ME4140 - ROS Workshop

Mechanical Engineering

Tennessee Technological University

Tristan Hill, Lecturer

Module 2 - Linux Basics

Module 2 - Linux Basics

- What is Linux?
- A Brief History
- Keyboard Shortcuts
- The Terminal
- Tutorial 2 - Install ROS Melodic

What is Linux?

- *Just like Windows, iOS, and Mac OS, Linux is an operating system. In fact, one of the most popular platforms on the planet, Android, is powered by the Linux operating system. An operating system is software that manages all of the hardware resources associated with your desktop or laptop. To put it simply, the operating system manages the communication between your software and your hardware. Without the operating system (OS), the software wouldn?t function.* - LINUX.COM

What is Linux?

Ubuntu is a distribution of Linux. But there are many others.

-
-
-

What is Linux?

Once upon a time in California ...

- Unix was developed at Bell Labs (AT&T)
- Linus Torvalds
- read the whole story here or here

A Brief History

Thought exercise: Think about designing a robot to move boxes from one location to another in a large room.

- Where do you begin?
- What does the robot look like?
- What major elements or components are required for the robot?

Keyboard Shortcuts

ROS is organized in a system of connected *nodes* which each node represents a different element or component in a robotic system.

- Laser
- Drive Kinematics
- Navigation
- Manipulator
- etc.

The Terminal

Each node can have corresponding source code, executables, data files, and more. Different software languages are available.

- C++ (instructor support in ME4140)
- Python (you are on your own)
- *markup languages* such as XML and YAML (we may use some)

Pre-built software is avaiable for interfacing with different Robots, sensors, actuators, and other components. Also, ROS can run on small board computers with limited resources.

- Robots! (Adept, Clearpath, UR)
- LIDAR (SICK, RPLidar, etc.) and Cameras (webcam, Kinect, Opti-track)
- Motor Drivers (Roboteq, ROSARIA)

Tutorial 2 - Install ROS Melodic

- **Overview:** ROS runs on Linux! Your first exercise is to setup your computer so that you can begin learning ROS.
- **Assignment:** Complete the tutorial in the document *virtualize_ubuntu.pdf* on ilearn. Your new system must be able to access the internet.
- **Deliverable:** Write a brief summary of what you have accomplished using MS word other software. Describe what you struggled with the most and include a screen capture of your Ubuntu desktop that includes your name somehow. You will have to be creative.
- **Next Week:** After completion of Module 1, you will be ready to install the ROS Melodic software package in Ubuntu 18.04. This is described in detail in Module 2.