FacePy

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Introduction:

This project will open a gateway for each and every institute authorised faculty or security to...

- **Display details**
  This will give access to teachers to get the student information within minutes.
- **Resource**
  Any faculty or administration doesn't need to approach any other source to get any information for a specific student.

IDEA:

- **As we know the administration daily faces challenges for identifying students in different criteria and troubles .**
- **So, this project will help the administration as following:** A current image of any student uploaded on this platform will display the information required for him/her.

Suppose...

A student in computer lab is messing up with the system which is being recorded in the CCTV footage. In this case administration will face the challenge like identifying the student from just his face .

Cont...

With the help of this software it is very easy to identify the students who is disturbing the curriculum or the discipline of campus

Requirements:-

- **Software:**

  OpenCV,PyCharm, NumPy, PIL, tkinter, Django

- **Hardware:**

  WebCam and Configured System

WORK PROPOSED

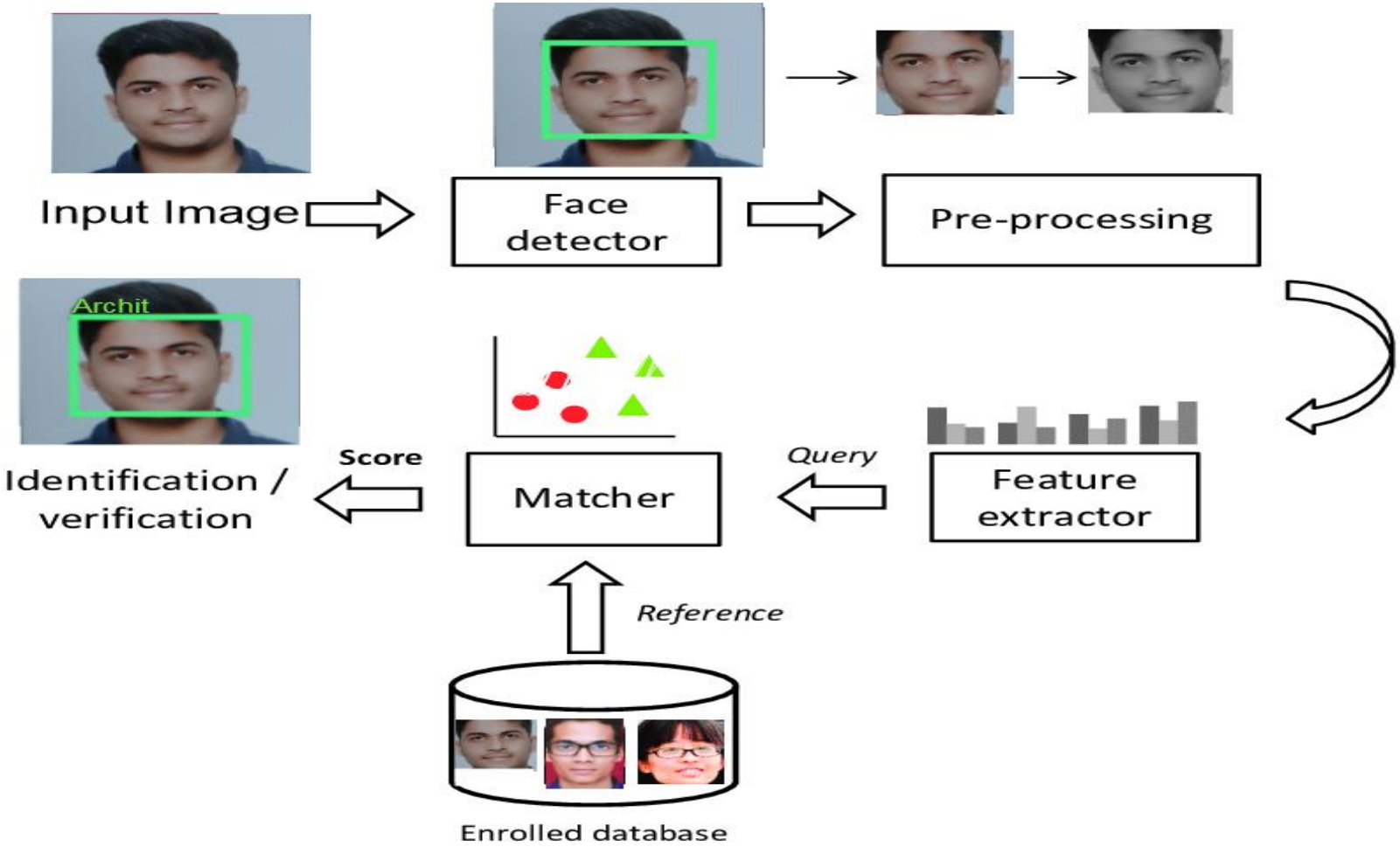
- Face Recognition where that detected and processed face is compared to a database of known faces, to decide who that person is.

- This can be prepared using various frameworks supporting several languages. These frameworks have an in-built Face Detector that works on the image of a person.

- They examine each image, location and labels it as "Face" or "Not Face." Classification assumes a fixed scale for the face. Since faces in an image might be smaller or larger than this.

- The code following them is specialized for face recognition, and they're widely used for. Further they resemble details with data stored and display them in as a label.

System Architecture:-



Modules...

Image and Video Inputs:

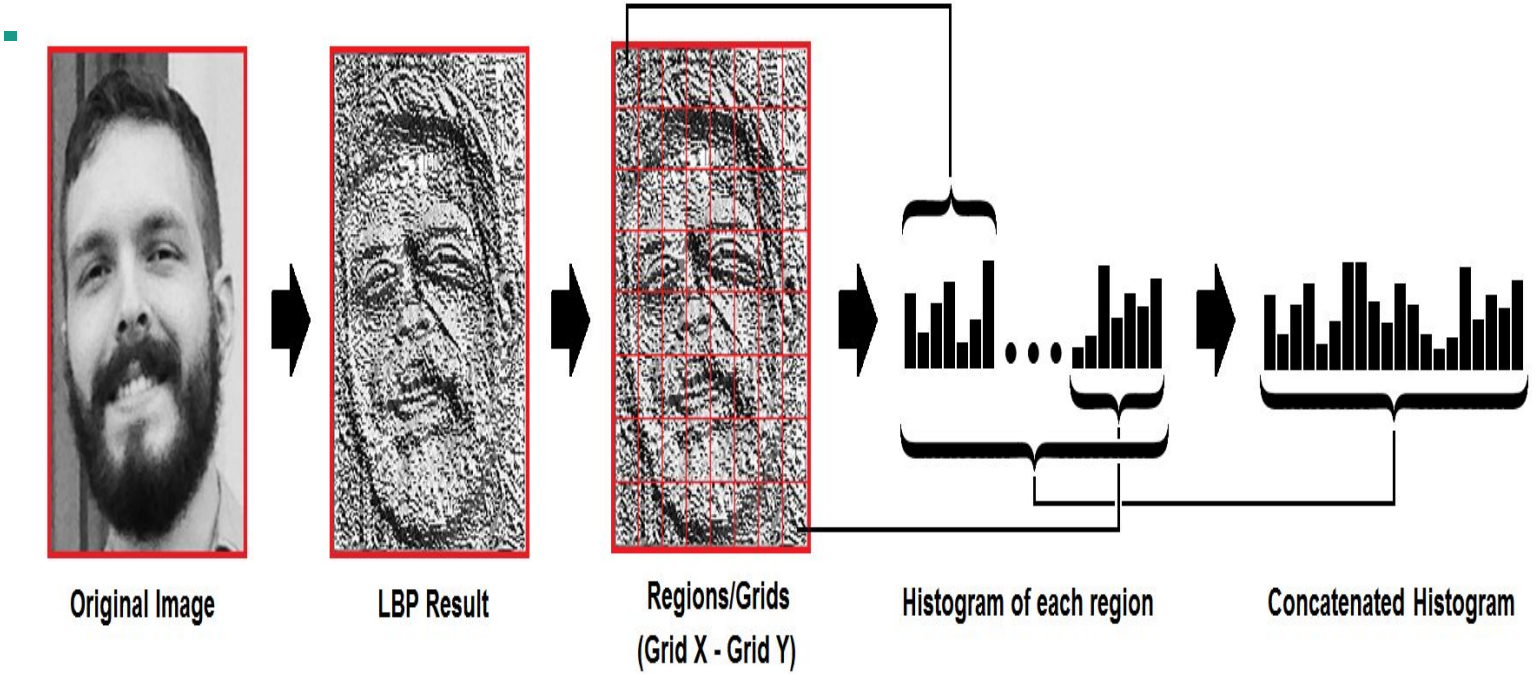
- ➔ OpenCV is a library of programming functions mainly aimed at real-time computer vision. The image displaying and pop-ups are supported by OpenCV only.
- ➔ OpenCV is believed to be the most efficient platform to create light weight application with less runtime.
- ➔ The image preprocessing is done for face detection and PIL cropping.

Face Detection and Recognition:

- **Face Detection** where a photo is searched to find a face, then the image is processed to crop and extract the person's face for easier recognition.
- **Face Recognition** where that detected and processed face is compared to a database of known faces, to decide who that person is.
- All of this process will be trained ad processed under face_recognition library.

Feature Extraction and Matcher:

- As we have an image in grayscale, each histogram (from each grid) will contain only 256 positions (0~255) representing the occurrences of each pixel intensity.
- Then, we need to concatenate each histogram to create a new and bigger histogram. Supposing we have 8x8 grids, we will have 8x8x256=16.384 positions in the final histogram. The final histogram represents the characteristics of the image original image.
- The LBPH algorithm is pretty much it


Original Image
LBP Result
Regions/Grids
(Grid X - Grid Y)
Histogram of each region
Concatenated Histogram

DataBase:

- **Database** will have a trained data sets of nearly 200 images of different people with their respective identity, more the database is available more will be the accuracy of the respective program

Milestones

September 2019

Get the project in working to detect faces

September 2019

Project can recognise faces

2019

2019

October 2019

Project will be ready to store database with image and directory formation.

Milestones

September 2019

Get the project to have face detection

December 2019

Give the project transformation with front end

March 2020

Will be adding the whole project in app development

October 2019

Get the data stored of the students in website database

February 2020

Attach AI for age approximation in the project.

References

https://www.researchgate.net/publication/267426877_Facial_Recognition_using_OpenCV

https://www.academia.edu/33192823/_Face_Detection_A_PROJECT_PROPOSAL

Youtube tutorials and other certification

Real time usage :

1. Live stream Face Detection
2. Database storing
3. Face Recognition in Images