Welcome our presentation

Presentation ON

Face recognition using open cv and python

A presentation on **Face recognition using open cv and python**

Presented to

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Facial recognition

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Introduction

What is Biometrics ??

A biometric is a unique , measurable characteristic of a human being that can be used to automatically recognize an individual or verify an individual's identity

What is image processing ???

Image processing is a method to perform some operations on an **image**, in order to get an enhanced **image** or to extract some useful information from it.

What is opencv python???

OpenCV-Python is a library of **Python** bindings designed to solve computer vision problems

What is Facial recognition ???

Facial recognition is a biometric software application capable of uniquely identifying or verifying a person by comparing and analyzing.


```
import cv2
img = cv2.imread('image.jpg')
while True:
    cv2.imshow('mandrill',img)
    if cv2.waitKey(1) & 0xFF == 27:
        break
cv2.destroyAllWindows()
```

Features of face recognition

Find faces in pictures

Find all the faces that appear in a picture:

```
faces_rects = haar_cascade_face.detectMultiScale(test_image_gray, scaleFactor = 1.2,
minNeighbors = 5);
# Let us print the no. of faces found
print('Faces found: ', len(faces_rects))
Faces found:  1
```

Our next step is to loop over all the coordinates it returned and draw rectangles around them using Open
CV. We will be drawing a green rectangle with a thickness of 2

```
for (x,y,w,h) in faces_rects:
    cv2.rectangle(test_image, (x, y), (x+w, y+h), (0, 255, 0), 2)
```
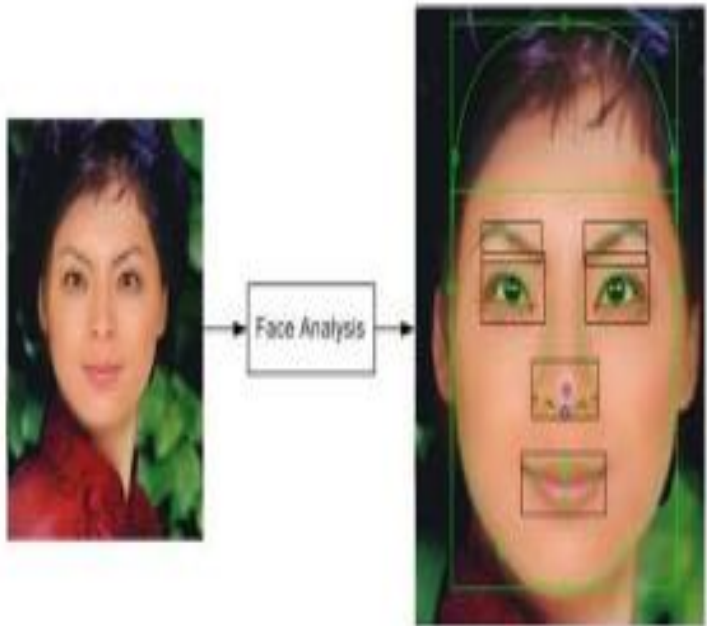
Finally, we shall display the original image in colored to see if the face has been detected correctly or not.

```
#convert image to RGB and show image
plt.imshow(convertToRGB(test_image))
```

Find and manipulate facial features in pictures

Get the locations and outlines of each person's eyes, nose, mouth and chin.


```python
def detect_faces(cascade, test_image, scaleFactor = 1.1):
    # create a copy of the image to prevent any changes to the
original one.
    image_copy = test_image.copy()
    #convert the test image to gray scale as opencv face
detector expects gray images
    gray_image = cv2.cvtColor(image_copy,
cv2.COLOR_BGR2GRAY)
    # Applying the haar classifier to detect faces
    faces_rect = cascade.detectMultiScale(gray_image,
scaleFactor=scaleFactor, minNeighbors=5)
    for (x, y, w, h) in faces_rect:
        cv2.rectangle(image_copy, (x, y), (x+w, y+h), (0, 255, 0),
15)
    return image_copy
```

Identify faces in pictures
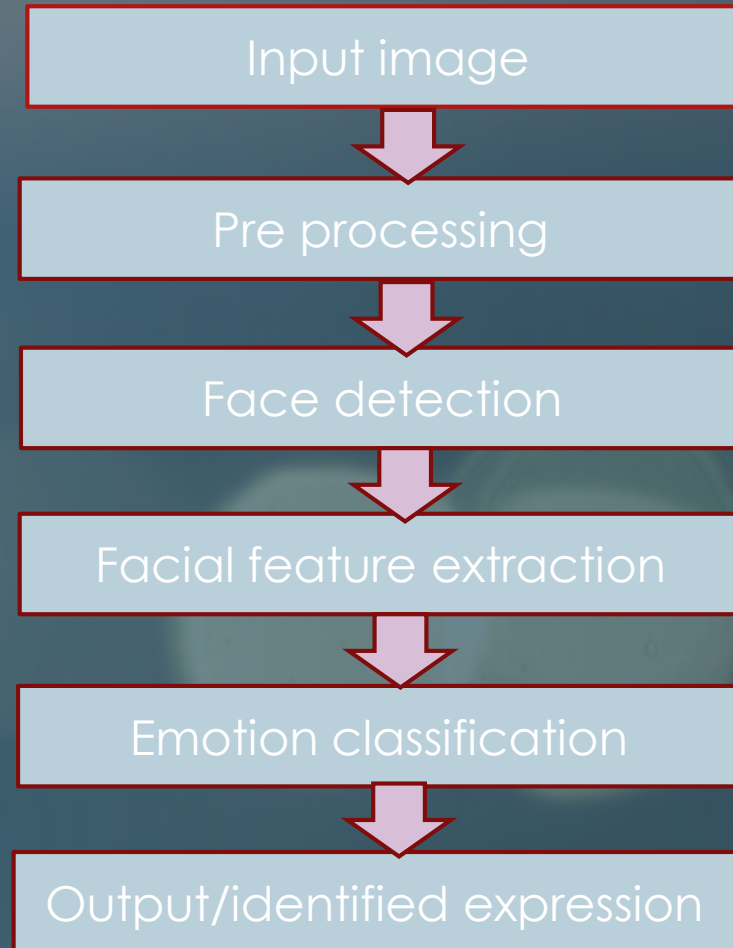
Recognize who appears in each photo.

Input   Picture contains "Joe Biden"   Output

how facial recognition work

how facial recognition works

Input image

↓

Pre processing

↓

Face detection

↓

Facial feature extraction

↓

Emotion classification

↓

Output/identified expression

Uses of face recognition

Uses of face recognition

1. U.S. government at airports.

2. Security counterterrorism

3. Day care

Uses of face recognition

4. Colleges in the classroo[m]

5. Voter verification.

6. Banking using ATM

Strength of face recognition

1. Convenient

2. Social acceptability

3. More user friendly

4. Inexpensive technique of identification

Limitation of face recognition

1. Problem with false rejection when people change their hairstyle ,grow or shave beard or wear glasses.

2. Face recognition systems can't tell the difference between identical twins.

Conclusion

For implementations where the biometric system must verify and identify users reliably over time ,facial scan can be difficult ,but not impossible technology to implement successfully.

Recap our presentation :

1. Introduction of biometrics
2. What is image processing ,facial recognition and opencv python
3. how facial recognition works??
4. Uses of facial recognition .
5. Strength and limitation of face recognition

References

1. http://www.wikipedia.org/wiki/facialrecognitionsys tem 2..
3.http://www.biometricgroup.com/wiley
3. https://pypi.org/project/face_recognition/

Thank you all