cartographer安装教程

1. 建立该脚本并运行来安装需要的依赖：

```
# Install the required libraries that are available as debs.
sudo apt-get update
sudo apt-get install -y \
    clang \
    cmake \
    g++ \
    git \
    google-mock \
    libboost-all-dev \
    libcairo2-dev \
    libcurl4-openssl-dev \
    libeigen3-dev \
    libgflags-dev \
    libgoogle-glog-dev \
    liblua5.2-dev \
    libsuitesparse-dev \
    lsb-release \
    ninja-build \
    stow

# Install Ceres Solver and Protocol Buffers support if available. # No need to
build it ourselves. if [[ "$(lsb_release -sc)" = "focal" || "$(lsb_release -
sc)" = "buster" ]]then
    sudo apt-get install -y python3-sphinx libgmock-dev libceres-dev protobuf-
compiler
else
    sudo apt-get install -y python-sphinx
    if [[ "$(lsb_release -sc)" = "bionic" ]]
    then
```

```
    sudo apt-get install -y libceres-dev
  fifi
```

2. 安装ninja和所需要的构建工具

```
sudo apt-get install -y python-wstool python-rosdep ninja-build
```

3. 创建工作区并初始化

```
mkdir carto_ros
cd carto_ros
wstool init src
```

这一步结束之后，**在主目录下会出现一个carto_ros（任意取名）的工作区，该区下多了一个空的src目录**

4. 下载.rosinstall文件，将其放到src目录下，可以使用指令：

```
wstool merge -t src
https://raw.githubusercontent.com/googlecartographer/cartographer_ros/master/cart
```

如果报错如下图：

```
xtark@xtark-vmpc:~/carto_ros$ wstool merge -t src https://raw.githubusercontent.
com/googlecartographer/cartographer_ros/master/cartographer_ros.rosinstall
ERROR in config: Unable to download URL [https://raw.githubusercontent.com/googl
ecartographer/cartographer_ros/master/cartographer_ros.rosinstall]: <urlopen err
or [Errno 104] Connection reset by peer>
```

需要我们自己创建一个.roinstall文件：

```
sudo gedit src/.rosinstall
```
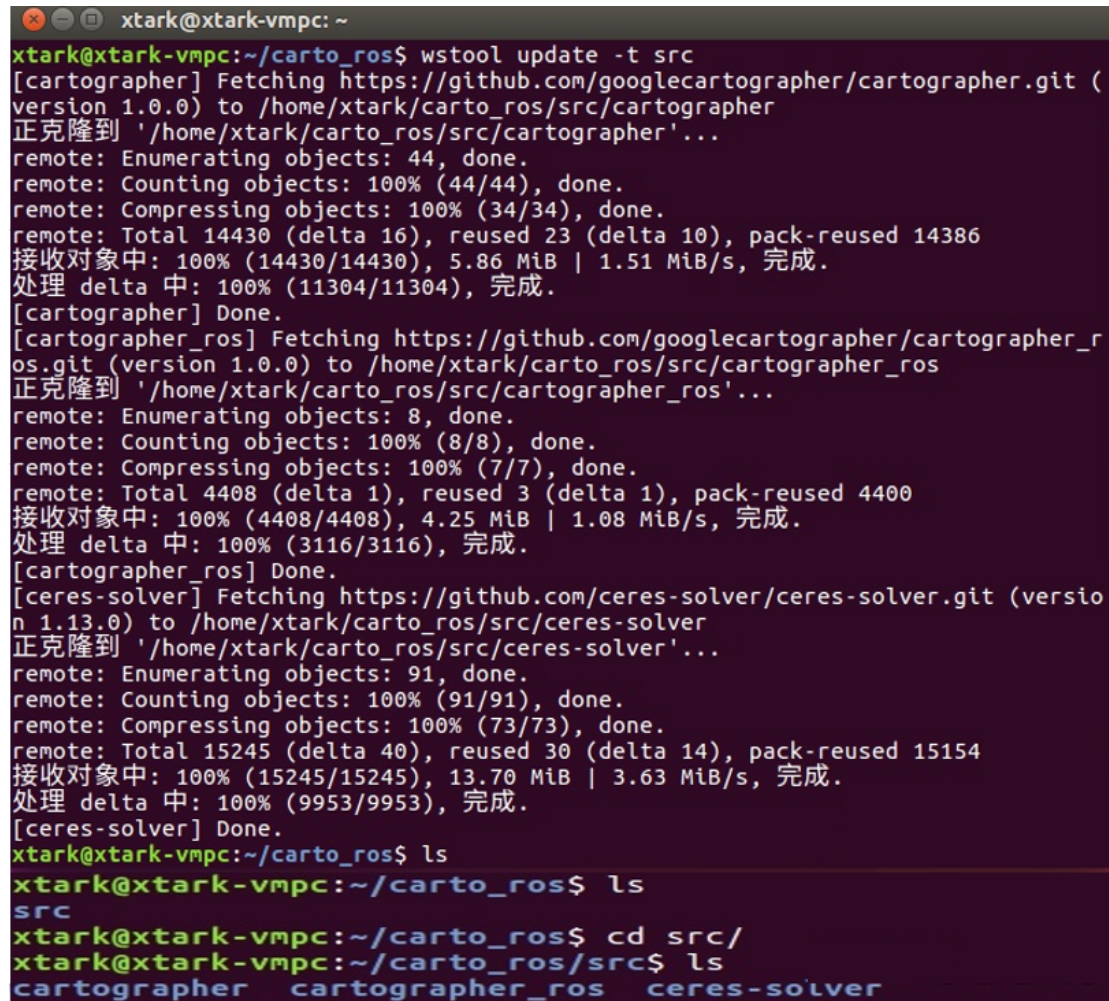
在这个文件中填入：

```
- git: {local-name: cartographer, uri:
'https://github.com/googlecartographer/cartographer.git', version: '1.0.0'}
- git: {local-name: cartographer_ros, uri:
'https://github.com/googlecartographer/cartographer_ros.git', version:
'1.0.0'}
- git: {local-name: ceres-solver, uri: 'https://ceres-
solver.googlesource.com/ceres-solver.git', version: '1.13.0'}
```

5. 更新依赖

```
wstool update -t src
```

到这里，目录结构应该和下图一致：

6. 用cartographer包中自带的脚本安装proto，在carto_ros工作目录中使用指令

```
src/cartographer/scripts/install_proto3.sh
```

完成后目录中应该有protobuf

7. 安装对应版本的ros

   注意安装自己的系统版本，在Ubuntu16下是安装对应的ros-Kinect，参考：
   https://blog.csdn.net/softimite_zifeng/article/details/78632211
   直到画出小乌龟

- 如果rosdep init 遇到问题，参考：

  ROS:sudo rosdep init出错常规方法都无效后解决办法记录 - liangxiao05的文章 -
  知乎 https://zhuanlan.zhihu.com/p/77483614

8. 更新rosdep

```
rosdep update
```

9. 编译安装

```
rosdep install --from-paths src --ignore-src --rosdistro=kinetic -y
catkin_make_isolated --install --use-ninja
```

注意一共五个process

```
re_media
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/glsl120
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/glsl120/submap.vert
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/glsl120/submap.frag
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/glsl120/glsl120.program
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/scripts
-- Installing: /home/xtark/carto_ros/install_isolated/share/c
re_media/materials/scripts/submap.material
<== Finished processing package [5 of 5]: 'cartographer_rviz'
```

到这里，目录结构如下：

```
xtark@xtark-vmpc:~/carto_ros$ ls
build_isolated   devel_isolated   install_isolated   protobuf   src
```

10. 配置环境

```
vi .bashrc
```

最后一行添加

```
source ~/carto_ros/install_isolated/setup.bash
```
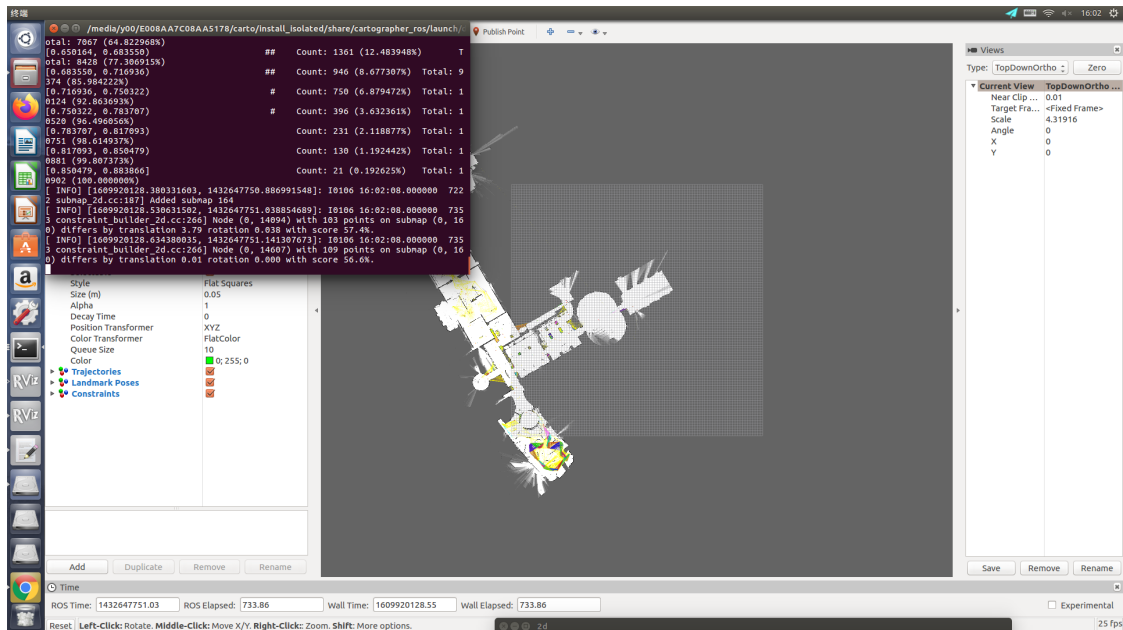
注意验证是否为有效目录

11. 下载测试所需要的数据包

```
wget -P ~/Downloads https://storage.googleapis.com/cartographer-public-
data/bags/backpack_2d/cartographer_paper_deutsches_museum.bag
```

运行

```
roslaunch cartographer_ros demo_backpack_2d.launch
bag_filename:=${HOME}/Downloads/cartographer_paper_deutsches_museum.bag
```


安装依赖中

遇到：

E: 无法定位软件包 libcxsparse3.1.2

E: 无法按照 glob 'libcxsparse3.1.2' 找到任何软件包

E: 无法按照正则表达式 libcxsparse3.1.2 找到任何软件包

在 etc/apt 下的sources.list

添加镜像源：deb http://archive.ubuntu.com/ubuntu/ trusty main universe restricted multiverse

$sudo apt-get update

遇到：

Unable to find the requested Boost libraries.

$sudo apt-get install libboost-all-dev

遇到：Failed to receive SOCKS4 connect request ack.

$git config --global http.proxy 'socks5://127.0.0.1:1080'