ROS-I Basic Training "Mobility"
Youbot Simulation

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Contents

1 Introduction

This tutorial is supposed to setup the Youbot simulation used in this training.

- Lines beginning with $ are terminal commands
- Lines beginning with # indicate the syntax of the commands
- The symbol ↪ represents a line break.

2 Checkout the simulation

In order to get the simulation for the Youbot running perform the following tasks:

1. Clone the required repositories:

```
$ cd <your_workspace>/src
$ git clone https://github.com/nlimpert/youbot_simulation.git
$ git clone https://github.com/nlimpert/youbot_description.
  ↪ git
```

2. Make sure that dependencies are satisfied:

```
$ sudo apt install ros-indigo-controller-manager
$ rosdep install youbot_simulation
$ rosdep install youbot_description
```

3 Create a "bringup" package

You should create a bringup package to summarize different launchfiles into one package:

```
$ cd <your_ws>/src
$ catkin_create_pkg youbot_bringup
```

Create a launchfile called youbot.launch in the folder youbot_bringup/launch that looks like the following:

```
<?xml version="1.0"?>
<launch>

  <include file="$(find youbot_gazebo_robot)/launch/youbot.launch
    ↪ " />
  <node pkg="rviz" type="rviz" name="rviz" />

</launch>
```

4 Startup the simulation

```
$ roslaunch youbot_bringup youbot.launch
```

You should see a screen similar to figure 1.

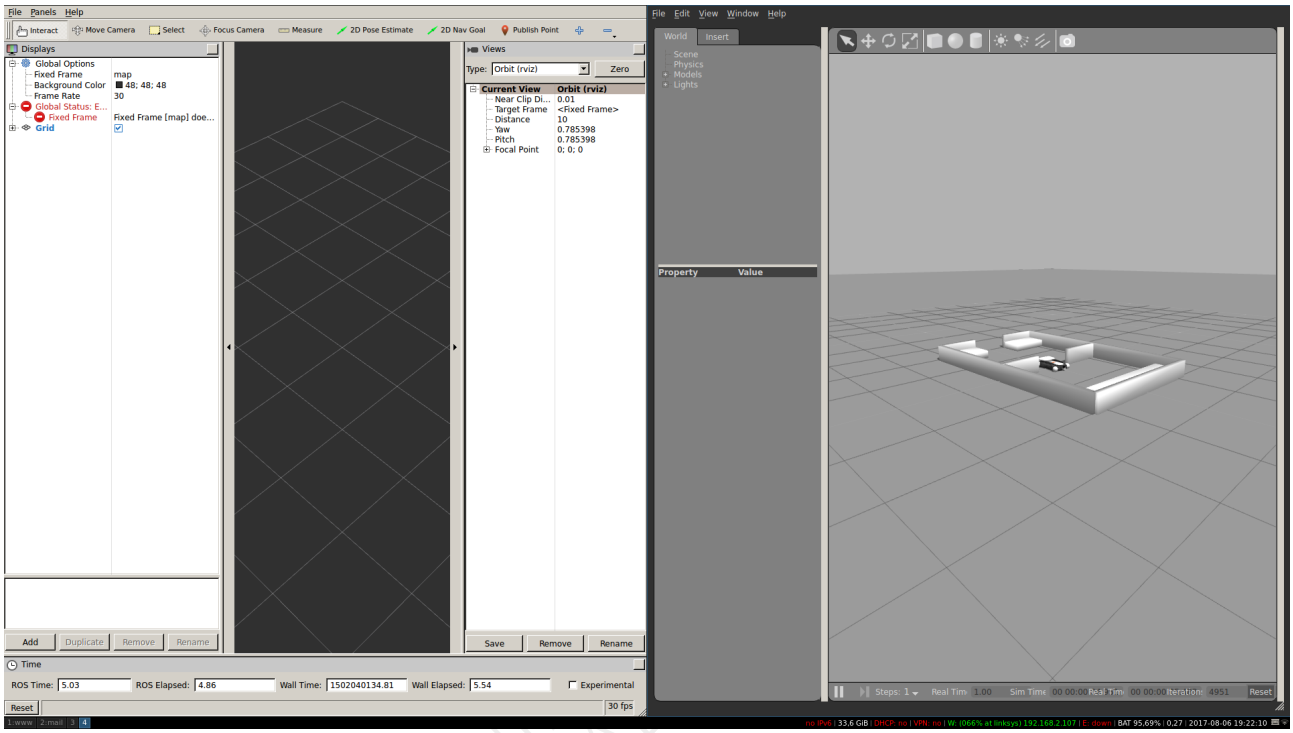

Figure 1: Youbot simulation after startup

Play around with RViz and try to find a setting that suits your needs.
You might for example setup to see the RobotModel or the tf tree. Keep in mind that in this case you cannot visualize relative to the "map" frame but rather in the "base_link" frame - this is why the "Global Status" seems to be faulty.

4.1 rqt

The rqt tools let you make use of many graphical user interfaces to interact with your robot. Simply execute "rqt" and you should get a window looking like figure 2

```
$ rqt
```

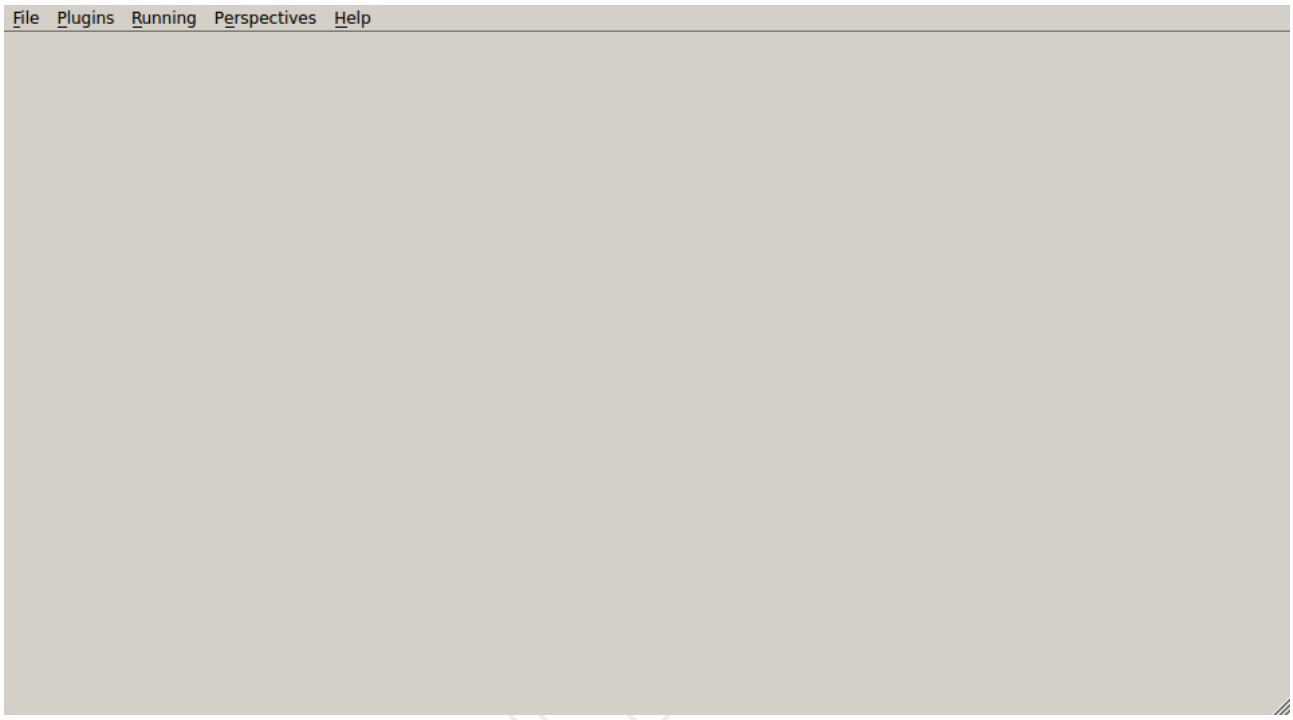

Figure 2: Blank rqt window

Within the rqt window you can make use if several plugins. For demonstration purposes we will use the "Robot Steering" tool capable of sending motion commands by moving sliders.
To add this simply click on "Plugins->Robot Tools->Robot Steering".
To try it out simply move the vertical and/or horizontal slider as shown in figure 3.

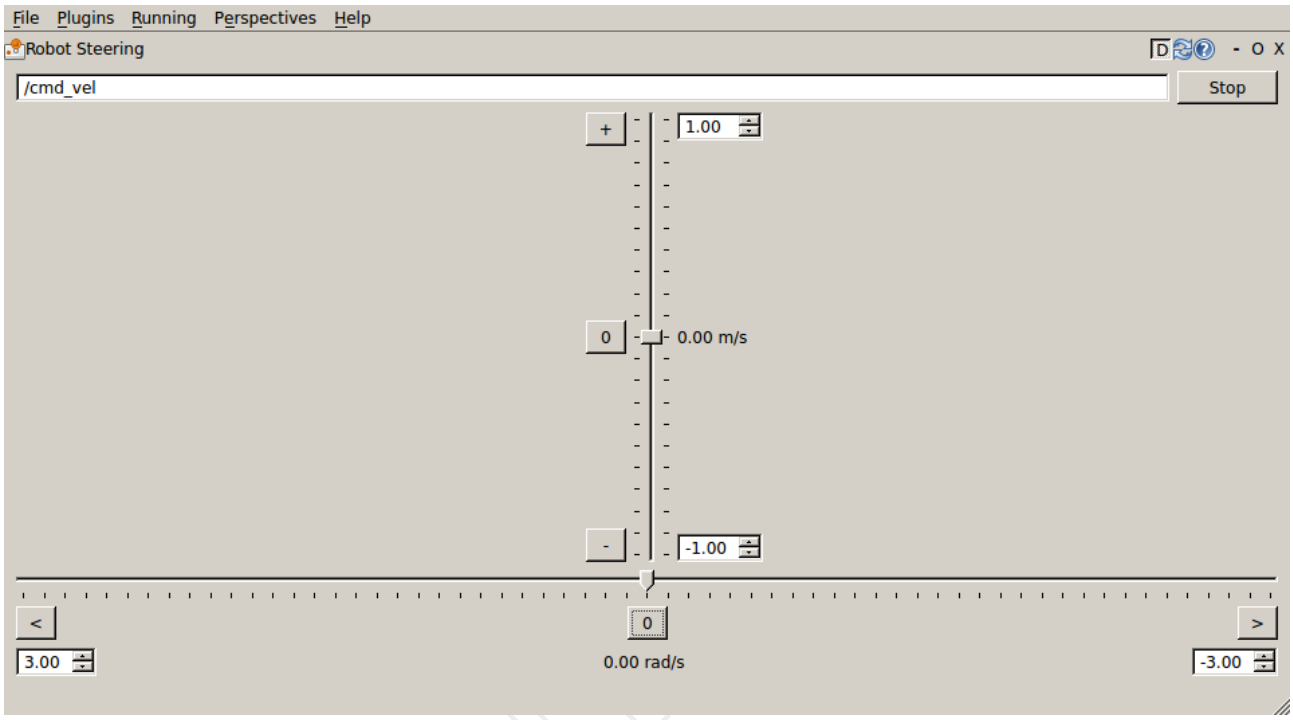

Figure 3: rqt with robot steering plugin