TOPIC: Face-Recognition

Aim : Identifying or verifying the identity of a person using their face.

Requirements.txt: 1. cmake

2.dlib

3.face_recognition

4. numpy

5.opencv-python

Code:

```
import face_recognition as fr
import os
import cv2
import face_recognition
import numpy as np
from time import sleep


def get_encoded_faces():
    """
    looks through the faces folder and encodes all
    the faces
    :return: dict of (name, image encoded)
    """
    encoded = {}

    for dirpath, dnames, fnames in os.walk("./faces"):
        for f in fnames:
            if f.endswith(".jpg") or f.endswith(".png"):
                face = fr.load_image_file("faces/" + f)
                encoding = fr.face_encodings(face)[0]
                encoded[f.split(".")[0]] = encoding

    return encoded


def unknown_image_encoded(img):
    """
    encode a face given the file name
    """
    face = fr.load_image_file("faces/" + img)
    encoding = fr.face_encodings(face)[0]

    return encoding


def classify_face(im):
    """
    will find all of the faces in a given image and label
    them if it knows what they are
    :param im: str of file path
    :return: list of face names
    """
    faces = get_encoded_faces()
    faces_encoded = list(faces.values())
    known_face_names = list(faces.keys())

    img = cv2.imread(im, 1)
    #img = cv2.resize(img, (0, 0), fx=0.5, fy=0.5)
    #img = img[:,:,::-1]

    face_locations = face_recognition.face_locations(img)
    unknown_face_encodings = face_recognition.face_encodings(img, face_loc
ations)

    face_names = []
    for face_encoding in unknown_face_encodings:
        # See if the face is a match for the known face(s)
        matches = face_recognition.compare_faces(faces_encoded, face_encod
ing)
        name = "Unknown"

        # use the known face with the smallest distance to the new face
        face_distances = face_recognition.face_distance(faces_encoded, fac
e_encoding)
        best_match_index = np.argmin(face_distances)
        if matches[best_match_index]:
            name = known_face_names[best_match_index]

        face_names.append(name)

        for (top, right, bottom, left), name in zip(face_locations, face_n
ames):
```

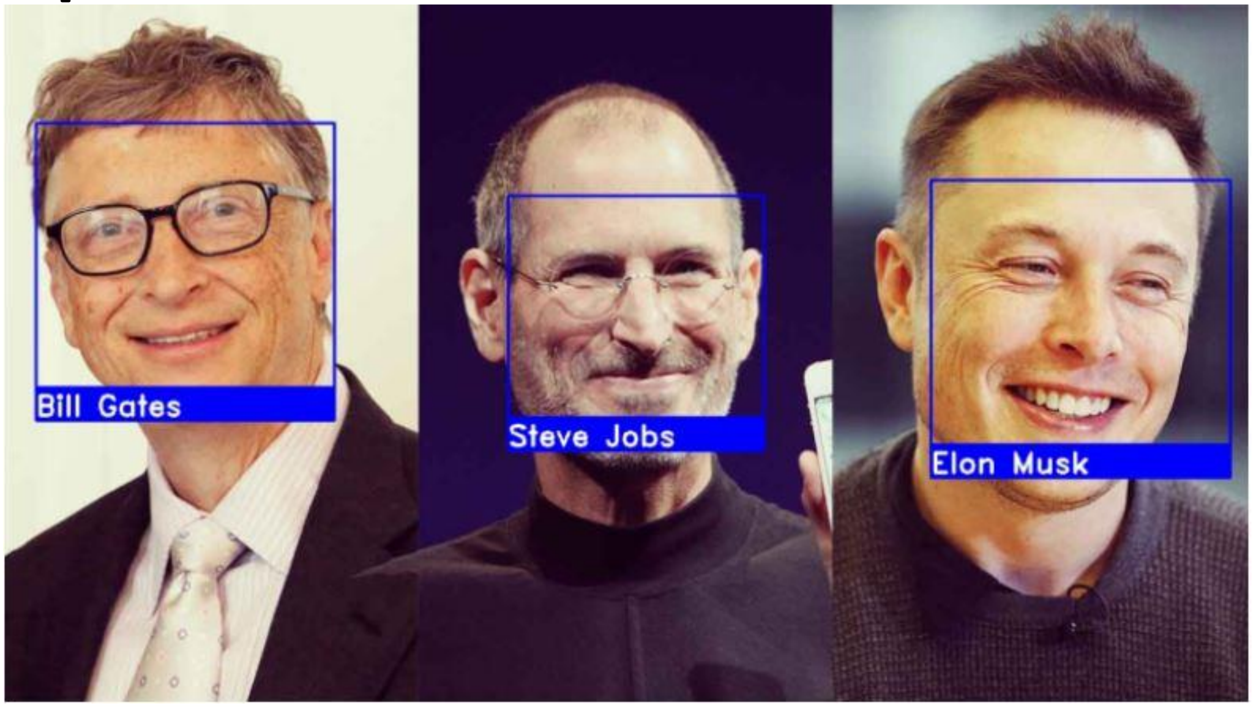
```
            # Draw a box around the face
            cv2.rectangle(img, (left-20, top-
20), (right+20, bottom+20), (255, 0, 0), 2)

            # Draw a label with a name below the face
            cv2.rectangle(img, (left-20, bottom -
15), (right+20, bottom+20), (255, 0, 0), cv2.FILLED)
            font = cv2.FONT_HERSHEY_DUPLEX
            cv2.putText(img, name, (left -
20, bottom + 15), font, 1.0, (255, 255, 255), 2)


    # Display the resulting image
    while True:

        cv2.imshow('Video', img)
        if cv2.waitKey(1) & 0xFF == ord('q'):
            return face_names
print(classify_face("test.jpg"))
```

Output:



Conclusion: Hence it is concluded that Recognition is possible through image processing In python .

References **: https://www.youtube.com/watch?v=D5xqcGk6LEc**