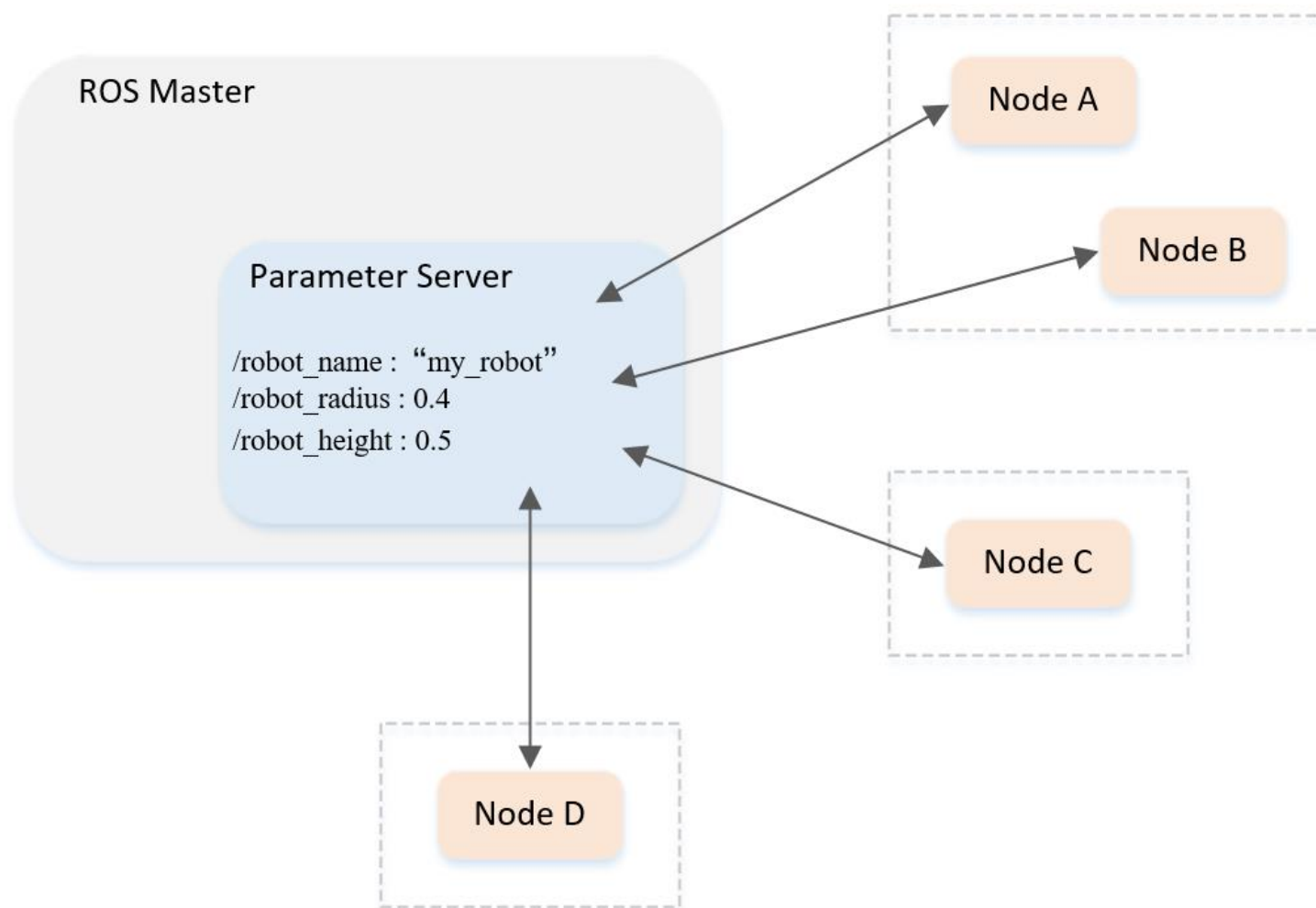


ROS入门  
21讲

# 16.参数的使用与编程方法

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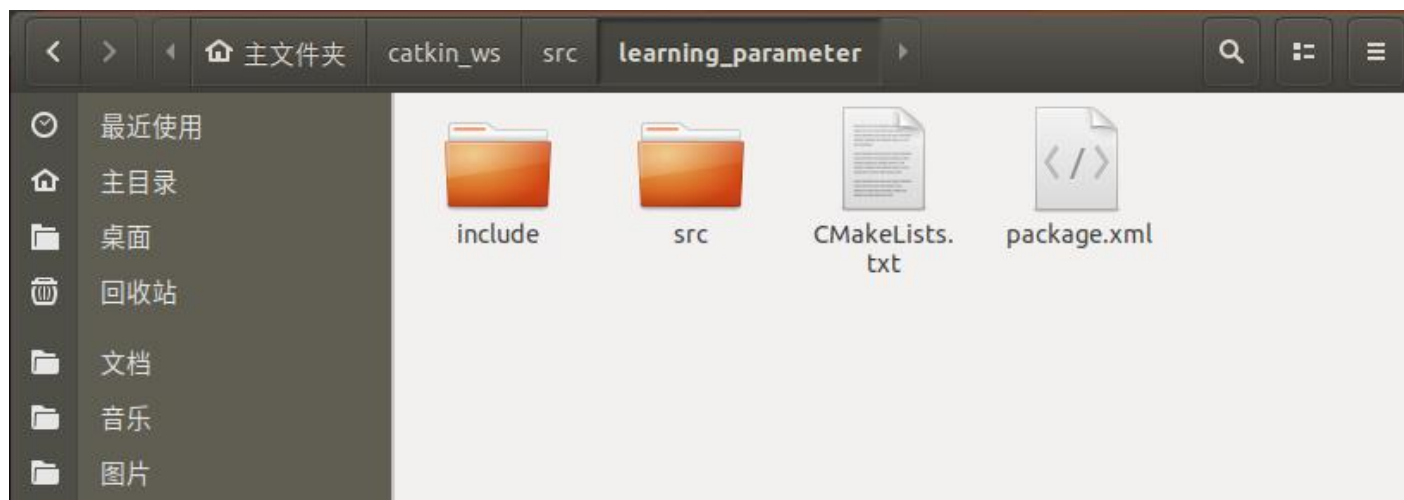
主讲人：古月



参数模型（全局字典）

```
$ cd ~/catkin_ws/src
```

```
$ catkin_create_pkg learning_parameter roscpp rospy std_srvs
```



## YAML参数文件

```
background_b: 255
background_g: 86
background_r: 69
roscistro: 'melodic'
roslaunch:
  uris: {host_hcx_vpc__43763: 'http://hcx-vpc:43763/'}
rosversion: '1.14.3'
run_id: 077058de-a38b-11e9-818b-000c29d22e4d
```

## rosparam

- 列出当前多有参数  
`$ rosparam list`
- 显示某个参数值  
`$ rosparam get param_key`
- 设置某个参数值  
`$ rosparam set param_key param_value`
- 保存参数到文件  
`$ rosparam dump file_name`
- 从文件读取参数  
`$ rosparam load file_name`
- 删除参数  
`$ rosparam delete param_key`

```
/**
 * 该例程设置/读取海龟例程中的参数
 */
#include <string>
#include <ros/ros.h>
#include <std_srvs/Empty.h>

int main(int argc, char **argv)
{
    int red, green, blue;

    // ROS节点初始化
    ros::init(argc, argv, "parameter_config");

    // 创建节点句柄
    ros::NodeHandle node;

    // 读取背景颜色参数
    ros::param::get("/background_r", red);
    ros::param::get("/background_g", green);
    ros::param::get("/background_b", blue);

    ROS_INFO("Get Background Color[%d, %d, %d]", red, green, blue);

    // 设置背景颜色参数
    ros::param::set("/background_r", 255);
    ros::param::set("/background_g", 255);
    ros::param::set("/background_b", 255);

    ROS_INFO("Set Background Color[255, 255, 255]");

    // 读取背景颜色参数
    ros::param::get("/background_r", red);
    ros::param::get("/background_g", green);
    ros::param::get("/background_b", blue);

    ROS_INFO("Re-get Background Color[%d, %d, %d]", red, green, blue);

    // 调用服务, 刷新背景颜色
    ros::service::waitForService("/clear");
    ros::ServiceClient clear_background = node.serviceClient<std_srvs::Empty>("/clear");
    std_srvs::Empty srv;
    clear_background.call(srv);

    sleep(1);

    return 0;
}
```

parameter\_config.cpp

## 如何获取/设置参数

- 初始化ROS节点;
- get函数获取参数;
- set函数设置参数;

```
## Declare a C++ executable
## With catkin_make all packages are built within a single CMake context
## The recommended prefix ensures that target names across packages don't collide
# add_executable(${PROJECT_NAME}_node src/learning_parameter_node.cpp)

## Specify libraries to link a library or executable target against
# target_link_libraries(${PROJECT_NAME}_node
#   ${catkin_LIBRARIES}
# )

add_executable(parameter_config src/parameter_config.cpp)
target_link_libraries(parameter_config ${catkin_LIBRARIES})
```

## 如何配置CMakeLists.txt中的编译规则

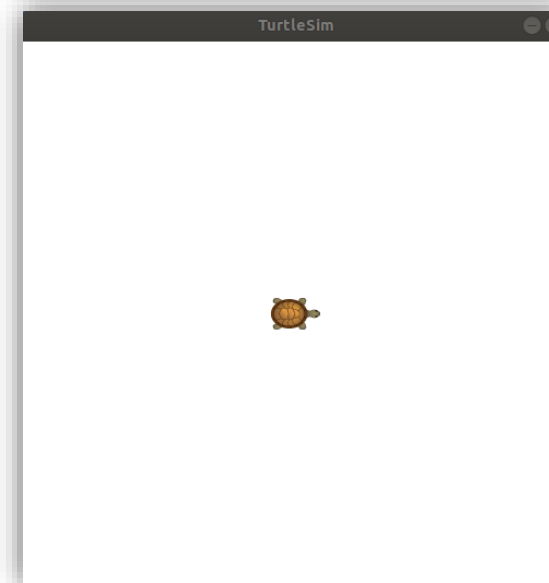
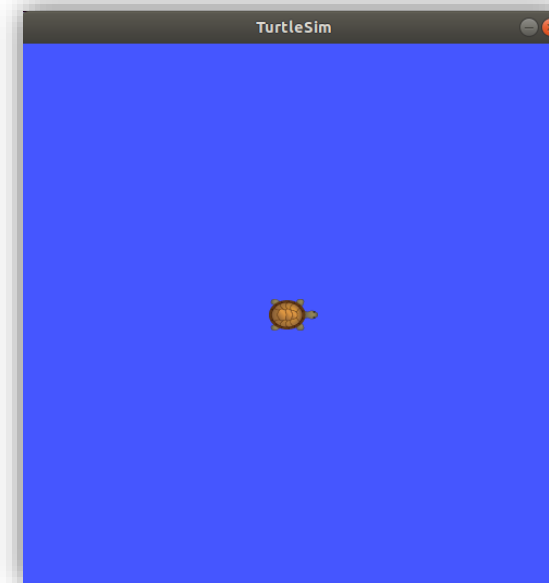
- 设置需要编译的代码和生成的可执行文件；
- 设置链接库；

```
add_executable(parameter_config src/parameter_config.cpp)
target_link_libraries(parameter_config ${catkin_LIBRARIES})
```

CMakeLists.txt

```
$ cd ~/catkin_ws  
$ catkin_make  
$ source devel/setup.bash  
$ roscore  
$ rosrun turtlesim turtlesim_node  
$ rosrun learning_parameter parameter_config
```

```
hcx@hcx-vpc:~$ rosrun learning_parameter parameter_config  
[ INFO] [1562816961.090709151]: Get Backgroud Color[69, 86, 255]  
[ INFO] [1562816961.104068283]: Set Backgroud Color[255, 255, 255]  
[ INFO] [1562816961.110197845]: Re-get Backgroud Color[255, 255, 255]
```



```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
# 该例程设置/读取海龟例程中的参数

import sys
import rospy
from std_srvs.srv import Empty

def parameter_config():
    # ROS节点初始化
    rospy.init_node('parameter_config', anonymous=True)

    # 读取背景颜色参数
    red = rospy.get_param('/background_r')
    green = rospy.get_param('/background_g')
    blue = rospy.get_param('/background_b')

    rospy.loginfo("Get Background Color[%d, %d, %d]", red, green, blue)

    # 设置背景颜色参数
    rospy.set_param("/background_r", 255);
    rospy.set_param("/background_g", 255);
    rospy.set_param("/background_b", 255);

    rospy.loginfo("Set Background Color[255, 255, 255]");

    # 读取背景颜色参数
    red = rospy.get_param('/background_r')
    green = rospy.get_param('/background_g')
    blue = rospy.get_param('/background_b')

    rospy.loginfo("Get Background Color[%d, %d, %d]", red, green, blue)

    # 发现/spawn服务后, 创建一个服务客户端, 连接名为/spawn的服务
    rospy.wait_for_service('/clear')
    try:
        clear_background = rospy.ServiceProxy('/clear', Empty)

        # 请求服务调用, 输入请求数据
        response = clear_background()
        return response
    except rospy.ServiceException, e:
        print "Service call failed: %s"%e

if __name__ == "__main__":
    parameter_config()
```

## 如何获取/设置参数

- 初始化ROS节点;
- get函数获取参数;
- set函数设置参数;

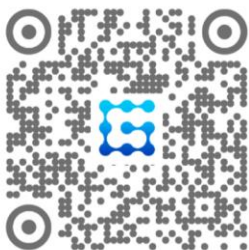
parameter\_config.py



# 感谢观看

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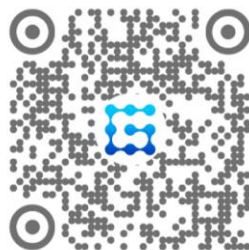
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