

Smart Society Security System

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ABSTRACT

Authentication is an issue in computer based communication. Face recognition is widely used in many applications such as system security and door control system. The paper describes how to take person identification using face recognition. The face recognition is implemented with the help of Principal Component Analysis (PCA) algorithm. The system will recognize the face of the person and saves the response in database automatically. The system also includes the feature of retrieving the list of person who is entering in society a particular day.

Index Terms— Entry list, Authentication, Automatic, Database, Face Recognition, *PCA

1. INTRODUCTION

Face recognition is one of the few biometric method that posses the merit of both accuracy and low intrusive has ness for this reason since the early 70 's face recognition has drawn the entry of researchers in field from security and image processing to computer vision face recognition has also proven useful in multimedia information processing as traditionally ,secure system are taken manually in the society using registration given to the Admin member but it is a very difficult to verify person one by one in a society when crime are detect environment.

The proposed system demonstrates how face or person identification is used for taking detail of a person using PCA algorithm how to store face and related detail in the database and how to retrieve the criminal record.

1.1 Evolution

The first attempt to use face recognition was made in 1960's with semi-automated system. The photographs contained marks to locate major features. It used features such as mouth, eyes and nose. But the problem was to select from the database a small set of records such that one of the image records matched the photograph. Another approach which seeks to classify the human face using combination of gestures and identifying markers but the problem is that this approach requires a huge number of training faces to achieve decent accuracy. Fisher's approach [6] was to measure different pieces of the face which are then mapped onto a global template. But the problem is that those features do not contain enough unique data to represent an adult face. The first fully automated system [12] developed uses very general pattern recognition. It compared faces to a generic face model and created patterns. But this approach is statistical and relies on histograms and gray scale.

2. SYSTEM OVERVIEW

The system uses the eigenface approach face recognition the method analyzes and computes eigenface which are face composed of eigenvector .The method also compare the eigenvector to identify the present of a person (face and detail) and its identity the method involves the following step .As a first step the system should be initialized with a set of training faces .Next when a face is detected the eigenvector is calculated for that face then the system compare the stored face image and

determines whether the face is identified or not the final is detected repeatedly the system may learn to recognize it.

2.1 Components.

The main component used in the system are open source computer vision library (open CV) Microsoft visual studio 2010 professional .Edition open CV is a library of programming function aimed mainly at real-time computer vision .The library is cross platform the open CV application area includes 2D and 3D features toolkits facial recognition system object identification and motion tracking open CV library contain more than 550 function the for open CV used here is Microsoft visual studio 2010 professional Edition.

2.2 Process.

The persons need to be in front of a camera at a minimum distance 60cm. The system will detect the image of the persons according to PCA [13].Convert it into a gray scale and store it an XML file. When the persons reappears before the camera faces are recognized by comparing the Eigen faces of current and stored images and their detail then the names of the detected faces are stored in Microsoft SQL database.

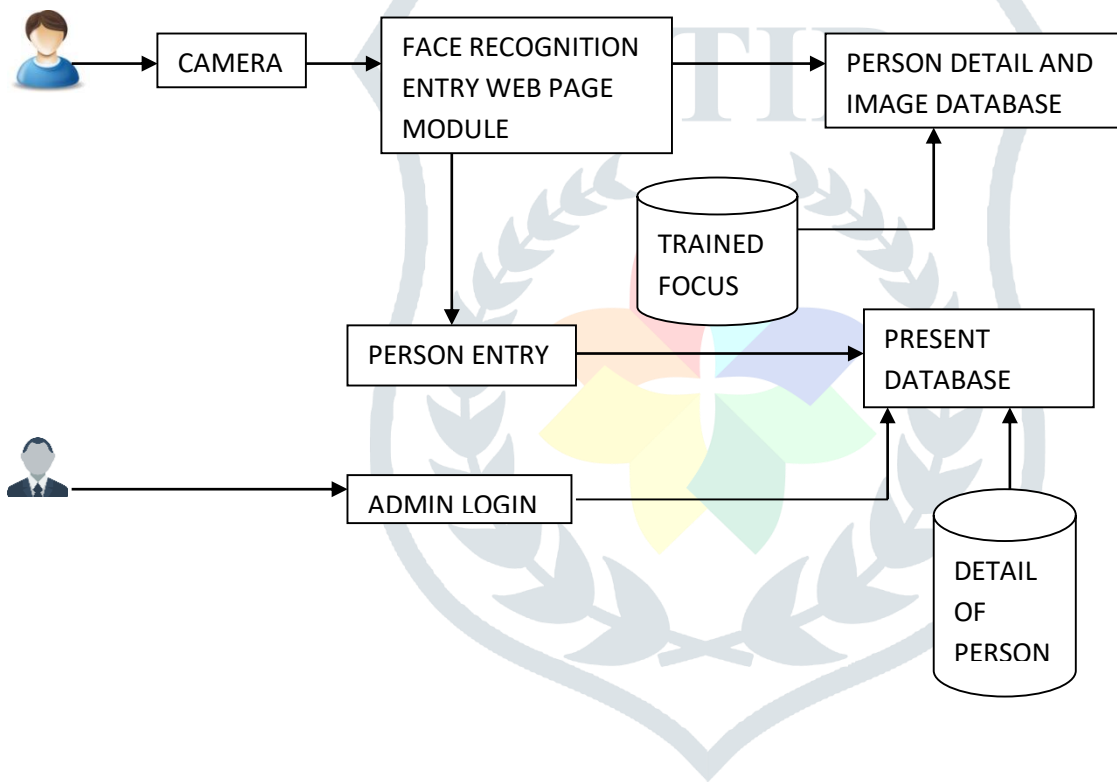
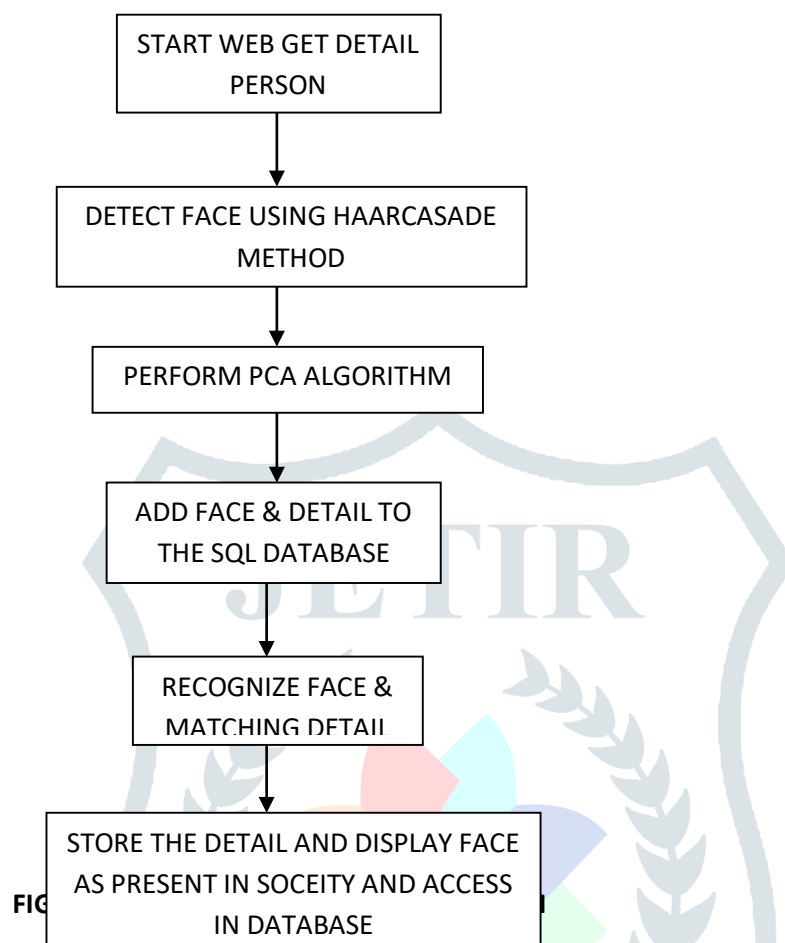


FIGURE.1 OVERVIEW OF THE SYSTEM.



2.3 Algorithm.

The algorithm used in the system is principal component analysis (PCA). Application such as face recognition and image compression uses PCA algorithm it is also used for finding data pattern. The following steps show the process of PCA.

1. Mean center the data.
2. Compute the covariance matrix of the dimension.
3. Find the eigenvector (V, E) of covariance matrix.
4. Sort eigenvector and their detail in decreasing order eigenvalues.
5. Project onto eigenvector in order.

3. IMPLEMENTATION

There basic steps are used for implementation the proposed system.

1. Detect and extract the face and detail and save the detail in an xml file.
2. Calculate eigenvalue and eigenvector for that image.
3. Recognize the face and match it according to detail and eigenvalues and eigenvector stored in xml file[1].
4. Store the name and basic detail of the face display in Microsoft SQL server database

4. ANALYSIS AND RESULTS.

The analysis process involves the following steps.

STEP1: Face detection and extraction.

Image can be captured with the help of webcam on the side.

Basic detail can be stored in the database.

START

The captured image should be processed and extracted.

The eigenvalue of the captured image should be calculated and should be compared with eigenvalue of existing face image in the database.

If the eigenvalues match recognition step will be done otherwise save the image and related information in the database.

STEP2: The basis for the face recognition is PCA algorithm and using PCA the following steps would be followed for face recognition.

START

The information about the matched face image can be found from the database.

The basic detail in the face recognition module is added to the MS SQL database along with the data to make the completion of entry each person.

4.1 RESULTS

The result of the analysis process is presented here in the form of gray scale image. The team performed a set of experiment to demonstrate the feasibility of the system 45 different of different persons are used in training dataset and the result binary image and is fisher discriminate framework method.

5. CONCLUSION

In order to reduce the criminal branch and to manage the time effectively the authors proposed automated admin person entry system base on face recognition and store basic detail in residential. The system takes entry detail for particular time the current work is mainly focused on face detection by PCA algorithm in video frame or image.

In the further work author are intended to improve face recognition by comparing 3D face image with 2D face image (Real time). Also the author are intended to improve on multiple face recognition at the same time so that the effectiveness of the time can still be managed and try to improve on the probability of the system. and find the data of the person enter in society.

REFERENCES

- [1] Mr. Arunkumar.L, Sri Ramakrishna Engineering College Coimbatore-22 “INTELLIGENT SURVEILLANCE CAMERA WITH REMORTE MONITORING”
IEEE journal on emerging 3June 2015.
- [2] Michael Bamberger, Andreas Do blander, Arnold Maier, and Bernhard Renner, “Distributed Embedded Smart Cameras for Surveillance Applications”
Published by the IEEE Computer Society 0018-9162/06/© 2006 IEEE. South.
- [3] Michele Magno, Federico Tomboy, Davide a Brunel “ multimodal video analysis on self-powered resource-limited wireless smart camera” IEEE journal on
emerging and selected topics in circuits and systems, vol. 3, no. 2, June 2014.
- [4] Smart Home Automation using ARM11 Information Technology Department, Xavier Institute of Engineering, Mumbai, India, 24 Feb 2015

[5] Krishna Kishore, B.Chinna Rao, P.M. Francis “ARM Based Mobile Phone- Embedded Real-Time Remote” International Journal of Emerging Technology and Advanced Engineering (ISSN 2250-2459, Volume 2, Issue 8, August 2012).

