Setup ROS+Gazebo

MEAM 520, University of Pennsylvania

These instructions help you to set up ROS+Gazebo on your machine if you do not wish to use the provided VM. The instructions are for Ubuntu 18.04 with ROS melodic.

NOTE that the provided VM contains the exact same settings as will be used for grading by the TA's. I highly recommend that you use the provided setup. You should only follow these instructions if your: already have a Ubuntu VM or partition that you want to put ROS on, have limited computational resources that prevent you from using the VM, and are willing to assume the cost of ensuring that your lab submissions run equally well in the class setup as on your machine.

1 Ubuntu 18.04

1. We'll assume that you already have a Ubuntu machine. If you need to set one up, you can use any number of online tutorials for learning how to partition your machine or create a new virtual machine. We recommend that you install Ubuntu 18.04 LTS (`https://releases.ubuntu.com/18.04/`).

2 Set up ROS Workspace

1. Follow the instructions on the official tutorial for ROS Melodic at `http://wiki.ros.org/melodic/Installation`. We recommend the Desktop-Full install, which includes ROS, rqt, rviz, robot-generic libraries, 2D/3D simulators and 2D/3D perception.
2. **Add additional dependencies:** You will need to install ROS controller[1] in order to run the code. Open a terminal and type

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

3. **Create a workspace** to contain your source code. For our workspace named meam520_ws, type into the terminal:

   ```
   $ mkdir -p ~/meam520_ws/src
   $ cd ~/meam520_ws/
   $ catkin_make
   ```

   You will need to source every time you want to launch a new window using:

   ```
   $ source devel/setup.bash
   ```

   Alternatively, you can add sourcing to your .bashrc file.

   For more details, refer to `http://wiki.ros.org/catkin/Tutorials/create_a_workspace`

[1] `http://wiki.ros.org/ros_control`

3 Clone this course repo into the src of your workspace

1. To grab our course code, clone our git repo into the src folder:

```
$ cd ~/meam520_ws/src
$ git clone https://github.com/MEAM520/meam520_sim.git
```

2. Don't forget to compile the code using

```
$ cd ..
$ catkin_make
```