Setting Up Ubuntu and ROS

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1 What is ROS?

The Robot Operating System (or ROS) is a meta-operating system used widely by the Robotics community to implement and test robotics algorithms. It provides a standardized framework to implement device drivers, control algorithms, simulations environments etc, and promotes code reusability. ROS is open source and is quickly becoming (if it isn't already) the de-facto standard for robotic application prototyping.

ROS can only be setup on Linux systems. Below are a set of instructions to install Ubuntu OS on your Windows/MacOS machines.

2 Getting Ubuntu

Ubuntu is a popular Linux OS (trivia: find out what "Ubuntu" means!). We recommend having a boot of **Ubuntu 16.04 (Xenial Xerus)**. If you already have a Ubuntu system, please skip this section and go to ROS installation.

2.1 Dual Boot

Getting a dual boot of Ubuntu is recommended. You need to follow the steps below:

- Download the Ubuntu 16.04 desktop ISO file: `http://releases.ubuntu.com/16.04/`
- Create a bootable USB stick. Follow this or any other tutorial of your choice: Bootable USB tutorial
- Use the bootable USB to install Ubuntu. Follow this or any other tutorial on the topic: Dual boot tutorial

2.2 Ubuntu on Virtual Machine

Ubuntu can be "simulated" on a Virtual machine. However, having a dual boot is recommended as Virtual machines can be a bit slow and laggy for ROS simulations.

- Install the popular VirtualBox: `https://www.virtualbox.org/` by going to the download section.
- Download the Ubuntu 16.04 desktop ISO file: `http://releases.ubuntu.com/16.04/`
- Follow steps in this video tutorial: video tutorial or this tutorial: Ubuntu on VM

3 Installing ROS

This should be a walk in the park. We are going to **install ROS kinetic-kame** which is supported by Ubuntu 16.04. ROS comes with excellent documentation for installation and tutorials.

- Follow the installation instructions: `http://wiki.ros.org/kinetic/Installation`.
- Set up the ROS workspace with catkin build: ROS catkin workspace

- Feel free to take a look at the ROS tutorial topics. There are tutorials in both C++ and Python. Python ones are typically easier to understand: `http://wiki.ros.org/ROS/Tutorials`