

ORB_SLAM2-3 代码运行

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1 orb2 与 orb3 eigen 注意版本：

1.1 注意事项：

本人在编译代码发现，网上的 **orb2 稠密重建**。用 **eigen3.1**（本人 3.1.0）版本，**orb3 用 eigen3.3**（本人 3.3.4）

1.2 orb3 编译时候找不到 cmake

1.2 orb3 编译时候找不到 cmake，把 cmake_modules 放到哥 g2o 和当前 orb 目录：

Ubuntu 16.04 ORB_SLAM3 记录一下编译出现的问题

本人在编译ORB_SLAM3时出现找不到Eigen或者缺少Eigen的某一个文件

发现ORB_SLAM3对比ORB_SLAM2，ORB_SLAM3的根目录少了一个文件夹 **cmake_modules**

里面存放这Find_Eigen文件 所以去Github上把这个文件夹下载下来放到ORB_SLAM3根目录和Thirdparty/G2o的根目录里

https://github.com/raulmur/ORB_SLAM2/tree/master/cmake_modules

编译成功

1.3 eigen3 安装，建议选择源码下载，再编译

准备 3.1.0 跟 3.3.4 两个版本：

```
-----  
mkdir build  
cd build  
cmake ..  
make -j4  
sudo make install  
-----
```

安装后，eigen3 在/usr/local/include/下。eigen3 没有库文件，只有头文件

1.4 查看 eigen3 版本

```
sudo gedit /usr/local/include/eigen3/Eigen/src/Core/util/Macros.h
```

切换版本，直接去 **build** 目录下进行 **sudo make install** 就行，会覆盖原目录

如果该文件打开为空，**eigen3** 可能安装在 **/usr/include/eigen3** 里，把路径里面 **local** 去掉进行查询

1.5 ceres 安装 eigen 版本

ceres1.14.0 版本（支持 slambook2 环境）安装时，用 eigen3.3.4 版本成功了

```
lin@lin-PC: ~/code/ORB_SLAM2_PointCloud/build
File Edit View Search Terminal Help
-- Using flag -std=c++11.
-- Found Eigen3: /usr/include/eigen3 (Required is at least version "3.1.0")
CMake Warning at CMakeLists.txt:42 (FIND_PACKAGE):
  By not providing "FindCSparse.cmake" in CMAKE_MODULE_PATH this project has
  asked CMake to find a package configuration file provided by "CSparse", but
  CMake did not find one.

  Could not find a package configuration file provided by "CSparse" with any
  of the following names:

    CSparseConfig.cmake
    csparse-config.cmake

  Add the installation prefix of "CSparse" to CMAKE_PREFIX_PATH or set
  "CSparse_DIR" to a directory containing one of the above files.  If
  "CSparse" provides a separate development package or SDK, be sure it has
  been installed.

CMake Warning at CMakeLists.txt:43 (FIND_PACKAGE):
  By not providing "FindCholmod.cmake" in CMAKE_MODULE_PATH this project has
  asked CMake to find a package configuration file provided by "Cholmod", but
  CMake did not find one.

  Could not find a package configuration file provided by "Cholmod" with any
```

表示 *CSparse* 找不到，造成这一问题的根本在 *CMakeList.txt* 文件中的 *find_package(CSpase*
REQUIRED) 这一句，无法定位 *CSparse* 导致的。

解决方案

- 1、解决的方法就是将十四讲书中第九讲原程序中自带的cmake文件夹复制到你刚刚建立的工程目录下，该文件夹中定义了编译运行过程中所用到的所有库的路径，使得该文件夹和新建立的工程中的CMakeList.txt文件保持在同一目录下。之后在新建立的工程中的CMakeList.txt中添加list(APPEND CMAKE_MODULE_PATH \${PROJECT_SOURCE_DIR}/cmake)，这一句用来引用cmake文件夹中赋予的路径，再次编译就通过了。
- 2、或者未安装CSparse，需要执行以下命令来安装CSparse。

```
1 | sudo apt-get install libsuitesparse-dev
```

sudo apt-get install libsuitesparse-dev

2 orb2_ros 运行稠密地图进行八叉树建图，并保存八叉树地图与栅格地图

2.1 安装前说明，请仔细阅读

1 orb 稠密代码可能编译成功，但运行出段错误，可能由于 eigen3 的版本不一样，亲测 **eigen3.1.0** 不会出现段错误。（玄学）

2 **pcl** 和 **vtk** 不需安装，安装 **ros1** 会自动安装好。所以先装 **ros1**

3 其他小问题，请百度解决。参考 **csdn 熊猫飞天** 博主的 **ORB_SLAM2** 稠密重建，大家可以自己查看。

1 运行 orb 代码：

```
roslaunch ORB_SLAM2 astra Vocabulary/ORBvoc.txt
Examples/ROS/ORB_SLAM2/Astra.yaml
```

2 运行点云转 map 代码：

```
source ~/catkin_ws/devel/setup.bash
roslaunch pointcloud_mapping tum1.launch
```

3 发布数据：

```
roslaunch play rgbd_dataset_freiburg1_room.bag
/camera/rgb/image_color:=/camera/rgb/image_raw
/camera/depth/image:=/camera/depth/image
```

4 数据跑完，不要关闭上面的终端，进行地图保存：

```
roslaunch octomap_server octomap_saver /home/lin/1.bt
```

格式 bt 和 ot 都行，区别自行百度。

5 保存栅格地图

```
roslaunch map_server map_saver map:=/projected_map -f /home/lin/mymap #保存地图
```

本人遇到的报错在下面篇幅：一个一个排忧解难

2.2 点云转点图代码：rviz 报错：

```
lin@lin-PC: ~/catkin_ws
lin@lin-PC: ~/catkin_ws 80x24
cx: 318.643
cy: 255.314
resolution: 0.01
DepthMapFactor: 1
queueSize: 10
mbuseExact: 0
[ INFO] [1638859903.878355968]: Stereo is NOT SUPPORTED
[ INFO] [1638859903.878438211]: OpenGL device: llvmpipe (LLVM 10.0.0, 128 bits)
[ INFO] [1638859903.878488525]: OpenGL version: 3.1 (GLSL 1.4).
[ERROR] [1638859904.012251184]: PluginlibFactory: The plugin for class 'octomap_rviz_plugin/OccupancyGrid' failed to load. Error: According to the loaded plugin descriptions the class octomap_rviz_plugin/OccupancyGrid with base class type rviz::Display does not exist. Declared types are rviz/Axes rviz/Camera rviz/DepthCloud rviz/Effort rviz/FluidPressure rviz/Grid rviz/GridCells rviz/Illuminance rviz/Image rviz/InteractiveMarkers rviz/LaserScan rviz/Map rviz/Marker rviz/MarkerArray rviz/Odometry rviz/Path rviz/PointCloud rviz/PointCloud2 rviz/PointStamped rviz/Polygon rviz/Pose rviz/PoseArray rviz/PoseWithCovariance rviz/Range rviz/RelativeHumidity rviz/RobotModel rviz/TF rviz/Temperature rviz/WrenchStamped rviz_plugin_tutorials/Imu
^C[rviz-3] killing on exit
[pointcloud_mapping-1] killing on exit
ros shutdown ...
terminate called after throwing an instance of 'pcl::IOException'
what(): : [pcl::PCDWriter::writeASCII] Input point cloud has no data!
```

sudo apt-get install ros-kinetic-octomap-rviz-plugin

kinetic 换成自己的 ros 版本 18.04 用 melodic

```
lin@lin-PC: ~/catkin_ws
lin@lin-PC: ~/catkin_ws 80x24
* /rostdistro: melodic
* /rosversion: 1.14.12

NODES
/
  octomap_server (octomap_server/octomap_server_node)
  pointcloud_mapping (pointcloud_mapping/pointcloud_mapping)
  rviz (rviz/rviz)

ROS_MASTER_URI=http://localhost:11311

process[pointcloud_mapping-1]: started with pid [25846]
ERROR: cannot launch node of type [octomap_server/octomap_server_node]: octomap_
server
ROS path [0]=/opt/ros/melodic/share/ros
ROS path [1]=/home/lin/catkin_ws/src
ROS path [2]=/opt/ros/melodic/share
process[rviz-3]: started with pid [25847]
[ INFO] [1638860058.341719604]: rviz version 1.13.21
[ INFO] [1638860058.341895271]: compiled against Qt version 5.9.5
[ INFO] [1638860058.341907063]: compiled against OGRE version 1.9.0 (Ghadamon)
[ INFO] [1638860058.358827809]: Forcing OpenGL version 0.
topicColor: /RGBD/RGB/Image
topicDepth: /RGBD/Depth/Image
```

sudo apt install ros-melodic-octomap

sudo apt install ros-melodic-octomap-server

2.3 pcl::IOException 报错:

```
PointCloudMapper.cc
~/catkin_ws/src/pointcloud_mapping/src
Save

mvGlobalPointClouds.clear();
mGlobalPointCloudID=0;
mLastGlobalPointCloudID=0;
}

void PointCloudMapper::shutdown()
{
    {
        unique_lock<mutex> lck(shutDownMutex);
        shutDownFlag = true;
    }
    string save_path = "/home/lin/resultPointCloudFile.pcd";
    pcl::io::savePCDFile(save_path,*globalMap);
    cout<<"save pcd files to : "<<save_path<<endl;
}
// -----end of namespace
}

C++ Tab Width: 8 Ln 448, Col 38 INS
```


2.4 保存地图码报错:

```
-- Installing: /usr/local/share/dynamicEDT3D/dynamicEDT3DTargets.cmake
lin@lin-PC:~/software/octomap/build$ rosrun octomap_server octomap_saver /home/lin/1
[ INFO] [1638862904.833570273]: Requesting the map from /octomap_binary...
[ INFO] [1638862905.018803731]: Map received (1581792 nodes, 0.020000 m res), saving to /home/lin/1
[ERROR] [1638862905.018864635]: Unknown file extension, must be either .bt or .oct
lin@lin-PC:~/software/octomap/build$ rosrun octomap_server octomap_saver /home/lin/1.bt
[ INFO] [1638862919.570881034]: Requesting the map from /octomap_binary...
[ INFO] [1638862919.762695936]: Map received (1581792 nodes, 0.020000 m res), saving to /home/lin/1.bt
lin@lin-PC:~/software/octomap/build$
```


2.5 显示 ot 和 bt 需要安装 octomap

octomap 和 ros 的 octomap 是 2 个东西

ubuntu18.04 安装octomap库

原创

zhiwei121

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2128



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文章标签:

ubuntu18.04

octomap

ubuntu18.04 安装octomap库

1、安装依赖项

```
sudo apt-get install doxygen
```

2、下载源码

```
git clone https://github.com/OctoMap/octomap
```

3、编译

```
cd octomap
```

```
mkdir build
```

```
cd build
```

```
cmake ...
```

```
make
```

4、安装

```
sudo make install
```

2.6 安装 navigation 导航包

```
sudo sh -c './etc/lsb-release && echo "deb http://mirrors.ustc.edu.cn/ros/ubuntu/ `lsb_release -cs` main" > /etc/apt/sources.list.d/ros-latest.list'
```

```
sudo apt-get update
```

```
sudo apt-get install ros-kinetic-navigation
```

参考链接:

https://blog.csdn.net/qq_43066145/article/details/107638543

2.流程

(1)安装navigation功能包，或者单独安装map_server功能包

安装功能包时如果找不到功能包，添加一下中科大的镜像站，然后再下载

```
1 sudo sh -c './etc/lsb-release && echo "deb http://mirrors.ustc.edu.cn/ros/ubuntu/`lsb_release -cs` main" > /etc/apt/sources.list.d/ros-latest.list'
2 sudo apt-get update
3 sudo apt-get install ros-kinetic-navigation
```

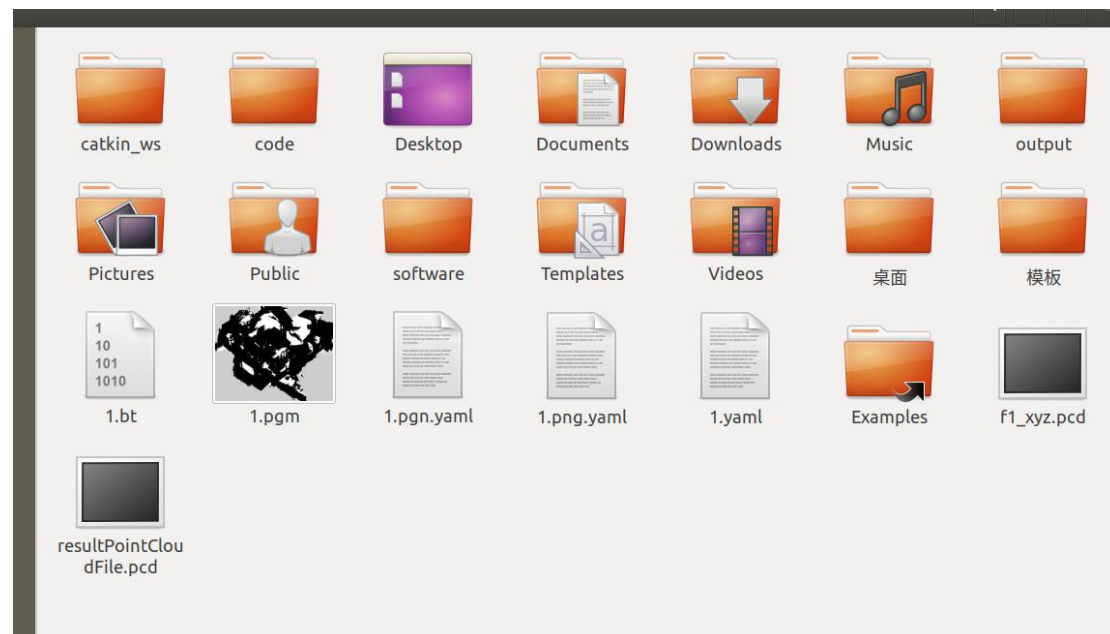
安装好里面有 map_server,move-base 等包

```
Setting up libcaca-dev (0.99.beta19-2ubuntu0.18.04.3) ...
Setting up libsdl1.2-dev (1.2.15+dfsg2-0.1ubuntu0.1) ...
Setting up ros-melodic-nav-core (1.16.7-1bionic.20210921.223539) ...
Setting up ros-melodic-navfn (1.16.7-1bionic.20210921.223929) ...
Setting up ros-melodic-base-local-planner (1.16.7-1bionic.20210921.223912) ...
Setting up libsdl-image1.2-dev:amd64 (1.2.12-8ubuntu0.1) ...
Setting up ros-melodic-move-slow-and-clear (1.16.7-1bionic.20210921.223926) ...
Setting up ros-melodic-carrot-planner (1.16.7-1bionic.20210921.224610) ...
Setting up ros-melodic-clear-costmap-recovery (1.16.7-1bionic.20210921.223926) ...
Setting up ros-melodic-rotate-recovery (1.16.7-1bionic.20210921.224627) ...
Setting up ros-melodic-dwa-local-planner (1.16.7-1bionic.20210921.224616) ...
Setting up ros-melodic-global-planner (1.16.7-1bionic.20210921.224354) ...
Setting up ros-melodic-map-server (1.16.7-1bionic.20210921.204207) ...
Setting up ros-melodic-move-base (1.16.7-1bionic.20210921.225105) ...
Setting up ros-melodic-navigation (1.16.7-1bionic.20210921.225633) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
```

2.7 保存栅格地图

```
/camera/rgb/camera_info
/camera/rgb/image_raw
/clicked_point
/clock
/cortex_marker_array
/free_cells_vis_array
/imu
/initialpose
/map
/move_base_simple/goal
/occupied_cells_vis_array
/octomap_binary
/octomap_full
/octomap_point_cloud_centers
/octomap_server/parameter_descriptions
/octomap_server/parameter_updates
/pointcloud_mapping/Global/PointCloudOutput
/pointcloud_mapping/Local/PointCloudOutput
/projected_map
/rosout
/rosout_agg
/tf
/tf_static
```

```
lin@lin-PC: ~
lin@lin-PC: ~ 80x24
lin@lin-PC:~$ roslaunch map_server map_saver map:=/projected_map -f /home/lin/1
[ INFO] [1638867577.358821511]: Waiting for the map
[ INFO] [1638867577.581711744]: Received a 338 X 276 map @ 0.020 m/pix
[ INFO] [1638867577.581755656]: Writing map occupancy data to /home/lin/1.pgm
[ INFO] [1638867577.583066151]: Writing map occupancy data to /home/lin/1.yaml
[ INFO] [1638867577.583357559]: Done
lin@lin-PC:~$
```



查看地图 topic 为/projected_map -f 后跟路径，保存为.pgm 格式（百度，一种图片格式）

二 VIOS_Mono 环境配置

ceres 安装（安装的 1.14.0）

安装前需要依赖:

eigen3 用的 3.3.4 版本

sudo apt-get install liblapack-dev libsuitesparse-dev libgflags-dev libgoogle-glog-dev libgtest-dev

```
-----  
- Installing: /usr/local/include/ceres/internal/autodiff.h  
- Installing: /usr/local/include/ceres/internal/disable_warnings.h  
- Installing: /usr/local/include/ceres/internal/eigen.h  
- Installing: /usr/local/include/ceres/internal/fixed_array.h  
- Installing: /usr/local/include/ceres/internal/macros.h  
- Installing: /usr/local/include/ceres/internal/manual_constructor.h  
- Installing: /usr/local/include/ceres/internal/numeric_diff.h  
- Installing: /usr/local/include/ceres/internal/port.h  
- Installing: /usr/local/include/ceres/internal/reenable_warnings.h  
- Installing: /usr/local/include/ceres/internal/scoped_ptr.h  
- Installing: /usr/local/include/ceres/internal/variadic_evaluate.h  
- Installing: /usr/local/include/ceres/internal/config.h  
- Installing: /usr/local/lib/cmake/Ceres/CeresTargets.cmake  
- Installing: /usr/local/lib/cmake/Ceres/CeresTargets-release.cmake  
- Installing: /usr/local/lib/cmake/Ceres/CeresConfig.cmake  
- Installing: /usr/local/lib/cmake/Ceres/CeresConfigVersion.cmake  
- Installing: /usr/local/lib/cmake/Ceres/FindEigen.cmake  
- Installing: /usr/local/lib/cmake/Ceres/FindGlog.cmake  
- Installing: /usr/local/lib/cmake/Ceres/FindGflags.cmake  
- Installing: /usr/local/lib/libceres.a  
lin@lin-PC:~/software/ceres-solver-1.14.0/build$ cd
```