

Introduction to Robot Operating System (ROS)

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1 Introduction

- Historical Background
- Robot Programming Before ROS
- ROS is ..
- ROS Equation

2 ROS Concepts

- Filesystem
- Computation Graph
- Community level

3 ROS installation

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Introduction

History and Legacy

- Started in 2007 by researches from Stanford AI Robot (Stair) and the Personal Robots (PR) Program and was sponsored by Willow Garage a visionary robotics incubator.
- Used Worldwide in Research and Industry.
- Currently supported by the Open Source Robotics Foundation.

Figure 1: Stair

Introduction

Robot Programming Before ROS

- There was no common platform for developing robotics and it took ages !
- The developed software for a robot couldn't be used in any other robot.
- Developers had to implement algorithms on their own.

Introduction

ROS is ..

A flexible framework for writing robot software. It is a collection of tools, libraries, and conventions that aim to simplify the task of creating complex and robust robot behavior across a wide variety of robotic platforms.

Introduction

Ros Equation

ROS Concepts

Filesystem

ROS Concepts

Computation Graph

ROS Concepts

Computation Graph: Master

ROS Concepts

Computation Graph: Master

ROS Concepts

Community level

- Supported for debian-based distributions such as Ubuntu.
- Supported by many robots.
- Current supported distributions
 - ROS Kinetic Kame, Released May, 2016.
 - ROS Melodic Morenia, Released May, 2018

After choosing the distribution follow the instruction on ROS wiki which start by:



- Configure your Ubuntu repositories.
- Setup your sources.list.
- Set keys
- Install with "sudo apt-get install ros-kinetic-desktop-full"

Future of ROS

Summary

- The **first main message** of your talk in one or two lines.
- The **second main message** of your talk in one or two lines.
- Perhaps a **third message**, but not more than that.
- Outlook
 - Something you haven't solved.
 - Something else you haven't solved.

For Further Reading I

-  A. Author.
Handbook of Everything.
Some Press, 1990.
-  S. Someone.
On this and that.
Journal of This and That, 2(1):50–100, 2000.