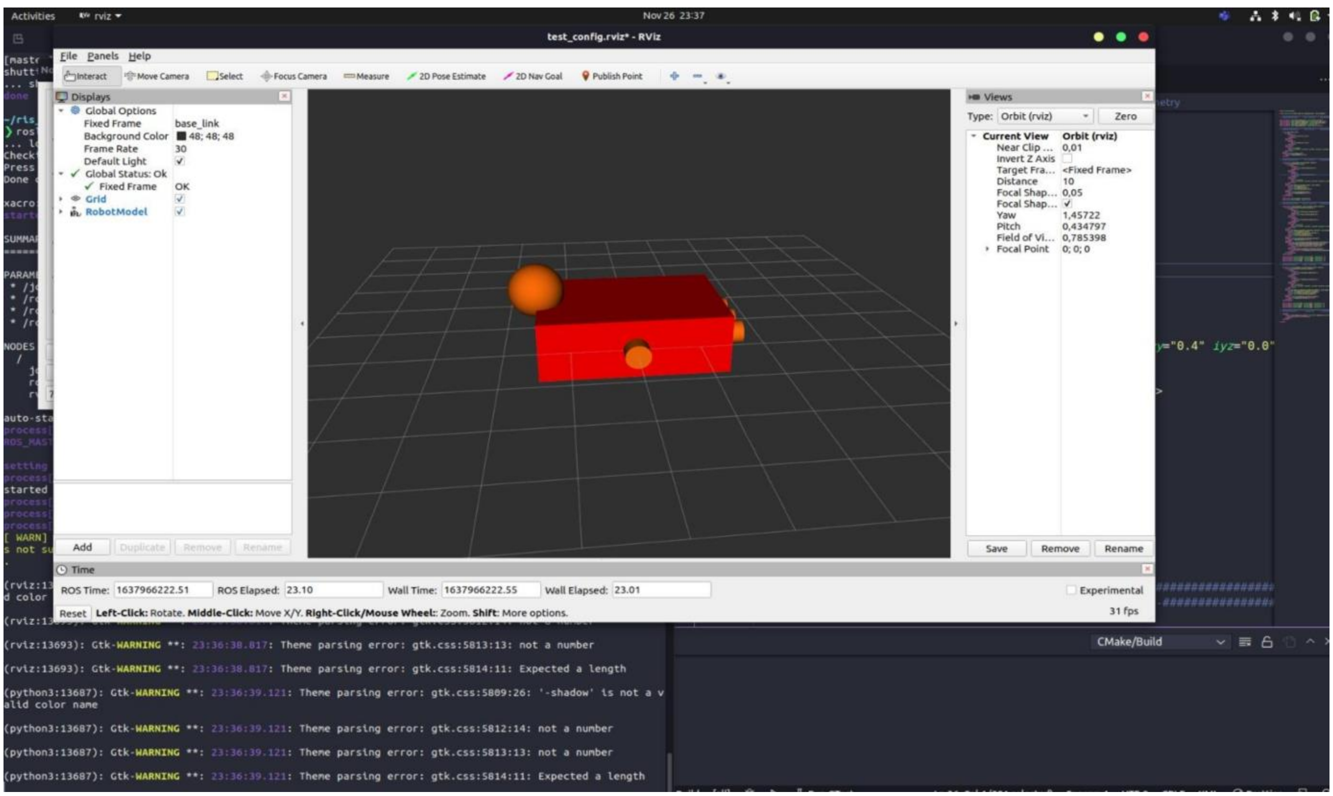
i. load this robot into uuv_gazebo_worlds/empty_underwater_world.launch in gazebo

ii. starts the node you created in exercise 3 to publish force/torque data

iii. starts the node you created in part c that publishes thrust commands to your vehicle

The ROV file was launched into UUV gazebo. The launch file can be found at: *simulation/launch/task4d.launch*.


Activities
rviz
Nov 26 23:36
test_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_link
Background Color 48; 48; 48
Frame Rate 30
Default Light
Global Status: Ok
Fixed Frame OK
Grid
RobotModel
Add Duplicate Remove Rename
Views
Type: Orbit (rviz) Zero
Current View Orbit (rviz)
Near Clip ... 0,01
Invert Z Axis
Target Fra... <Fixed Frame>
Distance 10
Focal Shap... 0,05
Focal Shap...
Yaw 2,8604
Pitch 0,579797
Field of Vi... 0,785398
Focal Point 0; 0; 0
Save Remove Rename
Time
ROS Time: 1637966215.53 ROS Elapsed: 16.13 Wall Time: 1637966215.56 Wall Elapsed: 16.10
Experimental
Reset Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click/Mouse Wheel:: Zoom. Shift: More options.
31 fps
CMake/Build
(rviz:13693): Gtk-WARNING **: 23:36:38.817: Theme parsing error: gtk.css:5813:13: not a number
(rviz:13693): Gtk-WARNING **: 23:36:38.817: Theme parsing error: gtk.css:5814:11: Expected a length
(python3:13687): Gtk-WARNING **: 23:36:39.121: Theme parsing error: gtk.css:5809:26: '-shadow' is not a valid color name
(python3:13687): Gtk-WARNING **: 23:36:39.121: Theme parsing error: gtk.css:5812:14: not a number
(python3:13687): Gtk-WARNING **: 23:36:39.121: Theme parsing error: gtk.css:5813:13: not a number


Activities
rviz
Nov 26 23:37
test_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_link
Background Color 48; 48; 48
Frame Rate 30
Default Light
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Type: Orbit (rviz) Zero
Current View Orbit (rviz)
Near Clip ... 0,01
Invert Z Axis
Target Fra... <Fixed Frame>
Distance 10
Focal Shap... 0,05
Focal Shap...
Yaw 1,45722
Pitch 0,434797
Field of Vi... 0,785398
Focal Point 0; 0; 0
Save Remove Rename
Time
ROS Time: 1637966222.51 ROS Elapsed: 23.10 Wall Time: 1637966222.55 Wall Elapsed: 23.01
Experimental
Reset Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click/Mouse Wheel:: Zoom. Shift: More options.
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