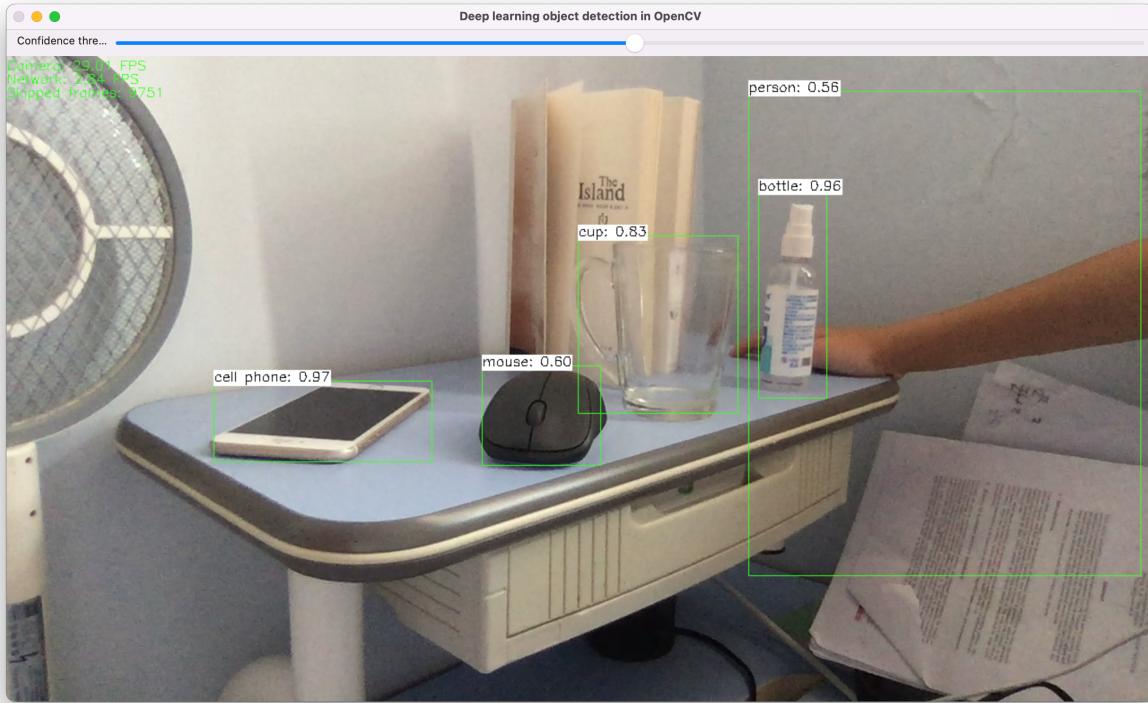


Build OpenCV

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Source code

```
git clone https://github.com/opencv/opencv.git
git clone https://github.com/opencv/opencv\_contrib.git
```

Errors

1. If Contrib has build error, remove it from build script.
2. If an error is reported related with zlib, remove it with `-DBUILD_ZLIB:=OFF`.

Attention

1. Build OpenCV along with the OpenCV Contrib, the source code of the two should match to avoid building problems. To make sure you have matched source code of OpenCV and OpenCV Contrib, after clone the repository from github, checkout the same tag version for both of them.

Build OpenCV on windows

Build

1. Copy the bash code to a bash script file
2. Use git terminal to start the build bash script

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3. Done

Bash Script

```
#!/bin/bash -e
rootDir=$(pwd)
rm -rf Build/opencv
rm -rf Install/opencv
mkdir -p Build/opencv
mkdir -p Install/opencv
CMAKE_CONFIG_GENERATOR="Unix Makefiles"
if [ ! -d "$buildDir/opencv" ]; then
    echo "cloning opencv"
    git clone https://github.com/opencv/opencv.git

else
    # cd opencv
    # git pull --rebase
    # cd ..
    echo "reuse opencv"
fi
if [ ! -d "$buildDir/opencv_contrib" ]; then
    echo "cloning opencv_contrib"
    git clone https://github.com/opencv/opencv_contrib.git
    mkdir -p Build/opencv_contrib
else
    # cd opencv_contrib
    # git pull --rebase
    # cd ..
    echo "reuse opencv_contrib"
fi
CV=opencv
pushd Build/$CV
CMAKE_OPTIONS='-DBUILD_PERF_TESTS:BOOL=OFF -DBUILD_TESTS:BOOL=OFF -
DBUILD_DOCS:BOOL=OFF -DWITH_CUDA:BOOL=OFF -DBUILD_EXAMPLES:BOOL=ON -
DINSTALL_CREATE_DISTRIB=ON'
cmake -G"$CMAKE_CONFIG_GENERATOR" $CMAKE_OPTIONS -
DOPENCV_EXTRA_MODULES_PATH="$rootDir"/opencv_contrib/modules -
DCMAKE_INSTALL_PREFIX="$rootDir"/install/"$CV" "$rootDir/$CV"
# echo "***** $Source_DIR -->debug"
#cmake --build . --target install --config debug
echo "***** $Source_DIR -->release"
cmake --build . --target install --config release
popd
```

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Build OpenCV On Mac

Build OpenCV along with the OpenCV Contrib, the source code of the two should match to avoid building problems. To make sure you have matched source code of OpenCV and OpenCV Contrib, after clone the repository from github, checkout the same tag version for both of them.

Bash Script

```
#!/bin/bash -e
buildDir=$(pwd)
rm -rf Build/opencv
rm -rf Install/opencv

mkdir -p Build/opencv
mkdir -p Install/opencv
CMAKE_CONFIG_GENERATOR="Unix Makefiles"
if [ ! -d "$buildDir/opencv" ]; then
    echo "cloning opencv"
    git clone https://github.com/opencv/opencv.git

else
    # cd opencv
    # git pull --rebase
    # cd ..
    echo "reuse opencv"
fi
if [ ! -d "$buildDir/opencv_contrib" ]; then
    echo "cloning opencv_contrib"
    git clone https://github.com/opencv/opencv_contrib.git
    mkdir -p Build/opencv_contrib
else
    # cd opencv_contrib
    # git pull --rebase
    # cd ..
    echo "reuse opencv_contrib"
fi
CV=opencv

pushd Build/$CV
CMAKE_OPTIONS='-DCMAKE_BUILD_TYPE=Debug -DBUILD_ZLIB:=OFF -DBUILD_PERF_TESTS:BOOL=OFF
-DBUILD_TESTS:BOOL=OFF -DBUILD_DOCS:BOOL=OFF -DWITH_CUDA:BOOL=OFF -
DBUILD_EXAMPLES:BOOL=ON -DINSTALL_CREATE_DISTRIB=ON'
# add below line to the generator if you want to build contrib modules
# -DOPENCV_EXTRA_MODULES_PATH="$buildDir"/opencv_contrib/modules

cmake -G"$CMAKE_CONFIG_GENERATOR" $CMAKE_OPTIONS -
DCMAKE_INSTALL_PREFIX="$buildDir"/install/"$CV" "$buildDir/$CV"
```

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```

# echo "***** $Source_DIR -->debug"
# cmake --build . --config debug
#echo "***** $Source_DIR -->release"
#cmake --build . --config release
# cmake --build . --target install
# cmake --build . --target install --config debug
make all -j8
popd

```

Run Example example_dnn_object_detection

1. Switch to your Build directory and navigate to Build/opencv/bin
2. Find model related files, put them under bin directory, for example,
 - yolov3.weights,
 - yolov3.cfg
 - yolov3.cls
3. Run ./example_dnn_object_detection --classes=yolov3.cls yolo

Note:

1. ***opencv/opencv/samples/dnn/download_models.py can download all models, but config files are not downloaded***
2. ***copy opencv/opencv/samples/data/dnn/object_detection_classes_yolov3.txt to your bin directory and rename it as yolov3.cls***

References

- <https://github.com/opencv>
- <http://zhaoxuhui.top/blog/2019/06/04/OpenCVContribEnvCPP.html>
- <https://github.com/opencv/opencv/issues/22119>
- <https://embeddeduse.com/2022/03/01/visualising-module-dependencies-with-cmake-and-graphviz/>
- https://cmake.org/cmake/help/latest/variable/CMAKE_BUILD_TYPE.html#variable:CM_AKE_BUILD_TYPE

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Miscellaneous

Release or Debug

CMAKE_BUILD_TYPE

Specifies the build type on single-configuration generators (e.g. Makefile Generators or Ninja). Typical values include Debug, Release, RelWithDebInfo and MinSizeRel, but custom build types can also be defined.

CMAKE_CONFIGURATION_TYPES

Specifies the available build types (configurations) on multi-config generators (e.g. Visual Studio, Xcode, or Ninja Multi-Config). Typical values include Debug, Release, RelWithDebInfo and MinSizeRel, but custom build types can also be defined.

BUILD 32-bit or 64-bit

```
cmake . -DCMAKE_GENERATOR_PLATFORM=x64  
cmake -A x64
```

<https://cmake.org/cmake/help/latest/variable/CMAKE GENERATOR PLATFORM.html>

<https://stackoverflow.com/questions/28350214/how-to-build-x86-and-or-x64-on-windows-from-command-line-with-cmake>

This cannot be done with CMake. You have to generate two separate build folders. One for the x86 NMake build and one for the x64 NMake build. You cannot generate a single Visual Studio project covering both architectures with CMake, either.

Configure VC to build OpenCV application:

https://docs.opencv.org/4.3.0/dd/d6e/tutorial_windows_visual_studio_opencv.html
cmake --build C:/foo/build/ --target clean

Create VC++ OpenCV application

Add include directory

C:\Apps\opencv\build\x64\vc15\lib

Add library directory

C:\Apps\opencv\build\x64\vc15\lib

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Add lib

opencv_world440.lib

Add preprocessor

_CRT_SECURE_NO_WARNINGS;

Read RTSP

The following code works for me without any problem. If you have a username and password for the stream, do not forget to include it in the url address.

```
cv::VideoCapture capture(url);

if (!capture->isOpened()) {
    //Error
}

cv::namedWindow("TEST", CV_WINDOW_AUTOSIZE);

cv::Mat frame;

while(m_enable) {
    if (!capture->read(frame)) {
        //Error
    }
    cv::imshow("TEST", frame);

    cv::waitKey(30);
}
```

<https://code.visualstudio.com/docs/cpp/config-linux>

```
LDLIBS += $(shell pkg-config --libs opencv4)
INCDIRS += $(SRCDIR) $(SRCDIRS) ./include ./include/GL /usr/include/opencv4
Use this order to link the SC with opencv
$(CXX) -o $@ $^ $(LDFLAGS)
```

Download the released build directly

If you don't want to be bothered to build from source code, the binary can be downloaded as well.

https://sourceforge.net/projects/opencvlibrary/files/4.4.0/opencv-4.4.0-vc14_vc15.exe/download

YOLO

<https://pjreddie.com/darknet/yolo/>

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