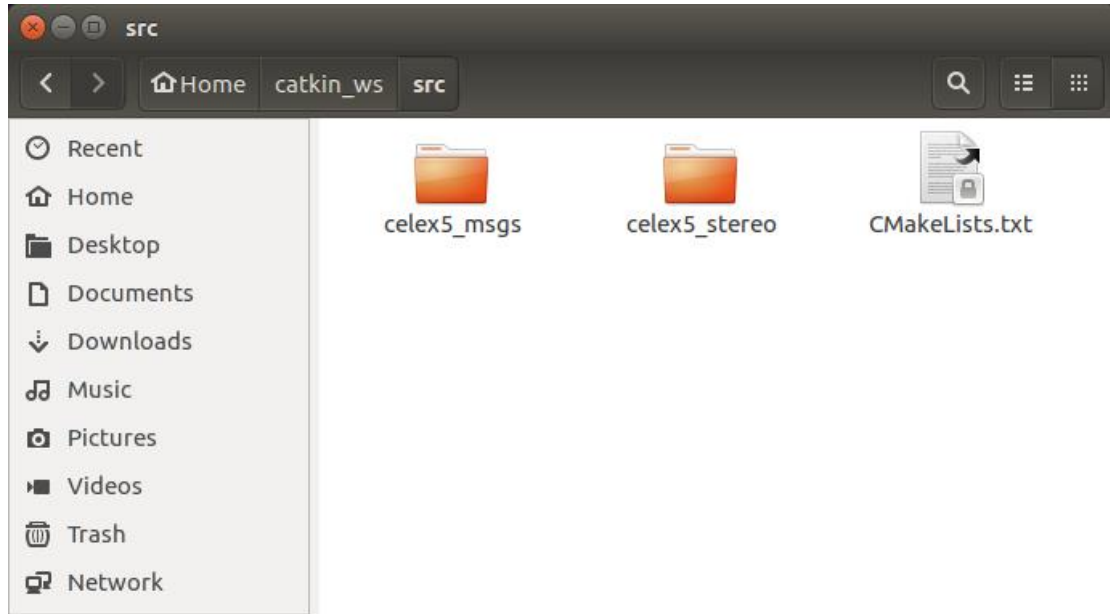
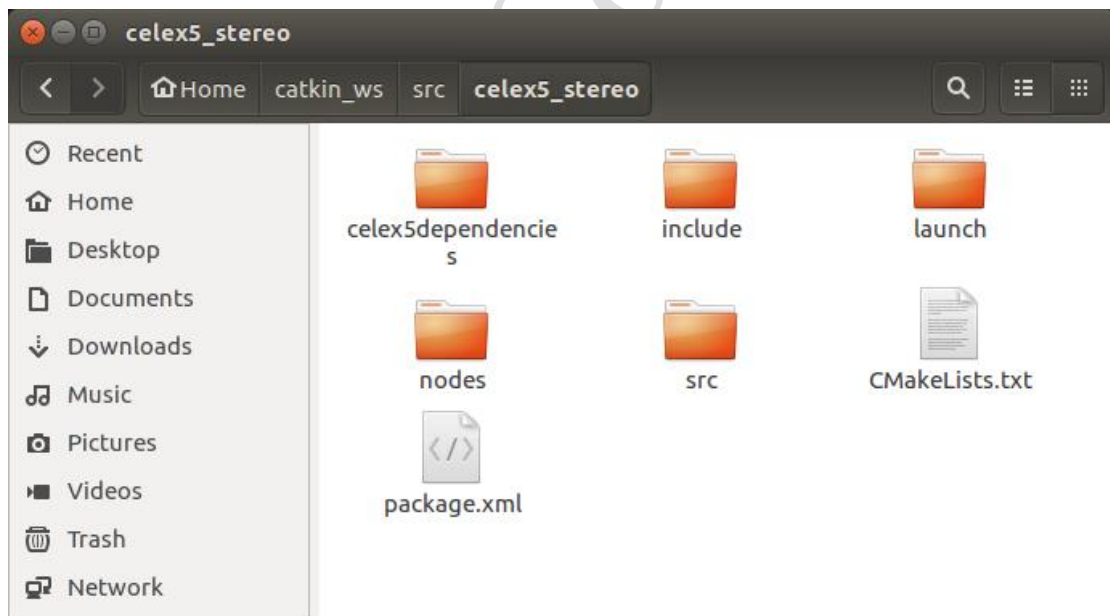


1 介绍

ROS 环境下示例代码文件位于发布目录“**Sample for ROS**”下，主要包括两个 Package 包（`celex5_msgs` 和 `celex5_stereo`），其中 `celex5_msgs` 包是自定义 ROS 消息包，`celex5_stereo` 包是 CeleX5 双目功能包。本示例在 Ubuntu 16.04 下基于 Kinetic 版本 ROS 环境编译运行。



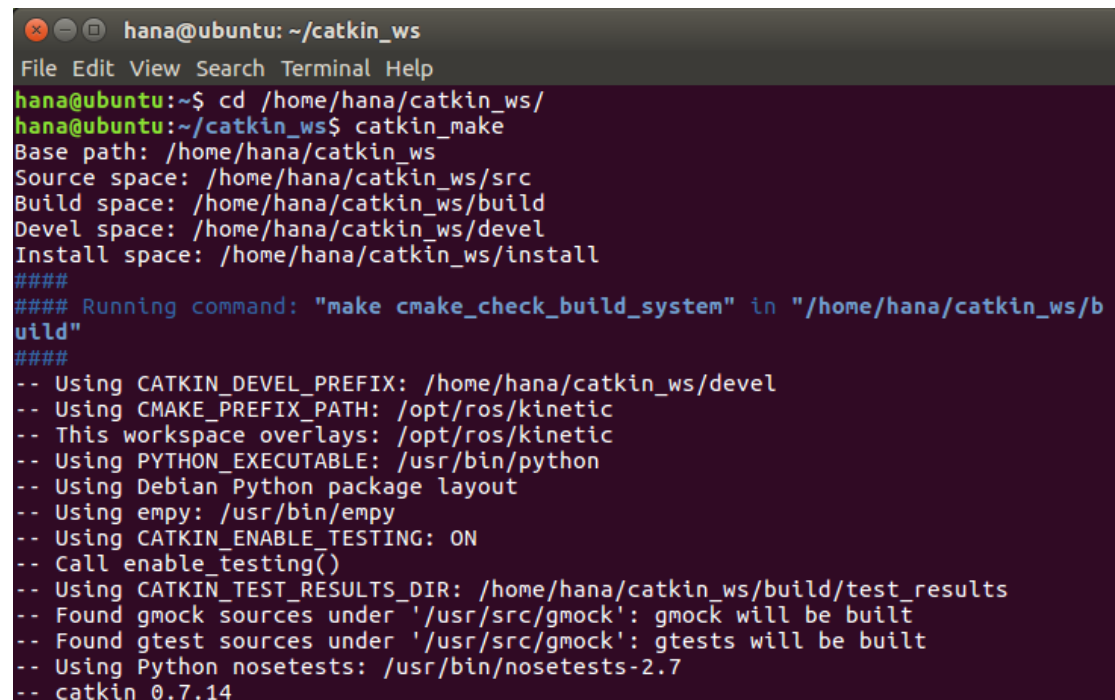
CeleX5 双目功能包中包括如下五个文件夹及文件：



- ✧ `celex5dependencies`：该文件夹中包括双目 API 头文件及库文件（Ubuntu 16.04）。
- ✧ `include`：该文件夹存放的是双目功能包头文件。
- ✧ `launch`：该文件中存放 `roslaunch` 启动文件。
- ✧ `nodes`：该文件夹存放 `roslaunch` 的启动节点文件。
- ✧ `src`：该文件夹中存放双目功能包的源文件。
- ✧ `CMakeLists.txt`：用于可执行文件的编译。
- ✧ `Package.xml`：描述双目功能包的属性。

2 CeleX5 双目功能包的编译

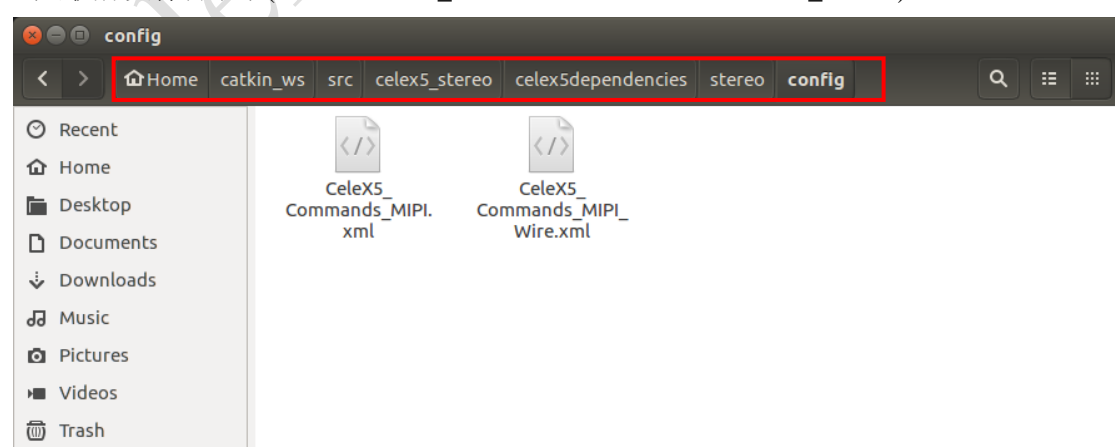
双目功能包的编译需要将 `celex5_msgs` 和 `celex5_stereo` 文件放置到创建好的 ROS 工作空间中的 `src` 目录下。如下图所示，当前的 ROS 工作空间名为 `catkin_ws`，进到工作空间中使用 `catkin_make` 命令，即可编译 `src` 目录下所有 catkin 工程。(注：编译依赖 OpenCV，用户需要自行配置 Ubuntu 下的 OpenCV 环境，本示例使用的是 OpenCV 3.3.0 版本)

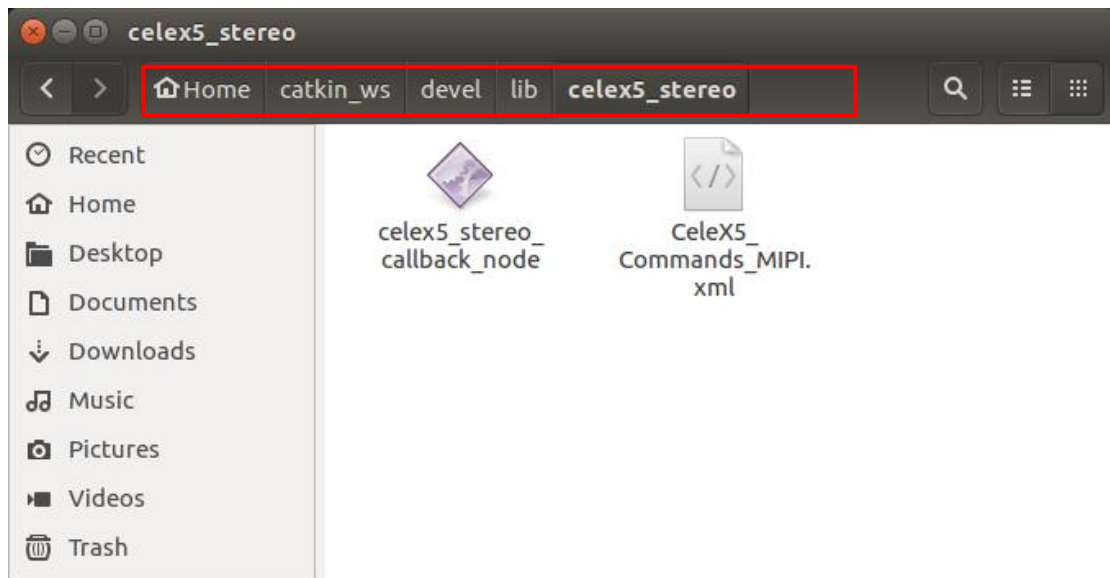


```
hana@ubuntu: ~/catkin_ws
File Edit View Search Terminal Help
hana@ubuntu:~$ cd /home/hana/catkin_ws/
hana@ubuntu:~/catkin_ws$ catkin_make
Base path: /home/hana/catkin_ws
Source space: /home/hana/catkin_ws/src
Build space: /home/hana/catkin_ws/build
Devel space: /home/hana/catkin_ws/devel
Install space: /home/hana/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/hana/catkin_ws/build"
####
-- Using CATKIN_DEVEL_PREFIX: /home/hana/catkin_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/kinetic
-- This workspace overlays: /opt/ros/kinetic
-- Using PYTHON_EXECUTABLE: /usr/bin/python
-- Using Debian Python package layout
-- Using empy: /usr/bin/empy
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/hana/catkin_ws/build/test_results
-- Found gmock sources under '/usr/src/gmock': gmock will be built
-- Found gtest sources under '/usr/src/gmock': gtests will be built
-- Using Python nosetests: /usr/bin/nosetests-2.7
-- catkin 0.7.14
```

3 CeleX5 双目功能包的运行

编译成功后，在工作空间的 `/devel/lib/celex5_stereo/` 目录下会生成可执行文件 `celex5_stereo_callback_node`，用户需要将执行文件所必需的 `.xml` 配置文件（`/home/YOUR_WORKSPACE/src/celex5_stereo/celexdependencies/stereo/config/*.xml`）拷贝到可执行文件目录下（`/home/YOUR_WORKSPACE/devel/lib/celex5_stereo/`）。





在运行 ROS 包之前，首先要先运行 *roscore*。然后，我们可以利用 *roslaunch* 或者 *roslaunch* 来运行节点。由于 CeleX5 的启动需要获取 libusb 权限，为了保证能成功运行节点程序，我们先直接进入 root 权限。

```
root@ubuntu: /home/hana/catkin_ws
File Edit View Search Terminal Help
hana@ubuntu:~/catkin_ws$ sudo su
[sudo] password for hana:
root@ubuntu:/home/hana/catkin_ws# source ./devel/setup.bash
root@ubuntu:/home/hana/catkin_ws# roslaunch celex5_stereo celex5
celex5datamanager.h          celex5_ros.cpp
celex5.h                     celex5_ros.h
celex5processeddata.h       celex5_stereo_callback.launch
celex5_ros_callback_node.cpp celex5_stereo_callback_node
root@ubuntu:/home/hana/catkin_ws# roslaunch celex5_stereo celex5_stereo_callback_no
de
XBase::getApplicationDirPath: readlink count = 72
setDeviceIndex: device_index = 0
setDeviceIndex, m_iDeviceIndex = 0
setDeviceIndex: device_index = 1
setDeviceIndex, m_iDeviceIndex = 1
XBase::getApplicationDirPath: readlink count = 72

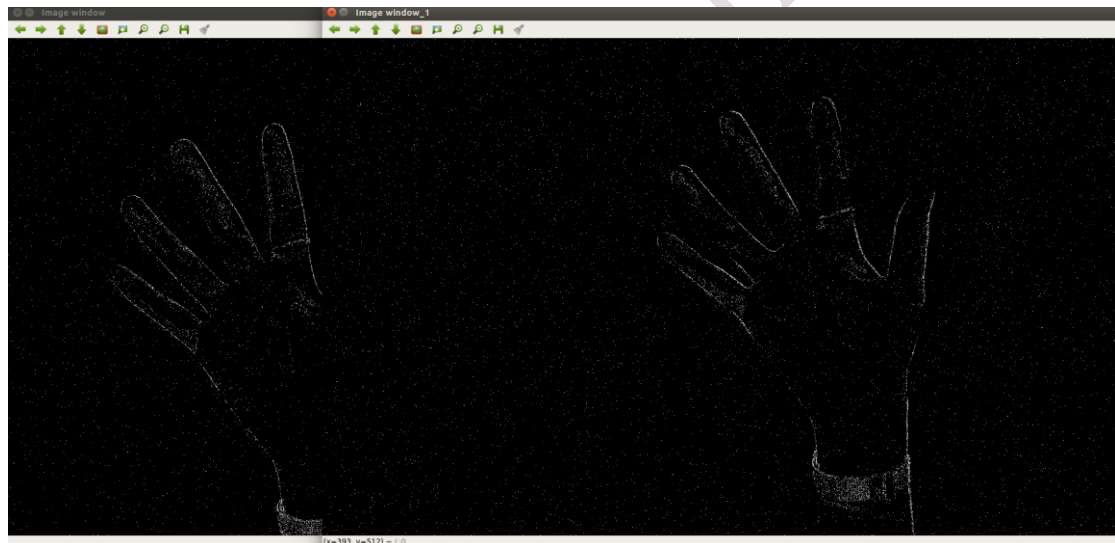
***** HHXmlReader::importCommands_Celex5 Begin *****
***** HHXmlReader::importCommands_Celex5 End *****

----- Serial Number: CX5-MP-0001-HXQ*S*
----- Firmware Version: 2.0
----- Firmware Date: Jan 24 2019 21:25:53
XBase::getApplicationDirPath: readlink count = 72
```

如果出现 `package *** not found` 或者是 tab 不出 `roslaunch` 等命令时，可以使用 `source ./devel/setup.bash` 刷新环境。

```
/home/hana/catkin_ws/src/celex5_stereo/launch/celex5_stereo_callback.launch http://l
File Edit View Search Terminal Help
hana@ubuntu:~$ cd catkin_ws/
hana@ubuntu:~/catkin_ws$ sudo su
[sudo] password for hana:
root@ubuntu:/home/hana/catkin_ws# ros
roscs
rosdep
rosdep-source
rosdistro_build_cache
rosdistro_freeze_source
rosdistro_migrate_to_rep_141
rosdistro_migrate_to_rep_143
root@ubuntu:/home/hana/catkin_ws# ros
roscs
rosdep
rosdep-source
rosdistro_build_cache
rosdistro_freeze_source
rosdistro_migrate_to_rep_141
rosdistro_migrate_to_rep_143
root@ubuntu:/home/hana/catkin_ws# source ./devel/setup.bash
root@ubuntu:/home/hana/catkin_ws# roslaunch celex5_stereo celex5_stereo_callback
.launch
... logging to /root/.ros/log/d1c4a1ae-7aa9-11e9-a20a-000c29876e43/roslaunch-ubu
ntu-73672.log
```

运行后可以看到双目的图像窗口。



也可以通过 rviz 订阅查看 /imgshow 和 /imgshow1 发布的图像信息。

