Robotics Competition 2021-22

eYRC 2021-22: Agri Bot (AB)

ROS Installation

Installation Instruction

- This Document assumes that the reader has installed *Ubuntu 20.04*. However, if you haven't installed *Ubuntu 20.04* yet make sure to install it before proceeding.

- You can download Ubuntu 20.04 ISO file from here.

Please practice and execute all the content related to this eYRC theme in *Ubuntu 20.04* only. Developer of this theme have tested all the provided material/packages only on the mentioned Operating system.

e-Yantra won't be able to help solve queries related to any other Operating System.

ROS Noetic Installation

Please only after installing the asked OS.

ROS (Robot Operating System) provides libraries and tools to help software developers create robot applications. It provides hardware abstraction, device drivers, libraries, visualizers, message-passing, package management, and more. ROS is licensed under an open source, BSD license.

Here the distribution compatible with *Ubuntu 20.04* is the *ROS Noetic Ninjemys*. Follow the steps below to install it.

Installation Steps

1. Setup your computer to accept software from packages.ros.org.

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/
```

2. Set up your keys.

```
sudo apt install curl
```

```
curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add
```

3. Make sure your Debian package index is up-to-date.

```
sudo apt update
```

4. Installing the ROS recommended configuration.

```
sudo apt install ros-noetic-desktop-full
```

Configuration Steps

1. Adding environment variables: To Automatically add ROS environment variables to your bash session every time a new shell (terminal) is launched, enter the following commands (this step is similar as adding environmental variable in windows):

```
echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc
```

```
source ~/.bashrc
```

2. Additional Dependencies: To install this tool and other dependencies for building ROS packages, run...

```
sudo apt install python3-rosdep python3-rosinstall python3-rosinstall-generator python3-v
```

2. Initialize rosdep: Before you can use many ROS tools, you will need to initialize rosdep. rosdep enables you to easily install system dependencies for source you want to compile and is required to run some core components in ROS. If you have not yet installed rosdep, do so as follows.

```
sudo apt install python3-rosdep
```

```
sudo rosdep init
```

```
rosdep update
```

Additional Installation for Agribot Theme

- Caktin tools

```
sudo apt-get install ros-noetic-catkin python3-catkin-tools
```

- turtlesim

```
sudo apt-get install ros-noetic-ros-tutorials
```

References

- Official ROS Documentation
- ROS Noetic Installation Instruction for Ubuntu