

OpenCV – de facto standard of CV programming

OpenCV (Open Source Computer Vision Library) is released under a BSD license and hence it's **free** for both academic and commercial use. It has C++, **Python** and Java interfaces and supports Windows, Linux, Mac OS, iOS and Android. OpenCV was designed for computational efficiency and with a strong focus on real-time applications. Written in optimized C/C++, the library can take advantage of multi-core processing. Enabled with OpenCL, it can take advantage of the hardware acceleration of the underlying heterogeneous compute platform.

DNN platforms always require Python & OpenCV !

Environmental Settings

Install OpenCV x Python on your own PC.

An easy way is to follow the following slides.

Google Colaboratory

Google Drive > New “Google Colaboratory” file

If you cannot make colab files,
“+ Connect more options” > Install Colaboratory

cf) Getting Started with Google CoLab | How to use Google Colab

<https://www.youtube.com/watch?v=i-HnvsehuSw>

Verify Installation

```
!pip uninstall opencv-python -y
```

```
!pip install opencv-contrib-python==3.4.2.17 --force-reinstall
```

```
import cv2
```

```
import numpy as np
```

```
from google.colab.patches import cv2_imshow
```

```
img = cv2.imread('home.jpg')
```

```
gray= cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
```

```
sift = cv2.xfeatures2d.SIFT_create()
```

```
kp, des1 = sift.detectAndCompute(gray, None)
```

```
cv2.drawKeypoints(gray,kp,img,flags=cv2.DRAW_MATCHES_FLAGS_DRAW_RICH_KEYPOINTS)
```

```
cv2_imshow(img)
```

Verify Installation (Contrib safety version)

```
import cv2
import numpy as np

img = cv2.imread('home.jpg')

gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
cv2_imshow(gray)
```

Another option: Install Anaconda

<https://qiita.com/FukuharaYohei/items/d8f82c827e0bae70096a>

From <https://www.anaconda.com/download/>

- Download installer
- **Python 3.x version**
- **64-Bit Graphical Installer**

Install OpenCV

From AnacondaNavigator

Environments > “Create” > Name: “opencv342”

opencv342 > Open Terminal

```
$ python -m pip install --upgrade pip
```

```
$ pip install opencv-contrib-python==3.4.2.17
```

```
$ pip install numpy
```

```
$ pip install matplotlib
```

```
$ pip install scipy
```

Verify Installation

```
import cv2
import numpy as np

img = cv2.imread('home.jpg')
```

```
gray= cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
sift = cv2.xfeatures2d.SIFT_create()
kp, des1 = sift.detectAndCompute(gray, None)
cv2.drawKeypoints(gray,kp,img,flags=cv2.DRAW_MATCHES_FLAGS_DRAW_RICH_KEYPOINTS)
cv2.imshow('SIFT',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Save the text as SIFT.py

Get ready for an arbitrary image as home.jpg

\$ python SIFT.py

Verify Installation (Contrib safety version)

```
import cv2
import numpy as np

img = cv2.imread('home.jpg')
```

Save the text as SIFT.py

Get ready for an arbitrary image as home.jpg

\$ python SIFT.py

```
gray= cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
#sift = cv2.xfeatures2d.SIFT_create()
#kp, des1 = sift.detectAndCompute(gray, None)
#cv2.drawKeypoints(gray,kp,img,flags=cv2.DRAW_MATCHES_FLAGS_DRAW_RICH_KEYPOINTS)
#cv2.imshow('SIFT',img)
cv2.imshow('SIFT',gray)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Text Editor (Optional)

Visual Studio Code (IDE)

<https://code.visualstudio.com/AnacondaNavigator> > Home

> Applications on “opencv342”
> Launch vscode

ATOM (Editor)

<https://atom.io/>

