**Introduction to OpenCV**

**Overview**

OpenCV means Open Source Computer Vision Library. It’s a free library used for computer vision stuff like image processing, object detection, working with videos, and even some machine learning.  
It works with many programming languages like Python, C++, Java and also runs on Windows, Linux, Mac, Android, iOS. Basically it’s a all-rounder for working with images and videos.

## **History**

* OpenCV started in 1999 at Intel Research by a guy named Gary Bradski.
* First version came out in 2000.
* Later it was maintained by Willow Garage and a company called Itseez.
* In 2016, Intel bought Itseez and OpenCV kept on getting better.
* Now it not only does old-style vision work but also supports deep neural networks (DNN) for AI models.

**Applications**

* Read and write images and videos.
* Change colors, resize, crop, rotate images.
* Apply filters like blur, sharpen, edge detection.
* Detect faces, eyes, or even cars using object detection.
* Match features between images to find similar parts.
* Work with 3D things like camera calibration and depth maps.
* Run AI models for object detection or image classification.

## **Installation**

For Python, you can simply open terminal and type:

pip install opencv-python

pip install opencv-contrib-python # for extra things like SIFT, SURF etc.

## **Basic Setup**

After install, you can test if it’s working like this:

import cv2

print(cv2.\_\_version\_\_)

If it shows a version number, means it’s installed.



