Tutorial 0: Installing the Robot Operating System (ROS)

The F1/10 Autonomous Racing Team

Note: If using Ubuntu 18.04 please install ROS Melodic instead of ROS Kinetic. Follow the instructions on the wiki: http://wiki.ros.org/melodic/Installation/Ubuntu

Installing ROS Kinetic on Ubuntu 16.04 LTS

This tutorial assumes that the host OS on which ROS Kinetic is to be installed is Ubuntu 16.04 LTS. This tutorial offers a very concise walkthrough of the ROS Installation. For a detailed step-by-step explaination of the commands used, please visit the ROS Inidgo Installation page .

The steps listed below install the 'Desktop-Full' ROS Kinetic. This means that simluators like Gazebo, rViz along with a large number of ROS packages are installted as well. If your host machine has any constraints regarding memory you should visit the link above to install a trimmed version of ROS Kinetic. Again, this is a very brief guide and if there is any problem at any step please visit the link above.

- Configure your Ubuntu repositories to allow "restricted," "universe," and "multiverse." You can follow the Ubuntu guide for instructions on doing this.

Execute the following commands/steps in the terminal one after the other:

- `sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'`
- `sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654`
- `sudo apt-get update`
- `sudo apt-get install ros-kinetic-desktop-full`
- `sudo rosdep init`
- `rosdep update`
- `echo "source /opt/ros/kinetic/setup.bash" >> ~/.bashrc`
- `source ~/.bashrc`
- `sudo apt install python-rosinstall python-rosinstall-generator python-wstool build-essential`

You should now have ROS Kinetic on your system.

To confirm this open a new terminal and type the following:

```
printenv | grep ROS*
```

You should see the following environemnt variables:

```
ROS_ROOT=/opt/ros/kinetic/share/ros
ROS_PACKAGE_PATH=/opt/ros/kinetic/share
ROS_MASTER_URI=http://localhost:11311
ROS_PYTHON_VERSION=2
GNOME_KEYRING_CONTROL=
ROS_VERSION=1
ROSLISP_PACKAGE_DIRECTORIES=
ROS_DISTRO=kinetic
ROS_ETC_DIR=/opt/ros/kinetic/etc/ros
```