#### **COMPUTER VISION PROJECT**

Software Engineering

## **AGENDA**

Introduction

Project Title

Project Scope

Language and Libraries

Working

#### **Project Title**

#### FACE RECOGNITION ATTENDANCE SYSTEM

#### **Project Scope**

the scope of the Face Recognition Attendance System is that it can save time and effort for taking attendance in conventional mode using this method. It is normally used for security purposes but here it is used as an identification and recognition method.

# PROGRAMMING LANGUAGE AND Libraries used

### **SCIKIT-LEARN**

(Scikit-learn (sklearn) is a Python library that provides a wide range of unsupervised and supervised machine learning algorithms)

### **OPENCV2**

(OPENCV (OPEN-SOURCE COMPUTER VISION LIBRARY) IS AN OPEN-SOURCE COMPUTER VISION AND MACHINE LEARNING SOFTWARE LIBRARY)

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## **PICKLE**

(Pickle is a module in Python that is used to convert a Python object into a byte stream. This process is also called serialization.)

## **NUMPY**

(NumPy is a Python library used for working with arrays.)

### OS

( THE OS MODULE IN PYTHON PROVIDES ACCESS TO SYSTEM-SPECIFIC FUNCTIONS FOR DEALING WITH THE FILESYSTEM, PROCESSES, SCHEDULER, ETC.)

## **CSV**

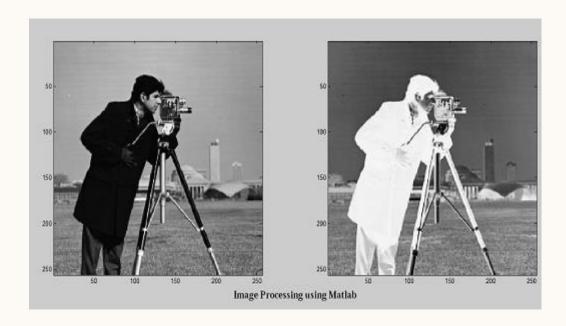
(Comma Separated Values (CSV) file is a plain text file that stores data by delimiting data entries with commas.)



#### **STEP 1: DATA COLLECTION**

First it will ask user to enter your name then, it will open webcam to take 100 photos of user face and store in faces\_data.pkl file so we can process it later. These images are store in format of BGR not RGB because of OpenCV standards.

## **RGB TO BGR**



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# STEP 2: APPLYING MACHINE LEARNING MODEL

The faces co-ordinate that we store in step will be used by k-NN algorithm.

k-NN algorithm Working:

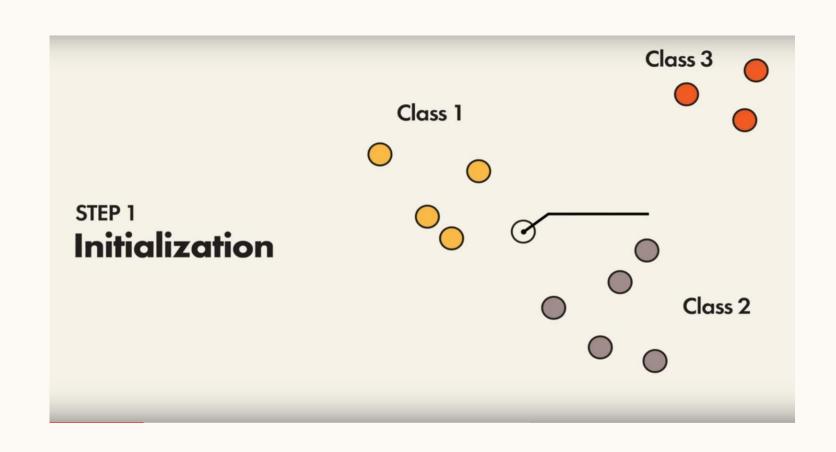
This k-NN algorithm used to predict data of unknow by comparing large amount of similar data.

The Euclidean distance formula says:

$$d = \sqrt{[(x^2-x^1)^2 + (y^2-y^1)^2]}$$

were,

- \* (x1, y1) are the coordinates of one point.
- \* (x2, y2) are the coordinates of the other point.
- \* d is the distance between (x1, y1) and (x2, y2).
- \* K is the value of closet number of points in graph.



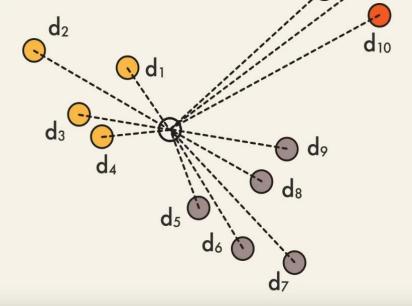
# STEP 2 Calculate Distance

#### Euclidean:

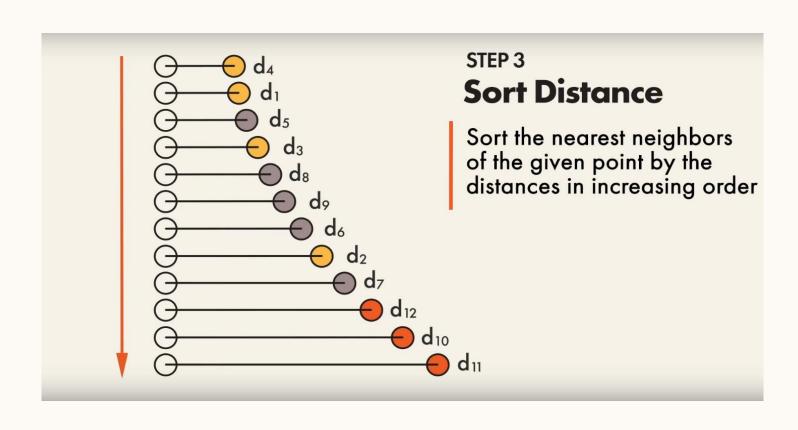
$$d(x,y) = \sqrt{\sum_{i=1}^{m} (x_i - y_i)^2}$$

Manhattan/city - block:

$$d(x,y) = \sum_{i=1}^{m} |x_i - y_i|$$



d<sub>12</sub>



#### **STEP 3: MARKING ATTENDANCE**

After Predicting Data Rectangle is formed upon the face and name will be mentioned, if you pressed o then attendance will be marked in Attendance.csv file.

## **TEAM MEMBERS**

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## **THANK YOU**