INTRODUCTION

The face is one of the easiest way to distinguish the individual identity of each other person's identity to identify. It is a popular computer vision library started by intel in 1999. The cross-platform library sets its focus on real time image processing and includes patent-free implementations of the latest computer vision algorithm. To build our face recognition system, we'll first perform face detection, extract face embeddings from each face using deep learning, train a face recognition model on the embeddings, and they finally recognize faces in both images and video streams with Open CV.

While we use OpenCV to facilitate face recognition, OpenCV itself was not responsible for identifying faces. We'll be applying deep learning in two key steps.

1) To apply Face detection, which detects the presence and location of a face in an image, but does not identify it.
2) To extract the 128-d feature vectors (called "embeddings") that quantify each face in an image.

PROGRAMMING STACK

```
# import the necessary packages
From imutils import paths.
import numpy as np.
```

import argparse.
import imutils.
import pickle.
import cv2.
import os

While traditional machine learning algorithms are linear, deep learning algorithms are stacked in a hierarchy of increasing complexity & abstraction. Computer programs that use it go through much the same process. Each algorithm in the hierarchy applies a non linear transformation on its input. We import our required packages in our program & tell us explain all the functionality

OBJECTIVES

- Automated surveillance, where the objectives is to recognise and track people.

- Monitoring closed circuit television (CCTV). The facial recognition capability can be embedded into existing CCTV networks to look for lost children or other missing persons or tracking known or suspected criminals.

- Image database investigations, searching image databases of licensed drivers, benefit recipients and finding people in large news photograph and media collection

- Multimedia environments with adaptive human computer interfaces.
- Airplane-boarding gate, the face recognition may be used in places of random checks merely to screen passengers for further investigation.
- Sketch-based face reconstruction, where law enforcement agencies in the world rely on practical methods to help crime witnesses reconstruct likenesses of faces.

PROPERTIES

- Facial features detection checkes whether face size and position are the right ones in the image.
- will also be able to activate photograph detection and multiface detection in the scene.
- Facial features extration conducts processing of several images that may come from different sources such as webcams, images on disk or videos and it generates the representative facial user structure of the person.
- The user can recognized afterwards by using just the face or providing additional information such as a pin, an email etc.