ADVANCED COMPUTER VISION

March 26, 2022

ABOUT US

❖ **Satya Mallick**

❖ **Industry**

- CEO, OpenCV.org   (2018 - present)
- CEO, OpenCV.ai   (2020 - present)
- CEO, Big Vision   (2015 - present)
- CTO, TAAZ Inc.   (2007 - 2015)

❖ **Education**

- IIT Kharagpur (2001) : B. Tech.

- University of California, San Diego (2006): Ph.D.

ABOUT US

❖ **Vikas Gupta**

❖ **Industry**

- Director (AI Courses), OpenCV.org   (2019 - present)
- Multiple Roles, BigVision.ai   (2017 - present)
- Senior Data Scientist,
  Snapdeal Multimedia Research Group   (2016 - 2017)
- Senior Software Engineer,
  Samsung R&D   (2015 - 2016)
- Research Associate, IIT Guwahati   (2010 - 2013)
- Assistant Professor, NITS Guwahati   (2010 - 2013)
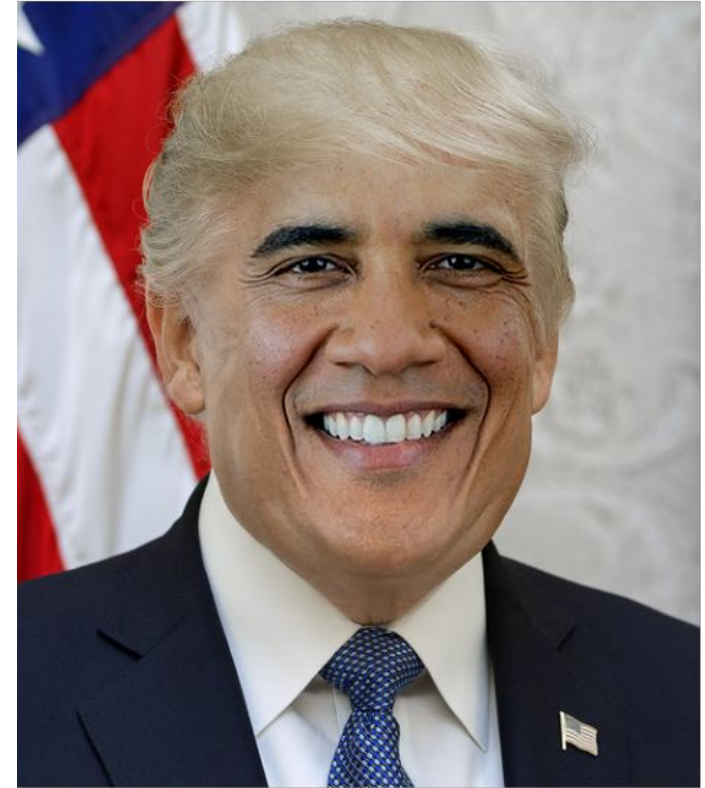- Engineer (C&I) , NTPC   (2009 - 2010)

❖ **Education**

- VNIT Nagpur (2009) : B. Tech (ECE).

- IISc Bangalore (2015): M.Tech (AI).

OUTLINE : DAY 1

❖ Introduction

❖ Overview

   • What is Computer Vision

   • Computer Vision Industry Applications

   • What is OpenCV

❖ OpenCV Basics

❖ Applications

   • Image Alignment

   • Image Stitching and Creating Panoramas

   • Face Swap

   • Face Morphing

COMPUTER VISION
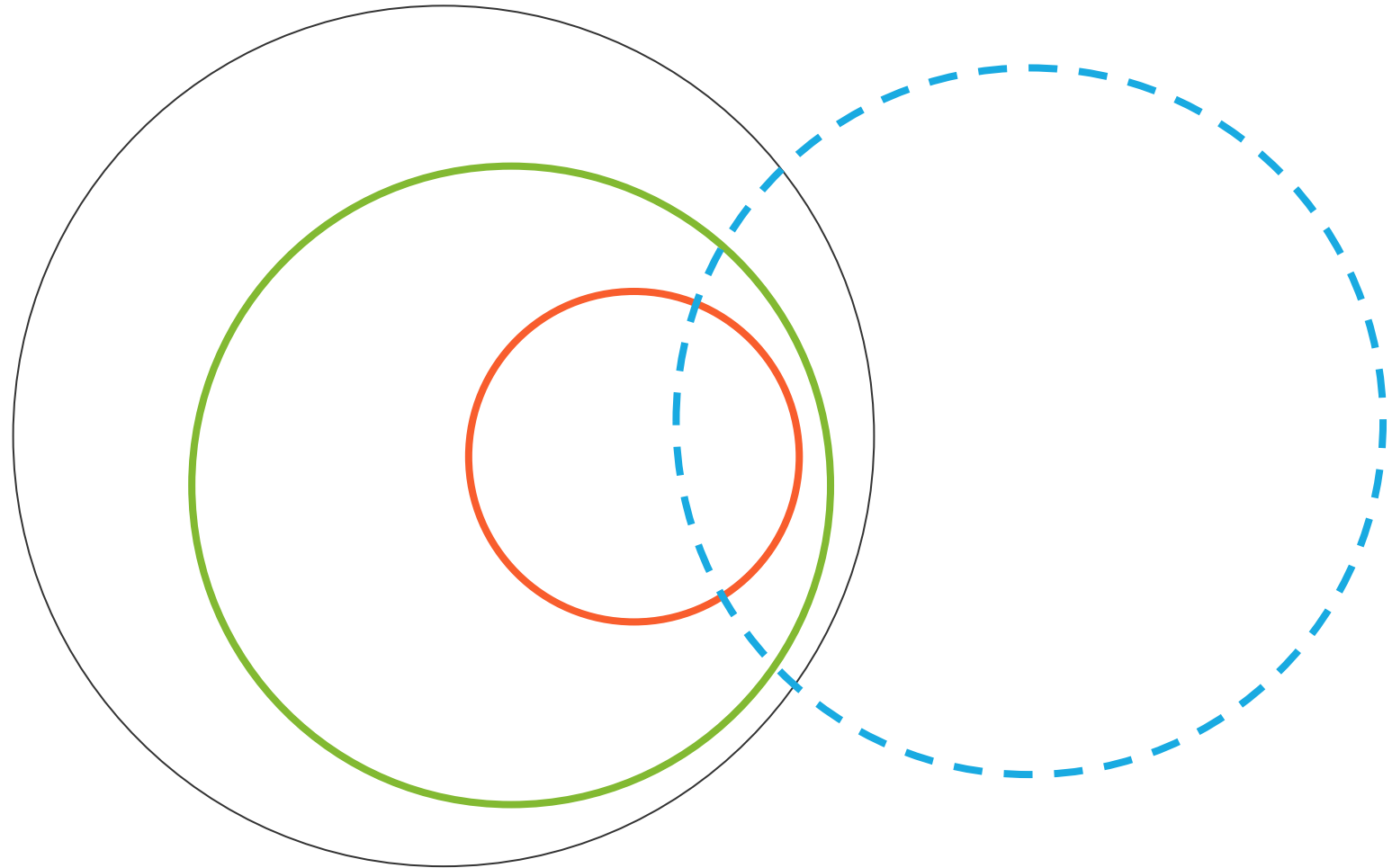
Let's make machines see!

AI, ML, DL, CV

Artificial Intelligence, Machine Learning, Deep Learning, and Computer Vision

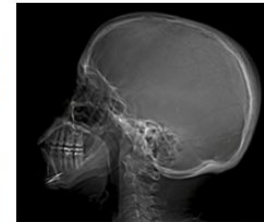|	
Artificial Intelligence	
Machine Intelligence	
Deep Learning	
Computer Vision	

COMPUTER VISION INDUSTRY

- ❖ Autonomous Driving
- ❖ Security & Surveillance
- ❖ Manufacturing
- ❖ Agriculture
- ❖ Entertainment
- ❖ Medical Diagnostics
- ❖ Space Exploration

WHAT IS OPENCV

WORLD'S LARGEST COMPUTER VISION LIBRARY

OPENCV LIBRARY

45k
45k Stars on Github
Extremely popular Github repo

1-2m
Installs per week
Rivals Tensorflow in Python installs using **pip**

89%
Embedded vision engineers
The most popular computer vision library among embedded vision engineers.

2500
Algorithms
The largest collection of my computer vision algorithms in a single library

OpenCV Timeline

❖ 2000 – The first public release

❖ 2005 – DARPA Challenge

❖ 2009 - OpenCV 2.0: Mobile and Python

❖ 2015 - OpenCV 3.0 and T-API

❖ 2016 - DNN module and JavaScript support

❖ 2018 - OpenCV 4.0 and C++11

❖ 2022 - OpenCV 5.0

EVOLUTION BEYOND THE LIBRARY

Courses, Hardware, Services

OPENCV BRAND

01

OPENCV LIBRARY

The largest open source computer vision library in the world

02

COURSES

A collection of world class courses in Artificial Intelligence, and Computer Vision.

03

HARDWARE

OpenCV AI Kit (OAK) and other hardware platforms

04

MARKETPLACE

AI models and tools

05

COMMUNITY

Forums, newsletter, podcast, and more.

06

CONSULTING SERVICES

OpenCV.ai is the for-profit consulting arm of OpenCV.

LET'S GET STARTED

Hands-on coding with Jupyter Notebooks

SUPPLEMENTARY MATERIAL

Courses, Hardware, Services

COMPUTER VISION COURSES

First steps to mastery

1

OpenCV for Beginners

A short, fun, and affordable course for beginners.

2

Computer Vision I: Introduction

An introductory course for beginners in computer vision and machine learning. Available in C++ and Python.

3

Computer Vision II: Applications

A computer vision course focussed on building real world applications.

DEEP LEARNING COURSES

First steps to mastery

4

Deep Learning with PyTorch

An introductory hands-on course for beginners in deep learning for computer vision.

5

Deep Learning with Tensorflow & Keras

An introductory hands-on course for beginners in deep learning for computer vision

HARDWARE : OPENCV AI KIT (OAK)

OpenCV AI Kit with Depth (OAK-D) is OpenCV's spatial AI camera based on Intel® Myriad™ X.

It can **run neural networks** for tasks like image classification, object detection, segmentation, pose estimation etc. in real time.

It comes with a stereo pair for **depth perception** in real time.
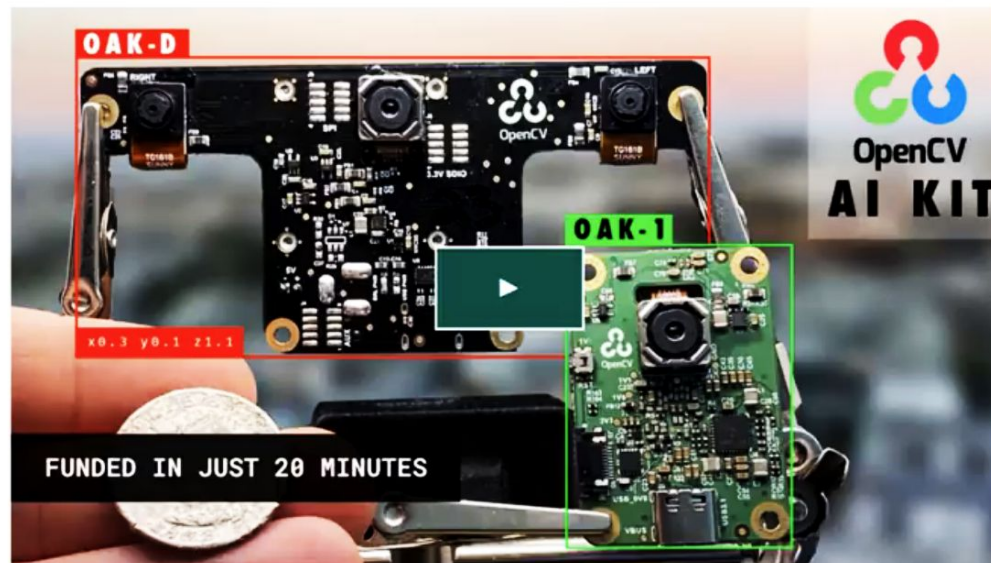
OPENCV AI KIT WITH DEPTH (OAK-D)

OAK KICKSTARTER