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DETECTING IMPERSONATERS IN EXAMINATION CENTRES

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ABSTRACT: Detecting impersonators in examination halls is important to provide a better way of examination handling system which can help in reducing malpractices happening in examination centers. According to the latest news reports, 56 JEE candidates who are potential impersonators were detected by a national testing agency. In order to solve this problem, an effective method is required with less manpower. With the advancement of machine learning and AI technology, it is easy to solve this problem. In this project we are developing an AI system where images of students are collected with names and hall ticket numbers are pre-trained using the KDTree algorithm and the model is saved. Whenever a student enters into classroom, the student should look at the camera and enter class, after the given time or class is filled with student's information will store in a video file with student name and hall ticket no . The video will have a user with hall ticket no and name on each face. If admin finds any unknown user tag on face admin can recheck and trace impersonators.

I. INTRODUCTION

According to the latest news reports, 56 JEE candidates who are potential impersonators were detected by a national testing agency.In order to solve this problem, an effective method is required with less manpower. With the advancement of machine learning and AI technology, it is easy to solve this problem.

This softwareprovides facility to Detect impersonators and to reduce the malpractices. Thisprojectuses AImethods and computer vision toidentify Impersonators in examination centers from given data set. First, Admin Used to collect the data and images of students and stored in a required data set by using AI method and student has to move in front of the camera .If the student already registered it will show his/her name , otherwise it will show unknown.

This has been developed to identify the impersonators in examination center . System is built with manually exclusive features. In allcases system willspecify object which are physical or on performance characteristics. They are used to giveoptimal distraction and otherinformation.Data are used for identifying,accessing,storingand matching records. The data ensures that only one value of the code with a single meaning is correctly applied to give entity or attribute as described in various ways.

The main features of this project is to identify the impersonators in examination center. The solutions are given asproposals. The proposal is then weighed with the existing system analytically and the best oneis selected. The proposal is presented to the user for an endorsement by the user. The proposalis reviewed on user request and suitable changes are made. This is loop that ends as soon asthe userissatisfiedwithproposal.

A detailedstudy of theprocessmust be made by varioustechniqueslikeImageprocessing, feature recognition etc. The data collected by these sources must be scrutinized toarrive to a conclusion. The conclusion is an understanding of how the system functions. Thissystem is called the existing system. Now the existing system is subjected to close study andproblem areas are identified. The designer now

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functions as a problem solver and tries to sortoutthedifficultiesthattheenterprisefaces.The solutionsaregivenasproposals.Theproposal is then weighed with the existing system analytically and thebest oneis selected.The proposal is presented to the userfor an endorsementby the user. The proposalisreviewed on user request and suitable changes are made. This is loop that ends as soon as theuserissatisfiedwithproposal.

II. LITERATURE SURVEY

Face detection is a computer technology that determines the location and size of human face in arbitrary (digital) image. The facial features are detected and any other objects like trees, buildings and bodies etc are ignored from the digital image. It can be regarded as a _specific' case of object-class detection, where the task is finding the location and sizes of all objects in an image that belong to a given class. Face detection, can be regarded as a more _general' case of face localization. In face localization, the task is to find the locations and sizes of a known number of faces (usually one). Basically there are two types of approaches to detect facial part in the given image i.e. feature base and image base approach.Feature base approach tries to extract features of the image and match it against the knowledge of the face features. While image base approach tries to get best match between training and testing images. Fig 2.1 detection methods 2.1 FEATURE BASE APPROCH: Active Shape ModelActive shape models focus on complex non-rigid features like actual physical and higher level appearance of features Means that Active Shape Models (ASMs) are aimed at automatically locating landmark points that define the shape of any statistically modelled Department of ECE Page 5 object in an image. When of facial features such as the eyes, lips, nose, mouth and eyebrows. The training stage of an ASM involves the building of a statistical a) facial model from a training set containing images with manually annotated landmarks. ASMs is classified into three groups i.e. snakes, PDM, Deformable templates b) 1.1)Snakes:The first type uses a generic active contour called snakes, first introduced by Kass et al. in 1987 Snakes are used to identify head boundaries [8,9,10,11,12]. In order to achieve the task, a snake is first initialized at the proximity around a head boundary. It then locks onto nearby edges and subsequently assume the shape of the head. The evolution of a snake is achieved by minimizing an energy function, Esnake (analogy with physical systems), denoted asEsnake = Einternal + EExternal WhereEinternal and EExternal are internal and external energy functions.Internal energy is the part that depends on the intrinsic properties of the snake and defines its natural evolution. The typical natural evolution in snakes is shrinking or expanding. The external energy counteracts the internal energy and enables the contours to deviate from the natural evolution and eventually assume the shape of nearby features—the head boundary at a state of equilibria.Two main consideration for forming snakes i.e. selection of energy terms and energy minimization. Elastic energy is used commonly as internal energy. Internal energy is vary with the distance between control points on the snake, through which we get contour an elastic-band characteristic that causes it to shrink or expand. On other side external energy relay on image features. Energy minimization process is done by optimization techniques such as the steepest gradient descent. Which needs highest computations. Huang and Chen and Lam and Yan both employ fast iteration methods by greedy algorithms. Snakes have some demerits like contour often becomes trapped onto false image features and another one is that snakes are not suitable in extracting non convex features. 2.1.1 Deformable Templates: Deformable templates were then introduced by Yuille et al. to take into account the a priori of facial features and to better the performance of snakes. Locating a facial feature boundary is not an easy task because the local evidence of facial edges is difficult to organize into a sensible global entity using generic contours. The low brightness contrast around some of these features also makes the edge detection process.Yuille et al. took the concept of snakes a step further by incorporating global information of the eye to improve the reliability of the extraction process. Department of ECE Page 6 Deformable

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templates approaches are developed to solve this problem. Deformation is based on local valley, edge, peak, and brightness .Other than face boundary, salient feature (eyes, nose, mouth and eyebrows) extraction is a great challenge of face recognition.E = Ev + Ee + Ep + Ei + Einternal ; where Ev , Ee , Ep , Ei , Einternal are external energy due to valley, edges, peak and image brightness and internal energy 2.1.2 PDM (Point Distribution Model): Independently of computerized image analysis, and before ASMs were developed, researchersdeveloped statistical models of shape . The idea is that once you represent shapes asvectors, you can apply standard statistical methods to them just like any other multivariateobject. These models learn allowable constellations of shape points from training examplesand use principal components to build what is called a Point Distribution Model. These havebeen used in diverse ways.

The first parametric statistical shape model for image analysis based on principal components of inter-landmark distances was presented by Cootes and Taylor in. On this approach, Cootes, Taylor, and their colleagues, then released a series of papers that cumulated in what we call the classical Active Shape Model.

III. EXISTING SYSTEM

Information given in the hall ticket is used as verification to check if student is exact person or not. Manual security checks are performed with are not perfect and some time students can change image from hall ticket.

Manual verification methods are used for checking personally for each student which is not possible to check each student personally.

Chances of changing images from hall ticket is possible which doesn't have verification method.

IV. PROPOSED SYSTEM AND ARCHITECTURE

In the proposed system, initially images of each student are collected and each dataset consists of 20 images of each student. These images are trained using kdtree algorithm using image processing technique and model is saved in system this model can be used for automatic prediction of student in exam halls from live video or images.

The system is very simple in design and to implement. The system requires very lowsystem resources and the system will work in almost all configurations. It has got followingfeatures. Student verification process is fast and accurate with least effort. Reduces impersonators issue with live verification. Time taken for prediction and processing is less and prediction done automatic using trained model.

Trained model can be used to track live video and automates process of detecting students at exam centers and display in video.

Below figure shows the architecture that shows the procedure followed for Detecting Impersonators Using AI Method ,startingfrominputtofinal prediction..

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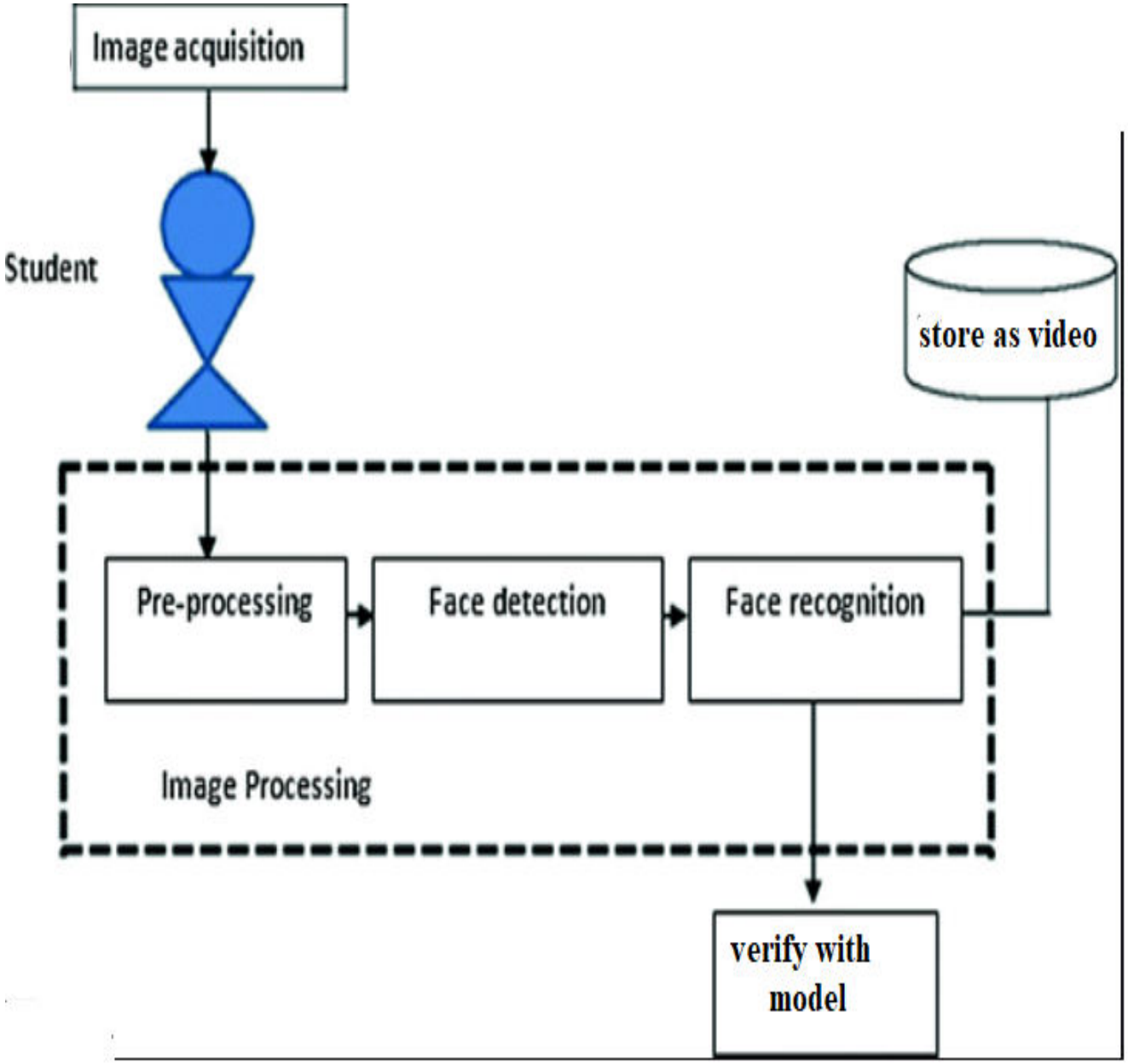

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V. IMPLEMENTATION

The objective of this project is to detect and recognize the faces from the scene.

A. IMAGE ACQUISTION :

Digital **Image** Processing. In **image** processing, it is defined as the action of retrieving an **image** from some source, usually a hardware-based source for processing. It is the first step in the workflow sequence because, without an **image**, no processing is possible.

B. PRE - PROCESSING:

Pre-processing is a common name for operations with images at the lowest level of abstraction — both input and output are intensity images. These iconic images are of the same kind as the original data captured by the sensor, with an intensity image usually represented by a matrix of image function values (brightnesses). The aim of pre-processing is an improvement of the image data that suppresses unwilling distortions or enhances some image features important for further processing, although geometric transformations of images (e.g. rotation, scaling, translation) are classified among pre-processing methods here since similar techniques are used.

C. FACE DETECTION:

The face is one of the easiest ways to distinguish the individual identity of each other. Face recognition is a personal identification system that uses personal characteristics of a person to identify the person's identity. Human face recognition procedure basically consists of two phases, namely face detection, where this process takes place very rapidly in humans, except under conditions where the object is located at a short distance away, the next is the introduction, which recognize a face as individuals. Stage is then replicated and developed as a model for facial image recognition (face recognition) is one of the much-studied biometrics technology and developed by experts. There are two kinds of methods that are currently popular in developed face recognition pattern namely, Eigenface method and Fisherface method. Facial image recognition Eigenface method is based on the reduction of facedimensional space using Principal Component Analysis (PCA) for facial features. The main purpose of the use of PCA on face recognition using Eigen faces was formed (face space) by finding the eigenvector corresponding to the largest eigenvalue of the face image. The area of this project face detection system with face recognition is Image processing. The software requirements for this project is matlab software. Keywords: face detection, Eigen face, PCA, matlab Extension: There are vast number of applications from this face detection project, this project can be extended that the various parts in the face can be detect which are in various directions and shapes.

D. FACE RECOGNITION :

There are two predominant approaches to the face recognition problem: Geometric (feature based) and photometric (view based). As researcher interest in face recognition continued, many different algorithms were developed, three of which have been well studied in face recognition literature. Recognition algorithms can be divided into two main approaches: 1. Geometric: Is based on geometrical relationship between facial landmarks, or in other words the spatial configuration of facial features. That means that the main geometrical features of the face such as the eyes, nose and mouth are first located and then faces are classified on the basis of various geometrical distances and angles between features. (Figure 3) 2. Photometric stereo: Used to recover the shape of an object from a number of images taken under different lighting conditions. The shape of the recovered object is defined by a gradient map, which is made up of an array of surface normals (Zhao and Chellappa, 2006) (Figure 2) Popular recognition algorithms include: 1. Principal Component Analysis using Eigenfaces, (PCA) 2. Linear Discriminate Analysis, 3. Elastic Bunch Graph Matching using the Fisherface algorithm.

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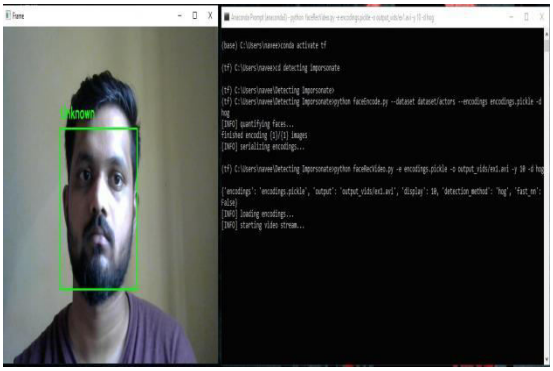
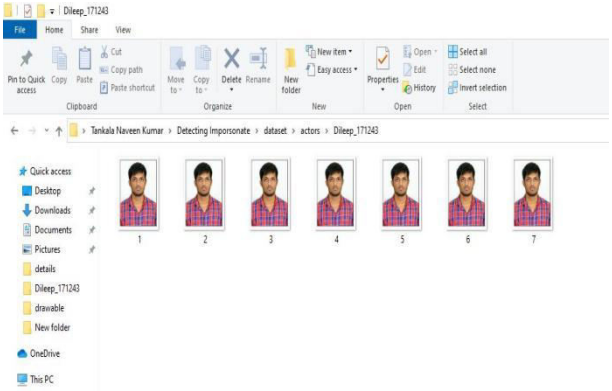
VI . RESULT

UNKNOWN RESULT



DATASET ACTORS 1



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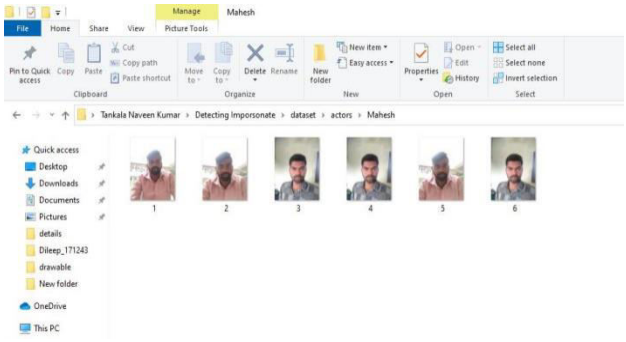
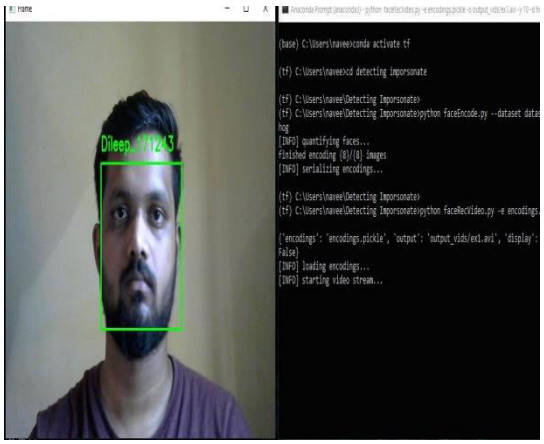


KNOWN RESULT



VII. CONCLUSION AND FUTURE WORKS.

Robust Automated Face Detection & Recognition system is developed and employed for Detecting Impersonation of Candidates in the examination system. A video is recorded while candidates enter the examination hall and it is checked against the dataset containing the images of all the candidates. If the face gets recognized it will display a ok message. Further if a face is detected is not recognized, when compared with the enrolment dataset, then a fraud is detected with respect to impersonation.

In future to makethis moreefficientweshall makemoredata. Wecan usemoretypeorclass ofdata. Infuturewe willbuildacompleteopensourceworkingplatformwit hhugeamountsofimagedata.

VIII. REFERENCES

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