Smart Attendance System using face-recognition

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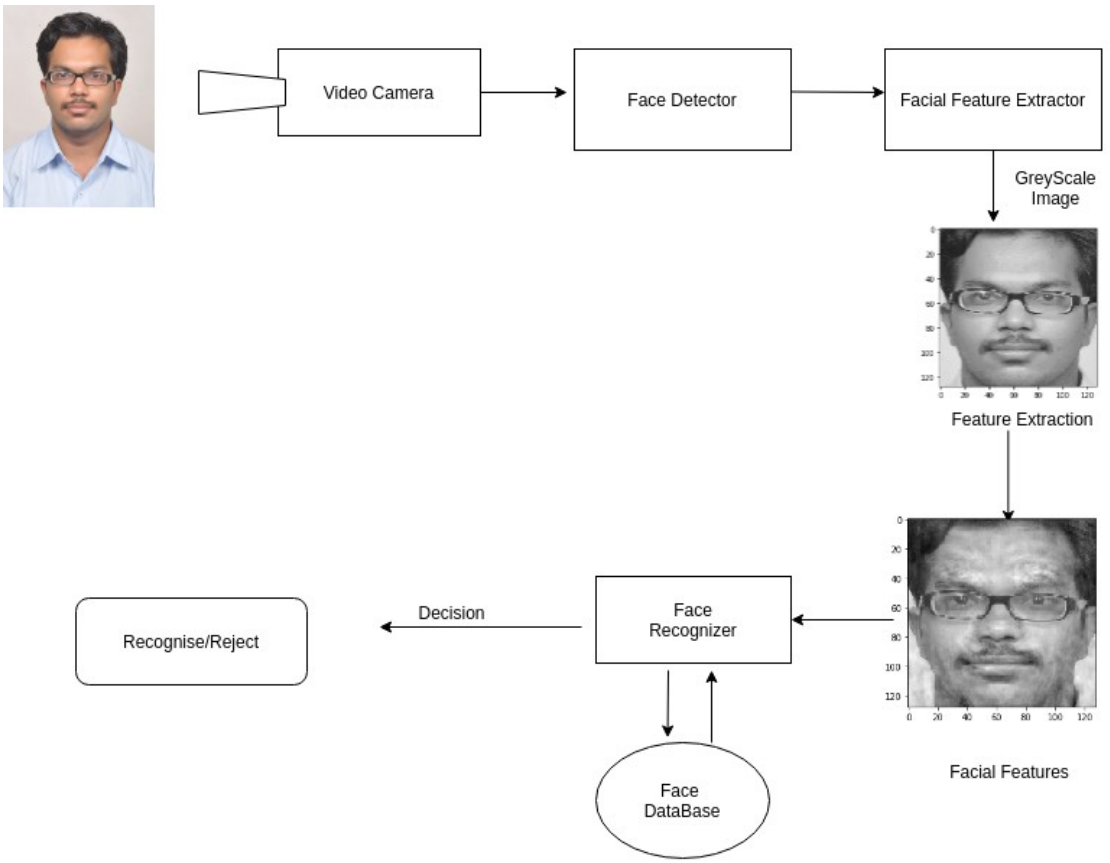
1 Abstract

The project deals with the automatic face-recognition attendance system. The camera is placed outside the classroom. For every person who enters the class, the camera captures the image and sends the image to the verification server , where the facial features are extracted from the sent image and will be passed to the trained model , which can identify the person and mark the attendance.



Face Recognition System Framework

2 Solution Overview

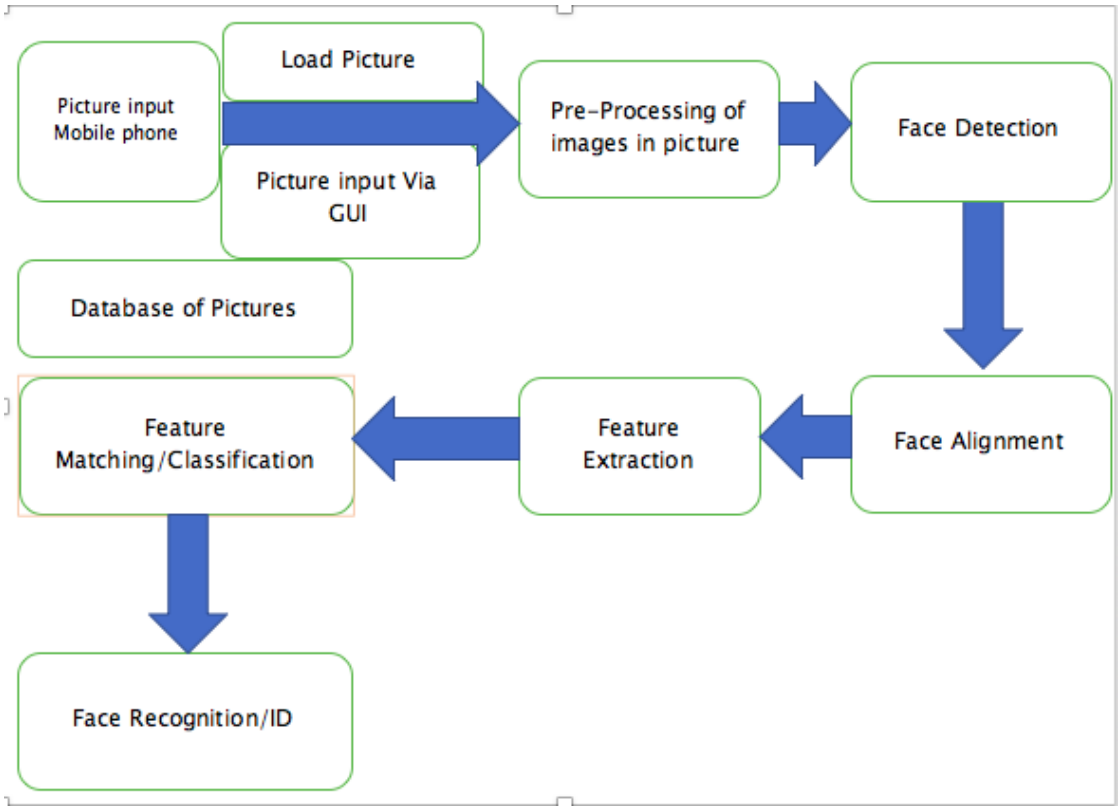


Figure 1: Face detection and recognition flow diagram

From the figure, above, Face Detection or face detector will detect any given face in the given image or input video. Face localization, will detect where the faces are located in the given image/video, by use of bounding boxes. Face Alignment is where the system will find a face and align landmarks such as nose, eyes, chin, mouth for feature extraction. Feature extraction, extracts key features such as the eyes, nose, mouth to undergo tracking. Feature matching and classification matches a face based on a trained data set of pictures from a database of pictures. Face recognition, gives a positive or negative output of a recognized face based on feature matching and classification from a referenced facial image.

3 Requirement:

Environment to be used

- 64-bit OS (Linux)
- Minimum RAM requirement : 4GB
- Web-cam for testing of module

Technologies to be used

- Programming language : Python
- Libraries: cv2 (Computer Vision)

Dataset used

- **https://preview.tinyurl.com/sryhl6q**
- Manually Created dataset for testing attendance System

4 Information Flow

We collect the photographs of students with several orientations and emotions to make our training model robust.We pre-process the images, by doing mean subtraction and scaling to deal with the illumination changes in the images we collected.We feed all the collected images to our model to learn, which can be finally used for classification when facial features are given as input.

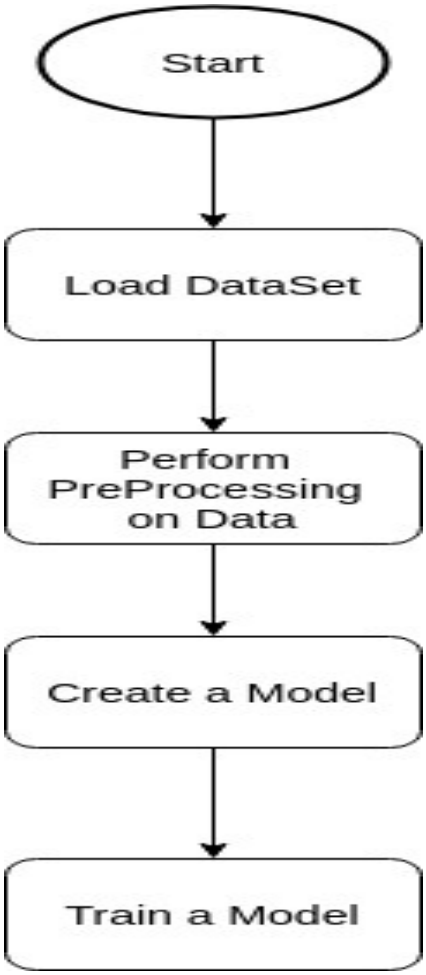
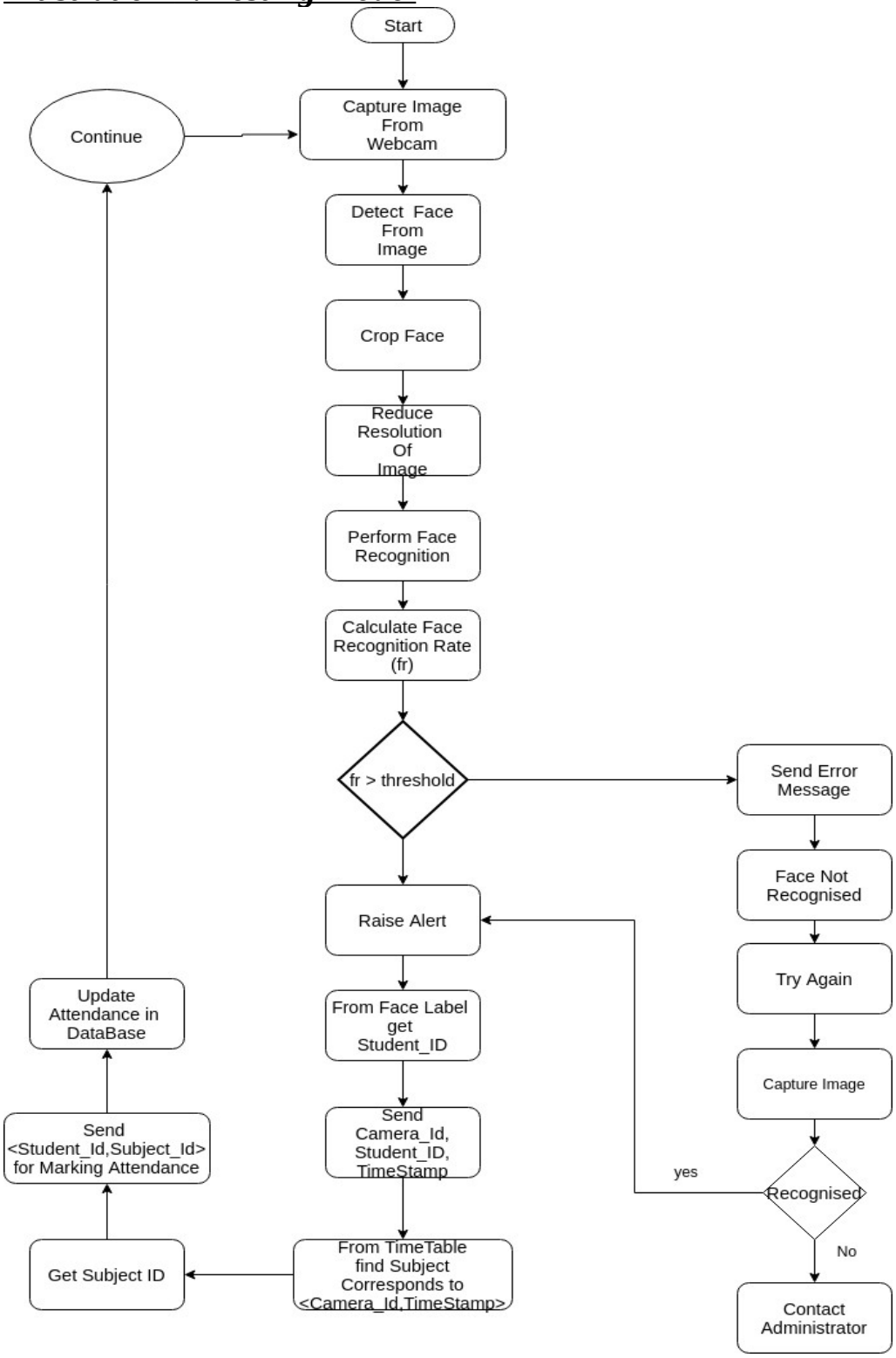


Illustration 1: Figure 2: Training of Model

Figure 3:

Illustration 2: Testing Model



INNOVATION:

1.Detecting Drowsiness of a Student

We captures the class image , and if any student found sleeping in the class we mark that student, if same student found sleeping for 4 times we decrement the attendance of that student by 1 and send notification to both student as well as concerned faculty.

2. Teacher Review

We capture the class image, and study the emotions of students from it, and generate a review of Teacher about the teaching style and this model also generate a review of particular students, that whether throughout the class whether the student is interactive or not. This innovation can be modified further

Illustration 3: Drowsiness Detector