Lesson 1 ROS Introduction

1. An introduction to Robot Operating System (ROS)

Before learning ROS, the definition of the operating system needs to be understanded first. What is the operating system? It provides some of software and hardware interfaces for direct use. Therefore, for different platforms and functions, different operating systems are needed to complete the underlying operating.

Ros is an open source operating system for robots. It provides OS-like services including hardware abstraction, low-level device control, implementation of commonly used functionality, message-passing between processes, and package management. Some tools and libraries are also provided for acquiring, compiling, writing, and executing programs for multi-machine fusion.

In addition, ROS has process-to-process communication, which is the biggest difference between it and other operating systems. In the traditional operating systems, communication between processes needs to be called by the system, which consumes a lot of system resources so that it is not suitable for robot operating system.

A robot may contain multiple sensors to collabrate through communication between modules to accomplish a given task through modules. Therefore, an effective and rapid communication beween processes is essential for a robot, and ROS provides such function.

Distro	Release date	Poster	*Tuturtle*, turtle in tutorial	EOL date
ROS Noetic Ninjemys (**Recommended**)	May 23rd, 2020			May, 2025 (Focal EOL)
ROS Melodic Morenia	May 23rd, 2018			May, 2023 (Bionic EOL)
ROS Lunar Loggerhead	May 23rd, 2017			May, 2019
ROS Kinetic Kame	May 23rd, 2016			April, 2021 (Xenial EOL)
ROS Jade Turtle	May 23rd, 2015			May, 2017
ROS Indigo Igloo	July 22nd, 2014			April, 2019 (Trusty EOL)
ROS Hydro Medusa	September 4th, 2013			May, 2015

ROS Groovy Galapagos	December 31, 2012			July, 2014
ROS Fuerte Turtle	April 23, 2012			--
ROS Electric Emys	August 30, 2011			--
ROS Diamondback	March 2, 2011			--
ROS C Turtle	August 2, 2010			--
ROS Box Turtle	March 2, 2010	 Box Turtle		--

2. ROS Features

1) Node to node design and independ functions.

2) Simple stureture and high integration.

3) Pentiful tool packages and supporting multiple programming languages. Each of packages adopts different programming language.

4) Free and open source

5) Abundant communities

Official website: https://wiki.ros.org