

Install OpenCV 3.4.4 on Ubuntu 18.04 (C++ and Python)



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(/wp-content/uploads/2017/06/install-opencv-3-on-ubuntu.jpg)

OpenCV released OpenCV-3.4.4 and OpenCV-4.0.0 on 20th November. There have been a lot of bug fixes and other changes in these versions. The release highlights are as follows:

- OpenCV is now C++11 library and requires C++11-compliant compiler. Minimum required CMake version has been raised to 3.5.1.
- A lot of C API from OpenCV 1.x has been removed.
- Persistence (storing and loading structured data to/from XML, YAML or JSON) in the core module has been completely reimplemented in C++ and lost the C API as well.
- New module G-API has been added, it acts as an engine for very efficient graph-based image processing pipelines.
- dnn module now includes experimental Vulkan backend and supports networks in ONNX format.
- The popular Kinect Fusion algorithm has been implemented and optimized for CPU and GPU (OpenCL)

QR code detector and decoder have been added to the objdetect module.

- Very efficient and yet high-quality DIS-dense optical flow algorithm has been moved from opencv_contrib to the video module.

In this post, we will provide a **bash script** for installing **OpenCV-3.4.4** (C++ and Python 3) on Ubuntu 18.04. We will also briefly study the script to understand what's going in it. Note that this script will install OpenCV in a local directory and not on the entire system.

Looking for installation script for **OpenCV 3.4.4 on Ubuntu 16.04**? Have a look at [this blog](#) ([/install-opencv-3-4-4-on-ubuntu-16-04/](#)).

1. Install OpenCV 3.4.4

Step 0: Select OpenCV version to install

```
1 | echo "OpenCV installation by learnOpenCV.com"
2 |
3 | #Specify OpenCV version
4 | cvVersion="3.4.4"
```

We are also going to clean build directories and create installation directory.

```
1 | # Clean build directories
2 | rm -rf opencv/build
3 | rm -rf opencv_contrib/build

1 | # Create directory for installation
2 | mkdir installation
3 | mkdir installation/OpenCV-"$cvVersion"
```

Finally, we will be storing the current working directory in cwd variable. We are also going to refer to this directory as **OpenCV_Home_Dir** throughout this blog.

```
1 | # Save current working directory
2 | cwd=$(pwd)
```

Step 1: Update Packages

```
1 | sudo apt -y update
2 | sudo apt -y upgrade
```

Learn OpenCV

If you are still not able to install OpenCV on your system, but want to get started with it, we suggest using our docker images with pre-installed OpenCV, Dlib, miniconda and jupyter notebooks along with other dependencies as described in [this blog \(install-opencv-docker-image-ubuntu-macos-windows\)](#).

Step 2: Install OS Libraries

```
1 | sudo apt -y remove x264 libx264-dev
2 |
3 | ## Install dependencies
4 | sudo apt -y install build-essential checkinstall cmake pkg-config yasm
5 | sudo apt -y install git gfortran
```

```

5  sudo apt -y install git gstreamer
6  sudo apt -y install libjpeg8-dev libpng-dev
7
8  sudo apt -y install software-properties-common
9  sudo add-apt-repository "deb http://security.ubuntu.com/ubuntu (http://
10 sudo apt -y update
11
12 sudo apt -y install libjasper1
13 sudo apt -y install libtiff-dev
14
15 sudo apt -y install libavcodec-dev libavformat-dev libswscale-dev libd
16 sudo apt -y install libxine2-dev libv4l-dev
17 cd /usr/include/linux
18 sudo ln -s -f ../libv4l1-videodev.h videodev.h
19 cd "$cwd"
20
21 sudo apt -y install libgstreamer1.0-dev libgstreamer-plugins-base1.0-d
22 sudo apt -y install libgtk2.0-dev libtbb-dev qt5-default
23 sudo apt -y install libatlas-base-dev
24 sudo apt -y install libfaac-dev libmp3lame-dev libtheora-dev
25 sudo apt -y install libvorbis-dev libxvidcore-dev
26 sudo apt -y install libopencore-amrnb-dev libopencore-amrwb-dev
27 sudo apt -y install libavresample-dev
28 sudo apt -y install x264 v4l-utils
29
30 # Optional dependencies
31 sudo apt -y install libprotobuf-dev protobuf-compiler
32 sudo apt -y install libgoogle-glog-dev libgflags-dev
33 sudo apt -y install libphoto2-dev libeigen3-dev libhdf5-dev doxygen

```

Looking for installation script for **OpenCV 4 on Ubuntu 18.04**? Have a look at [this blog](#) ([/install-opencv-4-on-ubuntu-18-04/](#)).

Step 3: Install Python Libraries

```

1  sudo apt -y install python3-dev python3-pip python3-venv
2  sudo -H pip3 install -U pip numpy
3  sudo apt -y install python3-testresources

```

We are also going to install `virtualenv` and `virtualenvwrapper` modules to create Python virtual environment. We will also install **dlib** in the Python environment.

```

1  cd $cwd
2  ##### For Python 3 #####
3  # create virtual environment
4  python3 -m venv OpenCV-"$cvVersion"-py3
5  echo "# Virtual Environment Wrapper" >> ~/.bashrc
6  echo "alias workoncv-$cvVersion=\"source $cwd/OpenCV-$cvVersion-py3/bin/"
7  source "$cwd"/OpenCV-"$cvVersion"-py3/bin/activate
8
9  # now install python libraries within this virtual environment
10 pip install wheel numpy scipy matplotlib scikit-image scikit-learn ipy
11
12 # quit virtual environment
13 deactivate
14 #####

```

If you are solely a Python user, it is easier to use `pip install opencv-contrib-python==3.4.4.19`.

Download Installation Script

To easily follow along this tutorial, please download installation script by clicking on the button below. It's FREE!

DOWNLOAD INSTALLATION SCRIPT

([HTTPS://BIGVISIONLLC.LPAGES.CO/LEADBOX/143948B73F72A2%3A173C9390C346DC/5649050225344512/](https://bigvisionllc.lpages.co/leadbox/143948B73F72A2%3A173C9390C346DC/5649050225344512/))

Step 4: Download opencv and opencv_contrib

```

1  git clone https://github.com/opencv/opencv.git
2  cd opencv
3  git checkout 3.4
4  cd ..
5
6  git clone https://github.com/opencv/opencv_contrib.git
7  cd opencv_contrib
8  git checkout 3.4
9  cd ..

```

Step 5: Compile and install OpenCV with contrib modules

First we navigate to the build directory.

```

1  cd opencv
2  mkdir build

```

```
3 | cd build
```

Learn OpenCV

Next, we start the compilation and installation process.

```
1 | cmake -D CMAKE_BUILD_TYPE=RELEASE \
2 |         -D CMAKE_INSTALL_PREFIX=$pwd/installation/OpenCV-"$cvVersion" \
3 |         -D INSTALL_C_EXAMPLES=ON \
4 |         -D INSTALL_PYTHON_EXAMPLES=ON \
5 |         -D WITH_TBB=ON \
6 |         -D WITH_V4L=ON \
7 |         -D OPENCV_PYTHON3_INSTALL_PATH=$pwd/OpenCV-$cvVersion-py3/ \
8 |         -D WITH_QT=ON \
9 |         -D WITH_OPENGL=ON \
10 |        -D OPENCV_EXTRA_MODULES_PATH=../../opencv_contrib/modules \
11 |        -D BUILD_EXAMPLES=ON ..
```

For system wide installation of OpenCV, change **CMAKE_INSTALL_PREFIX** to **CMAKE_INSTALL_PREFIX=/usr/local**.

```
1 | make -j4
2 | make install
```

2. How to use OpenCV in C++

There are two ways to use OpenCV in C++, the preferred way is to use **CMake**, the other one being command line compilation using **g++**. We will have a look at both ways.

Using CMakeLists.txt

The basic structure of your **CMakeLists.txt** will stay the same. Only difference being, that you will have to set **OpenCV_DIR** as shown below.

```
1 | SET(OpenCV_DIR <OpenCV_Home_Dir>/installation/OpenCV-3.4.4/share/OpenCV,
```

Make sure that you replace **OpenCV_Home_Dir** with correct path. For example, in my case:

```
1 | SET(OpenCV_DIR /home/hp/OpenCV_installation/installation/OpenCV-3.4.4/sl
```

Once you have made your CMakeLists.txt, follow the steps given below.

```
1 | mkdir build && cd build Learn OpenCV
2 | cmake ..
3 | cmake --build . --config Release
```

This will generate your executable file in **build** directory.

Using g++

To compile a sample file (let's say `my_sample_file.cpp`), use the following command.

```
1 | g++ `pkg-config --cflags --libs <OpenCV_Home_Dir>/installation/opencv-3
```

3. How to use OpenCV in Python

To use the OpenCV version installed using Python script, first we activate the Python Virtual Environment.

For OpenCV-3.4.4 : Python 3

```
1 | workon opencv-3.4.4-py3
```

Once you have activated the virtual environment, you can enter Python shell and test OpenCV version.

```
1 | ipython
2 | import cv2
3 | print(cv2.__version__)
```

Hope this script proves to be useful for you :). We will be back with installation script for **Windows**. Stay tuned for more interesting stuff. In case of any queries, feel free to comment below and we will get back to you as soon as possible.

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