

Real-Time Attendance Using Facial Identification and Expression Perception.

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Abstract: *The proposed system is about Attendance management system using face recognition techniques in image processing. Real-time attendance system will replace the manual work, which is difficult to maintain and manage. Old attendance pattern is time-consuming and only one person can sign the sheet at a time. There are many symmetric processes are already available like a fingerprint, RFID, iris, eye blinking. Among them, face recognition is the best method. In this system, we introduced attendance without human interference. The system is consisting of a camera that is install in the classroom and it will capture the image, the module has face registered in the dataset, capture images are compare with a dataset and finally, attendance is marked as present. If the attendance is marked as absent, the report will be stored in the database and at the end attendance report will be send to parents. There are many approaches for correlating the faces. In this project, it is discuss about feature extraction for detection and recognition in the face. The additional part of a project is emotion detection to get feedback of a particular session it also done by feature extraction method in emotion API. The Face API module is a bounding box for a face that gives a set of emotion for each face. There are so many types of emotion i.e.: Fury, Scorn, and Dislike, Delight, Inactive, Sadness and amazement. Here we only consider the emotions related to feedback e.g. : Amazement, Sadness, Dislike, etc.*

Keywords: Biometric, Emotion Detection, Face Detection, Face Recognition, Feature Extraction

1. INTRODUCTION

In many universities, managing the attendance is a major task to perform. The attendance is use to keep the record of students. Therefore, managing attendance is a key role. Many institutes use different methods for attendance, as on sheet attendance it is difficult to manage the attendance for a long-term because the chances of human error and loss of record may happen. This process is time-consuming and hectic nowadays. Authentication is the main problem while doing sheet work.

Analysis and calculating the record is a complicated task among all and may cause an error. To overcome certain trouble, we need some mechanism to manage attendance automatically.

There is various method available for attendance. In various universities, they are using, Biometric fingerprint identification. Another biometric technique is eyeball detection. In this technique, the location, size, and blinking of the eye are identify and save in the database and then it identifies the students according to it. This all method has its own disadvantage to overcome this

disadvantage.

An Attendance management system that was develop using biometrics, in our system we are using face recognition techniques, like feature extraction, face identification, Image acquisition, etc.

2. Literature Survey

In [1] lots of work related to Radiofrequency Infrared device has been used in the attendance management system. The student carries the RFID ID card that authenticates the individual user and marks their attendance. This approach is not fluent as it may possible that a non-authorized person may carry duplicate ID cards.

In [2] the authors proposed the system that takes the attendance of the student is an embedded system consists of hardware connected to the server. The camera is fix in the classroom that takes attendance of student and marks the attendance of server. The attendance is take by faculty member by entering data individually and saved the report generated on the server. This approach is time-consuming that the faculty member has to take attendance on the device.

In [3] the author has proposed the face recognition system that detects the faces of the student. This is a software approach that captures the picture of the student when they face the camera. It is install in the computer and laptop and the UI is operate from there. The record is save when the user first registers to the system. In addition, for further attendance student has to face API for attendance.

In [4] the author has proposed an automated face recognition system, which is reliable, and need prior improvement for better results.

3. Proposed Model

The system architecture of the attendance management system is discussed in the below diagram.

A. Structural Design: -

In this system, real-time face detection and recognition has done. The system is consisting of a camera that install in the classroom. The camera used should be of high definition so that it should cover the whole class.

The system is handle through a mobile phone application interface. This system is connected to the system through WIFI and we will able to operate the module and able to give the command through a mobile phone. The working of the automated attendance management system is simple and easy to comprehend.

The system has the face registered in the database when the registration of the student has done. The data set stored the image of face cropped in the database. The camera in the classroom is install and it is doing a video recording of the classroom. While taking the attendance the faculty member starts the system. In addition, the camera captures the image of the student and save cropped face image in the database.

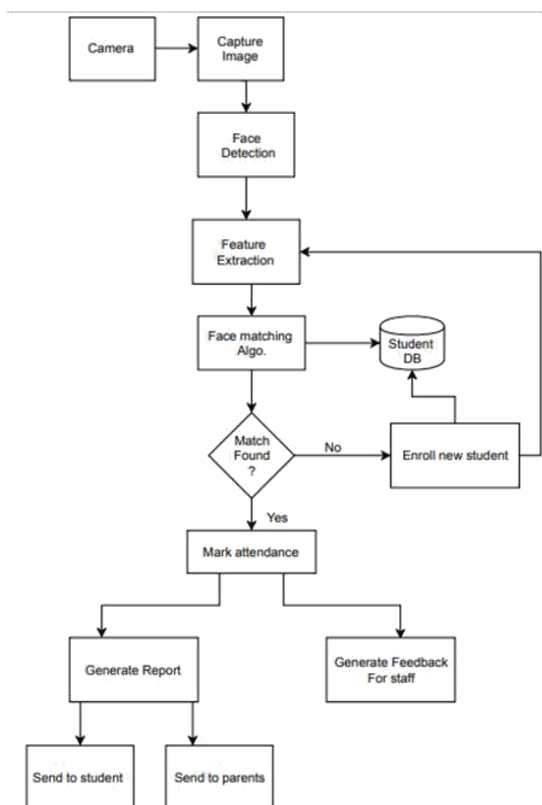


Figure 1: System Architecture

B. Methodology: -

The below are some methodology in which the system has to perform: -

- Capture the image
- Creating Face Database
- Face Detection
- Feature Extraction
- Registering attendance

1. Capturing the Image: -

The camera captures the image, detects the multiple faces, and saves in the database. Camera capture image of a student from a different angle and with different gestures. Each student data has five pictures.

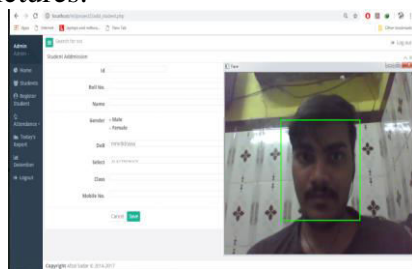


Fig 2. Registration of student.

2. Creating Face Database: -

The cropped faces are compare with the faces that are save in the database called a training set. In this training set, the database of the student is save at a registered time. This data is use from comparisons with the image that we the image captured per person data contain five images used for comparison.

4. Face Detection: -

The image captures are crop and converted into a grayscale image so that the processing speed should be decrease. The algorithm used to detect faces is the Viola-Jones Algorithm.

5. Feature Extraction: -

The cropped set and the registered image are stored in the dataset is compared. The commonly identified faces are marked as present and other marked as absent.

6. Register Attendance: -

The attendance of the student is stored in an excel sheet. In addition, the report generated given to the faculty member. The report of the absent student is send to the parent mobile number.

Conclusion:-

The automatic attendance management system allows the faculty member to reduce the paperwork and use the system for analysis of student attendance. That reduces the efforts and costs. The elementary things that needed for the proposed system are a camera, laptop, and local network. This proposed system is reliable, secure and easy to perform.

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