ROS Workshop - Tutorial 3 - Turtlesim

ME 4140 - Introduction to Robotics - Fall 2020

Overview:

After completing *Tutorial 2 - Install ROS*, your system is setup. You are ready to begin with Turtlesim, a simplistic robot model and simulator that serves as the *Hello World of ROS*. You can read more about turtlesim here on the wiki.

System Requirements:

- **ROS+OS**: This tutorial is intended for a system with ROS Melodic installed on the Ubuntu 18.04 LTS operating system. Alternate versions of ROS (i.e. - Kinetic, Noetic, etc.) may work but have not been tested. Versions of ROS are tied to versions of Ubuntu.
- **Internet:** Your computer must be connected to the internet to proceed. Downloading and installing *turtlesim* will only take a few minutes.

Disclaimer:

- **Copy and Paste Errors:** The ilearn PDF viewer does not allow the commands to be copied properly. Download the PDF if you want to copy and paste commands.
- **Learn the Terminal:** The commands in this tutorial are relatively short, and it may help improve understanding to type them manually. **Press** Tab **for auto-completion!**

Turtlesim Installation Instructions:

Press Ctrl + Alt + T to open a new terminal, then carefully copy each command and paste it into the terminal then press Enter . The terminal commands are shown in gray boxes, and **you will have multiple terminals open at one time during this tutorial.**

1. Update your Ubuntu packages. It is recommended to do this before you begin something new.

```
sudo apt update
```

2. Install turtlesim for ROS Melodic from the pre-built repositories. This will take a few moments. Also, install a keyboard controller node.

```
sudo apt install ros-melodic-turtlesim
```

```
sudo apt install ros-melodic-teleop-twist-keyboard
```

The terminal output will show if the packages were successfully installed.

Turtlesim Testdrive:

Now, test the newly installed simulator. This exercise is simple, but the process is important.

1. Start the roscore in a terminal. Leave this process running and this window open.

```
roscore
```

2. Open a second terminal, and start a turtlesim node in the new terminal window.

```
rosrun turtlesim turtlesim_node
```

3. In a third terminal run the keyboard controller node.

```
rosrun teleop_twist_keyboard teleop_twist_keyboard.py
```

   There is a problem, the nodes are not communicating.

4. Abort the keyboard node by clicking in the third terminal and pressing Ctrl + C . Then append the following *option* to the end of the previous command and rerun the node.

```
cmd_vel:=turtle1/cmd_vel
```