需要安装：

笔记本：	我的第一个笔记本		
创建时间：	2020/8/17 8:13	**更新时间：**	2020/8/19 10:12
作者：	2504213354@qq.com		
标签：	docker捕获摄像头并显示		
URL：	https://blog.csdn.net/qq_37342157/article/details/81244667		

需要安装：
opencv　X11

在网上找到源代码：

```
import cv2
import numpy as np
cap = cv2.VideoCapture(0)
while(1):
# get a frame
ret, frame = cap.read()
# show a frame cv2.imshow("capture", frame)
if cv2.waitKey(1) & 0xFF == ord('q'):
break cap.release()
cv2.destroyAllWindows()
```

拷贝到docker容器里执行：
报错缺少cv2模块

查找资料需要安装opencv-python

步骤一：安装opencv-python

在docker内部执行

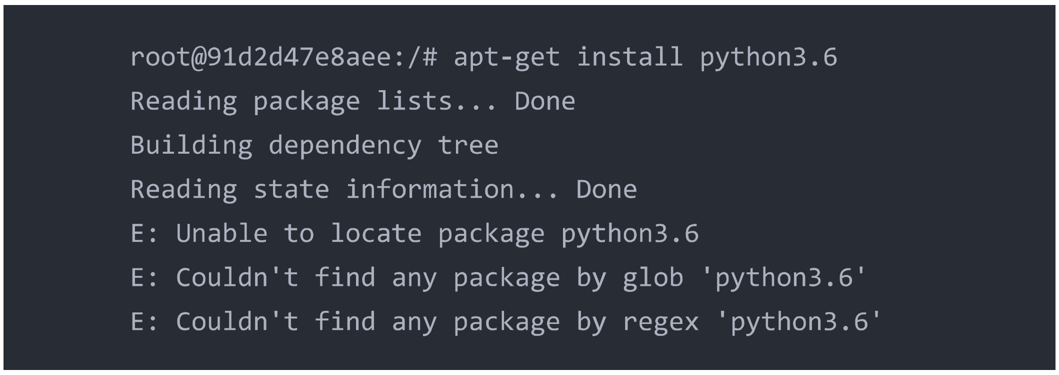
```
pip install opencv-Python
```

如果python版本较低，会报错：

```
Getting requirements to build wheel ... error
  ERROR: Command errored out with exit status 1:
   command: /usr/bin/python /usr/local/lib/python2.7/dist-
packages/pip/_vendor/pep517/_in_process.py get_requires_for_build_wheel
/tmp/tmpK9j8nr
       cwd: /tmp/pip-install-dVEO5J/opencv-python
  Complete output (22 lines):
  Traceback (most recent call last):

.....
```

、直接安装 apt-get install python3.6 ，失败



```
root@91d2d47e8aee:/# apt-get install python3.6
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package python3.6
E: Couldn't find any package by glob 'python3.6'
E: Couldn't find any package by regex 'python3.6'
```

2、添加ppa到系统，执行

```
add-apt-repository ppa:jonathonf/python-3.6
```

失败，问题：add-apt-repository找不到
对于ppa的解释：https://www.cnblogs.com/EasonJim/p/7119331.html

3、执行

```
apt-get update
```

4、执行以下

```
apt-get install python-software-properties
apt-get install software-properties-common
```

5、重复步骤

```
add-apt-repository ppa:jonathonf/python-3.6
```

安装完成！！！

6、查看Python版本以及指向

```
ls -l /usr/bin | grep python
```

```
7、删除原有Python链接
```

```
rm /usr/bin/python
```

8、建立新连接

```
ln -s /usr/bin/python3.6 /usr/bin/python
```

再次安装：

```
pip install opencv-Python
```

再次报错：

```
ImportError: No module named 'pip._interna
```

解决如下：

```
wget https://bootstrap.pypa.io/get-pip.py  --no-check-certificatesudo //报错就去掉选项
python get-pip.py
```

安装opencv依赖：

```
apt install libopencv-dev
```

之后再次安装：

成功！

步骤二：

打开docker使用x11权限：

```
xhost+
```

导出之前创建的镜像：

```
docker commit video video
```

创建新的容器并加上有关参数：

```
docker run -itd --name video1 --hostname video1  --device=/dev/video0 -e DISPLAY=unix$DISPLAY -v /tmp/.X11-unix:/tmp/.X11-unix video
```

/dev/video0是摄像头挂载名

再次运行代码：

成功！

rtmp推流

https://blog.csdn.net/zong596568821xp/article/details/92790502

opencv播放rtmp推流代码：

https://www.cnblogs.com/sirxy/p/12126383.html

opencv播放本地或远程视频

https://www.cnblogs.com/sirxy/p/12123426.html

配置rtmp推流：

在docker镜像中安装ffmpeg nginx

1、nginx服务器搭建：

```
sudo apt-get update
sudo apt-get install openssl libssl-dev
sudo apt-get install libpcre3 libpcre3-dev
```

编译源码：

在工作空间下，新建一个nginx文件夹，用来存放需要下载nginx和nginx-rtmp-module两个安装包源码

nginx下载链接，这里我下载了1.8.1版本的源码，解压文件，生成nginx-1.8.1文件夹

在nginx目录下，下载nginx-rtmp-module

```
git clone https://github.com/arut/nginx-rtmp-module.git
```

然后编译安装nginx，cd进nginx的目录

```
cd nginx-1.8.1
./configure --add-module=../nginx-rtmp-module
make
make install
```

configure报错：

进入/objs/Makfile，找到gcc编译行，将参数-Werror删除，再次编译成功

```
make
```

报错：

```
make[1]: *** [objs/src/event/ngx_event_openssl.o] 错误 1
```

查阅发现是openssl版本不对，参照如下教程修改：
https://blog.csdn.net/qq_39720249/article/details/84655501

再次编译，找不到openssl，需要加上路径：

```
./configure --with-openssl=/usr/local/openssl-1.0.10 --add-module=../nginx-rtmp-module
```

再次make报错

```
cc1: all warnings being treated as errors
objs/Makefile:510: recipe for target 'objs/src/core/ngx_murmurhash.o' failed
make[1]: *** [objs/src/core/ngx_murmurhash.o] Error 1
make[1]: Leaving directory '/home/nginx/nginx-1.8.1'
Makefile:8: recipe for target 'build' failed
```

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

再次打开objs/Makefile删去Werror

```
make
make install
```

成功安装!

测试nginx

进入安装目录/usr/local/nginx，运行以下命令

```
./sbin/nginx
```

配置rtmp

编辑/usr/local/nginx/conf/nginx.conf文件

```
rtmp {
server {
listen 1935; #服务端口--默认
chunk_size 4096; #数据传输块的大小--默认
#设置直播的application名称是 mylive
application mylive{
live on; #live on表示开启直播模式
}
}
}
#请在http里面找到server
http{
...# 这里有一些其他的配置
server {
listen 8080;
server_name localhost;
location / {
root html;
index index.html index.htm;
}
location /pop/video {
alias /var/video;
}
location /info {
rtmp_stat all;
rtmp_stat_stylesheet stat.xsl;
}
location /stat.xsl {
root html;
}
  }
}
```

配置完之后，需要重启nginx

```
/usr/local/nginx/sbin/nginx -s reload
```

推流代码:

```
import cv2
import subprocess
#rtsp = "rtsp://admin:a12345678@10.10.8.101:554/h264/ch1/main/av_stream"
rtmp = 'rtmp://localhost:1935/mylive/test'
# 读取视频并获取属性
cap = cv2.VideoCapture(rtsp)
size = (int(cap.get(cv2.CAP_PROP_FRAME_WIDTH)),
int(cap.get(cv2.CAP_PROP_FRAME_HEIGHT)))
sizeStr = str(size[0]) + 'x' + str(size[1])
command = ['ffmpeg',
'-y', '-an',
'-f', 'rawvideo',
'-vcodec','rawvideo',
'-pix_fmt', 'bgr24',
'-s', sizeStr,
'-r', '25',
'-i', '-',
'-c:v', 'libx264',
'-pix_fmt', 'yuv420p',
'-preset', 'ultrafast',
'-f', 'flv',
rtmp]
pipe = subprocess.Popen(command
, shell=False
, stdin=subprocess.PIPE
)
while cap.isOpened():
success,frame = cap.read()
if success:
'''
对frame进行识别处理
'''
if cv2.waitKey(1) & 0xFF == ord('q'):
break
pipe.stdin.write(frame.tostring())
cap.release()
pipe.terminate()
```

本部分参考： https://blog.csdn.net/zong596568821xp/article/details/92790502

安装ffmpeg:

```
echo "deb [check-valid-until=no] http://archive.debian.org/debian jessie-
backports main" > /etc/apt/sources.list.d/jessie-backports.list
sed -i '/deb http:\/\/deb.debian.org\/debian jessie-updates main/d'
/etc/apt/sources.list
apt-get -o Acquire::Check-Valid-Until=false update
apt-get -y --force-yes install yasm ffmpeg
```

安装成功之后就可以运行推流代码，推流到localhost:1935

```
docker run -itd --name video4 --hostname video4 -p 1935:1935 -p 8080:80 --
device=/dev/video0 -e DISPLAY=unix$DISPLAY -v /tmp/.X11-unix:/tmp/.X11-unix
quagga_snmp:v7
```

```
docker run -itd --name leo11 --hostname leo11 -p 1935:1935 -p 8080:80 --
device=/dev/video0 -e DISPLAY=unix$DISPLAY -v /tmp/.X11-unix:/tmp/.X11-unix
quagga_snmp:v7
```

```
docker run -itd --name leo13 --hostname leo13 -p 1900:1900 -p 8000:81 --
device=/dev/video0 -e DISPLAY=unix$DISPLAY -v /tmp/.X11-unix:/tmp/.X11-unix
quagga_snmp:v7
```

实验流程：
运行终端后，按照上面的指令开启nginx服务，发送端设置rtmp_send.py文件，rtmp链接后的ip改为拉流节点的ip，接收端设置rtmp_video.py，rtmp链接修改对应端口

发送端和接收端分别运行：
```
python rtmp_send.py
python rtmp_video.py
```