目录

第 2 章 opencv ubuntu 环境搭建

2.1 opencv 安装准备工作

2.1.1 安装环境

Ubuntu16.04 LTS
opencv3.2.0
contrib3.2.0

2.1.2 源码获取

软件百度网盘链接：

```
链接：https://pan.baidu.com/s/1AQH_yDL3nInC5bylSNUjdA
提取码：72pk
```

软件官网下载地址：

```
https://github.com/opencv/opencv/archive/3.2.0.tar.gz
https://github.com/opencv/opencv_contrib/archive/3.2.0.tar.gz
```

2.2 opencv 具体安装步骤

2.2.1 安装 opencv 所需依赖库

```
sudo apt-get install cmake libgtk2.0-dev libavcodec-dev libavformat-dev
libjpeg.dev libpng-dev libtiff-dev libtiff4.dev libswscale-dev
libjasper-dev libcurl4-openssl-dev libtbb2 libdc1394-22-dev
```

2.2.2 解压源码

将两个下载的源码文件拷贝到 Ubuntu 中并解压

```
unzip opencv-3.2.0.zip
unzip opencv_contrib-3.2.0.zip
```

如果解压失败，请安装 jar 解压工具：

```
sudo apt-get install default-jdk
jar xvf opencv-3.2.0.zip
```

2.2.3 配置 opencv

创建编译安装目录：

```
mkdir opencv-3.2.0/mybuild
mkdir opencv-3.2.0_install
```

通过 cmake 工具生成 Makefile:

```
cd  opencv-3.2.0/mybuild
cmake -D CMAKE_BUILD_TYPE=Release -D OPENCV_GENERATE_PKGCONFIG=ON -D
CMAKE_INSTALL_PREFIX=/home/edu/ai/opencv-3.2.0_install -D
OPENCV_EXTRA_MODULES_PATH=/home/edu/ai/opencv_contrib-3.2.0/modules
 ..
```

cmake 配置途中需要下载 ippicv_2019_lnx_intel64_general_20180723.tgz、ippicv_linux_20151201.tgz、protobuf-cpp-3.1.0.tar.gz 等文件，还有一堆.i 文件，网速不好的情况可能会比较慢，如果实在太慢可以中断 cmake，直接拷贝下载好的文件到相应目录，然后再继续执行上面的 cmake 命令：

一、ippicv_linux_20151201.tgz 位于 opencv-3.2.0/3rdparty/ippicv/downloads/linux-...

二、protobuf-cpp-3.1.0.tar.gz 位于 opencv_contrib-3.2.0/modules/dnn/.download/bd5e3.../v3.1.0/

三、那一堆.i 文件位于 opencv_contrib-3.2.0/modules/xfeatures2d/src/

2.2.4 编译安装 opencv

进入 opencv-3.2.0/mybuild 目录完成编译安装(该过程根据不同配置的计算可能需要 20 分钟左右)：

```
make  -j4
make  install
```

2.3 opencv 环境配置

2.3.1 添加 opencv 库

打开或创建 opencv.conf 文件，并添加 opencv 安装路径

```
sudo gedit /etc/ld.so.conf.d/opencv.conf
/home/edu/ai/opencv-3.2.0_install/lib <添加内容>
```

2.3.2 使 opencv 配置文件生效

```
sudo ldconfig
```

2.3.3 配置 bash 环境变量

```
sudo gedit  ~/.bashrc <在文件末尾添加如下内容>
 export PKG_CONFIG_PATH=/home/edu/ai/opencv-3.2.0_install/lib/pkgconfig
第四步：生效配置文件
source ~/.bashrc <使环境变量立即生效>
```

2.3.4 验证 opencv 环境配置是否成功

```
pkg-config --cflags --libs opencv
```

2.4 opencv 测试

找到 opencv-3.2.0/samples/cpp/example_cmake 目录,该目录下面有一个测试程序，配置编译之前需要修改 CMakeLists.txt，在文件中添加下面一行：

```
set(OpenCV_DIR /home/edu/ai/opencv-3.2.0/mybuild)
```

然后执行 cmake . 用于生成 makefile

```
cmake .
```

```
stu@qfedu:~/system/opencv-3.2.0/samples/cpp/example_cmake$ ls
CMakeLists.txt  example.cpp
stu@qfedu:~/system/opencv-3.2.0/samples/cpp/example_cmake$ cmake .
-- The C compiler identification is GNU 5.4.0
-- The CXX compiler identification is GNU 5.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Found OpenCV: /usr/local (found version "3.2.0")
-- OpenCV library status:
--     version: 3.2.0
--     libraries: opencv_calib3d;opencv_core;opencv_features2d;opencv_flann;opencv_highgui;opencv_imgcodecs;opencv_
imgproc;opencv_ml;opencv_objdetect;opencv_photo;opencv_shape;opencv_stitching;opencv_superres;opencv_video;opencv_v
ideoio;opencv_videostab;opencv_aruco;opencv_bgsegm;opencv_bioinspired;opencv_ccalib;opencv_datasets;opencv_dnn;open
cv_dpm;opencv_face;opencv_freetype;opencv_fuzzy;opencv_line_descriptor;opencv_optflow;opencv_phase_unwrapping;openc
v_plot;opencv_reg;opencv_rgbd;opencv_saliency;opencv_stereo;opencv_structured_light;opencv_surface_matching;opencv_
text;opencv_tracking;opencv_xfeatures2d;opencv_ximgproc;opencv_xobjdetect;opencv_xphoto
--     include path: /usr/local/include;/usr/local/include/opencv
-- Configuring done
-- Generating done
-- Build files have been written to: /home/stu/system/opencv-3.2.0/samples/cpp/example_cmake
```

会生成 Makefile

```
stu@qfedu:~/system/opencv-3.2.0/samples/cpp/example_cmake$ ls
CMakeCache.txt  CMakeFiles  cmake_install.cmake  CMakeLists.txt  example.cpp  Makefile
```

执行 make

```
make
```

```
stu@qfedu:~/system/opencv-3.2.0/samples/cpp/example_cmake$ make
Scanning dependencies of target opencv_example
[ 50%] Building CXX object CMakeFiles/opencv_example.dir/example.cpp.o
[100%] Linking CXX executable opencv_example
[100%] Built target opencv_example
```

执行生成的可执行文件

```
./opencv_example
```

执行结果