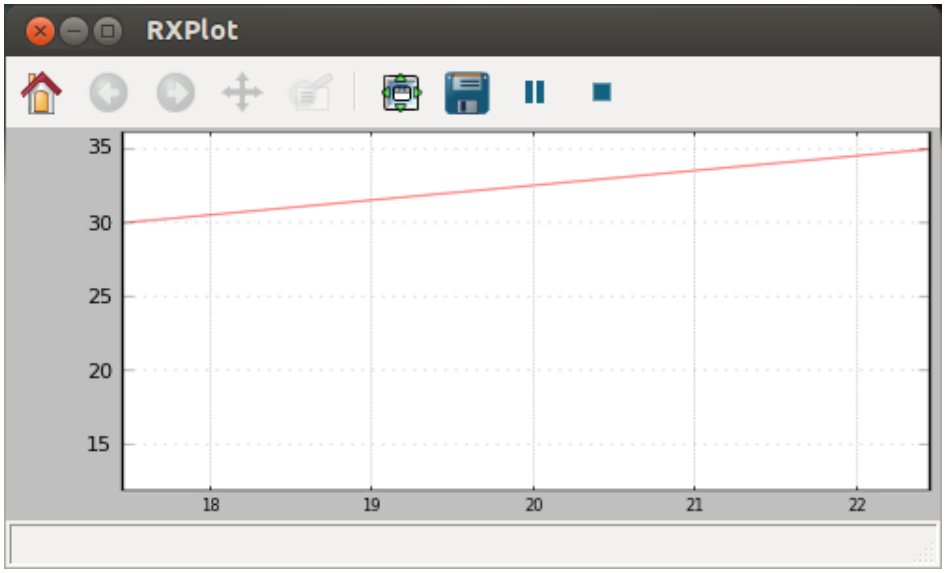
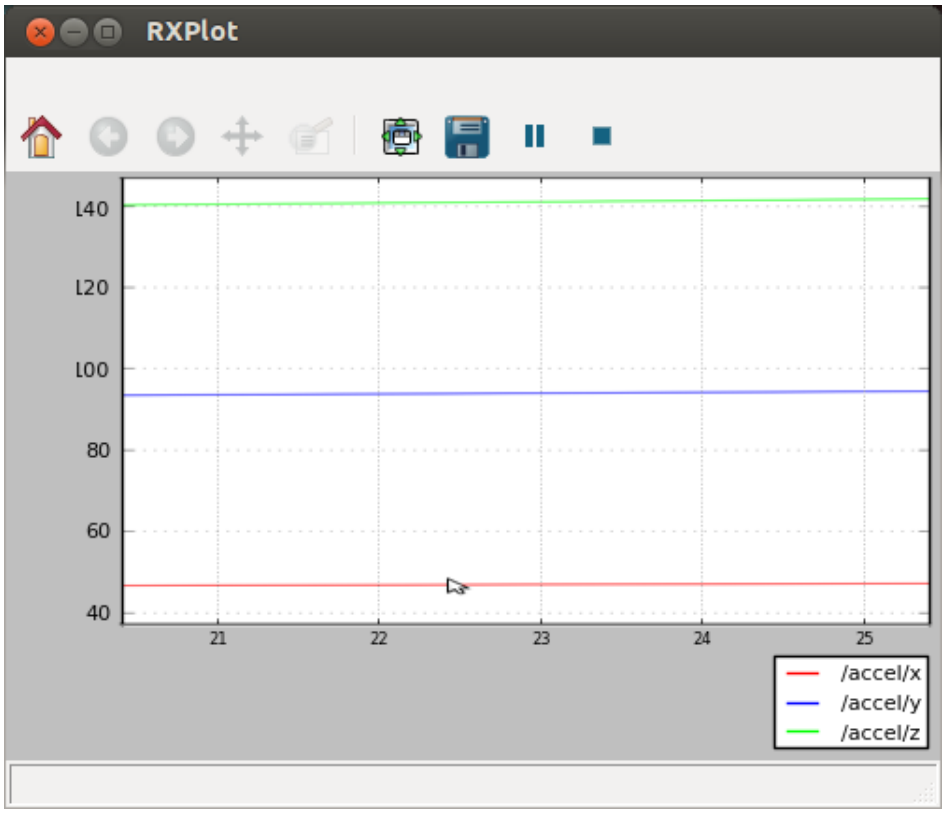
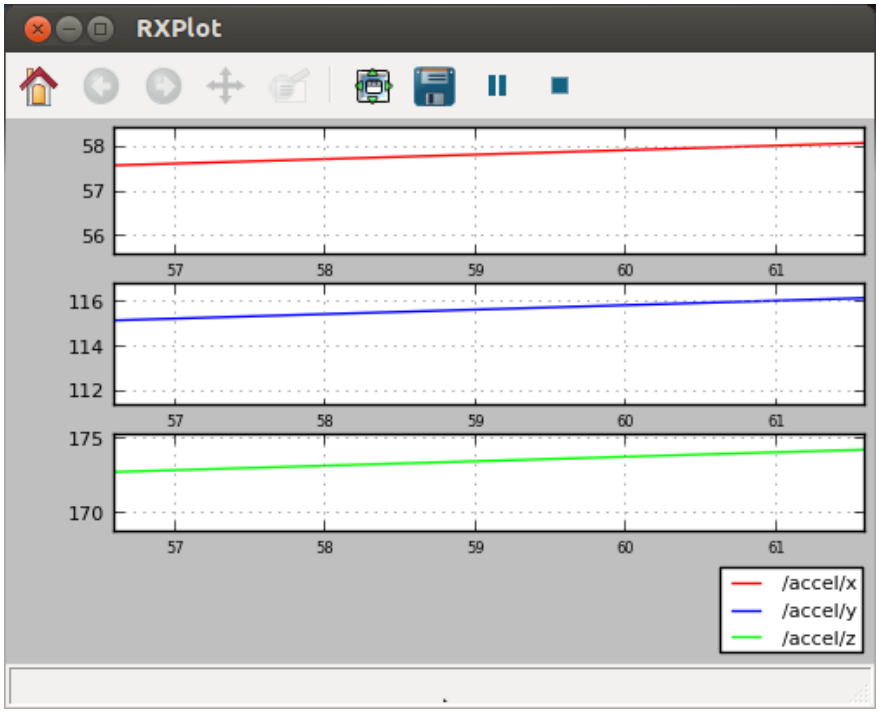
Chapter 3, Debugging and Visualization



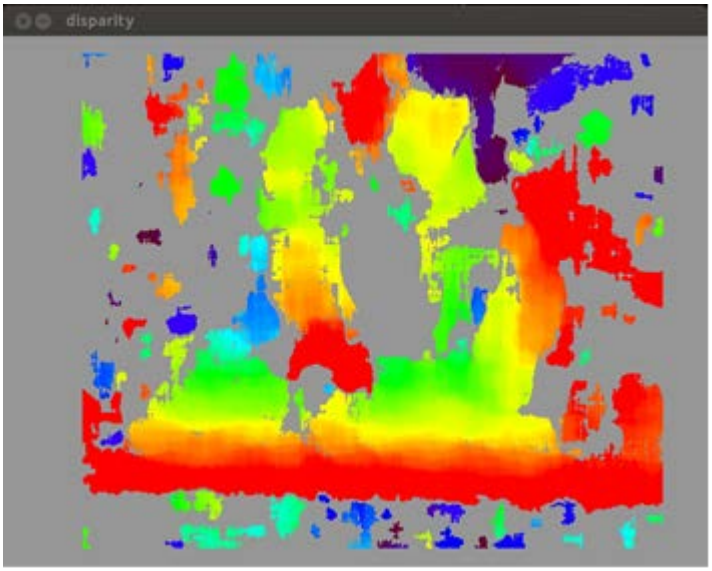
Plot that changes over time with incoming messages



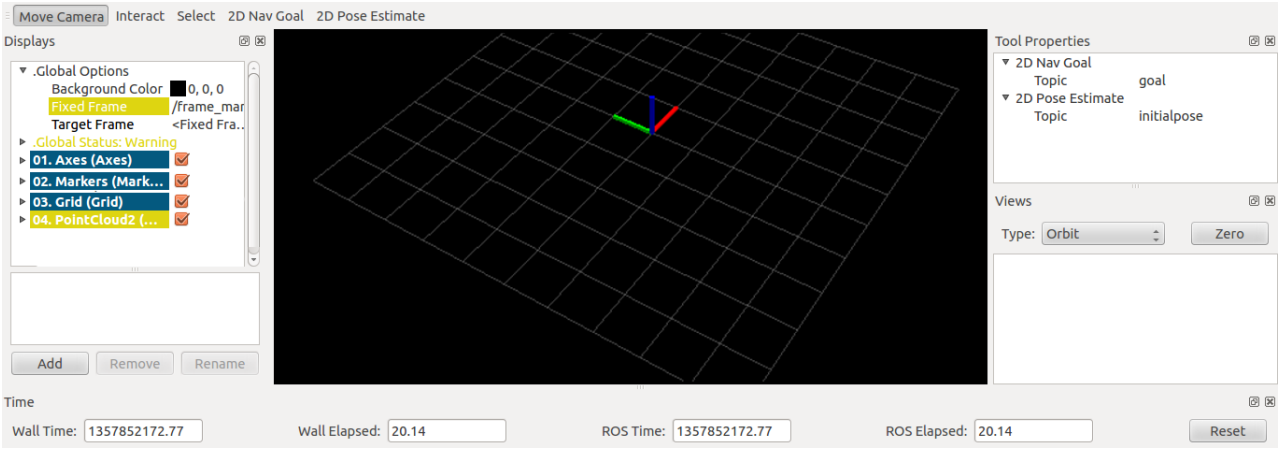
The rxplot /accel/x:y:z plot



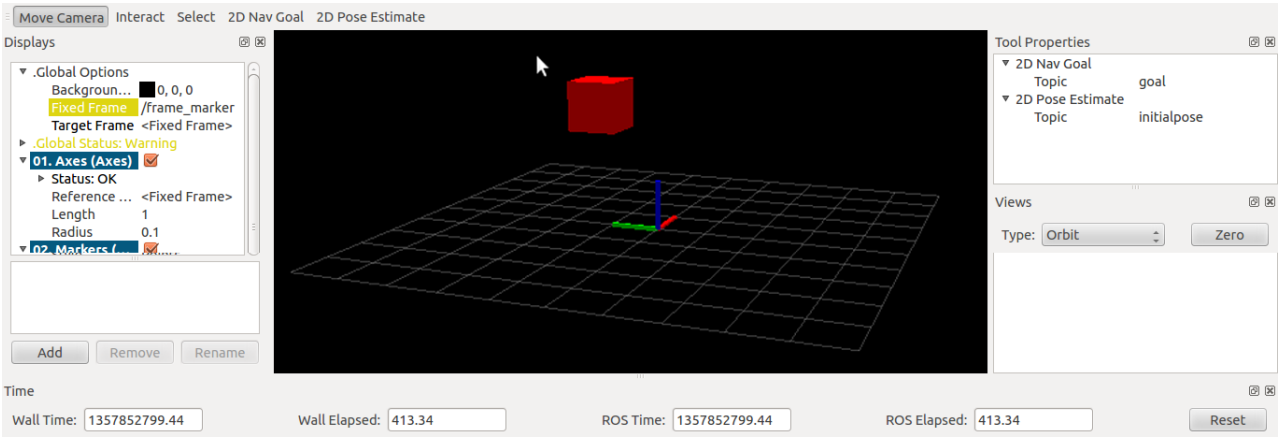
The rxplot /accel/x /accel/y /accel/z plot



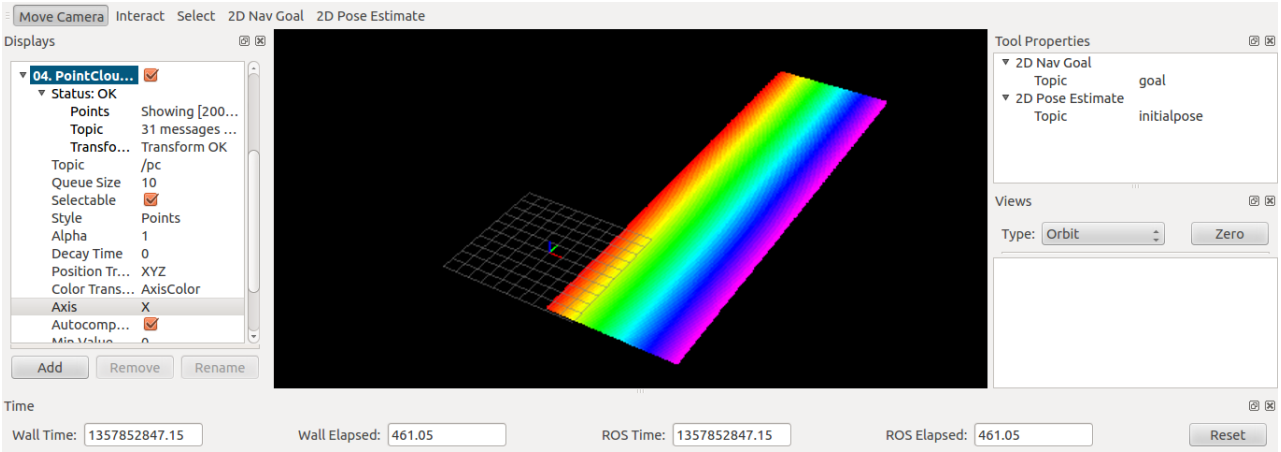
Disparity images



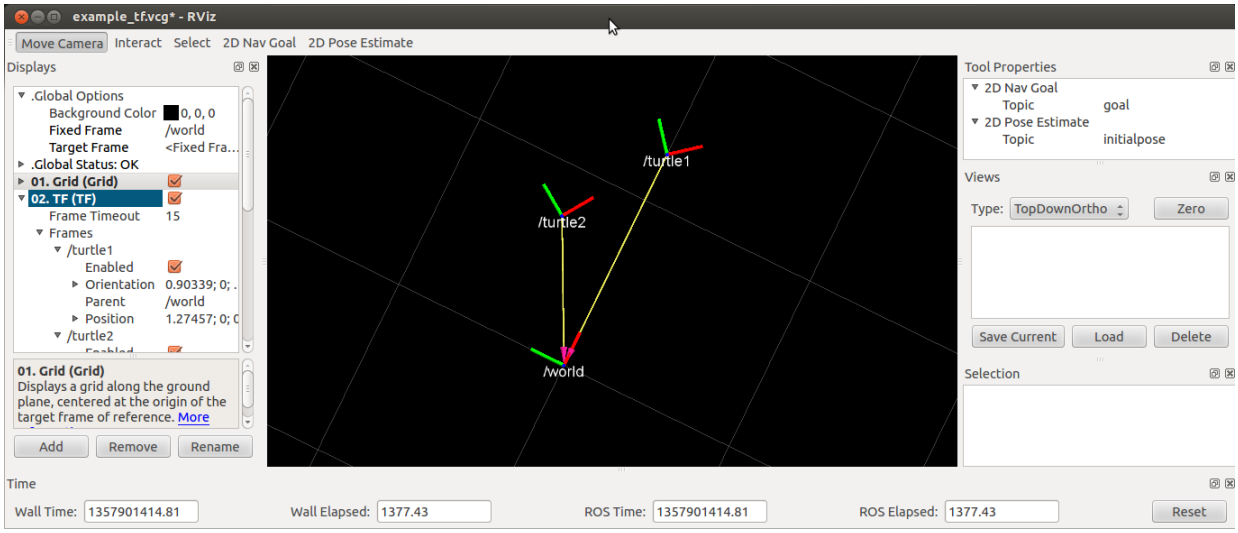
The rviz graphical interface



Setting the frame_id of the marker, that is frame_marker, in the fixed frame

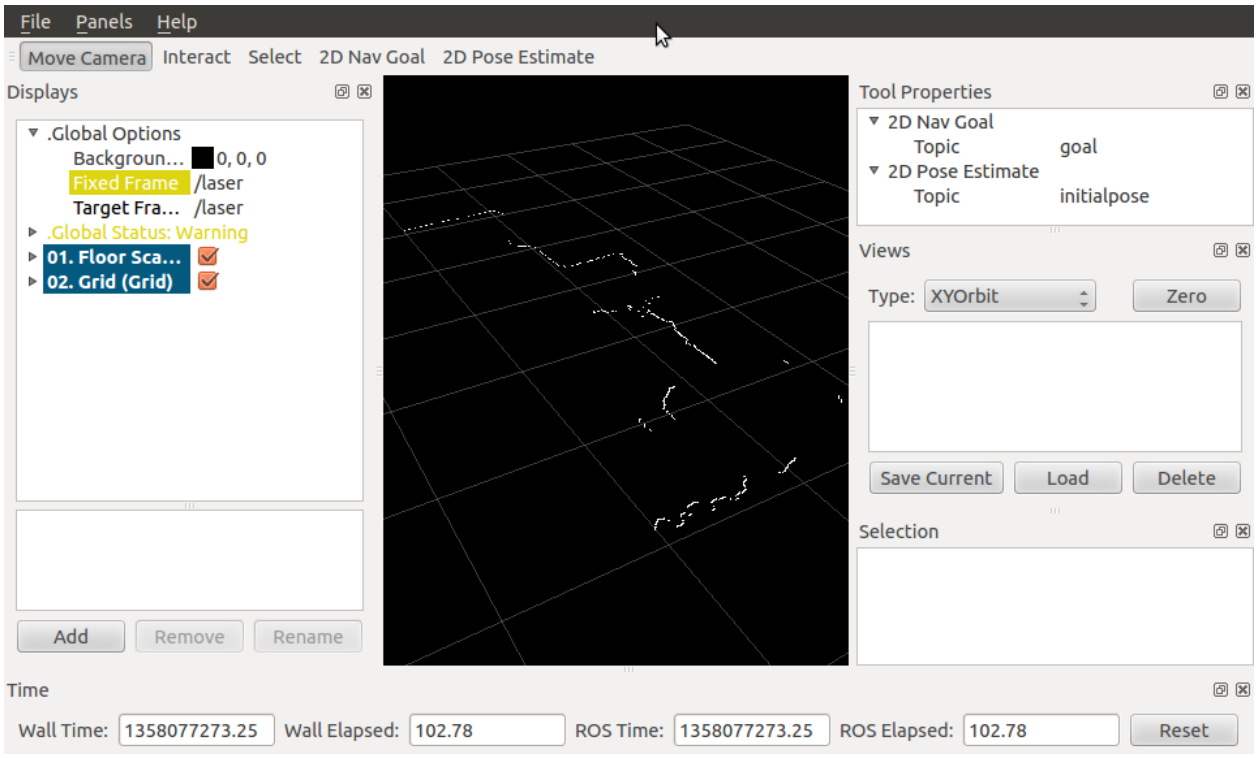


Setting the fixed frame to frame_pc

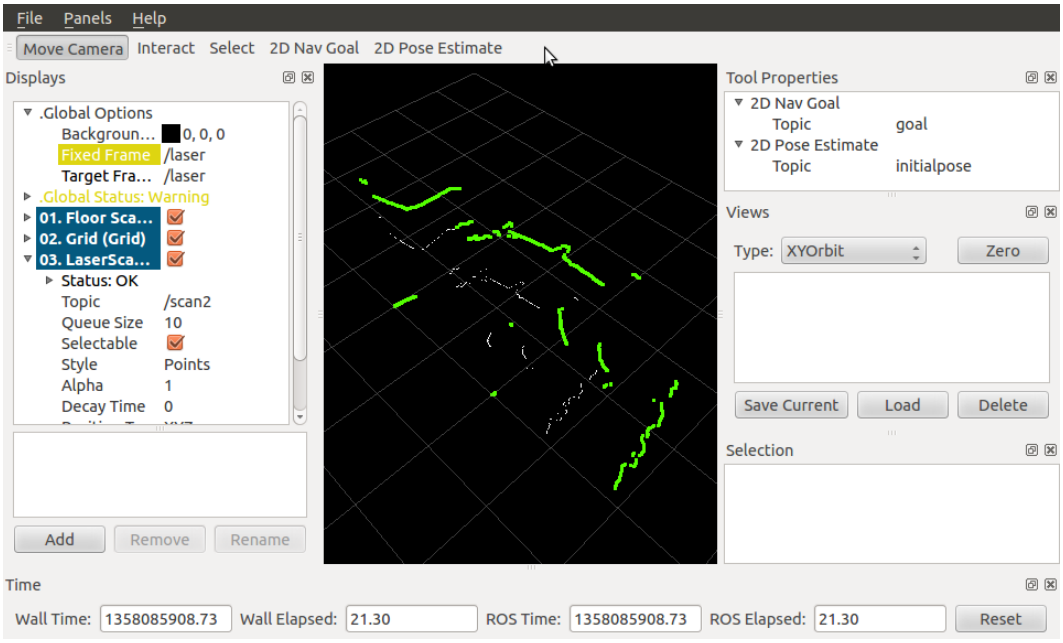


Two frames of each turtle are shown with respect to the /world frame

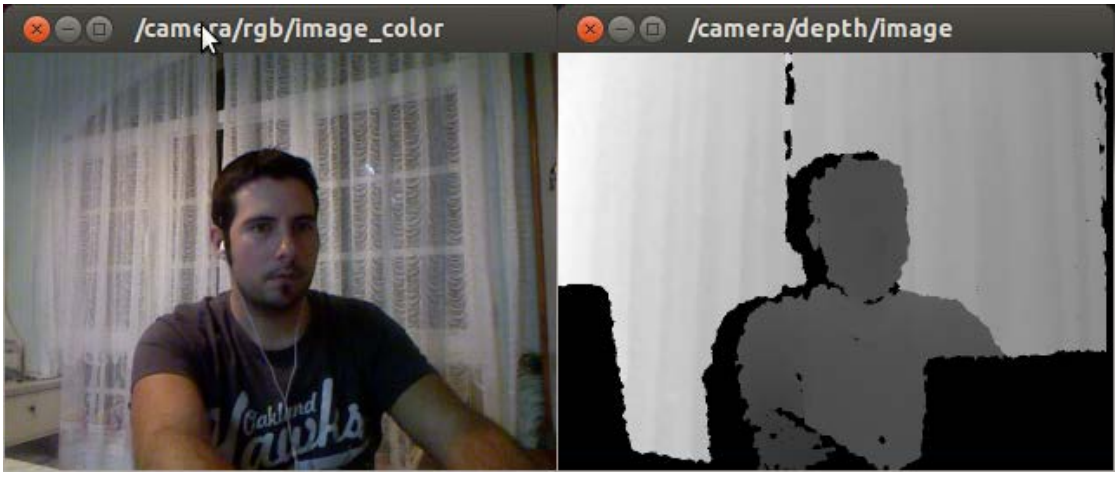
Chapter 4, Using Sensors and Actuators with ROS



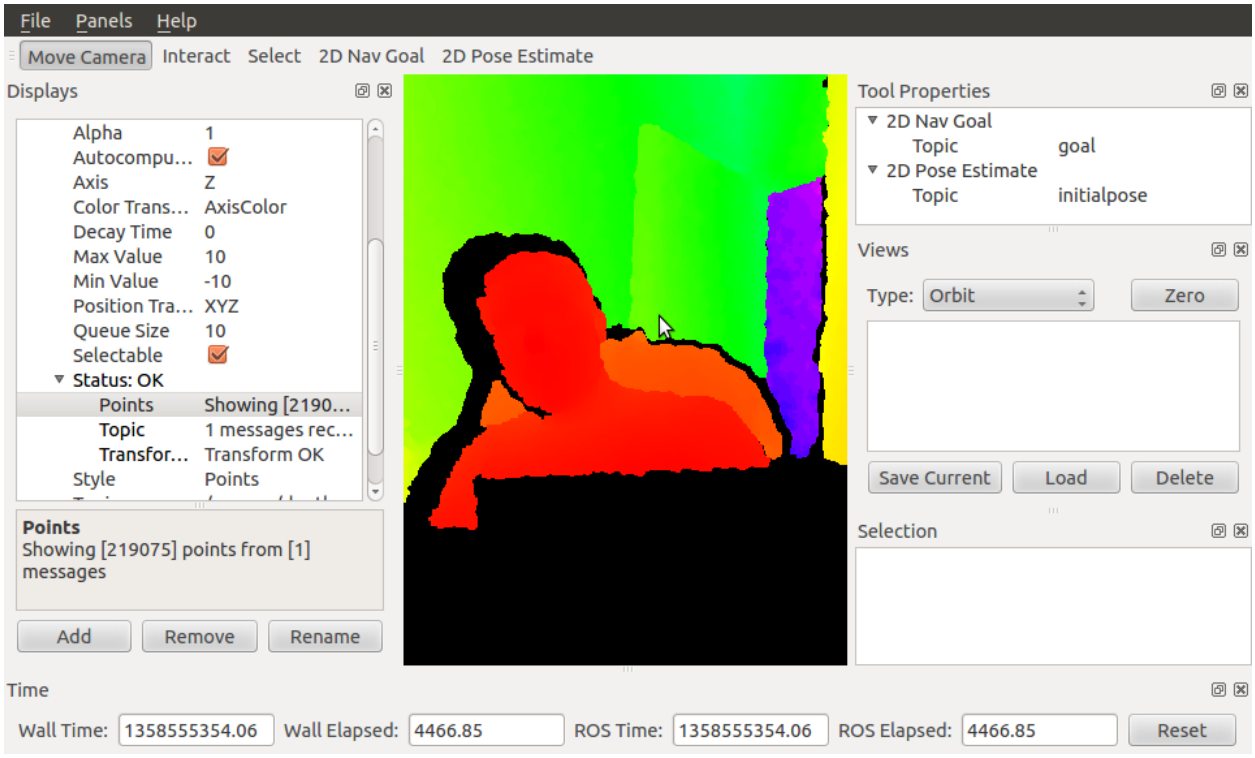
Laser sending in the data in ROS



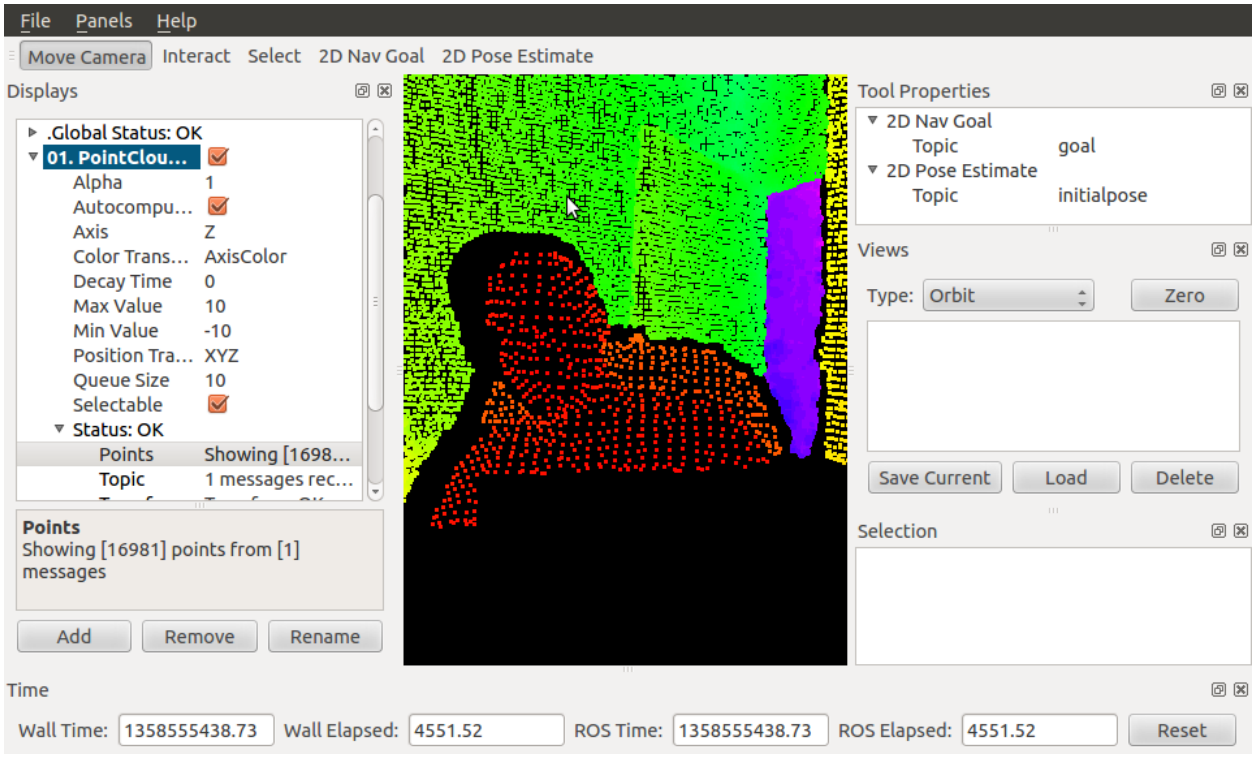
The rviz screen with the two-lasers contour. The green contour is the new data.



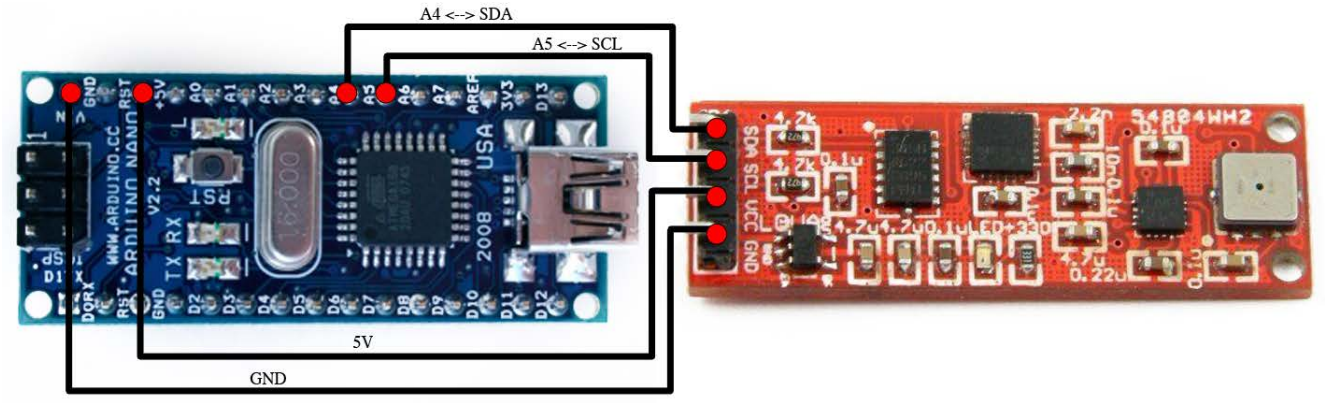
Using the depth sensor



Add a new PointCloud2 data visualization for 3D

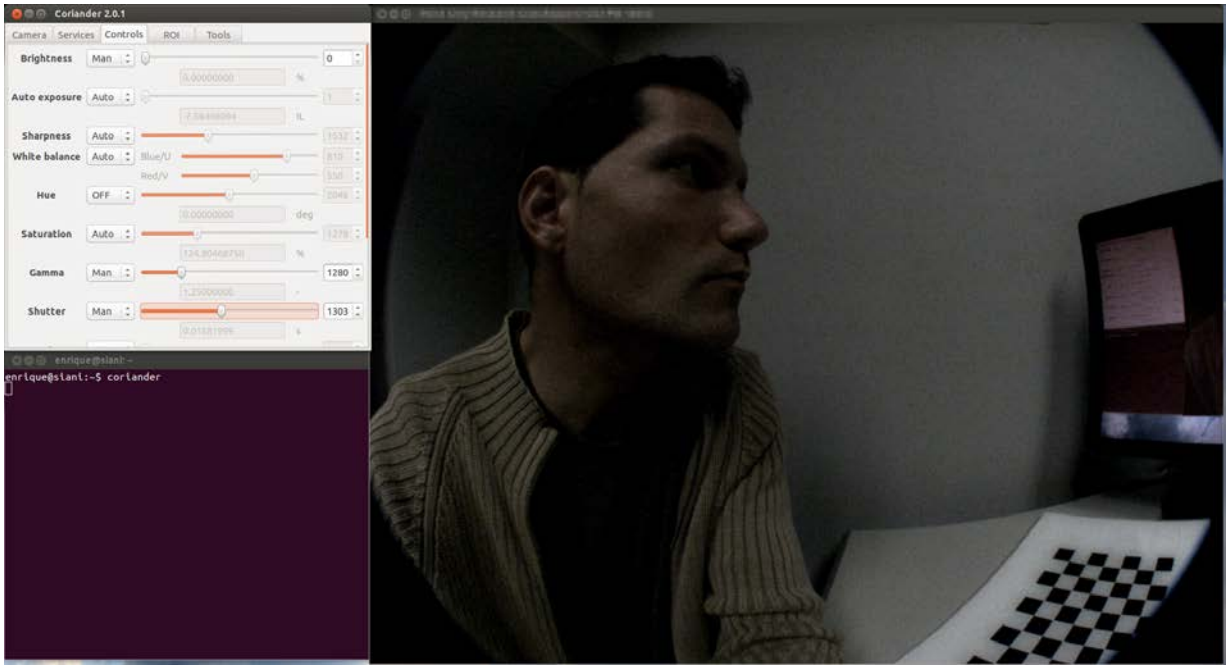


Resolution is less than the original data



Low-cost IMU – 10 degrees of freedom

Chapter 6, Computer Vision

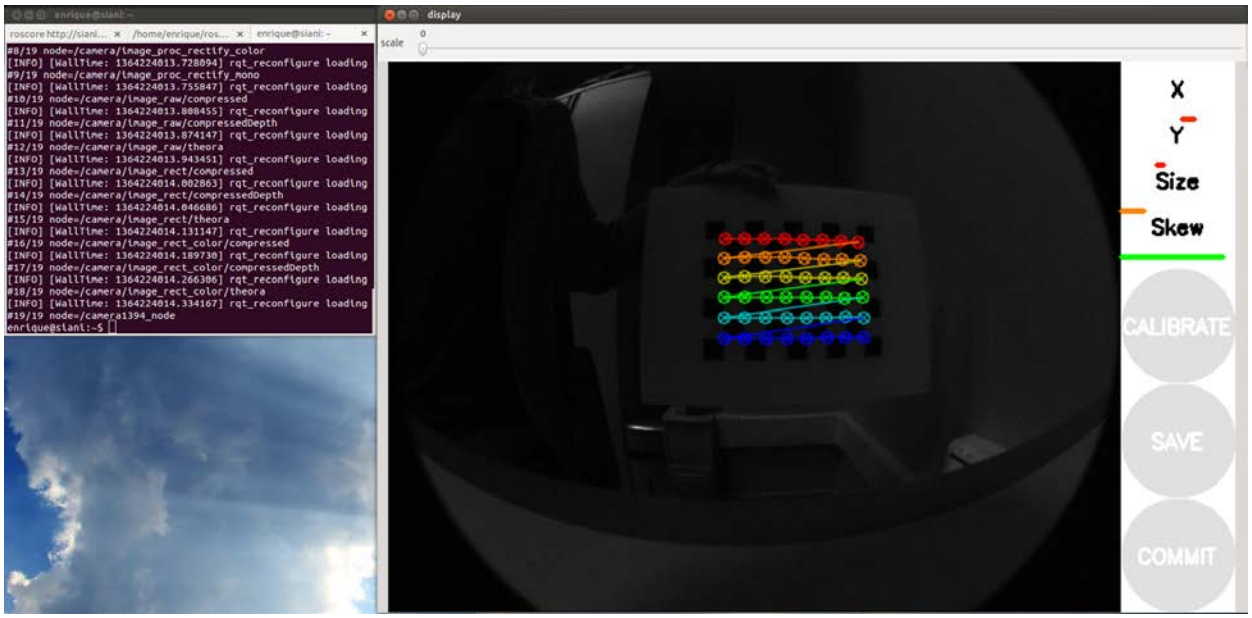


Configuration in Coriander

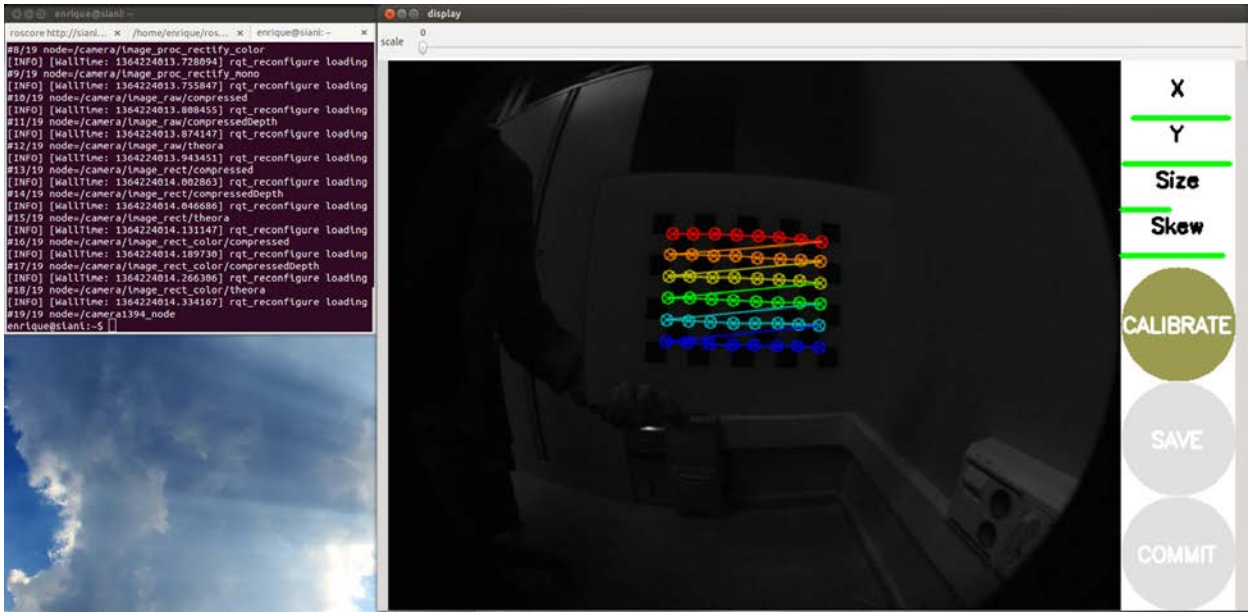
Configuration in Coriander with better exposure

RAW image of the USB camera, which is in color

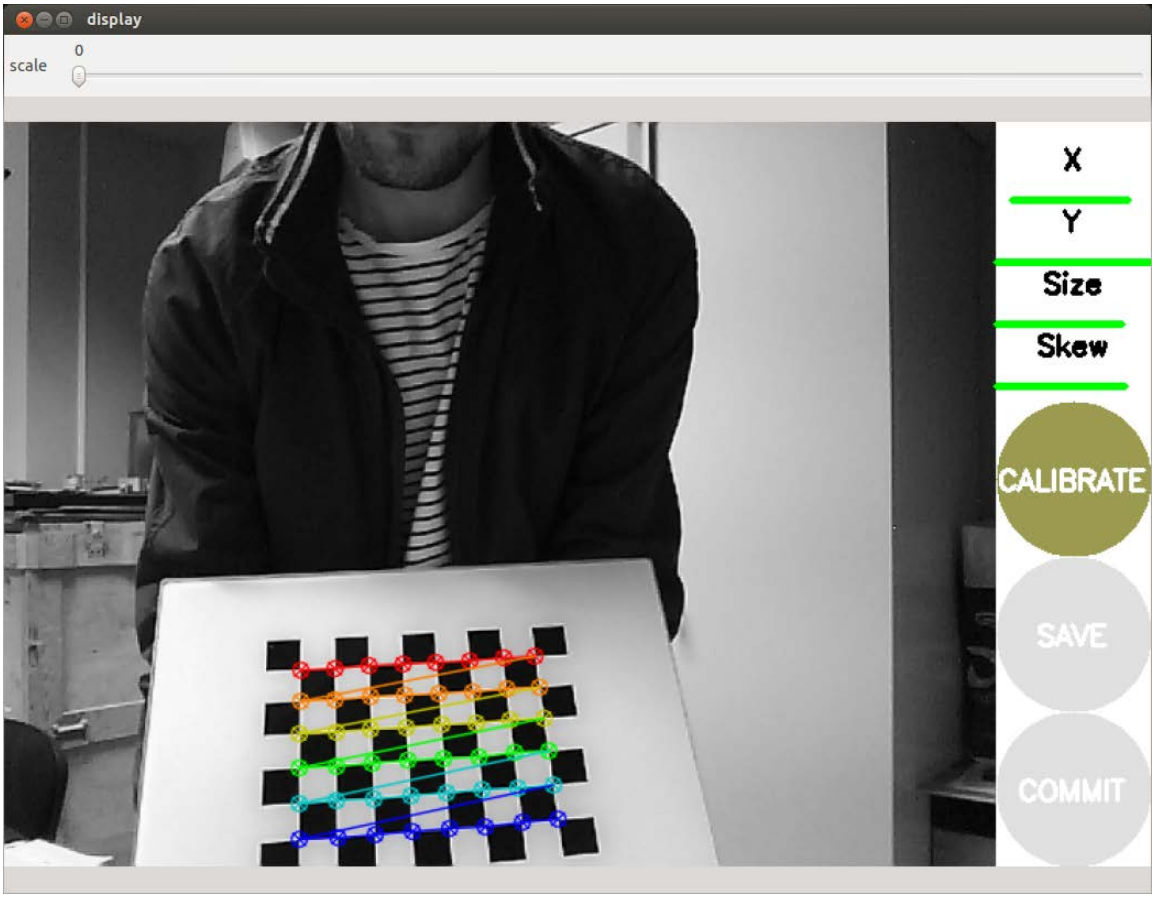
Visualization of the camera images with image_view



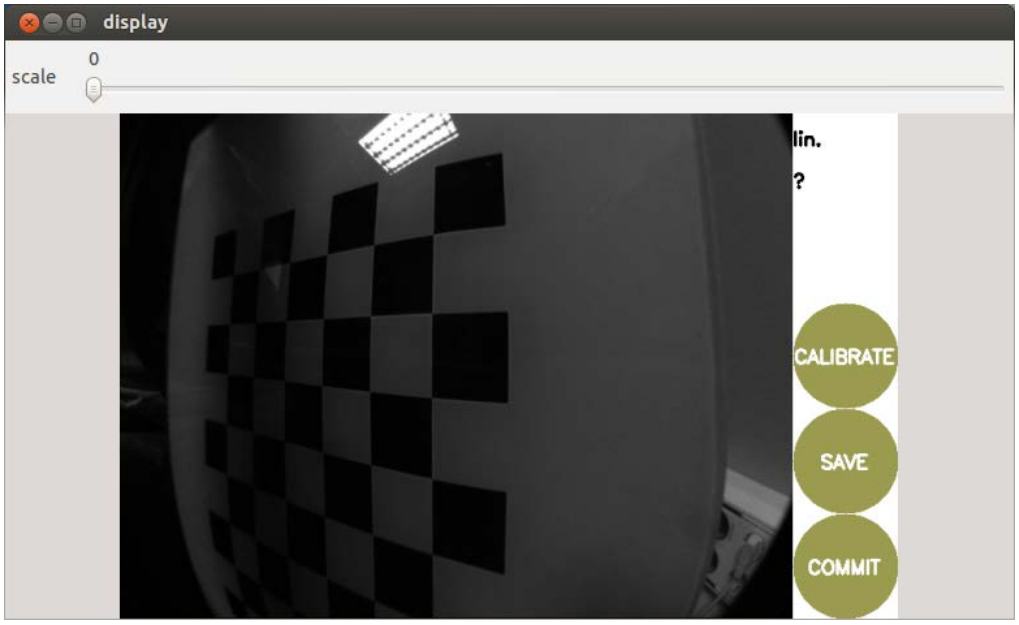
Calibrating the camera



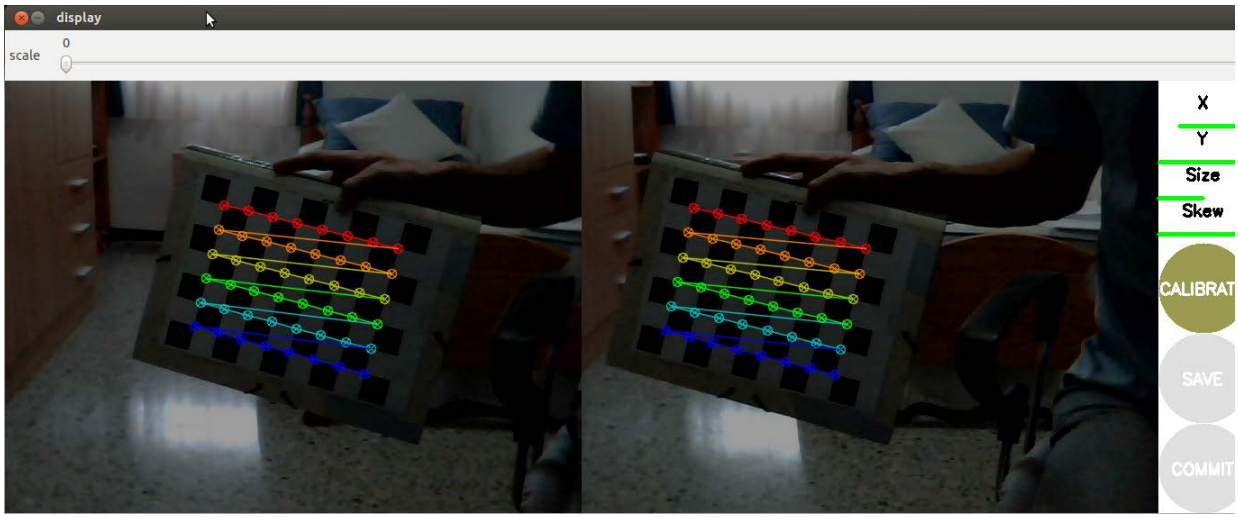
Calibrating the camera



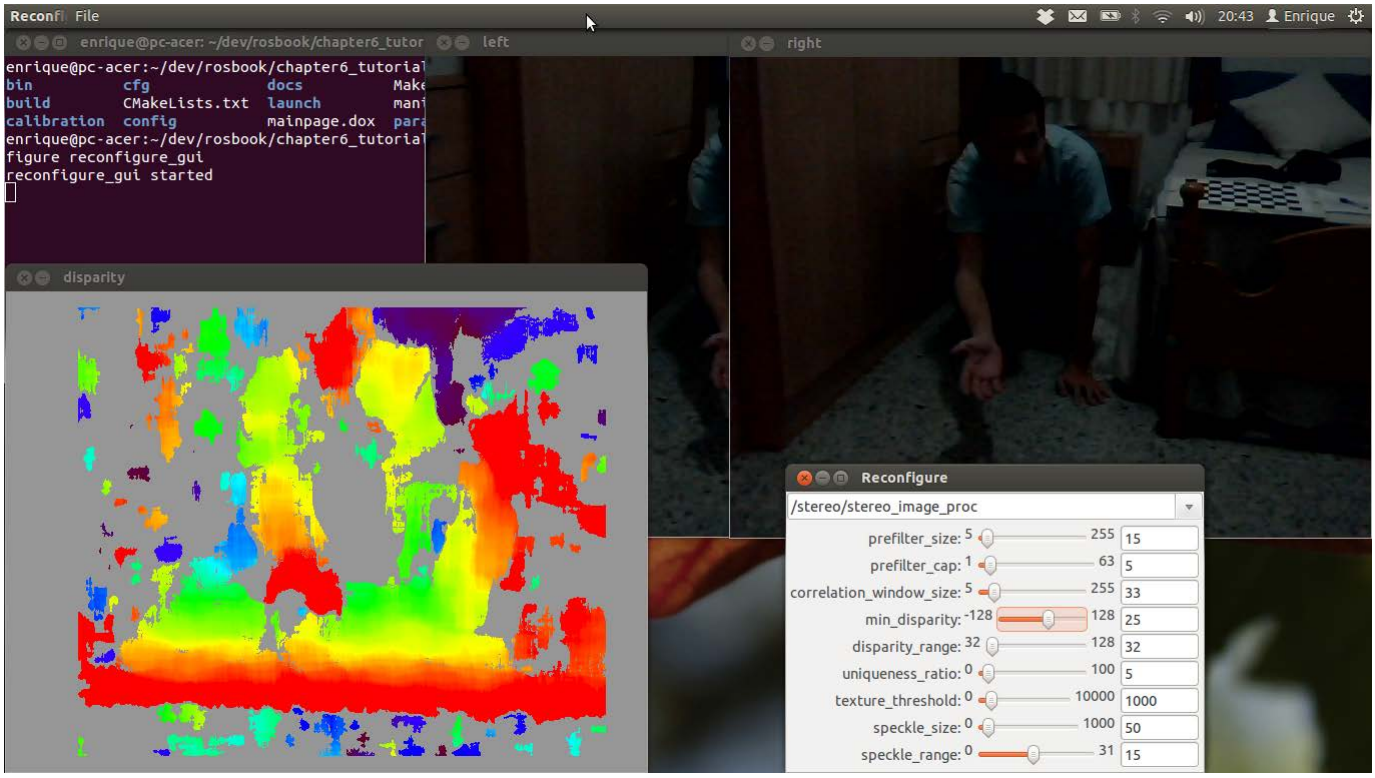
The calibration process in the GUI, identical to the one with FireWire cameras



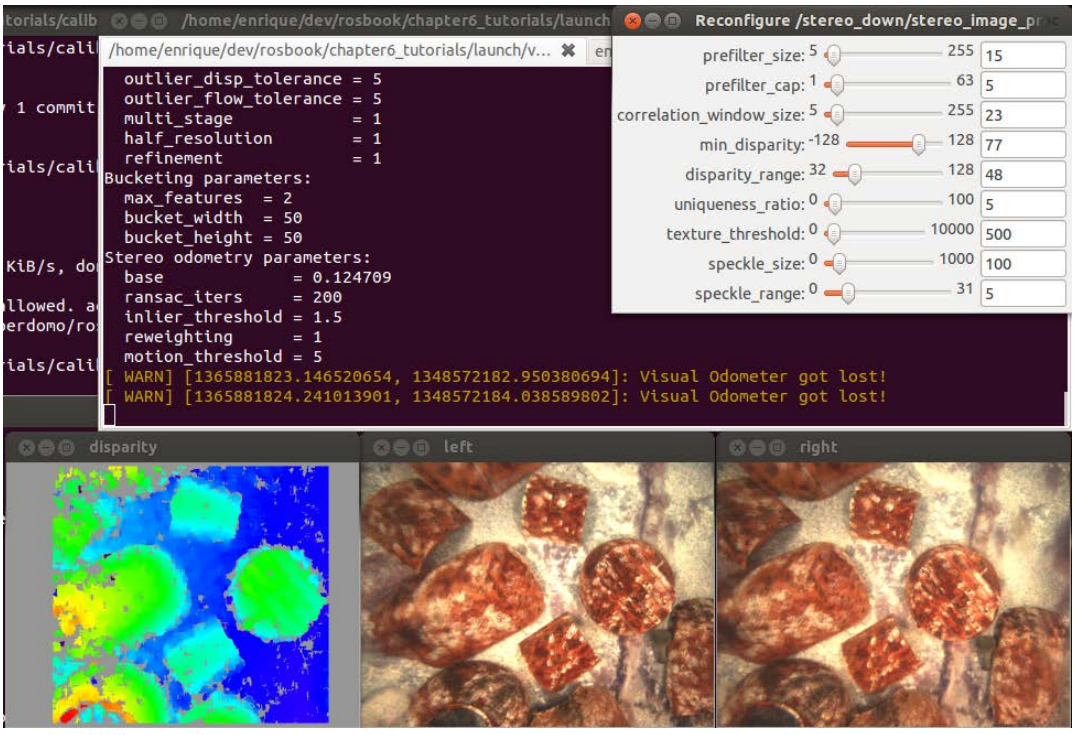
The end of the calibration process



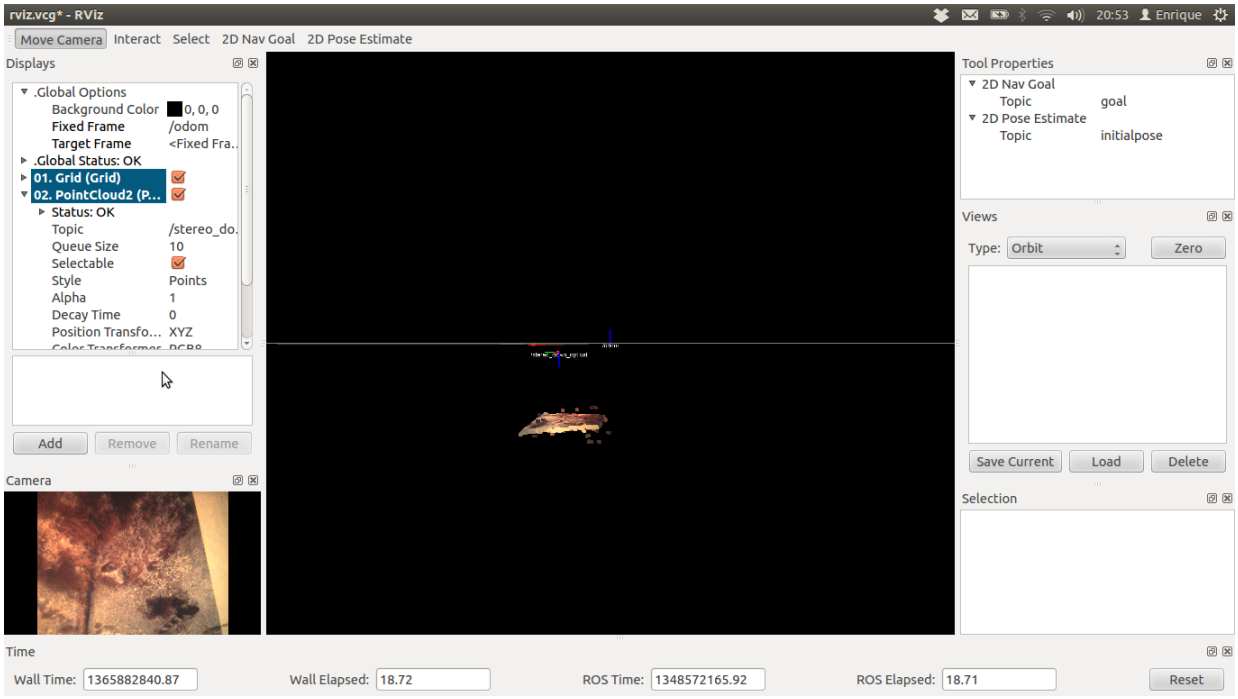
Stereo Calibration



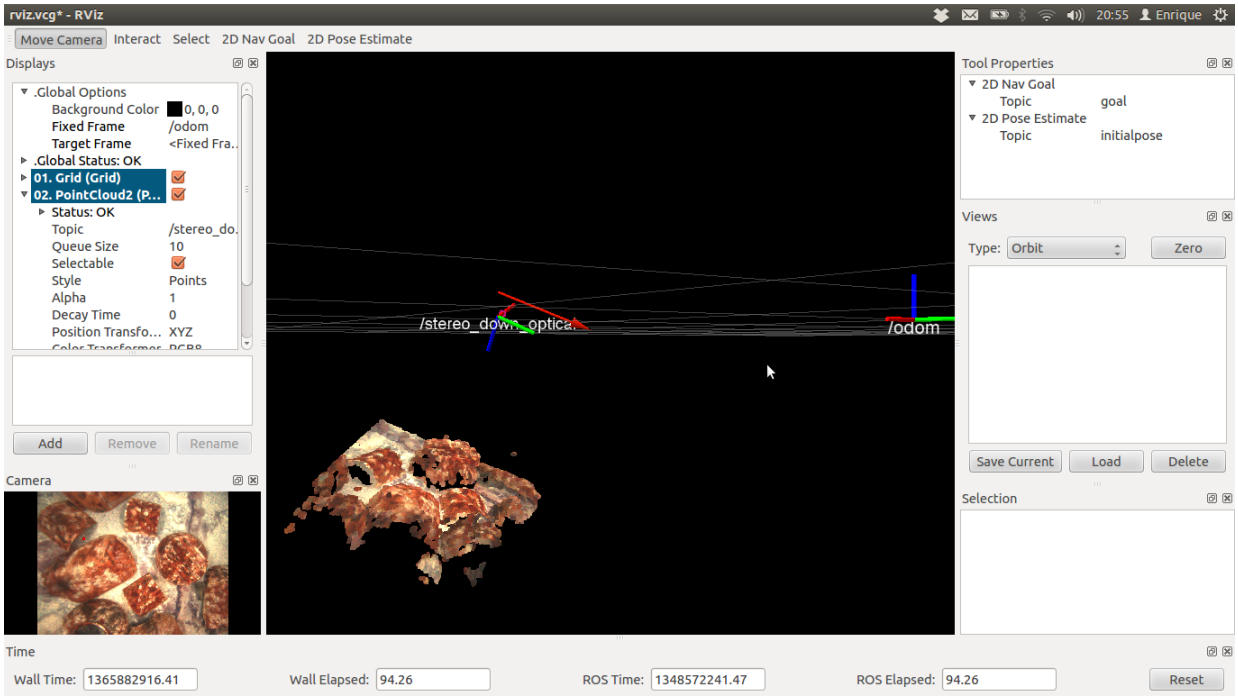
Using disparity parameters, which can be set with reconfigure_gui



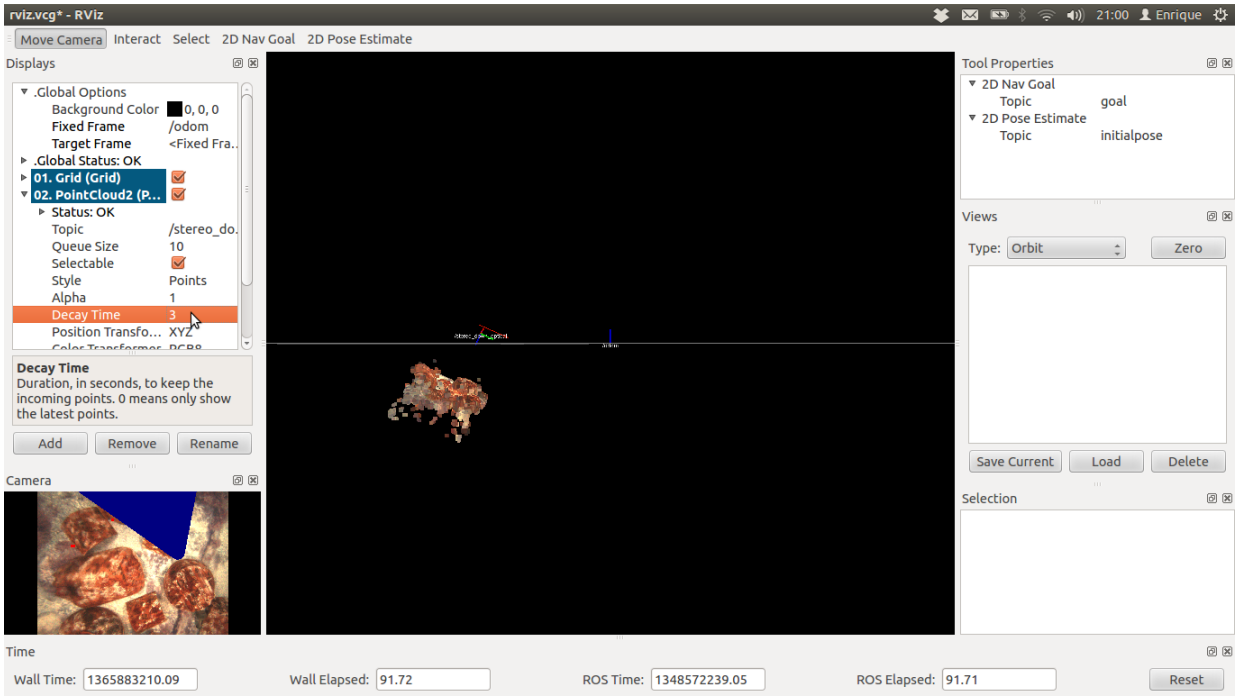
The left, right, and disparity images, and the reconfigure_gui interface used to configure the disparity algorithm



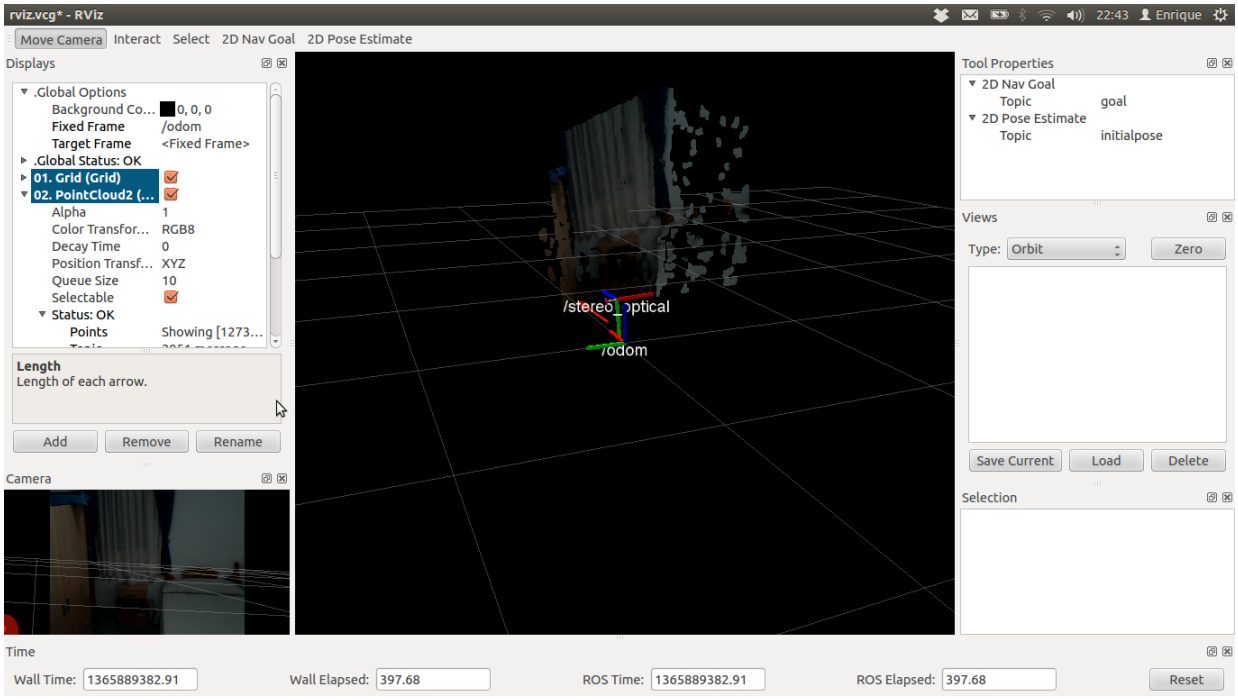
A map drawn in rviz



A closer view

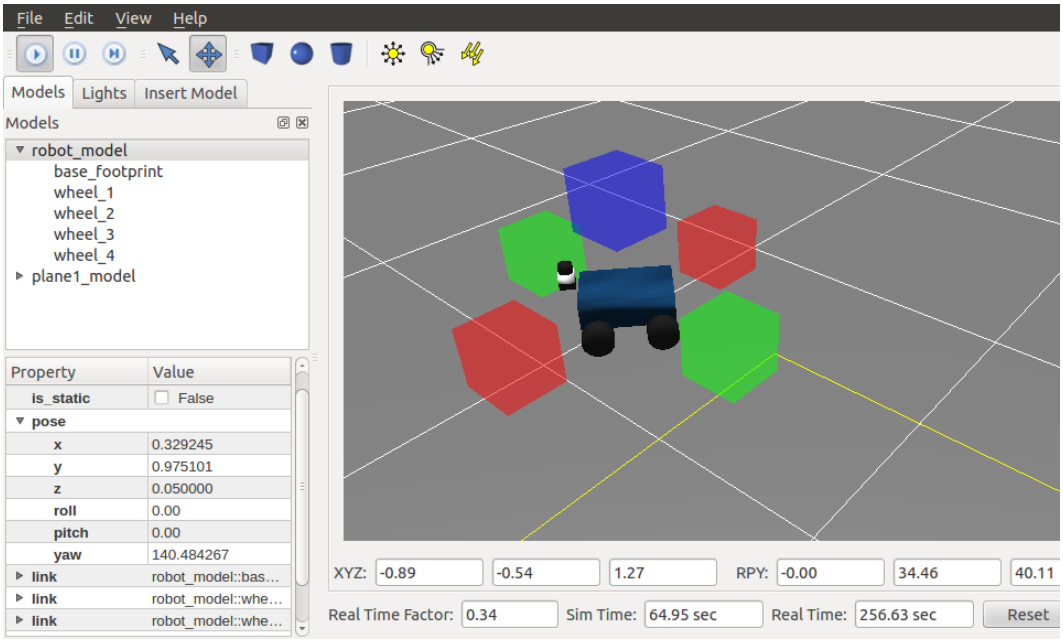


3D reconstruction using the visual odometry

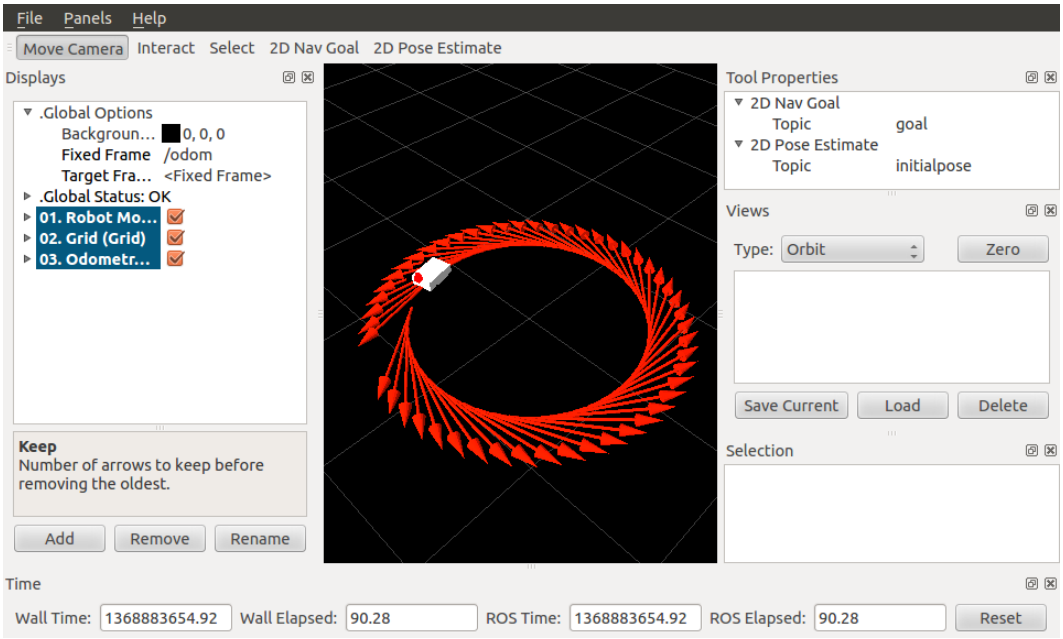


A visual odometry system running for our low-cost stereo camera

Chapter 7, Navigation Stack – Robot Setups

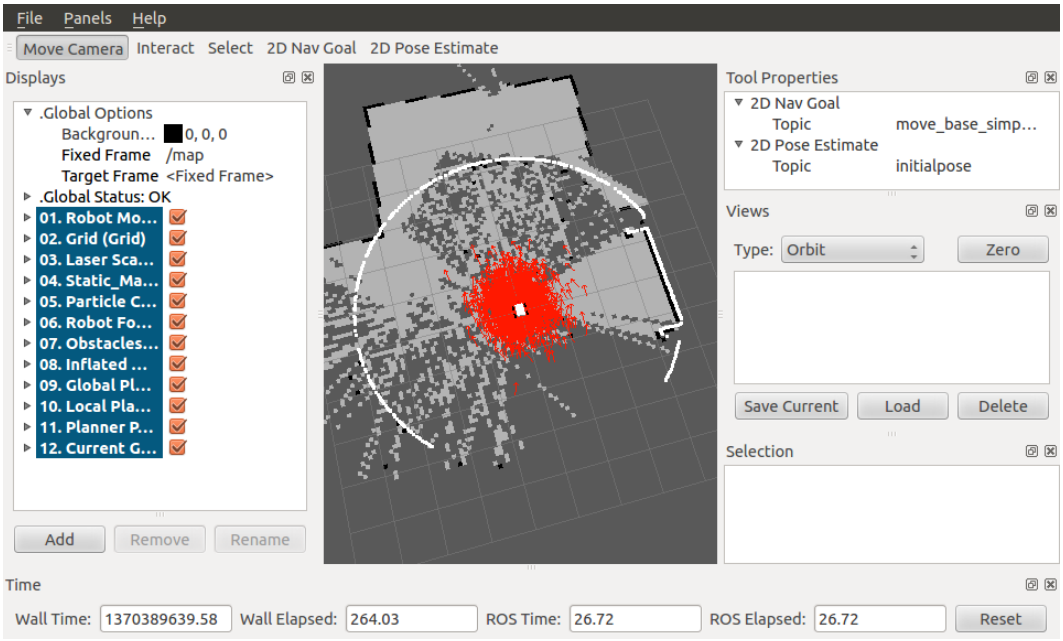


The Gazebo simulator showing robot properties and data

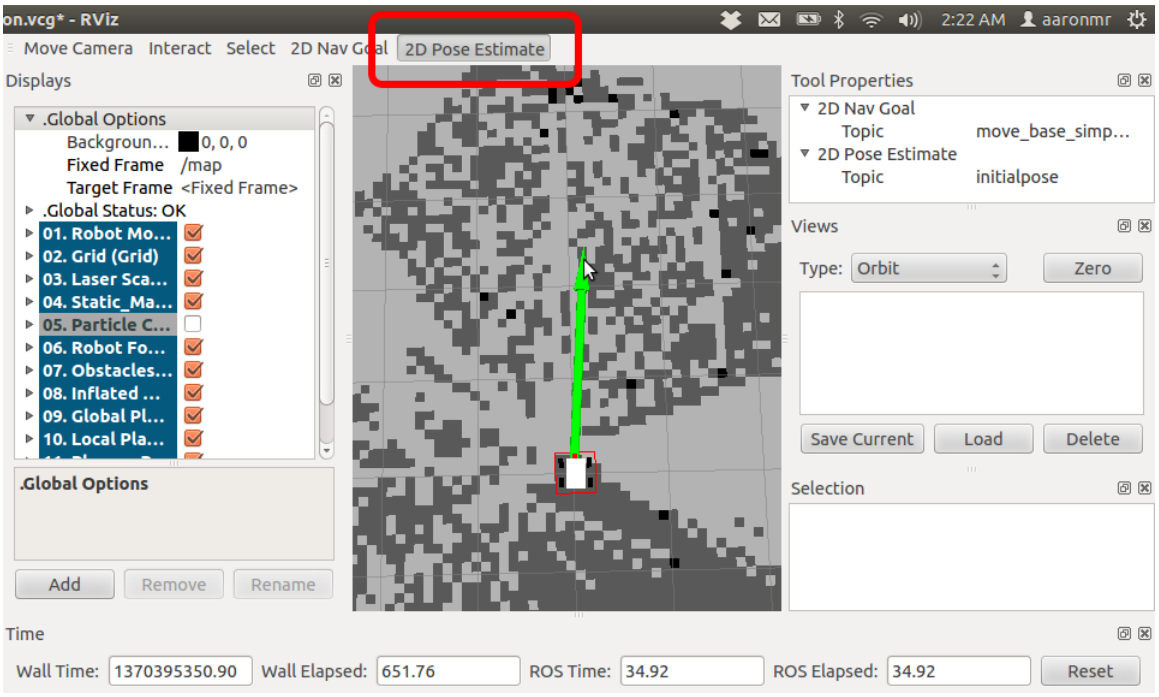


The robot moving over red arrows (grid) as you published a new tf frame transform

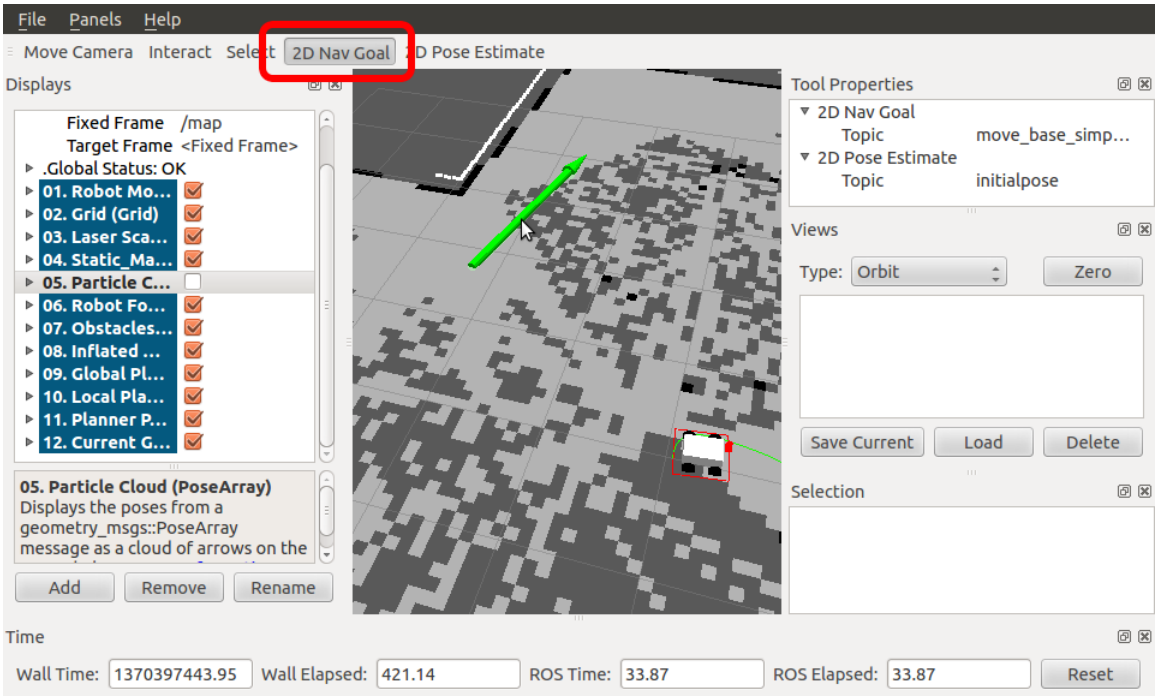
Chapter 8, Navigation Stack – Beyond Setups



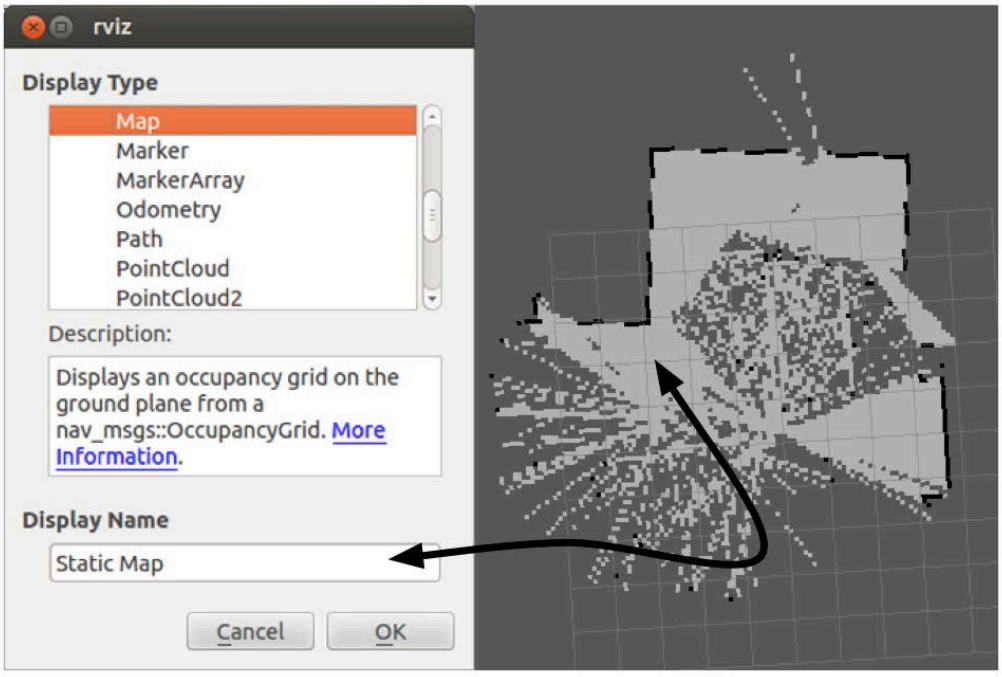
$ roslaunch chapter8_tutorials move_base.launch



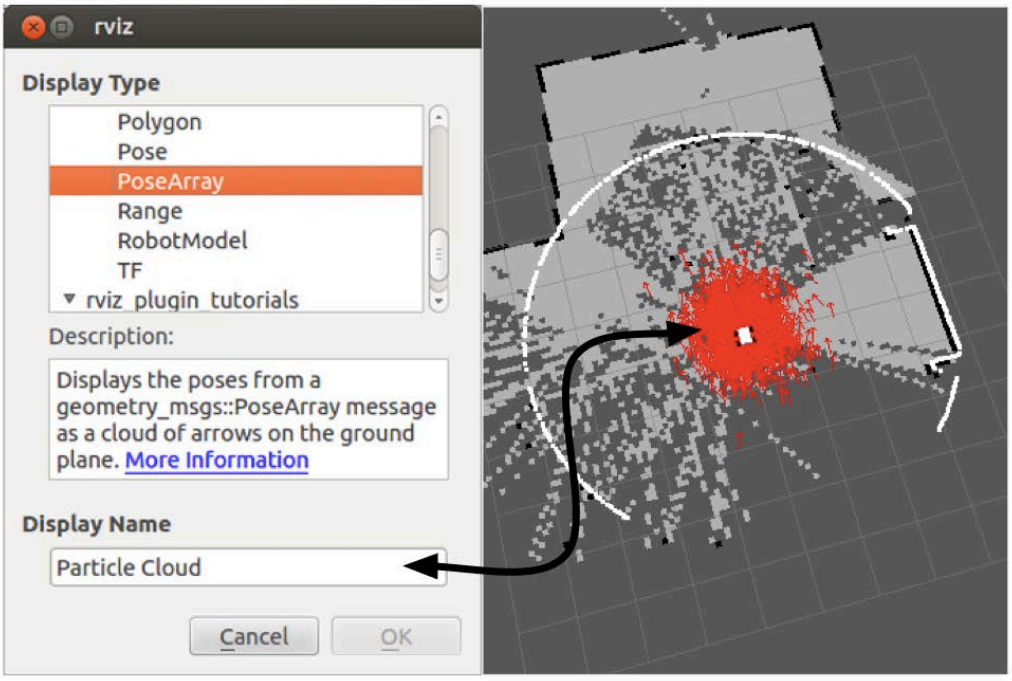
Use of initialpose



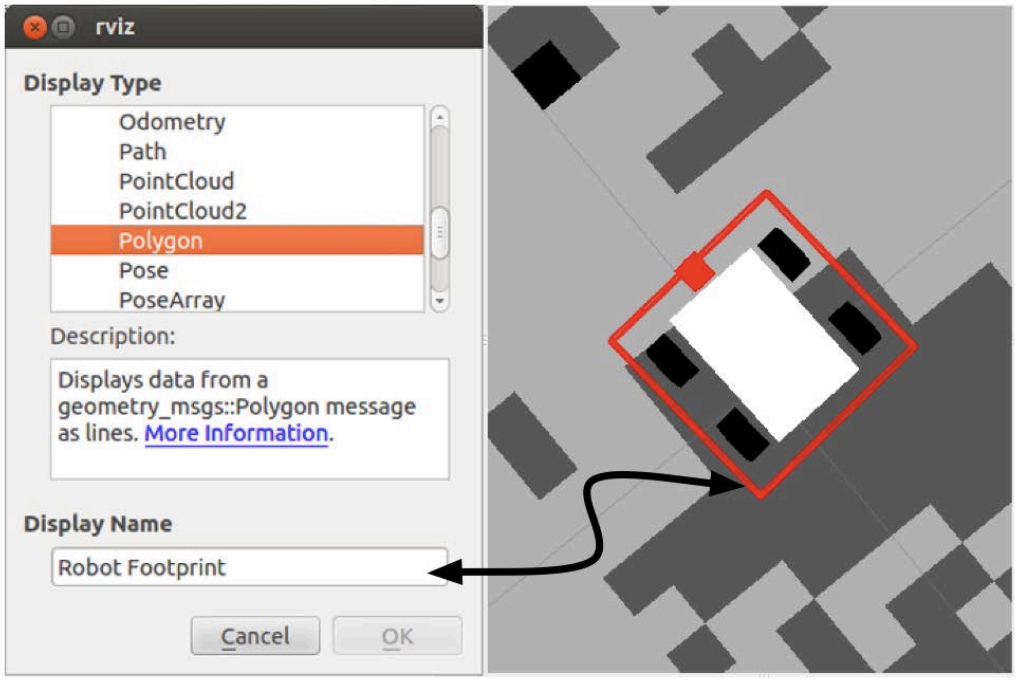
Use of /move_base_simple/goal



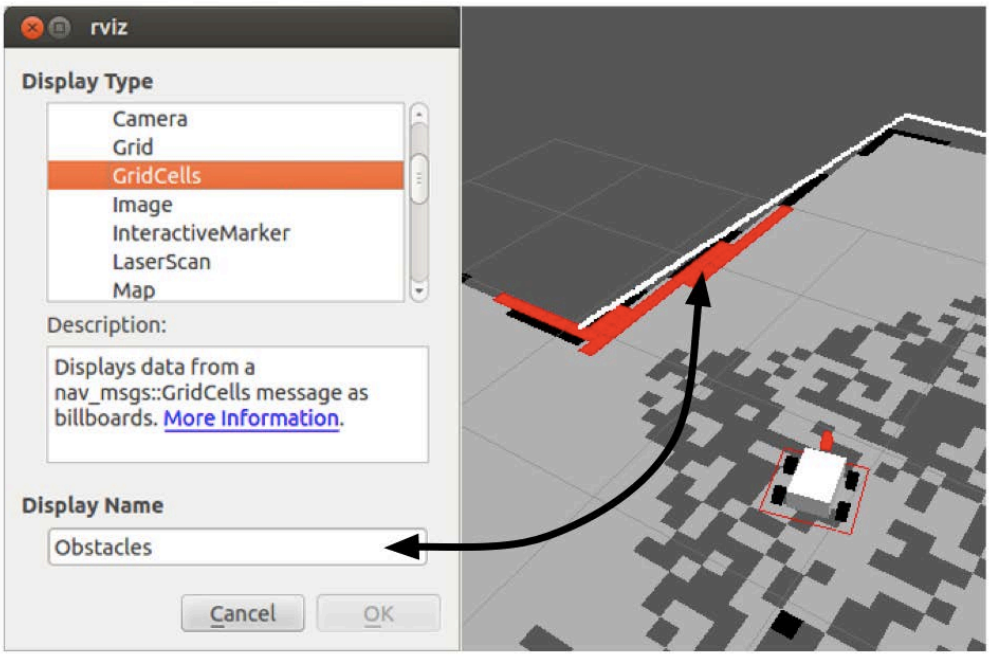
A static map



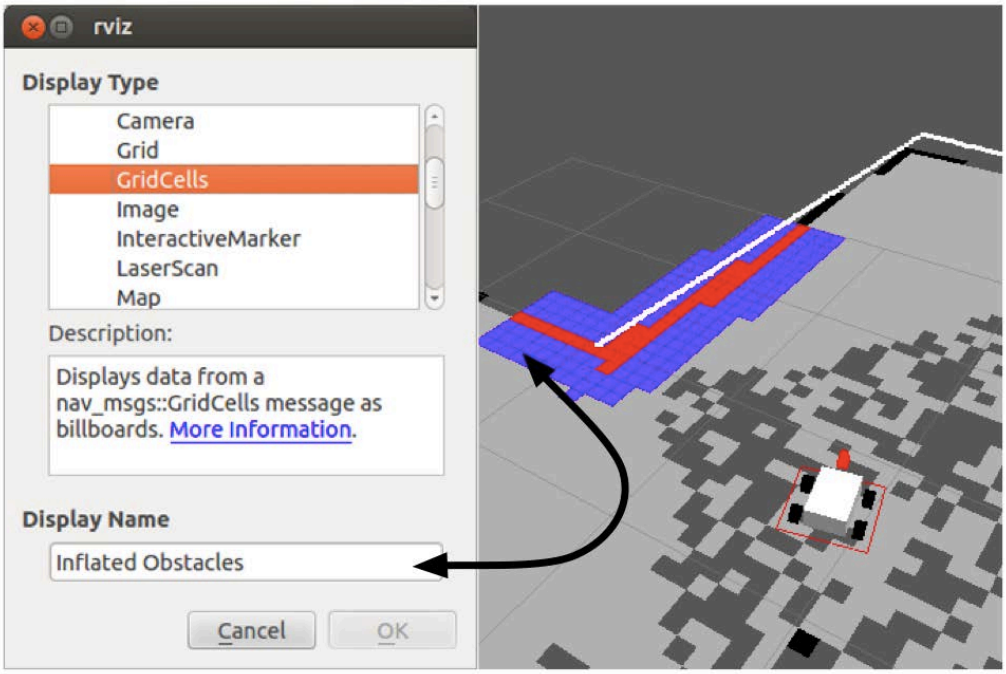
A particle cloud



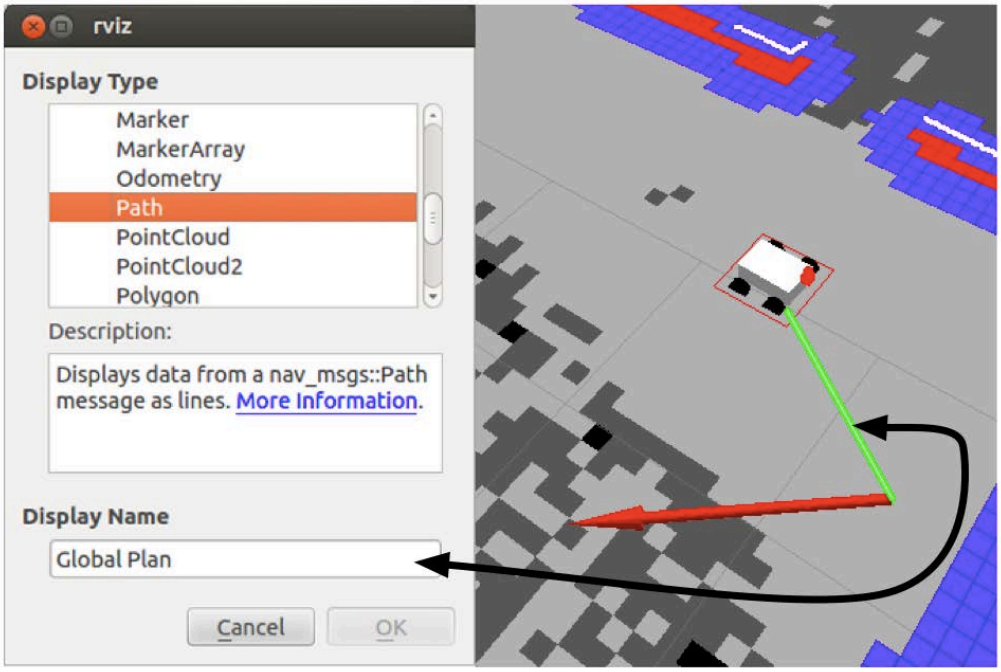
Robot footprint



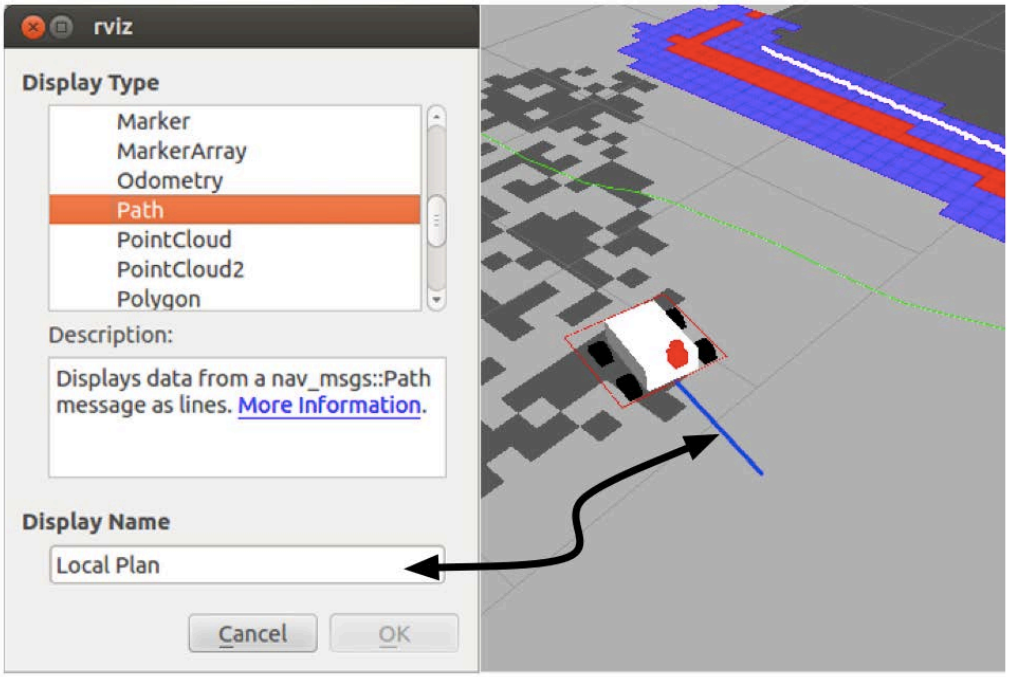
Obstacles



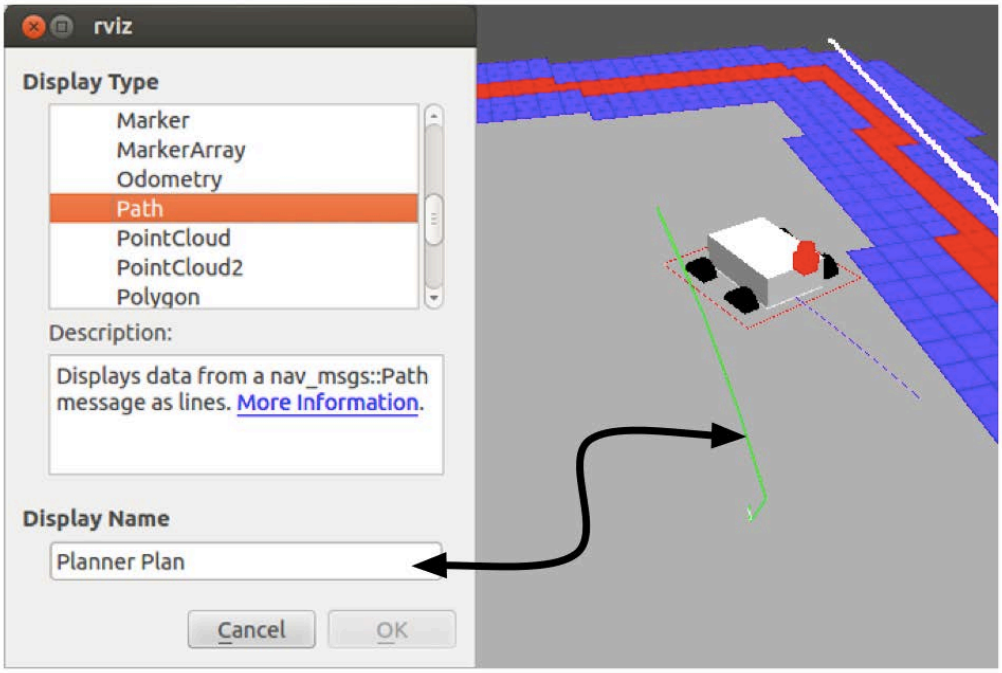
Inflated obstacles



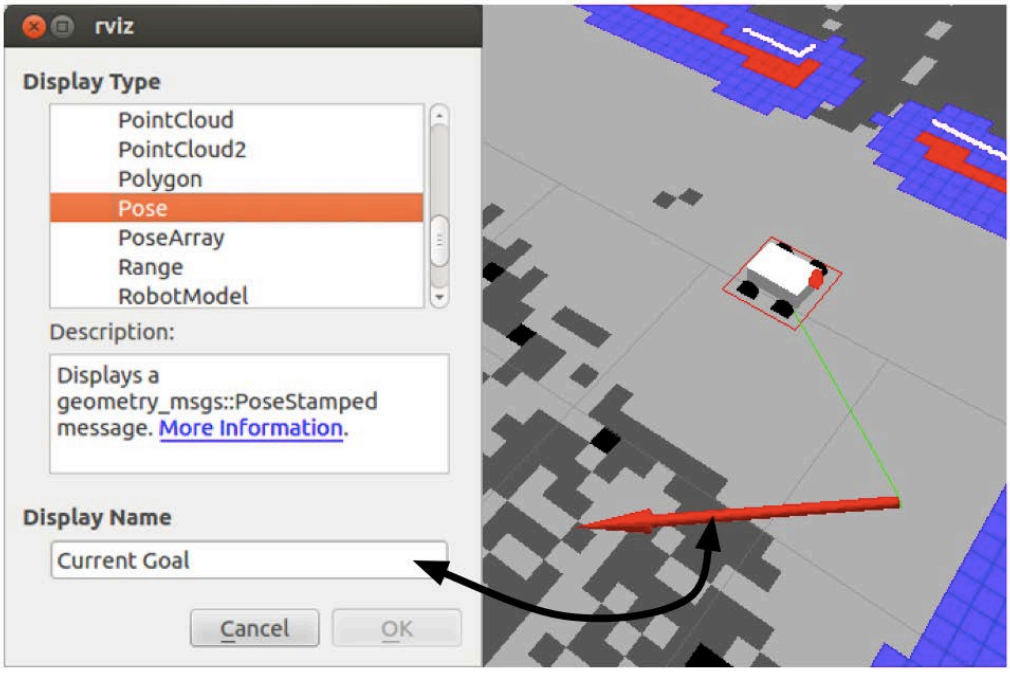
Global Plan



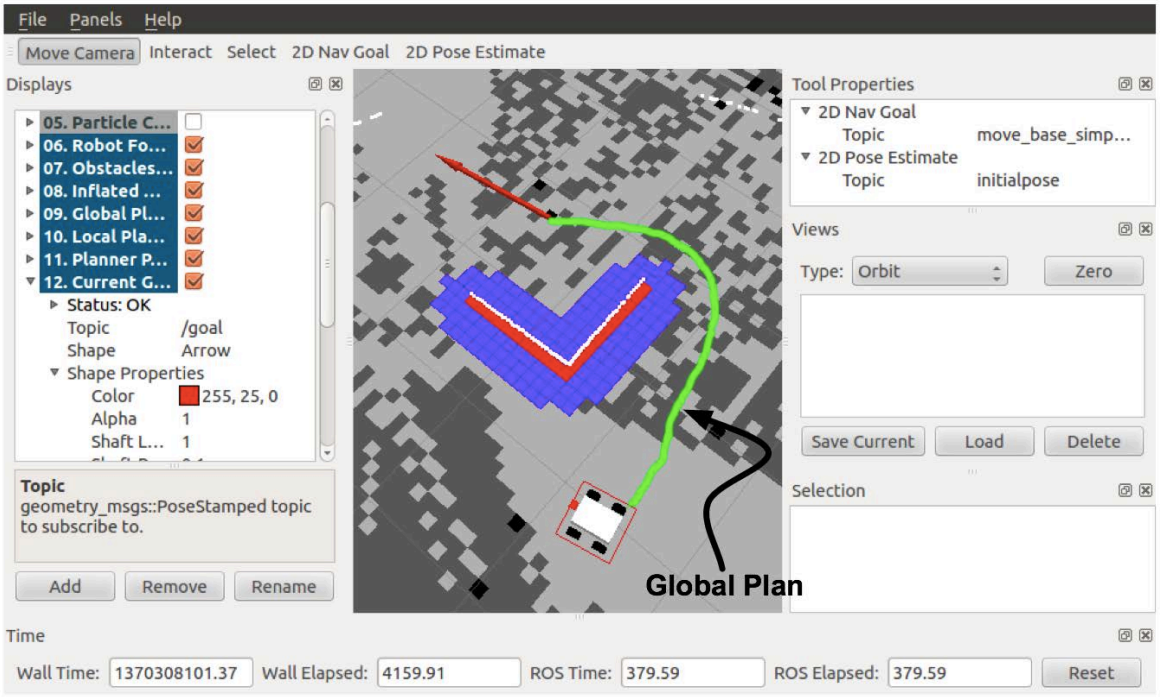
Local Plan



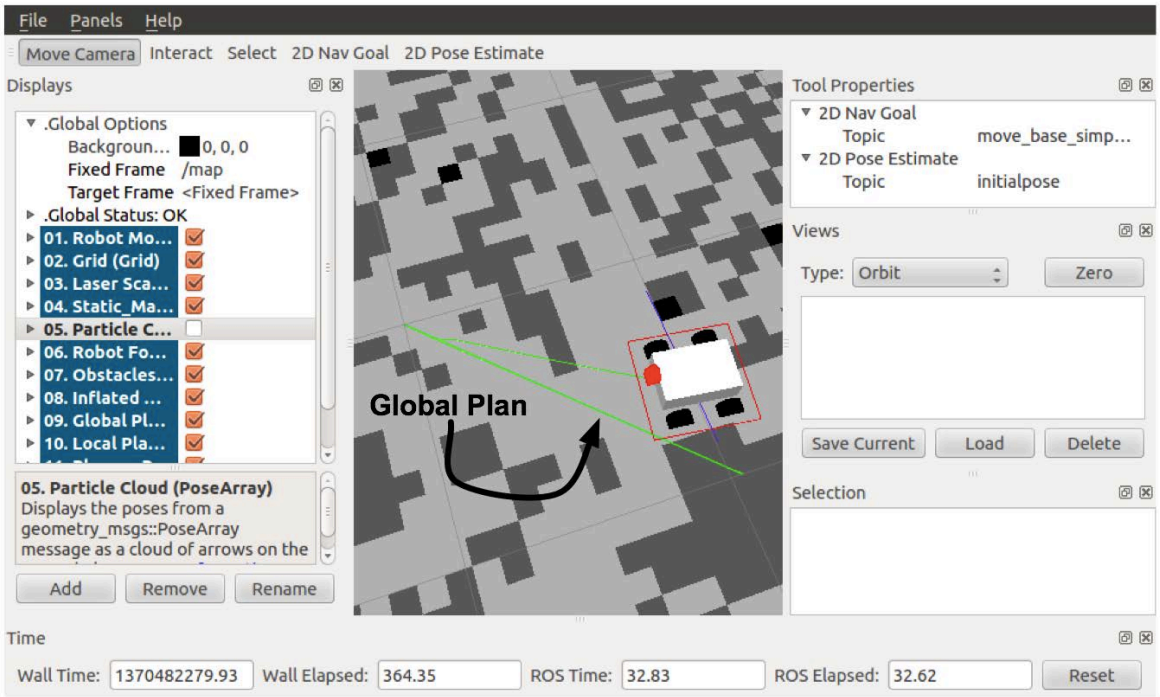
Planner Plan



Current Goal

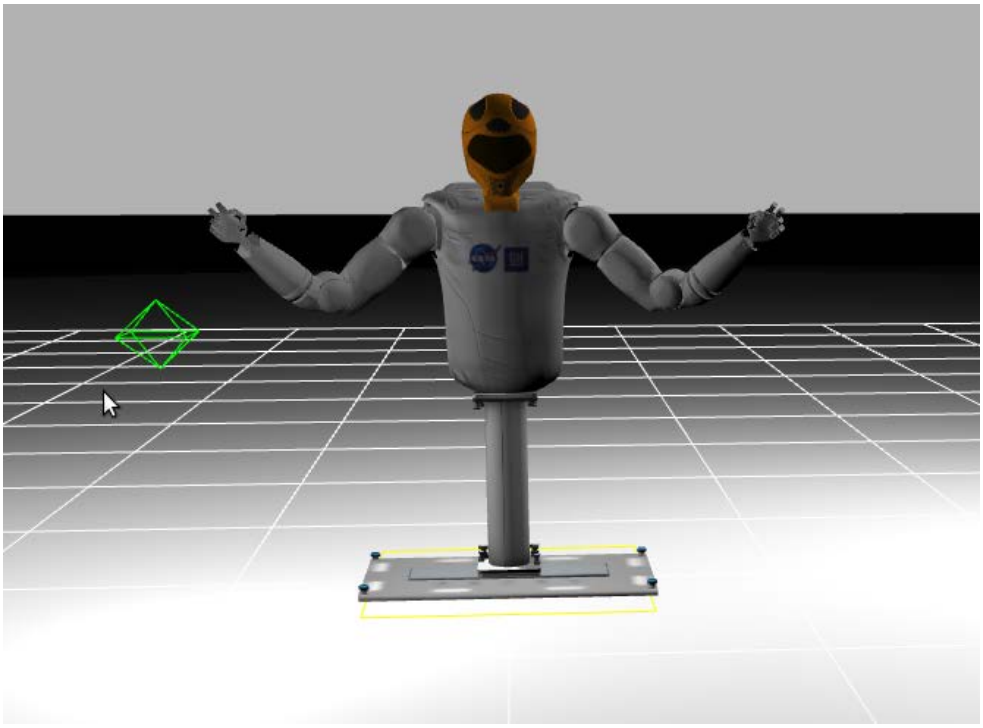


Avoiding obstacles

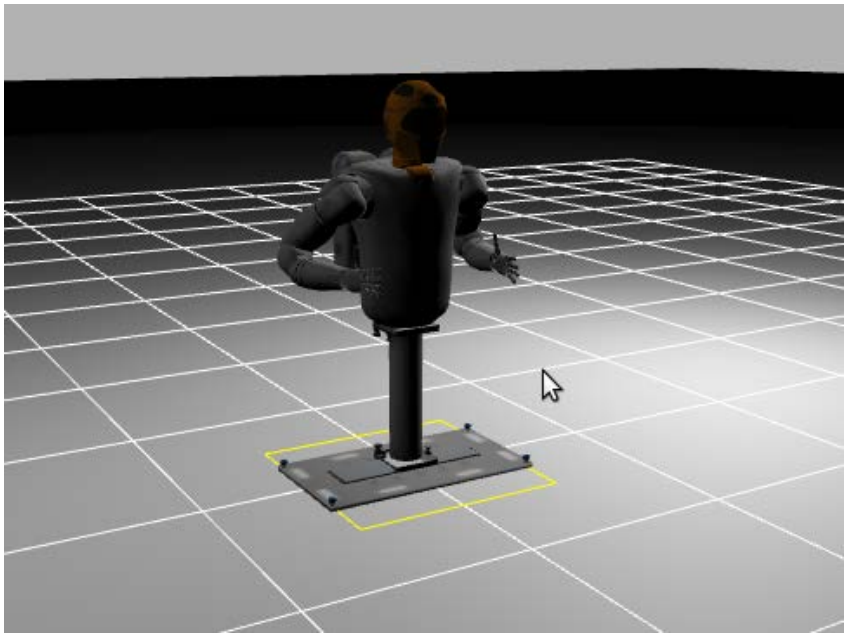


Sending Goals

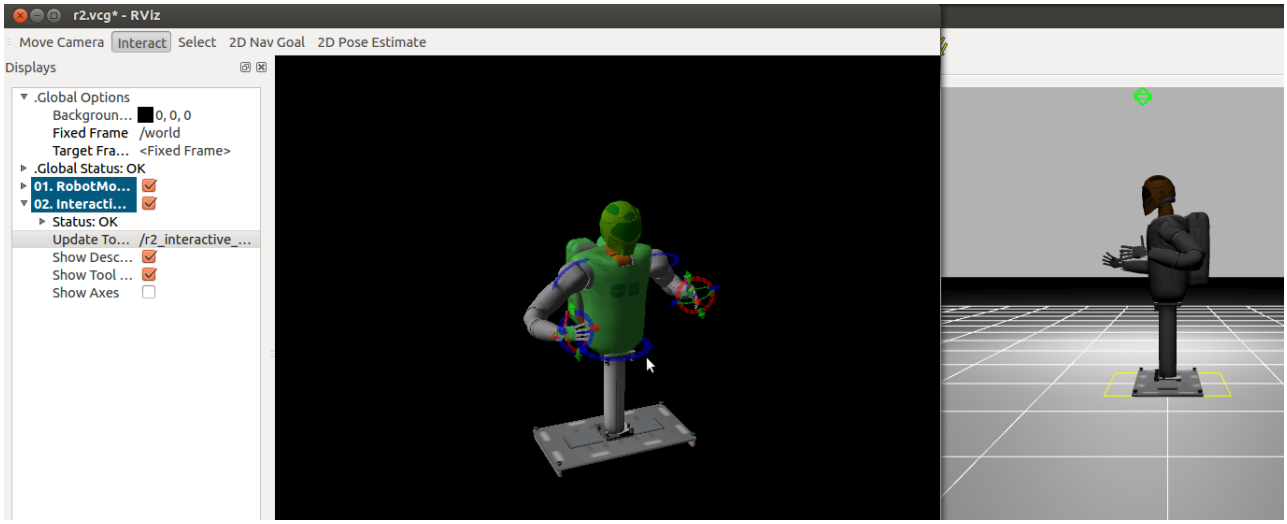
Chapter 9, Combining Everything – Learn by Doing



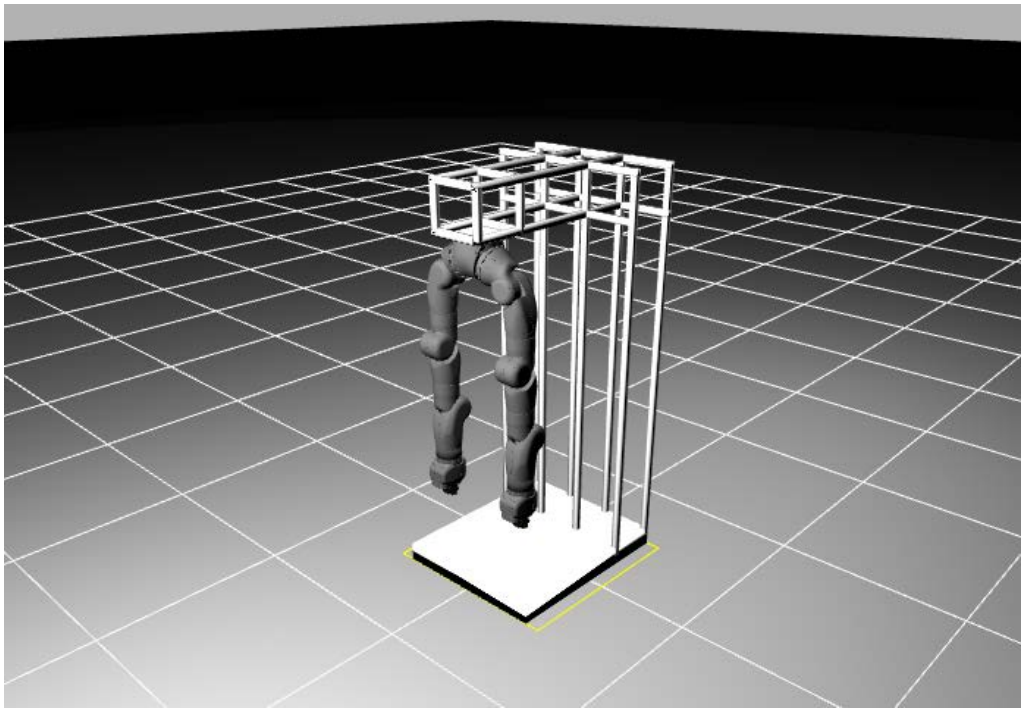
The R2 in the Gazebo empty world



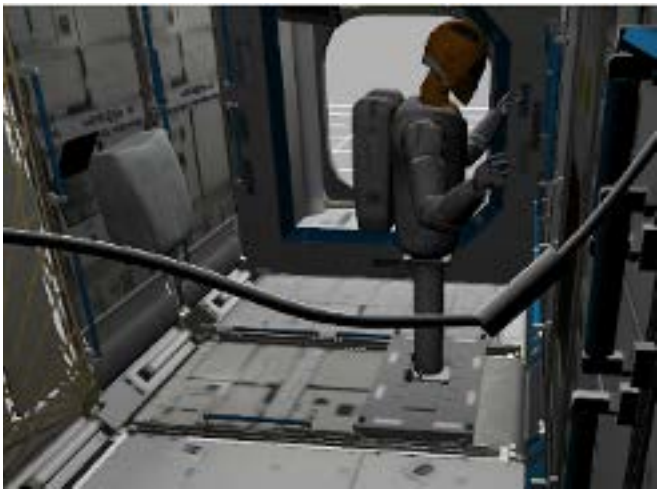
Controlling the R2 arms



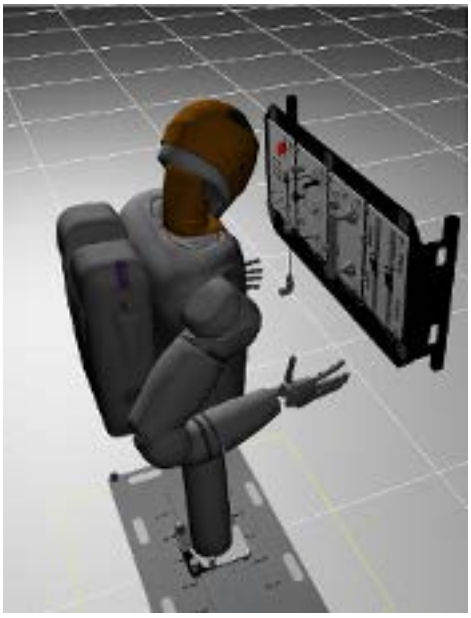
Controlling the robot easily with interactive markers



The R2 IVA climbing legs of a real Robonaut model



The R2 on the pedestal inside of the ISS world loaded in Gazebo



The R2 with the Task Board