Robot & Sensor

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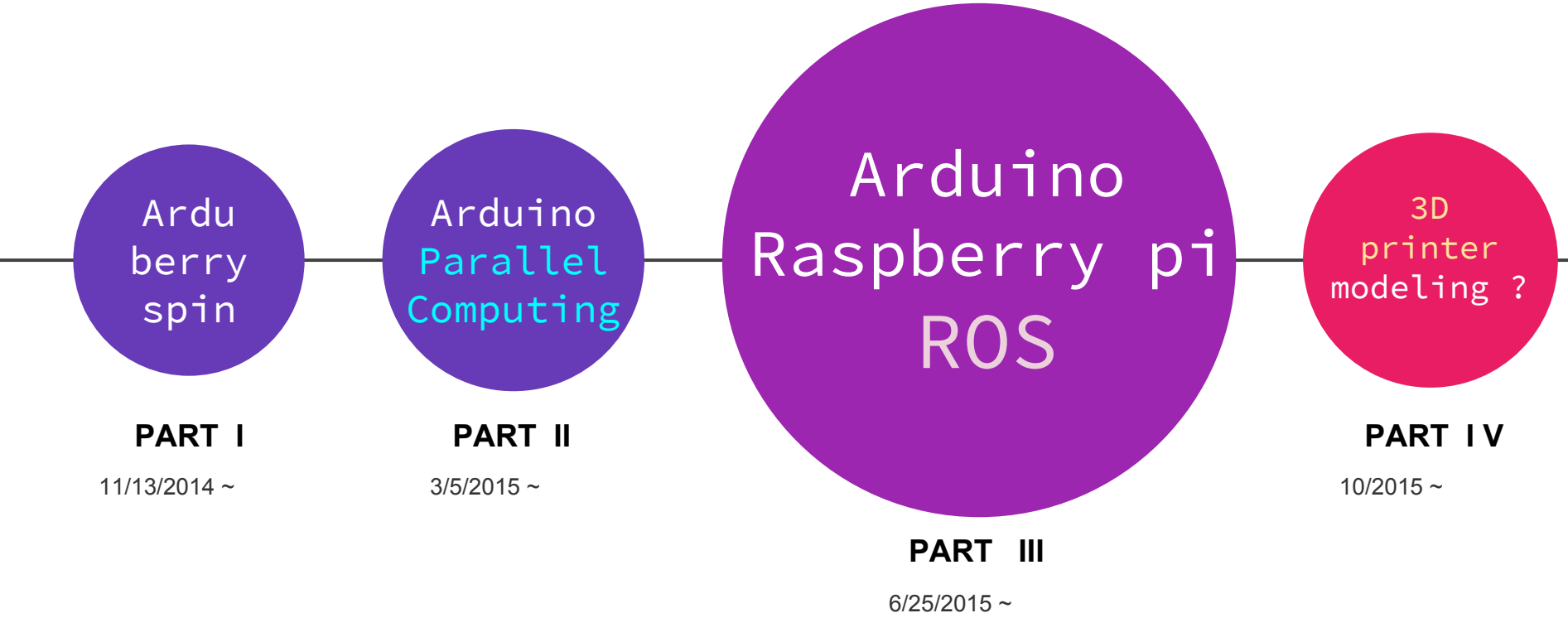
http://arduberryspin.github.io

HISTORY

http://arduberryspin.github.io/



ROS (The Robot Operating System)

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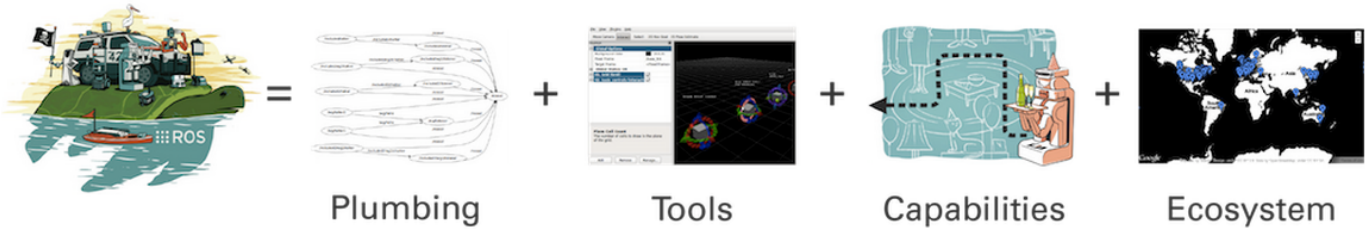
To encourage collaborative robotics software development !

The Robot Operating System (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.

https://youtu.be/PGaXiLZD2KQ



http://www.ros.org/

OSRF

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http://www.osrfoundation.org

Open Source Robotics Foundation, Inc. (OSRF) is an independent non-profit organization founded by members of the global robotics community. The mission of OSRF is to support the development, distribution, and adoption of open source software for use in robotics research, education, and product development.

We are located in the San Francisco Bay Area.

Open Source Robotics Foundation

Gazebo

ROS

Robotics Fast Track (RFT)

Robotics Projects

Robot Software

The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools, ROS has what you need for your next robotics project. And it's all open source.

http://www.ros.org/core-components/

Install

Get ROS Indigo Igloo on Ubuntu Linux

(Recommended for Stability)

Get ROS Jade Turtle on Ubuntu Linux

(Recommended for Latest Software)

GAZEBO

Simulation

Gazebo offers the ability to accurately and efficiently simulate populations of robots in complex indoor and outdoor environments. At your fingertips is a robust physics engine, high-quality graphics, and convenient programmatic and graphical interfaces.

Robot & Sensor

교재 : ROS 로봇 프로그래밍(표윤석 저)

http://www.aladin.co.kr/shop/wproduct.aspx?ISBN=6000824500

https://github.com/robotpilot/rosbook_kr/raw/master/pdf/ROS_Book_KR.pdf

Sensor

- 거리센서

  LRF(Laser Range Finders) 및 적외선 거리 센서

  3차원 센서 키넥트(Kinect), Xtion

- 관성센서(위치 추정), 컬러 카메라(사용자나 물체 인식), 마이크로폰(음성인식), 토크 센서 (토크 제어)

- I2C, UART 등을 사용한 센서들의 사용방법의 통일

ROS sensor package

http://wiki.ros.org/Sensors

1D range finders 저가 로봇용 적외선 직성거리센서
2D range finders LRF센서 (내비게이션)
3D Sensors (range finders & RGB-D cameras) 3차원계측
Audio / Speech Recognition 음성인식
Cameras 물체인식, 얼굴인식, 문자판독
Environmental

Force/Torque/Touch Sensors
Motion Capture
Pose Estimation (GPS/IMU)
Power Supply
RFID
Sensor Interfaces

공개 패키지 사용법

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http://www.ros.org/ debbuild/indigo.html

http://rosindex.github.io/stats/

공개 패키지 중 자신에게 필요한 패키지 검색하는 방법,
설치사용하는 방법에 대해 알아보자

http://www.ros.org/browse/list.php

패키지 검색

face detect - pi_face_tracker

패키지 설치

$git clone https://github.com/ericperko/uvc_cam.git

$rosdep install uvc_cam

$rosmake uvc_cam

아래는 안됨!

$svn co http://pi-robot-ros-pkg-googlecode.com/svn/trunk/pi_vision

$rosmake pi_vision

메시지,서비스 빌드

```
$roscd pi_face_tracker

$make
```

패키지 노드 실행

```
$roscore
```

카메라 드라이버 구동

```
$roslaunch ros2opencv uvc_cam.launch --screen
```

얼굴 인식 노드 구동

```
$roslaunch pi_face_tracker face_tracker_uvc_cam.launch --
screen
```

오로카 제 3회 오픈로보틱스 세미나에 다녀와서...

그래 이제 ROS 로봇프로그래밍 시작이닷!

야심찬 시작!

리눅스설치
프로그램설치
환경설정
ERROR와의 한판승부
...

하지만 요즘 핫하다는 **Docker**와 함께라면!

고래는 거북이도
춤추게 한다

거인의 어깨에 올라서서 더 넓은 세상을 바라보자!

Official Docker for ROS !!

https://hub.docker.com/_/ros/

https://github.com/osrf/docker_images

도커튜토리얼 http://blog.nacyot.com/articles/2014-01-27-easy-deploy-with-docker/)

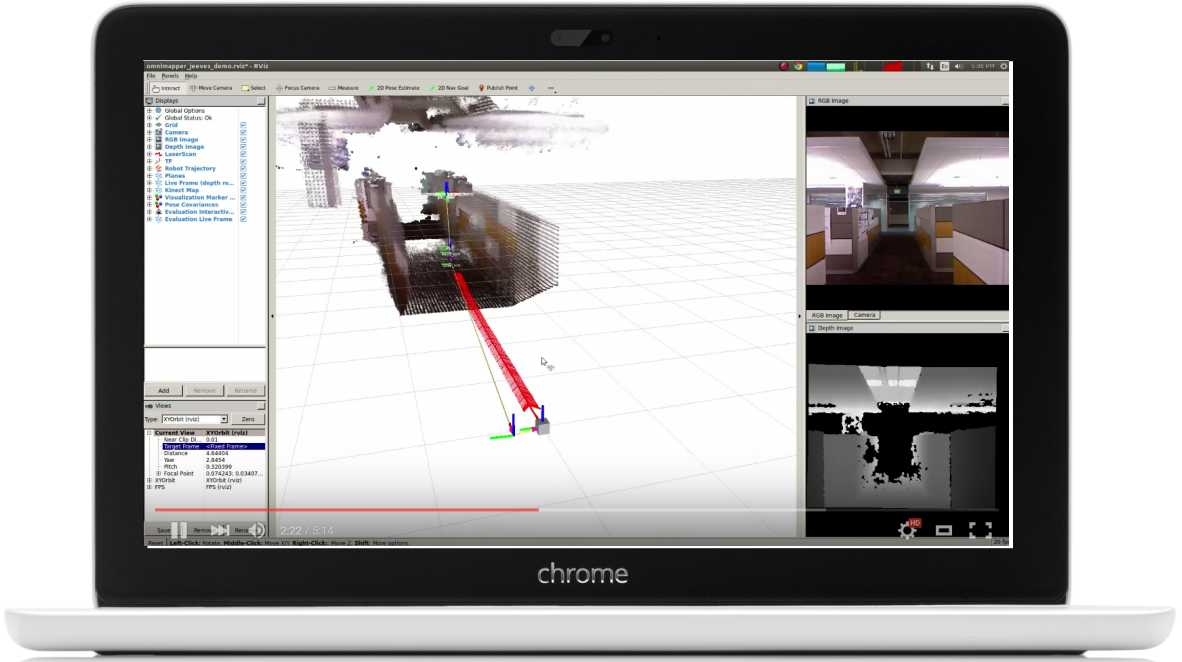
도커기본사용법 http://pyrasis.com/Docker/Docker-HOWTO)

ROS Docker Demo

Ruffin White

게시일: 2015. 2. 7.

Demo using ROS with Docker
http://lists.ros.org/lurker/message/20150207.045015.a980e817.en.html

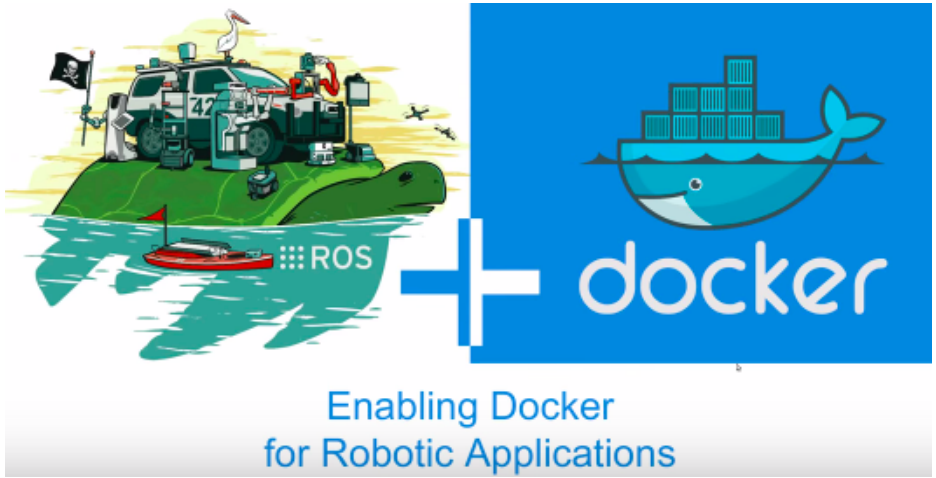


https://www.youtube.com/watch?v=djLKmDMsdxM

OSRF Internship

| Ruffin White

게시일: 2015. 8. 17.
Videos:
ROS Docker Demo | https://www.youtube.com/watch?v=djLKm...
ROS + Docker Demo: Building and Running nodes | https://www.youtube.com/watch?v=9xqek...
Gazebo + Docker Demo: Logging and Connecting to gzserver | https://www.youtube.com/watch?v=P__ph...



https://www.youtube.com/watch?v=VRaWujhDQiw

How to use this image

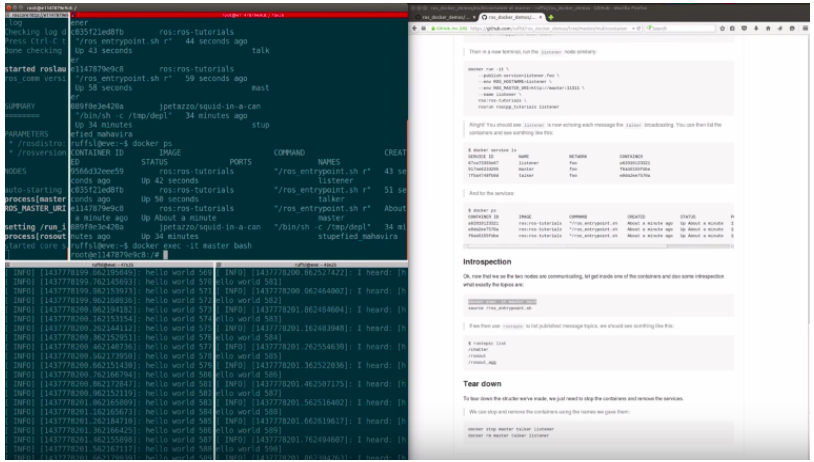
Create a `Dockerfile` in your ROS app project

```
FROM ros:indigo
# place here your application's setup specifics
CMD [ "roslaunch", "my-ros-app my-ros-app.launch" ]
```

You can then build and run the Docker image:

```
$ docker build -t my-ros-app .
$ docker run -it --rm --name my-running-app my-ros-app
```

https://github.com/osrf/docker_images



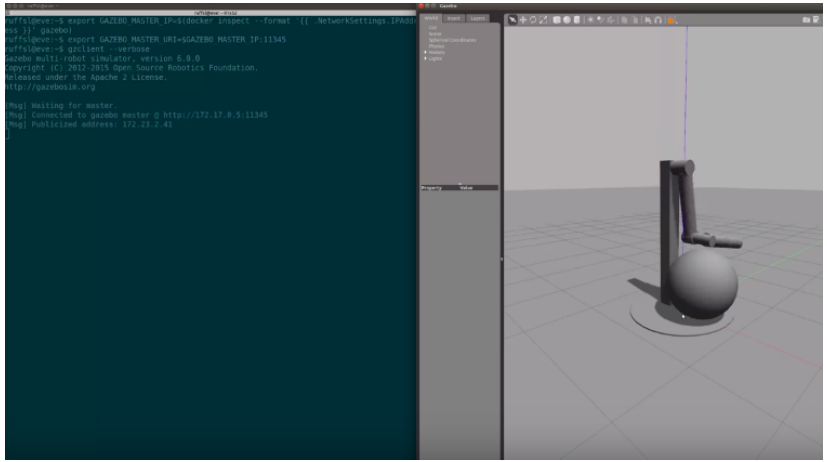
Docker Demo
: Building and Running nodes

https://www.youtube.com/watch?v=9xqekKwzmV8

게시일: 2015. 8. 17. 작성자 : Ruffin white

Building and Running Listener and Talker nodes with docker:

https://registry.hub.docker.com/_/ros/



Gazebo + Docker Demo: Logging and Connecting to gzserver

https://www.youtube.com/watch?v=P__phnA57LM

게시일: 2015. 8. 17. 작성자 : Ruffin white

Logging and Connecting to gzserver running with docker: