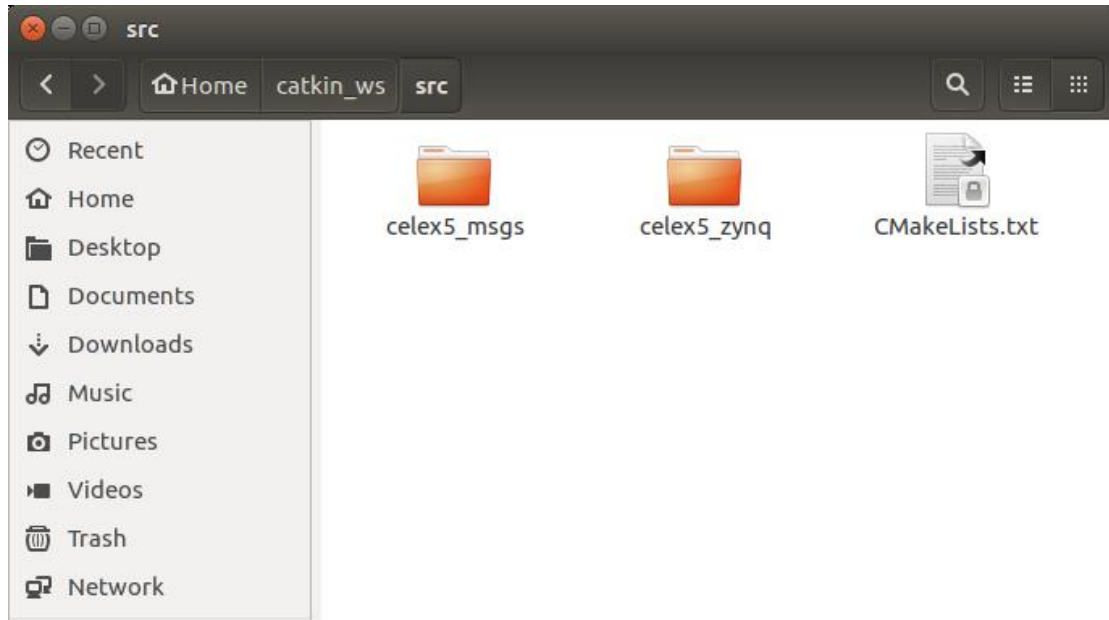
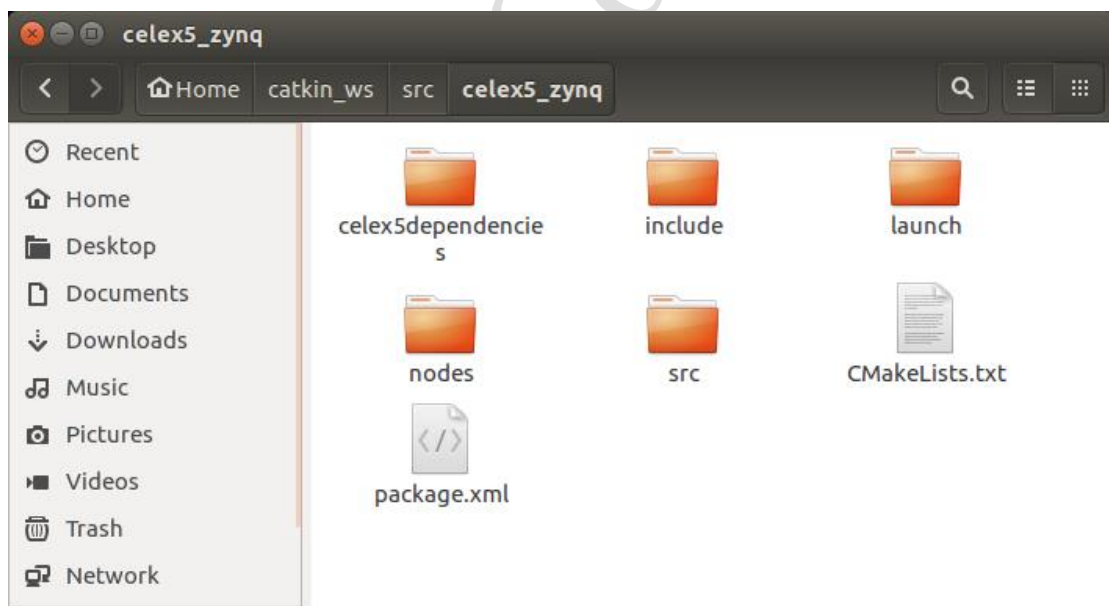


1 Introduction

The sample code file in the ROS environment under the release directory “Sample-ROS” mainly includes two packages (celex5_msgs and celex5_zynq), wherein the *celex5_msgs* is a custom ROS message package, and the *celex5_zynq* is a CeleX5 function package.



The CeleX5 function package includes the following five folders and files.

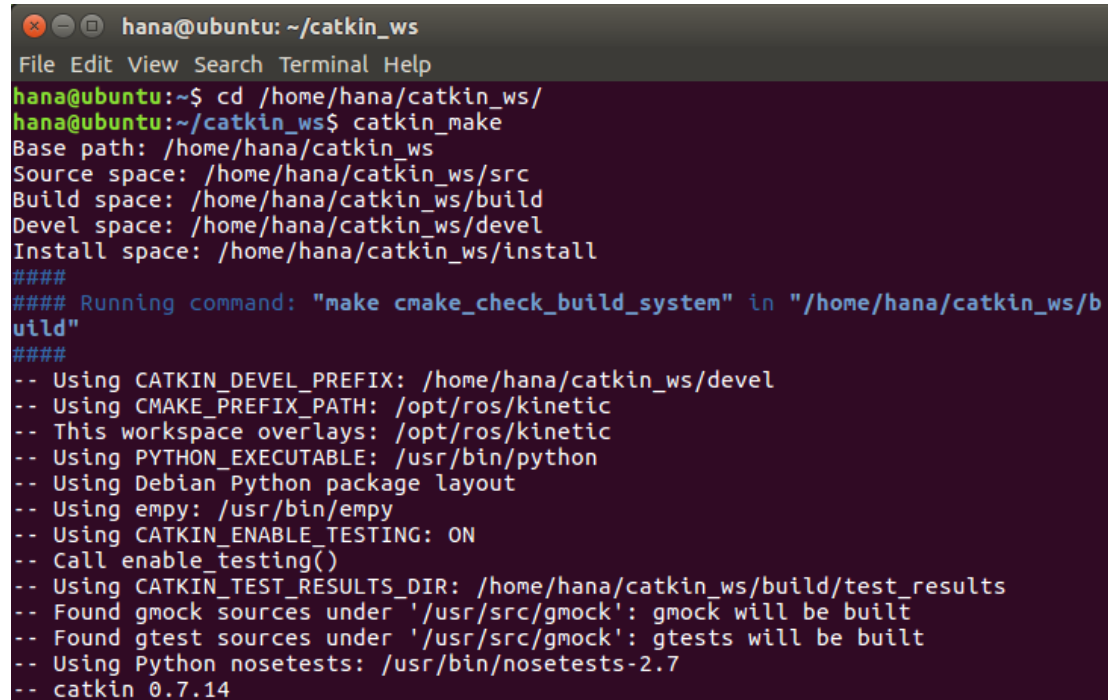


- ✧ **celex5dependencies:** This folder includes the API header files and library files. (for Ubuntu 16.04)
- ✧ **include:** This folder holds the header file.
- ✧ **launch:** The roslaunch startup file is stored in this file.
- ✧ **nodes:** This folder holds the startup node file for rosrn.
- ✧ **src:** The source file is stored in this folder.
- ✧ **CMakeLists.txt:** Used for compilation of executable files.

-
- ✧ **Package.xml:** Describe the properties of the package.

2 Compile ROS Sample Package

Place the *celex5_msgs* and *celex5_zynq* folders in the *src* directory of the created ROS workspace to compile. As shown in the following figure, the current ROS workspace is named *catkin_ws*. Enter the workspace and use the *catkin_make* command to compile all catkin projects in the *src* directory. (Note: Compilation depends on OpenCV, users need to configure the OpenCV environment under Ubuntu, this example uses OpenCV version 3.3.0)



```
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 Run ROS Sample Package

Before running the ROS package, you must first run *roscore*. Then we can use *roslaunch* or *roslaunch* to run the node. As the client, ROS will wait for the network connection of the ZYNQ server (the default IP address of the server is 192.168.1.11, and the user must configure the client device IP to the same network segment).

```
hana@ubuntu: ~/catkin_ws
hana@ubuntu:~/catkin_ws$ source ./devel/setup.bash
hana@ubuntu:~/catkin_ws$ rosrunc celex5_zynq celex5
celex5datamanager.h          celex5_ros_node.cpp
celex5.h                     celex5_zynq_callback.launch
celex5processeddata.h        celex5_zynq_callback_node
celex5_ros_callback_node.cpp celex5_zynq.launch
celex5_ros.cpp               celex5_zynq_node
celex5_ros.h
hana@ubuntu:~/catkin_ws$ rosrunc celex5_zynq celex5_zynq_node
XBase::getApplicationDirPath: readlink count = 59
create socket successfully!
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
connect failed, try to connect again, please wait...
```

If there is a package *** not found or rosrunc and other commands is invalid, you can use `source ./devel/setup.bash` to refresh the environment.

```
hana@ubuntu: ~/catkin_ws
hana@ubuntu:~/catkin_ws$ roslaunch celex5_zynq celex5_zynq.launch
... logging to /home/hana/.ros/log/e88d70dc-8e7c-11e9-a37e-000c29876e43/roslaunch
h-ubuntu-21594.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://ubuntu:44119/

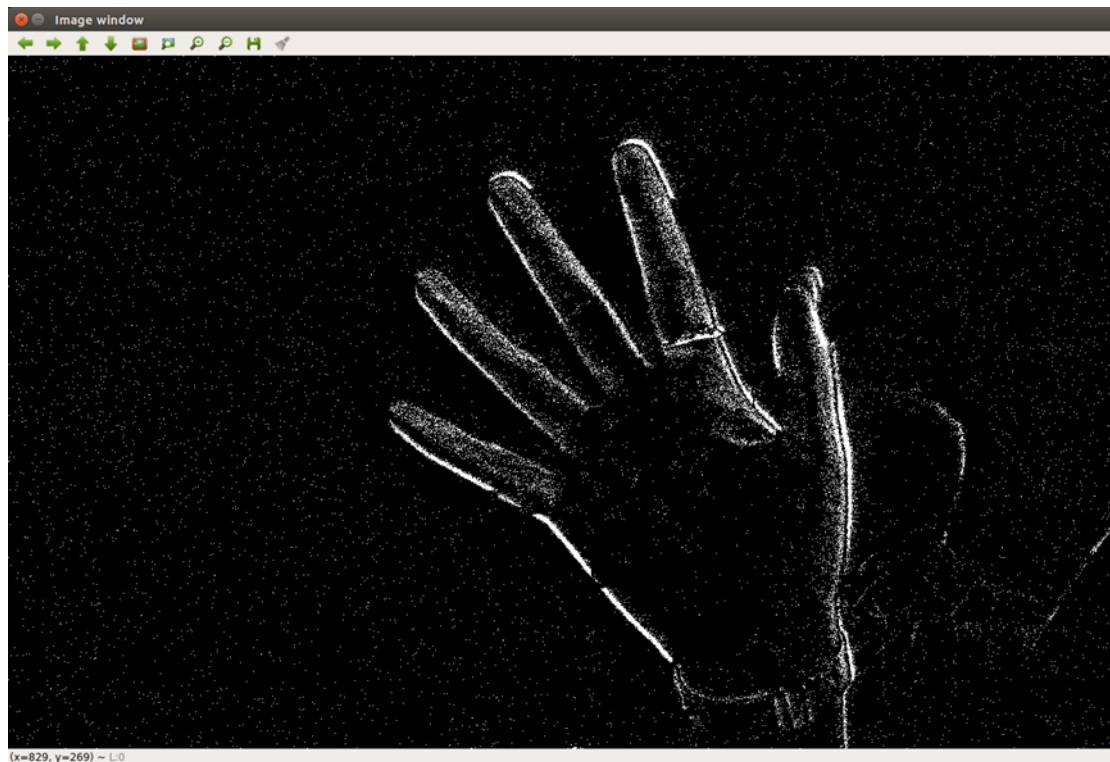
SUMMARY
=====

PARAMETERS
* /celex_zynq/celex_mode: Event_Address_Onl...
* /celex_zynq/clock_rate: 100
* /celex_zynq/threshold: 170
* /rostdistro: kinetic
* /rosversion: 1.12.14

NODES
/
  celex_zynq (celex5_zynq/celex5_zynq_node)

ROS_MASTER_URI=http://localhost:11311
```

If socket connected successfully, you can see the image window after rosrunc or roslaunch the node.



You can also view image information published by /imgshow via rviz.

