

# Introduction to Robot Operating System (ROS)

Application to mobile robots

Amr Elhussein

Advisor: Dr. Suruz Miah

Department of Electrical and Computer Engineering

Bradley University

1501 W. Bradley Avenue

Peoria, IL, 61625, USA

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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: Stair

# Introduction

## Robot Programming Before ROS

- No common platform for developing robotics
- Build every thing from scratch
- Algorithm implementation

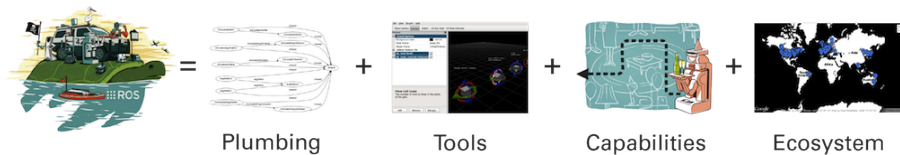
# Introduction

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



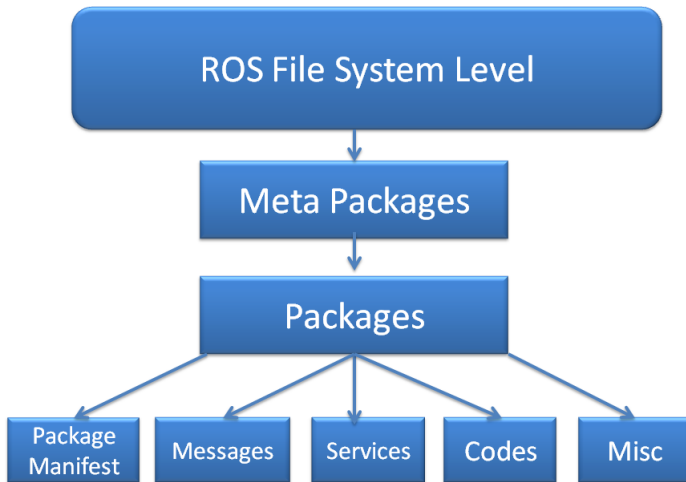
# Introduction

## Applications



# ROS Concepts

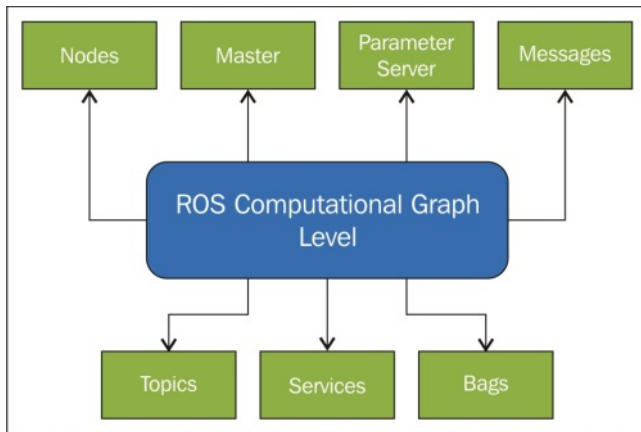
## Filesystem





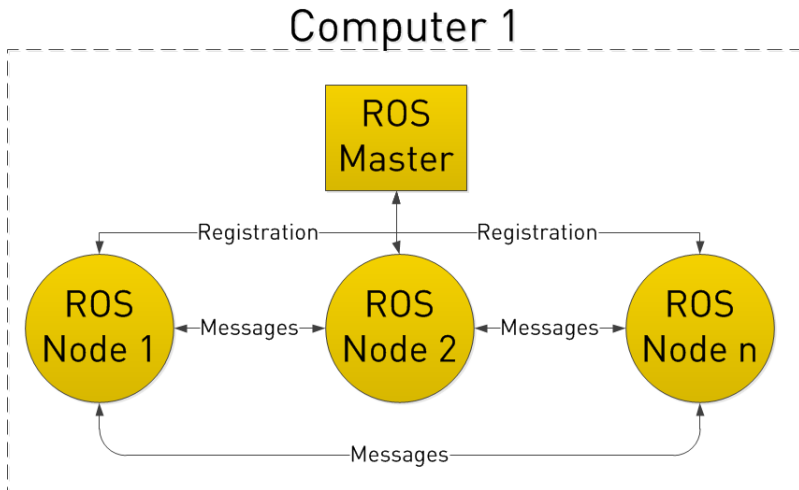
# ROS Concepts

## Computation Graph



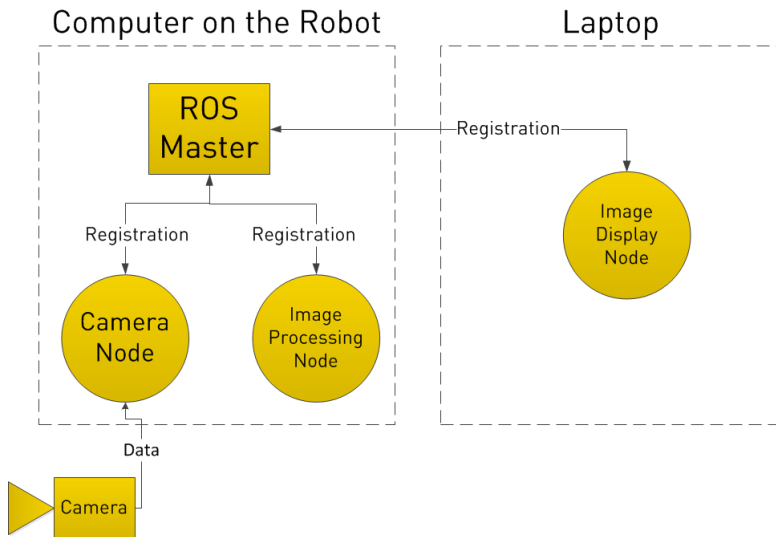
# ROS Concepts

## Computation Graph: Master



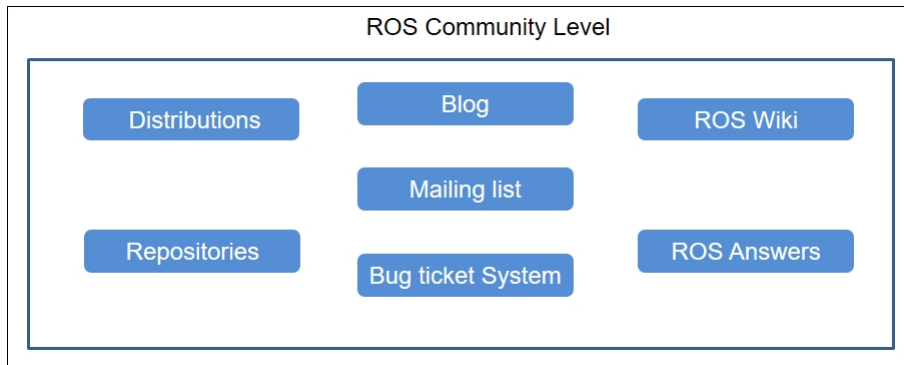
# ROS Concepts

## Computation Graph: Master



# ROS Concepts

## Community level



- Debian-based distributions such as Ubuntu.
- 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

- Security
- Critical Missions
- Distributed Processing



*Thanks !*