IMAGE PROCESSING

DIGITAL ASSIGNMENT 2-3

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ALGORITHM:

- Find the face from the image.
- Detect face landmarks in the face image.
  If a face is not looking directly at the camera, we can distort the image to look directly face-on once we have a series of reference points. These reference points are called face landmarks. There are 68 landmarks typically used on a persons face as per the below image. Once these points are known we can rotate, scale and shear the image to look straight ahead to improve the ability to encode the face.
- Encode the image to get face data in the form of numeric data.
- Compare the encoding data of known image and test image to get the similarity between the images. We can use Eucledian distance also for computing similarity among the two faces.

  IMPLEMENTATION:
  - Python version 3
  - Dlib library
  - Face Recognition api supported by dlib

TASK-1

Compare Your photos from different ages(primary, secondary, college) find the similarity among them.

Photos Taken-:

Childhood:

School:

Secondary:

College:

 # Result between childhood and school:

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py"
The test image has a distance of 0.39 from known image
Similarity percentage: 60.6893504943248 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? True
```

---Similarity % - 60.68%

#Result between childhood and secondary

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py"
The test image has a distance of 0.67 from known image
Similarity percentage: 32.99635362214185 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? False
```

---Similarity% - 33%

 # Result between childhood and college

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py"
The test image has a distance of 0.61 from known image
Similarity percentage: 38.990667082151944 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? False
```

---Similarity% - 39%

#Result between secondary and college

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.p
The test image has a distance of 0.37 from known image
Similarity percentage: 62.55988237439839 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? True
```

---Similarity% - 63%

Conclusion- As the age gap is less more similarity percentage can be seen.(i.e in childhood and school images, college and secondary images)

TASK -2

Compare your photo with your family members.

Input Photos:

Mother:

Father:

Sister:

Outputs:

 # Similarity between mother and me

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py
The test image has a distance of 0.56 from known image
Similarity percentage: 43.78285315050262 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? False
```

--Similarity % -44%

 # Similarity between father and me

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py
The test image has a distance of 0.68 from known image
Similarity percentage: 31.663644516195188 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? False
```

--Similarity % -31%

#Similarity between sister and me

```
C:\Users\LENOVO\Anaconda3\envs\py35\python.exe "E:/3rd year/6th Sem/Image Processing/DA2_DA3/try2.py"
The test image has a distance of 0.71 from known image
Similarity percentage: 28.566705095947174 %
- With a normal cutoff of 0.75, would the test image match the known image? True
- With a very strict cutoff of 0.5, would the test image match the known image? False
```

--Similarity % -29%

NOTE:-

Output shows 4 different values which are as follows-

1. Distance between the encodings of the image.
2. Similarity Percentage on the basis of the above distance calculated.
3. Result when threshold distance is taken as 0.75.This is considerable match case.
4. Result when threshold distance is taken as 0.50. This is the best match case.