

Webcam Based Students Attendance System

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ABSTRACT

We propose a system that take classroom attendance automatically using face detection and recognition technique. The detection and recognition can done by converting color image into grayscale images taken by camera. The faces are detected by current frame captured by camera and compared with stored faces.

We first review the system architecture and then face detection and face recognition. After that we review various attendance lists generation.

Keywords: *Automatic Attendance reports, Classroom attendance, Face Detection, Face Recognition Webcam.*

I. INTRODUCTION

The manually written records utilized as a part of universities or schools are time costly. The proposed Students Attendance System is planned to supplant the manual model. Understudy's setting, for example, outward appearance is thought about.

It is conceivable to assess participation consequently whether every understudy is available or truant by utilizing face acknowledgment innovation. We are worried about the technique to utilize confront picture handling innovation. We are proposing a strategy that takes the participation utilizing face acknowledgment in view of grayscale picture

II. EXISTING SYSTEMS

1. Register Records:

Attendance is maintained manually by entering the whether student present or absent .So more paper work is required to maintain the attendance and it is time consuming. Manual attendance record system is not efficient and requires time to arrange record and to calculate the average attendance of each individual student.

2. Thumb Scanner and Smart Card:

Thumb scanner consists of automated method of recognizing a person based on unique physical characteristic

such as thumb or fingers of hand. For attendance using this system student has to wait in queue. So this system is not efficient for student attendance as there are number of students.

Smart card system takes more time for huge number of students and also there is waiting queue of students for attendance. There is possibility that not ignored is the miss-use of smart card for attendance, a student can carry two or more smart cards and can register the attendance of other students also.

III. PROPOSED SYSTEM ARCHITECTURE:

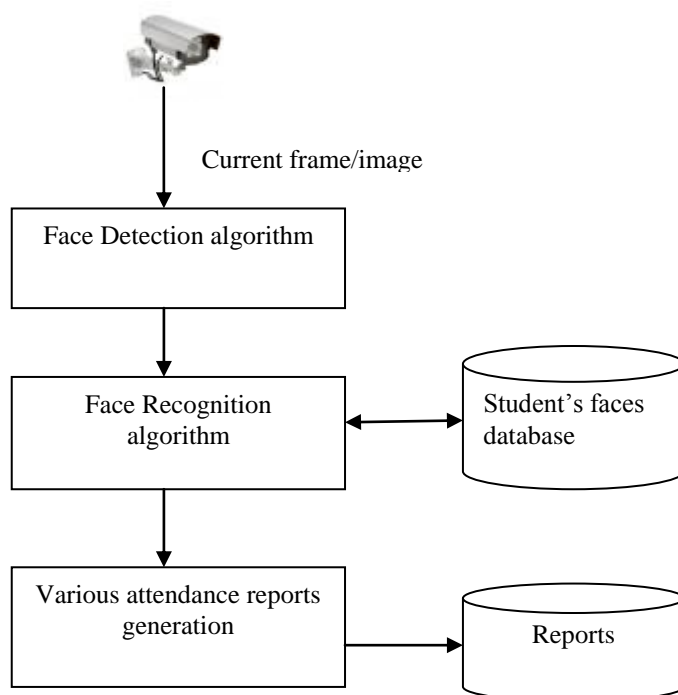


Fig: Architecture of the system

3. Steps for implementation:

3.1. Gathering student details:

Students details like name, student ID, profile information with image are collected and stored in the student database.

3.2 Attendance through camera:

Camera which is exactly placed at position from where camera can capture images of student's . The face image will be detected from the captured current frame or Image by using **Viola Jones face detection algorithm** [1] [3].

• FACE DETECTION USING VIOLA-JONES ALGORITHM

The Viola-Jones algorithm is a widely used mechanism for object detection. The main property of this algorithm is that training is slow, but detection is fast. This algorithm uses Haar basis feature filters, so it does not use multiplications.

Detection happens inside a detection window. A minimum and maximum window size is chosen, and for each size a sliding step size is chosen. Then the detection window is moved across the image as follows:

1. Set the minimum window size, and sliding step corresponding to that size.
2. For the chosen window size, slide the window vertically and horizontally with the same step. At each step, a set of N face recognition filters is applied. If one filter gives a positive answer, the face is detected in the current window.
3. If the size of the window is the maximum size stop the procedure. Otherwise increase the size of the window and corresponding sliding step to the next chosen size and go to the step 2.

3.3 Face recognition:

Faces from captured images are compared with stored face images by using **Eigen Face Algorithm [4]** and according to the result system will mark the attendance of the students. The resultant data will be stored into the database.

• **Eigen Face Algorithm**

1. Check, if the captured image is a face or not. If the weight of the captured image differ too much from the weight of image in the database ,then the image probably is not a face.
2. Similar faces possess similar features (Eigen faces) to similar degrees (weights). All images having similar weights are likely to be similar faces.

3.4 Reports generation:

System would generate various reports as mentioned below

- i) Daily Attendance Reports
- ii) Subject wise Attendance Report.
- iii) Monthly Attendance Report.
- iv) Defaulter List.

IV. METHODS OF IMPLEMENTATION

The main part is to detect the faces from current frame or from image captured by camera. Then the captured images will send for storing purpose. The stored image will be used to detect the face one by one and to compare between stored (in database) face image and face detected from captured image. So, we have discussed method for face detection using Viola-Jones algorithm or use framework open CV. The method follows steps as given below.

Step 1: Capture the current frame/ image using camera .

Step 2: Then convert the image into grayscale as shown in below fig.



Fig . Grayscale Image

Step 3: The faces are detected by viola-jones method [3]
based on haar features and face marked as shown in
below figure.



Fig. Face Detection

V. CONCLUSION

In this paper, in order to obtain the attendance of students, we proposed Students Attendance System based on face detection and recognition method. The detection and recognition done by converting image into grayscale taken by camera. The faces are detected by current frame captured by camera and compared with stored faces. In proposed system all attendance reports are generated.

REFERENCES

- [1] Ms. Patil Priyanka, Mrs. Shinde Shraddha, “Webcam Based Attendance System”. Second International Conference on Computational Intelligence Applications 2011
- [2] Yohei Kawaguchi, Tetsuo Shoji, Weijane Lin, Koh Kakusho, Michihiko Minoh, “Face Recognition-Based Lecture Attendance System” Department of Intelligence Science and Technology, Graduate School of Informatics, Kyoto University Academic Center for Computing and Media Studies, Kyoto University, pp.3-4
- [3] URL, http://en.wikipedia.org/wiki/Viola%E2%80%93object_detection_framework
- [4] URL, <http://en.wikipedia.org/wiki/Eigenface>