**Algorithm** ----Deep learning algorithms(**Convolutional neural network**)

"\_\_\_\_Turk and Pentland\_\_\_\_" suggested an approach to face recognition that uses dimensionality reduction and "linear algebra concepts to recognize faces"

PCA (Principal Component Analysis) Algorithm

It uses Eigenvalues and EigenVectors to reduce dimensionality and project a training sample/data on small feature space

We first convert these images into vectors of size N2 such that:

imagetovector

https://www.geeksforgeeks.org/ml-face-recognition-using-eigenfaces-pca-algorithm/

k-Nearest Neighbors:( lazy learner algorithm )

k-NN is one of the most basic classification algorithms in machine learning

It is generally used in data mining, pattern recognition, recommender systems and intrusion detection.

Libraries used are:

OpenCV2

Pandas

Numpy

Scikit-learn

haarcascade\_frontalface\_default.xml dataset=====available in online you may download it

3 python files

1]facedetect.py

2].csv

3]recognize file

npwriter.py – Create/Update ‘.csv’: file

import cv2

import numpy as np

# import the file where data is

# stored in a csv file format

import npwriter

# this is used to access the web-cam

# in order to capture frames

cap = cv2.VideoCapture(0)

import pandas as pd

import numpy as np

import os.path

recog.py – Face-recognizer

Working:

Step-1: Select the number K of the neighbors

Step-2: Calculate the Euclidean distance of K number of neighbors

Step-3: Take the K nearest neighbors as per the calculated Euclidean distance.

Step-4: Among these k neighbors, count the number of the data points in each category.

Step-5: Assign the new data points to that category for which the number of the neighbor is maximum.

Step-6: Our model is ready.

NUMPY : NumPy is a very popular python library for large multi-dimensional array and matrix processing

KERAS : Keras is a very popular Machine Learning library for Python. It is a high-level neural networks API capable of running on top of TensorFlow

Keras for ML beginners to build and design a Neural Network.

TENSORFLOW : TensorFlow is a very popular open-source library for high performance numerical computation

Tensorflow is a framework that involves defining and running computations involving tensors.TensorFlow is widely used in the field of deep learning research and application.