A Survey on Automatic Attendance Management System Based on Multi Face Detection Technique

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Abstract: Students face detection is an important technology in biometric verification and has been used in various applications such as video monitor system, interaction with human computer and security. This project describes about student attendance system. For every schools, colleges and library attendance is mandatory. Traditional method for taking attendance is lecture calling student name and record the attendance in sheet. For each lecture its wastage of time. It is very difficult to verify each and every student in a large classroom. To avoid these losses, we use automatic attendance system. The proposed system describes a method like when he enters the class room and marks the attendance by extracting the image using Principal component analysis (PCA) algorithm the system will record the attendance of the student in class room environment automatically. The student database is collected. The student database includes name of the students, their images roll number. It maintains a log report entry of each student with Respect to each subject and also generates a report of the student attendance. Using Simple Mail Transfer Protocol (SMTP) the report of the attendance information will be sent to the faculty and also to the parents.

Keywords: Face Detection, PCA, IOT, SMTP.

I. INTRODUCTION

Image processing is any form of signal processing for which the input is an image, such as a photograph or video frame; the output of image processing may be either an image or a set of characteristics or parameters related to the image. Image processing is classified into two types. They are, Analog image processing Digital image processing Analog image processing is any image processing task conducted on two dimensional analog signals. Digital image processing is the use of computer algorithms or perform image processing on digital images. Digital image processing generally refers to processing of a two dimensional picture by a digital computer. Student attendance record plays an important role in every school, college and university. Student attendance can be classified into two types. They are, Manual Attendance System, Automated Attendance System. The manual attendance system is very difficult for faculty to verify and maintain Each and every student record in large class environment and requires more time for calculating the average and recording the attendance of each student. The automated attendance system will extract the face image when student enters the classroom and marks the attendance automatically. This project is based on Face Detection technique. A face Detection system is a computer application for identifying or verifying a person a person automatically from a digital image or a video frame from a video source.
II. PROBLEM DEFINITION

Face Detection system is to identify a person using his face image. Face Detection module that Detection the individual students face and update the student attendance database automatically. The first step is that, the staff and student class representative are provided with their own Username and Password to Log-in. Next step is, the training image and their features are stored in the database. Then, testing image features are compared with the training images. Once the image is identified, the attendance will be registered. Finally, the attendance details of the student are send to staff parent through E-Mail.

A) Objective

Face Detection technology and major application in the field of education to efficiently automate and manage the attendance system. As the number of students enrolling to university increases every year, to maintain the attendance and records of thousands of students is a major concern in the education sector. Therefore in this project we discuss an effective system to mark the attendance of students automatically by Detection their face.

B) Scope

In order to obtain the attendance of individual student, this project proposes the automatic attendance system based on face Detection technique using Principal component analysis (PCA) algorithm. The system will record the student attendance when he she enters and exit the classroom automatically and also provide additional information to faculty by maintaining a log report for entry and exit time. Using SMTP protocol, student’s attendance is sent to their parents through mail. By using this method the calculated attendance will be more effective and time saving. Comparing to manual attendance system this provides more reliable solution. In further work, our system can be used in mobile based face recognition. It can be implemented in real time applications using CCTV camera. Instead of PCA algorithm, various recognition algorithms can be implemented for effective results.

III. Literature Survey


We contribution a system that takes the attendance of students for classroom lecture. Our system takes the attendance automatically using face recognition. However, it is difficult to estimate the attendance precisely using each result of face Recognition independently because the face detection rate is not sufficiently high. In this paper, we propose a method for estimating the attendance precisely using all the results of face recognition obtained by continuous observation. Continuous Observation improves the performance for the estimation of the attendance we constructed the lecture attendance system based on face recognition, and applied the system to classroom lecture.


Taking Attendance manually is a very tedious job and wastes a lot of time too. The existing biometric attendance also wastes a lot of time as it is not automatic and also requires the involvement of the students too. The work described aims at Automating the whole process. The camera installed will take a picture of the whole classroom, followed by detecting individual faces in the image, recognizing the students and then updating their attendance. The image will be captured twice-once at the beginning of the class and once at the end to ensure that the student has attended the whole class.


Human face detection and recognition is an important technology in biometric verification and has been used in various applications such as video monitor system, interaction with human-computer and security. This paper describes about student
Attendance system. For every schools, colleges and library attendance is mandatory. Traditional method for taking attendance is lecture calling student name and record the attendance in sheet. For each lecture its wastage of time. It is very difficult to verify each and every student in a large classroom. To avoid these losses, we use automatic attendance system.

Yohei KAWAGUCHI, Tetsuo SHOJI, Weijane LIN, Koh KAKUSHO, Michihiko MINOH, Face Detection-based Lecture Attendance System, Department of IntelligenceScience and Technology, Graduate School of Informatics, Kyoto University AcademicCenter for Computing and Media Studies, Kyoto University vol. I pp 167-173, 2000.

Automatic face recognition (AFR) technologies have seen dramatic improvements in performance over the past years, and such systems are now widely used for security and commercial applications. An automated system for human face Recognition in a real time background for a college to mark the attendance of their employees. So Smart Attendance using Real Time Face Recognition is a real world solution which comes with day to day activities of handling employees. The task is very difficult as the real time background subtraction in an image is still a challenge. To detect real time human face are used and a simple fast Principal Component Analysis has used to recognize the faces detected with a high accuracy rate. The Matched face is used to mark attendance of the employee. Our system maintains the attendance records of employees automatically.

III. Existing System

A biometric is a unique, measurable characteristic of a human being that can be used to automatically recognize an individual or verify an individual’s identity. Biometrics can measure both physiological and behavioral characteristics. Physiological biometrics this biometrics is based on measurements and data derived from direct measurement of a part of the human body. Behavioral biometrics this biometrics is based on measurements and data derived from an action.

IV. Proposed System

It requires no physical interaction on behalf of the user. It is accurate and allows for high enrolment and verification rates. It can use your existing hardware infrastructure true, existing cameras and image capture Devices will work with no problems. To speed up the face Detection process we only compare images captured in a classroom, with the database of students enrolled for that course only. This ensures that we process only a small subset of images available on our central data base. In Face Detection there are two types of comparisons: - VERIFICATION- The system compares the given individual with who they say they are and gives a yes or no decision. IDENTIFICATION- The system compares the given individual to all the other individuals in the database and gives a ranked list of matches.

![Proposed System Architecture](image)

Fig. 1 Proposed System Architecture

1) Login

The login phase is provided for the Lecturer and student class Representative. Login name and password is given to both the lecturer and Representative. In the absence of lecturer, the representative can login into the system. After log-in the input image is captured and sent for feature extraction.
2) **Staff and Student Information Module**

Information about staffs such as their name, email id, mobile number, subject they are handling and their department. In student information the name of each student in the class are displayed with each student’s image. In this module, we have update and clear button. Update button is used to take the student attendance details and clear button is used to clear the previous attendance details.

3) **Update Attendance Module**

Once the update attendance button is clicked then the testing and training image features are extracted and classified. If Euclidean distance value is minimum then student attendance is registered. The percentage of the Individual student is calculated.

**V. ADVANTAGES**

1) Automated attendance management which does not consumes time and the data is not lost until we erase the data. This method is most ancient in these day.

2) The management of attendance in this method is simpler and the attendance is taken more accurately

3) People see your emotion by your facial expression.

4) Can show if you are happy/sad, satisfied/unsatisfied, angry/pleased etc. without saying a word or while other is talking with you.

5) It can make you know if the conversation is boring or interesting by the people's face expression.

**CONCLUSION**

Through this system, we are sure that the attendance of individual student, this synopsis report proposes the automatic attendance system based on face detection technique using Principal component analysis (PCA) algorithm. The system will record the student attendance when he enters and exit the classroom automatically and also provide additional information to faculty by maintaining a log report for entry and exit time. Using SMTP protocol, student’s attendance is sent to their parents through mail. By using this method the calculated attendance will be more effective and time saving. Comparing to manual attendance system this provides more reliable solution. In further work, our system can be used in mobile based face recognition. Instead of PCA algorithm, various detection algorithms can be implemented for effective results.

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