免费电子书

学习

ros

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#ros

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1: ros

ROS。

2007STAIR20082013Willow Garage。 2013ROS。

ROS。 。 ROSBSD。

ROS ROS ..... ROS。 /。

ROSUnix。 ROSUbuntuMac OS XROSFedoraGentooArch LinuxLinux。 ROS C ++Python。

*ROS*10*ROS Kinetic* 。

ROSROShttp://www.ros.org/

Ros Distro	Ubuntu	
Kinetic Kame	15.10,16.04	2016523
	14.04,14.10,15.04	2015523
Indigo Igloo	13.10,14.04	2014722
Hydro Medusa	12.04,12.10,13.04	201394
Groovy Galapagos	11.10,12.04,12.10	2012-12-31
	10.04,11.10,12.04	2012-04-23
Emys	10.04,10.10,11.04,11.10	2011-08-30
	10.04,10.10,11.04	2011-03-02
C	9.04,9.10,10.04,10.10	2010-08-02
	8.04	2010-03-02

Examples

ROS。 ROS wikiROS。 ROS

ROS				
	Ubuntu 16.04Xenial	amd64 / i386 / armhf		Xenial
	Ubuntu 15.10Wily	amd64 / i386		

ROS				
	Debian 8	amd64 / arm64		
	OS XHomebrew	-		
	Gentoo	-		Gentoo
	OpenEmbedded/ Yocto	-		Yocto

...

Hello World Publisher

```
mkdir -p ~/catkin_ws/src
cd ~/catkin_ws/src
catkin_init_workspace
```

```
cd ~/catkin_ws/
catkin_make
```

```
source devel/setup.bash
```

hello_world

```
catkin_create_pkg hello_world std_msgs rospy roscpp
```

srctalker.cpp

```
cd hello_world/src
touch talker.cpp
```

“hello world”

```
#include "ros/ros.h"
#include "std_msgs/String.h"

#include <sstream>

int main(int argc, char **argv)
{
  ros::init(argc, argv, "talker");

  ros::NodeHandle n;

  ros::Publisher chatter_pub = n.advertise<std_msgs::String>("chatter", 1000);

  ros::Rate loop_rate(10);

  int count = 0;
  while (ros::ok())
  {
```

```
    std_msgs::String msg;

    std::stringstream ss;
    ss << "hello world " << count;
    msg.data = ss.str();

    ROS_INFO("%s", msg.data.c_str());

    chatter_pub.publish(msg);

    ros::spinOnce();

    loop_rate.sleep();
    ++count;
  }

  return 0;
}
```

```
cd ..
```

/CMakeLists.txt

```
catkin_package(
 INCLUDE_DIRS include
 LIBRARIES hello_world
#  CATKIN_DEPENDS roscpp rospy std_msgs
#  DEPENDS system_lib
)

include_directories(include ${catkin_INCLUDE_DIRS})

add_executable(talker src/talker.cpp)
target_link_libraries(talker ${catkin_LIBRARIES})
add_dependencies(talker hello_world_generate_messages_cpp)
```

```
cd ..
```

```
catkin_make
```

```
source devel/setup.bash
```

ROS

```
roscore
```

roscore/

```
rosrun hello_world talker
```

/

```
rostopic echo /chatter
```

ros https://riptutorial.com/zh-CN/ros/topic/7287/ros

2: roslaunch

""

“”“”。

Examples

Yamlros

roslaunchROS。“* .launch”。

```
roscd stereo_camera
rosparam load marvin_cameras.yaml
rosrun stereo_camera stereo_camera __name:=bumblebeeLeft
rosrun stereo_camera stereo_camera __name:=bumblebeeCenter

roslaunch openni_launch_marvin kinect_left.launch
roslaunch openni_launch_marvin kinect_center.launch
```

`break up these commands in pieces。` 4ros *roscd rosparam rosrunroslaunch* 。

roslaunch。`one and only roslaunch file in ROSone and only roslaunch file in ROS。`
“solution.launch”。

XMLROS“basic_example.launch”“roslaunch_example”ROS

```
<launch>

</launch>
```

```
$ roslaunch roslaunch_example basic_example.launch
```

```
$ roslaunch package_name launch_file_name.launch
```

...

Launch
ROSROS。。

```
rosrun stereo_camera stereo_camera __name:=bumblebeeLeft
rosrun stereo_camera stereo_camera __name:=bumblebeeCenter
```

`stereo_camerastereo_camera__name:=bumblebeeLeft__name:=bumblebeeCenter。`

```
<launch>
    <node name="$(arg name)" pkg="stereo_camera" type="stereo_camera" output="screen">
```

```
        <param name="name" value="bumblebeeLeft" />
    </node>

    <node name="$(arg name)" pkg="stereo_camera" type="stereo_camera" output="screen">
        <param name="name" value="bumblebeeCenter" />
    </node>
</launch>
```

。

ROS

“name”

```
<param name="name" value="bumblebeeCenter" />
```

`"$(arg parameter_name)"`。

`on the terminal`“”`(~/.ros)`“screen”。

ROSROS

roslaunch XML。。。

```
roslaunch openni_launch_marvin kinect_left.launch
roslaunch openni_launch_marvin kinect_center.launch
```

```
<include file="$(find openni_launch_marvin)/launch/kinect_left.launch" />
<include file="$(find openni_launch_marvin)/launch/kinect_center.launch" />
```

roscdROS

。roslaunch`"$(find package_name)"`relative to the package racine。
“kinect_center.launch”“openni_launch_marvin”/ launch /“。

YAML

ROSYAMLROS“rosparam”。“rosparam YAMLROS。。。“

YAML

```
<rosparam command="load" file="$(find marvin_cameras)/config/marvin_cameras.yaml" />
```

YAML“marvin_cameras.yaml”“marvin_cameras / config /”。

“solution.launch”。

solution.launch

```
<launch>
```

```
    <rosparam command="load" file="$(find marvin_cameras)/config/marvin_cameras.yaml" />

    <node name="$(arg name)" pkg="stereo_camera" type="stereo_camera" output="screen">
          <param name="name" value="bumblebeeLeft" />
    </node>

    <node name="$(arg name)" pkg="stereo_camera" type="stereo_camera" output="screen">
          <param name="name" value="bumblebeeCenter" />
    </node>

    <include file="$(find openni_launch_marvin)/launch/kinect_left.launch" />
    <include file="$(find openni_launch_marvin)/launch/kinect_center.launch" />

</launch>
```

roslaunch。

roslaunch https://riptutorial.com/zh-CN/ros/topic/7361/roslaunch

3:

ROS◦ src◦ `CMakeLists.txtpackage.xml`◦

Examples

rospy

`workspace_nameworkspace_name package_name`◦

```
$ cd ~/workspace_name/src/
$ catkin_create_pkg package_name rospy
```

https://riptutorial.com/zh-CN/ros/topic/8314/

4:

◦ ROS◦ ROS◦

Examples

```
$ mkdir -p ~/workspace_name/src
$ cd ~/workspace_name/src
$ catkin_init_workspace
$ cd ~/workspace_name/
$ catkin_make
```

workspace_nameworkspace_name ◦

```
$ source ~/workspace_name/devel/setup.bash
```

https://riptutorial.com/zh-CN/ros/topic/8313/

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