

# ORB\_SLAM3环境配置

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## ORB\_SLAM3环境配置

### 1. 下载软件安装包

### 2. 依次安装软件包

#### 1. 补齐前置库

##### 注意事项

出现问题A

解决方式1

解决方式2

解决方式3

解决方式4

#### 2. 安装Eigen3

#### 3. 安装Pangolin

#### 4. 安装Opencv3.4.3

##### 注意事项

出现问题A

解决方式

出现问题B

解决方式

出现问题C

解决方式

#### 5. 安装boost 库

#### 6. 安装ORB-SLAM3

##### 1. 源码编译

##### 注意事项

出现问题A

解决方式

##### 2. 安装

##### 验证案例代码：

##### 注意事项

出现问题A

解决方式

出现问题B

解决方式

##### 3. 编译ORB\_SLAM3 ROS模块

##### 注意事项

出现问题A

解决方式

出现问题B

解决方式

出现问题C

解决方式

### 3. 开启摄像头连接

##### 注意事项

出现问题A

解决方式

出现问题B

解决方式

ORB-SLAM3是一个支持视觉、视觉加惯导、混合地图的SLAM系统,可以在单目,双目和RGB-D相机上利用针孔或者鱼眼模型运行

## 1.下载软件安装包

ORB-SLAM3源码

Pangolin

Eigen3

Opencv3.4.3

boost 库

## 2.依次安装软件包

### 1.补齐前置库

```
#顺序可能有误，根据需求安装即可
sudo apt install libgl1-mesa-dev
sudo apt install vim
sudo apt install git
sudo apt install libglew-dev
sudo apt install cmake
sudo apt install libpython2.7-dev
sudo apt install pkg-config
sudo apt install libegl1-mesa-dev libwayland-dev libxkbcommon-dev wayland-protocols
sudo apt-get install build-essential libgtk2.0-dev libavcodec-dev libavformat-dev libjpeg-dev libtiff5-dev libswscale-dev libjasper-dev
sudo apt-get install libssl-dev
```

### 注意事项

#### 出现问题A

E: Sub-process returned an error code

#或

未找到软件包.....

#原因: 未更换下载源, 执行update失败

```
E: Sub-process returned an error code
(48条消息) 错误E: Sub-process returned an error code
无法定位软件包 libappstream3
lcc@lcc-virtual-machine: ~

文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
忽略:1 http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu bionic InRelease
命中:2 https://mirrors.ustc.edu.cn/ubuntu bionic InRelease
命中:3 https://mirrors.ustc.edu.cn/ubuntu bionic-updates InRelease
命中:4 http://mirrors.tuna.tsinghua.edu.cn/ros2/ubuntu bionic InRelease
命中:5 https://mirrors.ustc.edu.cn/ubuntu bionic-backports InRelease
命中:6 http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu bionic Release
命中:7 https://mirrors.ustc.edu.cn/ubuntu bionic-security InRelease

(appstreamcli:38969): GLib-CRITICAL **: 11:58:12.549: g_variant_builder_end: assertion '!GVSB(builder)->uniform_item_types || GVSB(builder)->prev_item_type != NULL || g_variant_type_is_definite (GVSB(builder)->type)' failed

(appstreamcli:38969): GLib-CRITICAL **: 11:58:12.549: g_variant_new_variant: assertion 'value != NULL' failed

(appstreamcli:38969): GLib-ERROR **: 11:58:12.549: g_variant_new_parsed: 11-13: invalid GVariant format string
Trace/breakpoint trap (core dumped)
正在读取软件包列表... 完成
E: Problem executing scripts APT::Update::Post-Invoke-Success 'if /usr/bin/test -w /var/cache/app-info -a -e /usr/bin/appstreamcli; then appstreamcli refresh-cache > /dev/null; fi'
E: Sub-process returned an error code
lcc@lcc-virtual-machine:~$
```

## 解决方式1

解决方法:

```
1 | sudo kill -KILL appstreamcli
2 | wget -P /tmp https://launchpad.net/ubuntu/+archive/primary/+files/appstream_0.9.4-1ubuntu1_amd64.deb https://launchpad.net/ubuntu,
3 | sudo dpkg -i /tmp/appstream_0.9.4-1ubuntu1_amd64.deb /tmp/libappstream3_0.9.4-1ubuntu1_amd64.deb
```

## 解决方式2

### 1、首先，备份原始源文件sources.list

```
sudo cp /etc/apt/sources.list /etc/apt/sources.list.backup
```

### 2、使用 gedit 编辑，更改源文件sources.list内容

执行命令：

```
sudo gedit /etc/apt/sources.list
```

删除sources.list内容，并将以下内容全部复制到sources.list中

```
1 deb http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse
2 deb http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiverse
3 deb http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multiverse
4 deb http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiverse
5 deb http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multiverse
6 deb-src http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse
7 deb-src http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiverse
8 deb-src http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multiverse
9 deb-src http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiverse
10 deb-src http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multiverse
```

保存文件，退出。

### 3、重新执行更新命令，更新软件列表，检测出可以更新的软件。

```
sudo apt-get update
```

## 解决方式3

## 1. 确认软件包名称

首先要确认的是，我们要安装的软件包名称是否正确。在终端中输入以下命令，查看可用的包列表：

```
apt-cache search libjasper-dev
```

如果返回值为空，则说明该包不存在于源列表中，我们需要尝试其他的软件源。

## 2. 更换软件源

如果我们确认软件包名称正确，但是在默认的软件源中找不到这个包，我们需要自己手动添加额外的软件源。这可以通过编辑 `/etc/apt/sources.list` 文件来完成。

在文件的末尾添加以下两行代码，分别是Ubuntu官方源和Ubuntu中科大源：

```
deb http://archive.ubuntu.com/ubuntu bionic main restricted universe multiverse
deb http://mirrors.ustc.edu.cn/ubuntu/ bionic main restricted universe multiverse
```

保存更改后，执行以下命令，更新软件源：

```
sudo apt-get update
```

然后再次尝试安装 `libjasper-dev` 库：

```
sudo apt-get install libjasper-dev
```

如果没有报错信息，说明安装成功。

1 — 2.2.1

## 解决方式4

### 解决方法

#### 1. 首先运行如下命令

```
1 | sudo add-apt-repository "deb http://security.ubuntu.com/ubuntu xenial-security main"
```

若运行成功，则跳至第 3 步

```
#再执行
sudo apt-get update
```

## 2. 安装Eigen3

```
cd Eigen3
mkdir build
cd build
cmake ..
sudo make install
```

## 3. 安装Pangolin

```
cd Pangolin
mkdir build
cd build
cmake ..
cmake --build .
```

## 4.安装Opencv3.4.3

```
cd opencv-3.4.3
mkdir build
cd build
cmake -D CMAKE_BUILD_TYPE=Release -D CMAKE_INSTALL_PREFIX=/usr/local ..
make -j4
sudo make install
#配置环境.....
```

### 注意事项

#### 出现问题A

E: 软件包 libjasper-dev 没有可安装候选



```
lcc@lcc-virtual-machine:~/SLAM$ sudo apt-get install build-essential libgtk2.0-dev
libavcodec-dev libavformat-dev libjpeg-dev libtiff5-dev libswscale-dev libjas
per-dev
正在读取软件包列表... 完成
正在分析软件包的依赖关系树
正在读取状态信息... 完成
没有可用的软件包 libjasper-dev，但是它被其它的软件包引用了。
这可能意味着这个缺失的软件包可能已被废弃，
或者只能在其他发布源中找到
E: 软件包 libjasper-dev 没有可安装候选
```

#### 解决方式

```
sudo add-apt-repository "deb http://security.ubuntu.com/ubuntu xenial-security
main"
sudo apt update
sudo apt install libjasper1 libjasper-dev
```

#### 出现问题B

#安装opencv gcc版本过低 make报错



```
lcc@lcc-virtual-machine: ~/SLAM/opencv-3.4.3(1)/opencv-3.4.3/build
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
le/protobuf/util/internal/protostream_objectsource.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/internal/protostream_objectwriter.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/internal/type_info.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/internal/utility.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/json_util.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/message_differencer.cc.o
[ 6%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/time_util.cc.o
[ 7%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/util/type_resolver_util.cc.o
[ 7%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/wire_format.cc.o
[ 7%] Building CXX object 3rdparty/protobuf/CMakeFiles/libprotobuf.dir/src/goog
le/protobuf/wrappers.pb.cc.o
[ 7%] Linking CXX static library ../lib/liblibprotobuf.a
[ 7%] Built target libprotobuf
Makefile:165: recipe for target 'all' failed
make: *** [all] Error 2
lcc@lcc-virtual-machine: ~/SLAM/opencv-3.4.3(1)/opencv-3.4.3/build$
```

## 解决方式

原因是Linux系统gcc版本过低，yum安装的gcc是4.8.5的。需要升级gcc，如下

```
yum -y install centos-release-scl
yum -y install devtoolset-9-gcc devtoolset-9-gcc-c++ devtoolset-9-binutils
scl enable devtoolset-9 bash
echo "source /opt/rh/devtoolset-9/enable" >> /etc/profile
gcc -v
```

```
[root@redis-6.0.4]# yum -y install centos-release-scl
```

```
[root@redis-6.0.4]# yum -y install devtoolset-9-gcc devtoolset-9-gcc-c++ devtoolset-9-binutils
```

```
[root@redis-6.0.4]# scl enable devtoolset-9 bash
[root@redis-6.0.4]# echo "source /opt/rh/devtoolset-9/enable" >> /etc/profile
[root@bj-tct redis-6.0.4]#
```

三、重新编译

```
[root@redis-6.0.4]# make && make install
```

## 出现问题C

死机

## 解决方式

重装虚拟机

## 5.安装boost 库

```
sudo ./bootstrap.sh
sudo ./b2 install
```

## 6.安装ORB-SLAM3

### 1.源码编译

```
chmod +x build.sh
```

#### 注意事项

#### 出现问题A

#cmakelist中opencv版本不同

#### 解决方式

```
LIST(APPEND CMAKE_MODULE_PATH ${PROJECT_SOURCE_DIR}/CMake_
find_package(OpenCV 3.4)
if(NOT OpenCV_FOUND)
    message(FATAL_ERROR "OpenCV > 4.4 not found.")
endif()
MESSAGE("OPENCV VERSION:")
```

### 2.安装

依次安装DBow2, g2o, Sophus后安装ORB\_SLAM3即可。

#### 验证案例代码：

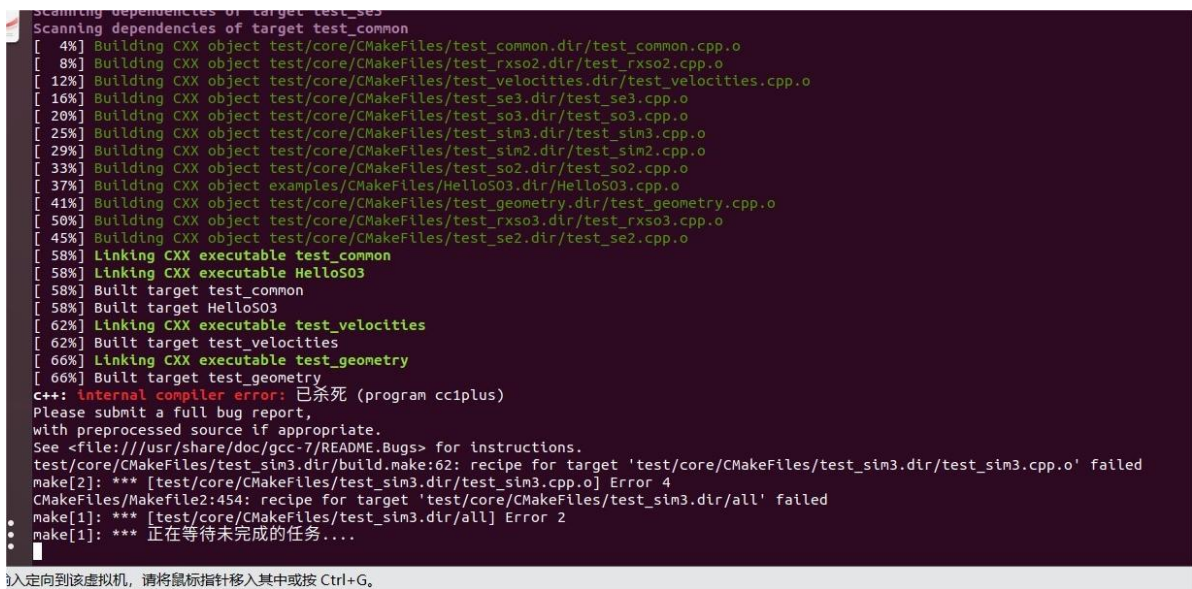
```
./Examples/Monocular-Inertial/mono_inertial_euroc ./Vocabulary/ORBvoc.txt
./Examples/Monocular-Inertial/EuRoC.yaml ./dataset/v102 ./Examples/Monocular-
Inertial/EuRoC_TimeStamps/v102.txt dataset-v102_monoi
```

#### 注意事项

#### 出现问题A

卡死



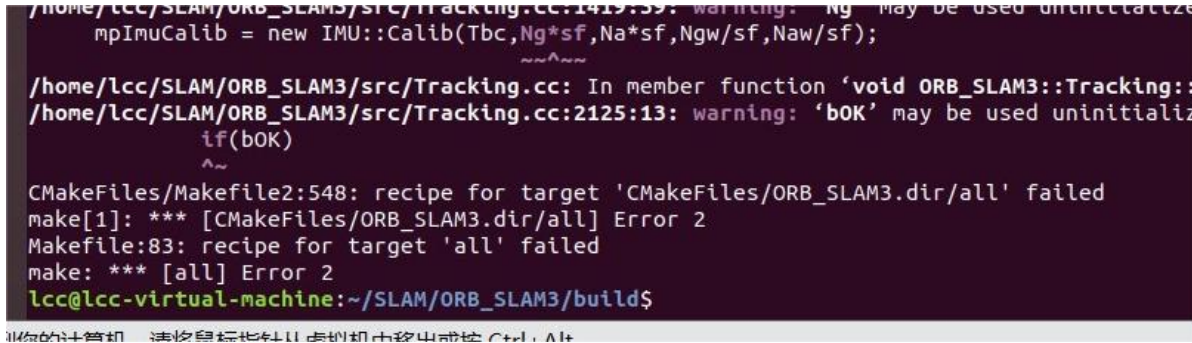


## 解决方式

```
#切换
make -> make -j4
```

## 出现问题B

```
make: *** [all] Error 2
```



## 解决方式

```
#切换
make -j4 -> make
```

## 3.编译ORB\_SLAM3 ROS模块

```
cp -r Examples_old/ROS Examples
vim
~/bashrcexport ROS_PACKAGE_PATH=${ROS_PACKAGE_PATH}:/home/raypc/codes/orb/Examples/ROS/
chmod +x build_ros.sh
./build_ros.sh
```

## 注意事项

### 出现问题A

Error: the rosdep view is empty: call 'sudo rosdep init' and 'rosdep update'  
#ros一键安装时漏掉了

```
CMake Deprecation Warning at /opt/ros/melodic/share/ros/core/rosbuild/rosbuild.cmake:20 (cmake_policy):
  The OLD behavior for policy CMP0005 will be removed from a future version
  of CMake.

The cmake-policies(7) manual explains that the OLD behaviors of all
policies are deprecated and that a policy should be set to OLD only under
specific short-term circumstances. Projects should be ported to the NEW
behavior and not rely on setting a policy to OLD.
Call Stack (most recent call first):
  CMakeLists.txt:2 (include)

CMake Deprecation Warning at /opt/ros/melodic/share/ros/core/rosbuild/rosbuild.cmake:23 (cmake_policy):
  The OLD behavior for policy CMP0011 will be removed from a future version
  of CMake.

The cmake-policies(7) manual explains that the OLD behaviors of all
policies are deprecated and that a policy should be set to OLD only under
specific short-term circumstances. Projects should be ported to the NEW
behavior and not rely on setting a policy to OLD.
Call Stack (most recent call first):
  CMakeLists.txt:2 (include)

[rosbuild] Building package ORB_SLAM3
Failed to invoke /opt/ros/melodic/bin/rospack deps-manifests ORB_SLAM3
[rospack] Error: the rosdep view is empty: call 'sudo rosdep init' and 'rosdep update'

CMake Error at /opt/ros/melodic/share/ros/core/rosbuild/public.cmake:129 (message):

  Failed to invoke rospack to get compile flags for package 'ORB_SLAM3'.
  Look above for errors from rospack itself. Aborting. Please fix the
  broken dependency!

Call Stack (most recent call first):
  /opt/ros/melodic/share/ros/core/rosbuild/public.cmake:207 (rosbuild_invoke_rospack)
  CMakeLists.txt:4 (rosbuild_init)

-- Configuring incomplete, errors occurred!
See also "/home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/build/CMakeFiles/CMakeOutput.log".
make: *** 没有指明目标并且找不到 makefile。 停止。
lcc@lcc-virtual-machine:~/SLAM/ORB_SLAM3$ code ~/.bashrc
lcc@lcc-virtual-machine:~/SLAM/ORB_SLAM3$
```

### 解决方式

解决方法：

把sudo rosdep init和rosdep update执行成功就可以了，下次编译就没有问题了。

### 出现问题B

#### Sophus安装出现问题

fatal error: sophus/se3.hpp:没有那个文件或目录  
#include <sophus/se3.hpp>

```

compilation terminated.
CMakeFiles/MonoAR.dir/build.make:198: recipe for target 'CMakeFiles/MonoAR.dir/src/AR/ViewerAR.cc.o' failed
make[2]: *** [CMakeFiles/MonoAR.dir/src/AR/ViewerAR.cc.o] Error 1
make[2]: *** 正在等待未完成的任务....
In file included from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Frame.h:30:0,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/KeyFrame.h:28,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/MapPoint.h:23,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/FrameDrawer.h:24,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Viewer.h:23,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Tracking.h:26,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/System.h:31,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/src/AR/ros_mono_ar.cc:31:
/home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/ImuTypes.h:29:10: fatal error: sophus/se3.hpp: 没有那个文件或目录
#include <sophus/se3.hpp>
compilation terminated.
CMakeFiles/MonoAR.dir/build.make:118: recipe for target 'CMakeFiles/MonoAR.dir/src/AR/ros_mono_ar.cc.o' failed
make[2]: *** [CMakeFiles/MonoAR.dir/src/AR/ros_mono_ar.cc.o] Error 1
CMakeFiles/Makefile2:631: recipe for target 'CMakeFiles/MonoAR.dir/all' failed
make[1]: *** [CMakeFiles/MonoAR.dir/all] Error 2
make[1]: *** 正在等待未完成的任务....
In file included from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Frame.h:30:0,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/KeyFrame.h:28,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/MapPoint.h:23,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/FrameDrawer.h:24,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Viewer.h:23,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Tracking.h:26,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/System.h:31,
                  from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/src/ros_mono_inertial.cc:34:
/home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/ImuTypes.h:29:10: fatal error: sophus/se3.hpp: 没有那个文件或目录
#include <sophus/se3.hpp>
compilation terminated.
In file included from /home/lcc/SLAM/ORB_SLAM3/Examples/ROS/ORB_SLAM3/../../../../include/Frame.h:30:0,

```

## 解决方式

### 重装Sophus

```

1 | cd Sophus
2 | mkdir build
3 | cd build
4 | cmake ..
5 | make
6 | sudo make install

```

## 出现问题C

opencv默认版本与使用版本不符，引起冲突

warning: libopencv\_imgproc.so.3.2, needed by /usr/lib/libcv\_bridge.so, may conflict with libopencv\_imgproc.so.3.4

```

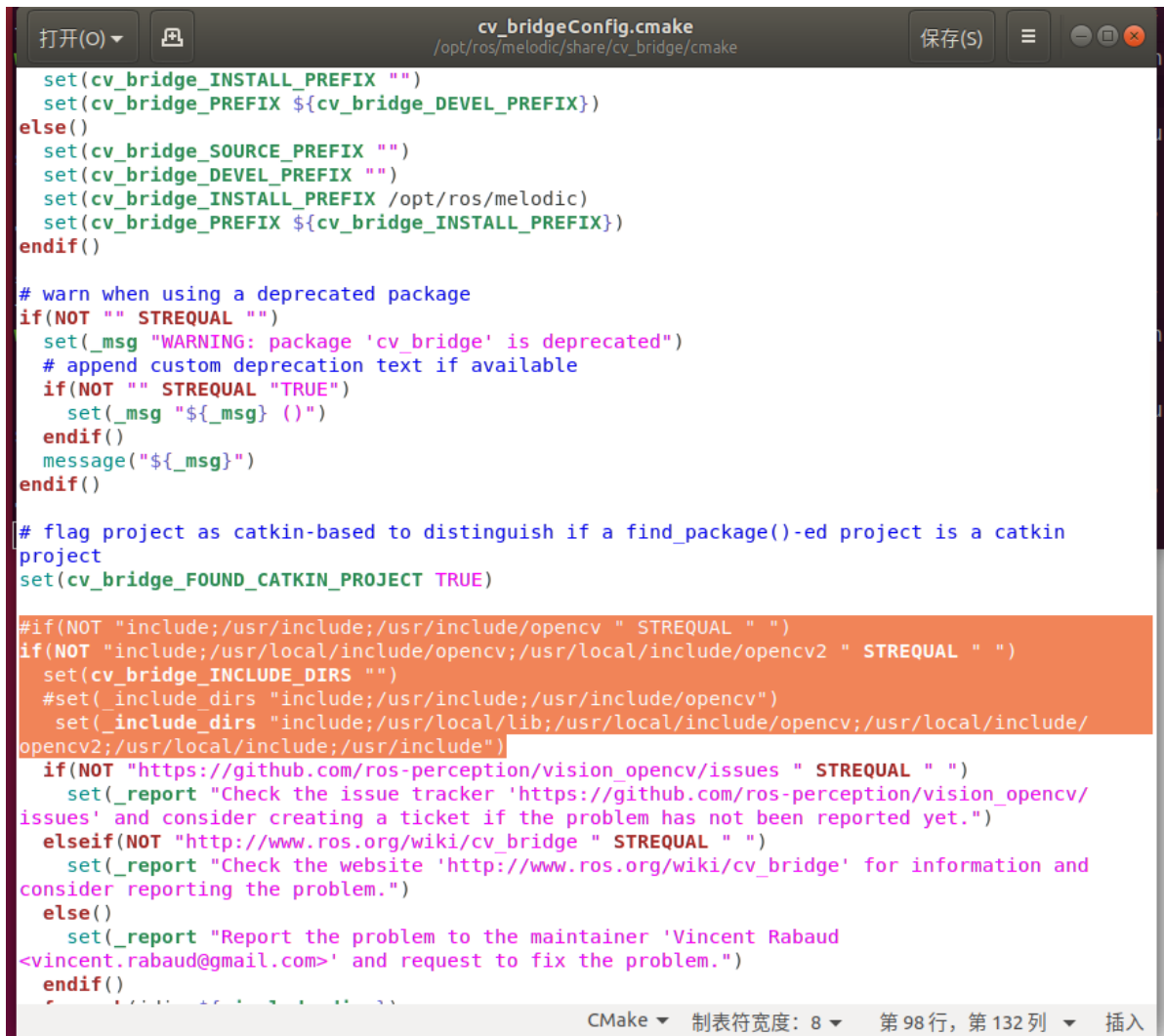
make[2]: *** 正在等待未完成的任务....
c++: internal compiler error: 已杀死 (program cc1plus)
Please submit a full bug report,
with preprocessed source if appropriate.
See <file:///usr/share/doc/gcc-7/README.Bugs> for instructions.
CMakeFiles/Mono.dir/build.make:118: recipe for target 'CMakeFiles/Mono.dir/src/ros_mono.cc.o' failed
make[2]: *** [CMakeFiles/Mono.dir/src/ros_mono.cc.o] Error 4
CMakeFiles/Makefile2:594: recipe for target 'CMakeFiles/Mono.dir/all' failed
make[1]: *** [CMakeFiles/Mono.dir/all] Error 2
make[1]: *** 正在等待未完成的任务....
virtual memory exhausted: 无法分配内存
CMakeFiles/Mono_Inertial.dir/build.make:118: recipe for target 'CMakeFiles/Mono_Inertial.dir/src/ros_mono_inertial.cc.o' failed
make[2]: *** [CMakeFiles/Mono_Inertial.dir/src/ros_mono_inertial.cc.o] Error 1
CMakeFiles/Makefile2:67: recipe for target 'CMakeFiles/Mono_Inertial.dir/all' failed
make[1]: *** [CMakeFiles/Mono_Inertial.dir/all] Error 2
[ 61%] Linking CXX executable ../Stereo_Inertial
[ 69%] Linking CXX executable ../RGBD
/usr/bin/ld: warning: libopencv_imgproc.so.3.2, needed by /opt/ros/melodic/lib/libcv_bridge.so, may conflict with libopencv_imgproc.so.3.4
/usr/bin/ld: warning: libopencv_core.so.3.2, needed by /opt/ros/melodic/lib/libcv_bridge.so, may conflict with libopencv_core.so.3.4
[ 69%] Built target Stereo_Inertial
/usr/bin/ld: warning: libopencv_core.so.3.2, needed by /opt/ros/melodic/lib/libcv_bridge.so, may conflict with libopencv_core.so.3.4
[ 69%] Built target RGBD
[ 76%] Linking CXX executable ../Stereo
/usr/bin/ld: warning: libopencv_imgproc.so.3.2, needed by /opt/ros/melodic/lib/libcv_bridge.so, may conflict with libopencv_imgproc.so.3.4
/usr/bin/ld: warning: libopencv_core.so.3.2, needed by /opt/ros/melodic/lib/libcv_bridge.so, may conflict with libopencv_core.so.3.4
[ 76%] Built target Stereo
CMakeFiles/MonoAR.dir/build.make:118: recipe for target 'CMakeFiles/MonoAR.dir/src/AR/ros_mono_ar.cc.o' failed
make[2]: *** [CMakeFiles/MonoAR.dir/src/AR/ros_mono_ar.cc.o] Error 1
CMakeFiles/Makefile2:573: recipe for target 'CMakeFiles/MonoAR.dir/all' failed
make[1]: *** [CMakeFiles/MonoAR.dir/all] Error 2
Makefile:129: recipe for target 'all' failed
make: *** [all] Error 2
lcc@lcc-virtual-machine:~/SLAM/ORB_SLAM3$

```



## 解决方式

修改cv\_bridgeConfig.cmake

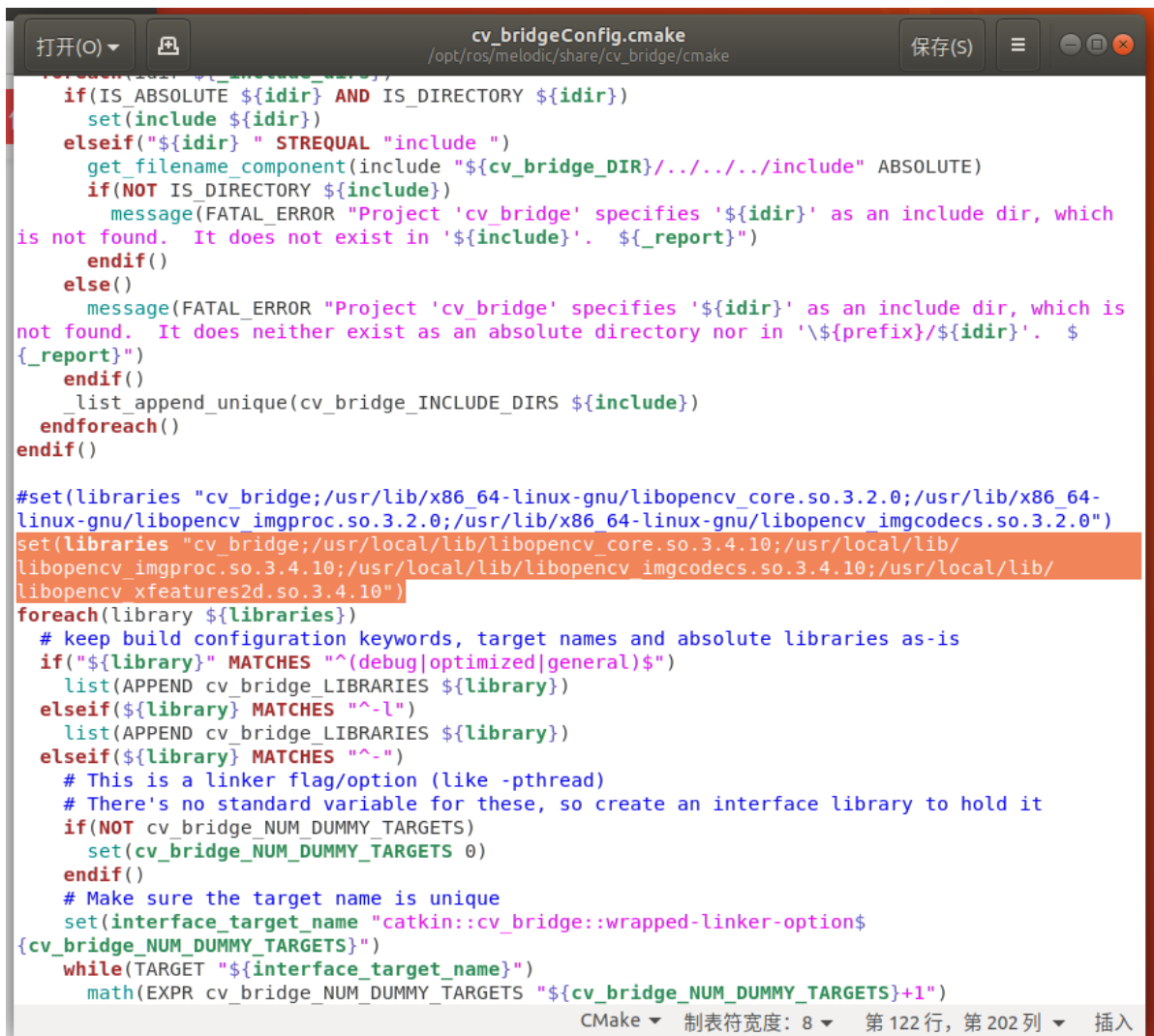


```
set(cv_bridge_INSTALL_PREFIX "")
set(cv_bridge_PREFIX ${cv_bridge_DEVEL_PREFIX})
else()
set(cv_bridge_SOURCE_PREFIX "")
set(cv_bridge_DEVEL_PREFIX "")
set(cv_bridge_INSTALL_PREFIX /opt/ros/melodic)
set(cv_bridge_PREFIX ${cv_bridge_INSTALL_PREFIX})
endif()

# warn when using a deprecated package
if(NOT "" STREQUAL "")
set(_msg "WARNING: package 'cv_bridge' is deprecated")
# append custom deprecation text if available
if(NOT "" STREQUAL "TRUE")
set(_msg "${_msg} ()")
endif()
message("${_msg}")
endif()

# flag project as catkin-based to distinguish if a find_package()-ed project is a catkin project
set(cv_bridge_FOUND_CATKIN_PROJECT TRUE)

#if(NOT "include;/usr/include;/usr/include/opencv " STREQUAL " ")
if(NOT "include;/usr/local/include/opencv;/usr/local/include/opencv2 " STREQUAL " ")
set(cv_bridge_INCLUDE_DIRS "")
#set(_include_dirs "include;/usr/include;/usr/include/opencv")
set(_include_dirs "include;/usr/local/lib;/usr/local/include/opencv;/usr/local/include/opencv2;/usr/local/include;/usr/include")
if(NOT "https://github.com/ros-perception/vision_opencv/issues " STREQUAL " ")
set(_report "Check the issue tracker 'https://github.com/ros-perception/vision_opencv/issues' and consider creating a ticket if the problem has not been reported yet.")
elseif(NOT "http://www.ros.org/wiki/cv_bridge " STREQUAL " ")
set(_report "Check the website 'http://www.ros.org/wiki/cv_bridge' for information and consider reporting the problem.")
else()
set(_report "Report the problem to the maintainer 'Vincent Rabaud <vincent.rabaud@gmail.com>' and request to fix the problem.")
endif()
endif()
```



```
if(IS_ABSOLUTE ${idir} AND IS_DIRECTORY ${idir})
    set(include ${idir})
elseif("${idir}" STREQUAL "include")
    get_filename_component(include "${cv_bridge_DIR}/../../include" ABSOLUTE)
    if(NOT IS_DIRECTORY ${include})
        message(FATAL_ERROR "Project 'cv_bridge' specifies '${idir}' as an include dir, which
is not found. It does not exist in '${include}'. ${_report}")
    endif()
else()
    message(FATAL_ERROR "Project 'cv_bridge' specifies '${idir}' as an include dir, which is
not found. It does neither exist as an absolute directory nor in '${prefix}/${idir}'. ${
_report}")
    endif()
    _list_append_unique(cv_bridge_INCLUDE_DIRS ${include})
endforeach()
endif()

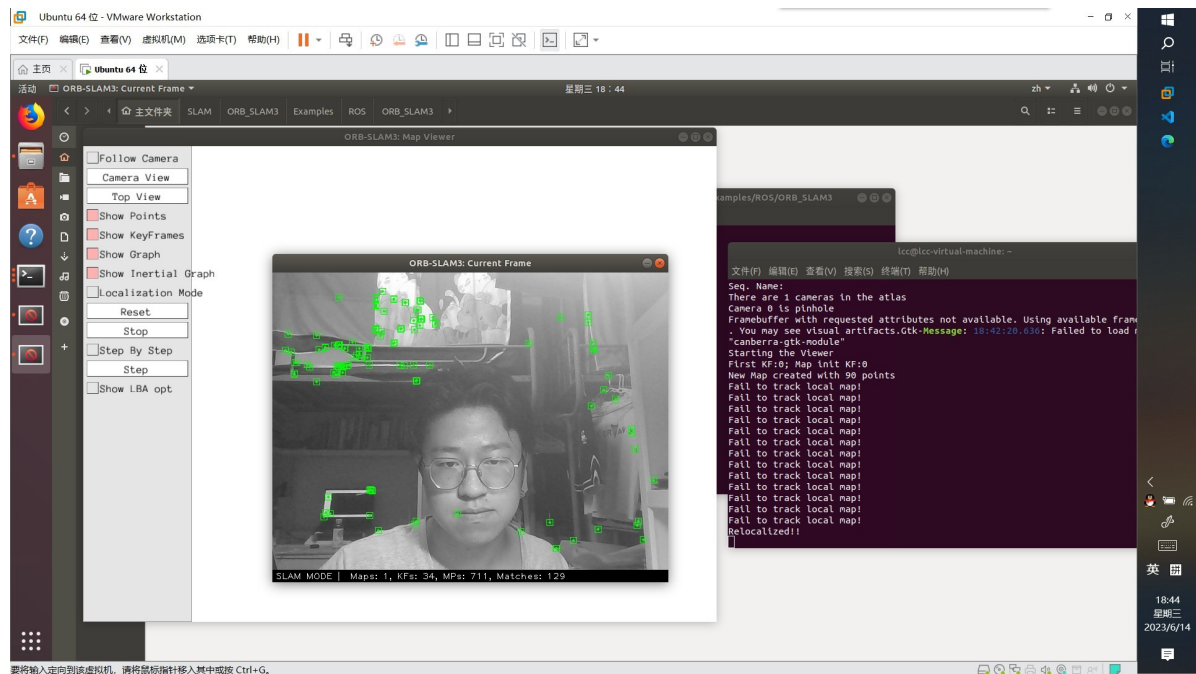
#set(libraries "cv_bridge;/usr/lib/x86_64-linux-gnu/libopencv_core.so.3.2.0;/usr/lib/x86_64-
linux-gnu/libopencv_imgproc.so.3.2.0;/usr/lib/x86_64-linux-gnu/libopencv_imgcodecs.so.3.2.0")
set(libraries "cv_bridge;/usr/local/lib/libopencv_core.so.3.4.10;/usr/local/lib/
libopencv_imgproc.so.3.4.10;/usr/local/lib/libopencv_imgcodecs.so.3.4.10;/usr/local/lib/
libopencv_xfeatures2d.so.3.4.10")
foreach(library ${libraries})
    # keep build configuration keywords, target names and absolute libraries as-is
    if("${library}" MATCHES "^(debug|optimized|general)$")
        list(APPEND cv_bridge_LIBRARIES ${library})
    elseif("${library}" MATCHES "^-l")
        list(APPEND cv_bridge_LIBRARIES ${library})
    elseif("${library}" MATCHES "^-")
        # This is a linker flag/option (like -pthread)
        # There's no standard variable for these, so create an interface library to hold it
        if(NOT cv_bridge_NUM_DUMMY_TARGETS)
            set(cv_bridge_NUM_DUMMY_TARGETS 0)
        endif()
        # Make sure the target name is unique
        set(interface_target_name "catkin::cv_bridge::wrapped-linker-option$
{cv_bridge_NUM_DUMMY_TARGETS}")
        while(TARGET "${interface_target_name}")
            math(EXPR cv_bridge_NUM_DUMMY_TARGETS "${cv_bridge_NUM_DUMMY_TARGETS}+1")
        endwhile()
    endif()
endforeach()
CMake 制表符宽度: 8 第 122 行, 第 202 列 插入
```

(其实我修改完之后还是不行就又改回来了，但就能编译了)

### 3.开启摄像头连接

```
#将camera.py放入 /Examples/ROS/ORB_SLAM3/文件夹下
chmod +x camera.py
roslaunch ORB_SLAM3 camera.py
roslaunch ORB_SLAM3 Mono /home/lcc/SLAM/ORB_SLAM3/Vocabulary/ORBvoc.txt
/home/lcc/SLAM/ORB_SLAM3/Examples/Monocular/TUM1.yaml
```





## 注意事项

### 出现问题A

#运行后系统提示如下

```
[ WARN:0] global /tmp/pip-req-build-6amqbhlx/opencv/modules/videoio/src/cap_v4l.cpp (893) open
VIDEOIO(V4L2:/dev/video0): can't open camera by index
```

### 解决方式

启动 虚拟机->可移动设备->关于摄像头设备的选项

### 出现问题B

初始摄像头黑屏没有画面

### 解决方式

调整摄像头的位置（物理）