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**«OpenCV» for Python**

**Name:** OpenCV

**Source:** <https://opencv.org/>

**License:** Free (Open Source, BSD)

**Installation:**

Paste command in cmd: pip install opencv-python

After that import library in python with «import cv2»

**Documentation:** <https://docs.opencv.org/master/>

**Examples:** <https://github.com/opencv/opencv/tree/master/modules/python/test>

**Description:**

OpenCV provides the following functions:

* Basic operations:

Image import – img = cv2.imread(path\_to\_img) ;

Show image – cv2.imshow(…);

Save image – cv2.imwrite(…);

Operations with image:

scaling – cv2.resize(img, …);

rotation – cv2.getRotationMatrix2D(…), cv2.warpAffine(…);

blurring – cv2.GaussianBlur(img, …);

cropping – img[y:(y + height); x:(x + width)];

converting colours – cv2.cvtColor(…);

Drawing primitives and text on the image:

Line – cv2.line(…),

rectangle – cv2.rectangle(…), text – cv2.putText(…);

Application of filters to an image;

Operations with separate pixels of an image (e.g. modify the pixel values (colour in BRG));

* Colour segmentation of the image;
* Morphological operations;
* Working with video – cv2.VideoCapture(…);
* Object detection:

Haar Cascade – cv2.CascadeClassifier(…), cascadeName.detectMultiScale3.

**Work together with other libraries:**

OpenCV library works with NumPy.

Can be used for image preprocessing for machine learning with other libraries (e.g. preprocessing for using neural network with Keras + TensorFlow).

**«Imutils» for Python**

**Name:** Imutils

**Source:** <https://github.com/jrosebr1/imutils>

**License:** Free (Open Source, BSD)

**Installation:**

Paste command in cmd: pip install imutils

After that import library in python with «import imutils»

**Documentation:** <https://github.com/jrosebr1/imutils>

**Examples:** <https://github.com/jrosebr1/imutils>

**Description:**

Library for simplify some functions of OpenCV. Imutils provides simple functions like working with colours, ages, scaling, and rotation. Also it provides finding functions in OpenCV using keywords.

**Work together with other libraries:**

Based on OpenCV and Matplotlib libraries.

Can be used for image preprocessing for machine learning (e.g. preprocessing for using neural network with Keras + TensorFlow).