# OpenCV

Open Source Computer Vision Library

Python multiline comment in visual studio code: ctrl+K+C

* OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library.
* OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products.
* Being a BSD-licensed product, OpenCV makes it easy for businesses to utilize and modify the code.
* Library has over 2500 optimized algorithms.
* These algorithms can be used to detect and recognize faces, identify objects, classify human actions in videos, track camera movements, track moving objects, extract 3D models of objects, produce 3D point clouds from stereo cameras, stitch images together to produce a high resolution image of an entire scene, find similar images from an image database, remove red eyes from images taken using flash, follow eye movements, recognize scenery and establish markers to overlay it with augmented reality, etc.
* Goals
  + Here, you will learn how to read an image, how to display it and how to save it back
  + You will learn these functions: cv2.imread(), cv2.imshow(), cv2.imwrite()
  + Optionally, you will learn how to display images with Matplotlib
* **cv2.imread()** method loads an image from the specified file. If the image cannot be read (because of missing file, improper permissions, unsupported or invalid format) then this method returns an empty matrix.
* cv2.waitKey() is a keyboard binding function. Its argument is time in milliseconds.
* Special case where we can already create a window and load image to it later. We can specify whether window is resizable or not by cv2.namedWindow() function. Flags—cv2.WINDOW\_AUTOSIZE is the default, cv2.WINDOW\_NORMAL to resize the window. Other flags are WINDOW\_FREERATIO, WINDOW\_FULLSCREEN, WINDOW\_GUI\_EXPANDED, etc.
* Use the function cv2.imwrite() to save an image.
* Matplotlib
  + Installation in windows
    - python -m pip install -U pip
    - python -m pip install -U matplotlib
* matplotlib.pyplot provides a MATLAB-like plotting framework.
* pylab combines pyplot with numpy into a single namespace. This is convenient for interactive work, but for programming it is recommended that the namespaces be kept separate.

# Splitting large python function across multiple files

Each module has its own private symbol table, which is used as the global symbol table by all functions defined in the module. Thus, the author of a module can use global variables in the module without worrying about accidental clashes with a user’s global variables.

<https://docs.openfaas.com/>