**INTRODUCTION**

Attendance systems of old practises are not quite efficient today for keeping track on student’s attendance. Due to the availability of large resources over the internet today, it is very hard to motivate the students to attend lectures without fail have become more challenging. In order to drag the attention of students and make them interactive in observing technologies we move on to latest upcoming trends on developing attendance systems. This is the strong reason for college attendance management system has to come up with an approach that ensures strong contribution of students in classrooms.

To track attendance of the students, many attendance management systems are introduced in the market. With the introduction of this variety of attendance system, skipping classes without the staff’s knowledge have become difficult for the students. For few view of college attendance systems that were used earlier in the market are based on RFID systems, punch card systems, swipe card systems, biometric systems that includes fingerprint analysis, iris analysis etc. Although these systems all are lagged in their own respective so which lead to the new way practise on AMS.

In smart AMS we are going to mark the attendance of the student by capturing the image of the person for identifying correctly.

**OBJECTIVE/AIM-**

Attendance Management System (AMS) can be made into smarter way by using face recognition technique, where we use a camera in Aakash Tablet which captures the image of the person and checks the observed image with the face in database.

It is typically used for two purposes. Firstly, marking attendance for student by comparing the face images produced recently and secondly, recognition of human who are strange to the environment i.e. an unauthorized person for verification of image, a newly emerging trend. Face Recognition is used which claims to provide more accuracy in matching the image databases and has an ability to recognize a subject at different view angles.

In the standalone application, face was captured by the camera and the detected faces are stored in Image folder.

For matching the captured images with the database, Eigen faces methodology was used. Observance of Eigen faces method was explained as,

a) Single structure of face pattern only allowed.

b) Gallery images must be of same size.

c) Requires full frontal face to be presented for each time.

d) Does not endure to the variations of brightness effect, pose and different expressions of face.

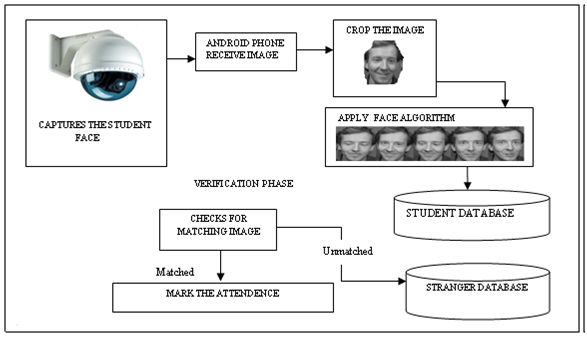
e) Effective only for low dimensional structure of face patterns.

The image which doesn’t match with database is given by error message. Where the instructor has to take the attendance to those unmatched student images manually.

* **TECHNICAL DETAILS**

The smart applications for AMS are designed as shown in the architecture diagram [Figure 1]. The camera is used to captures the face of the students. The captured image is stored in the Image folder.

The use of face technology enables the work of identifying, verifying and detecting the match images in the face database. The diagram illustrates how the phases of the system are carried out. The smart AMS consists of six modules which are explained detailed below.

****

**I) REGISTRATION**

First phase of the system, actually deals with registering the information of the student in a particular classroom. The information includes

(1) Name of the student

(2) Register or Roll number

(3) Image of the student (taken by camera).

These details are placed in the student database from which the actual comparison will be done.

**ii) IMAGE CAPTURING**

The cameras are used for capturing the images of the student which will be in active mode when it given to the student and that image is automatically stored in the Image Folder. The use of camera is that it is capable of capture the image of high quality and also at different angles view.

**iii) IDENTIFICATION**

To identify the student image, Aakash tablet which holds the image database of the student, checks for the match using face recognition software technique.

In face recognition technique sensors are used to capture information about the outline of a face surface. The obtained information is then used to identify the distinct features on the face surface, such as the axis of the eye sockets, nose, and Chin.

Steps followed in face recognition technique are:

1. Obtained image is cropped.

2. To the cropped image a Face algorithm of canonical face matching is applied to get different face reactions of the particular image.

**iv) VERIFICATION**

By the time of verification, dual process is done. One, the images of the students that are captured recently is compared for the match in student database. In two of the probabilities the images are checked. If the captured image matches with the image that has been registered before are processed for attendance management. Second, if it is observed to be unmatched with student database then the image of the student will be consider as new and saved in the separate database called stranger database. The separation of the database will provide some information about the stranger who is new to the environment and gives the information about the person who has been entered. It not only ensures security but also make some fear to the student who needed to be entered without any authority.

**v) MARKING ATTENDANCE**

The image of the student which is obtained, matched with student database and the attendance will be marked and the information is sent to the server which controls the overall database of the student. The software is installed in the Aakash Tablet that would have much additional functionality that would improve the AMS features and helps in finding the report of each student.

# **HARDWARE REQUIREMENTS**

|  |  |
| --- | --- |
| **Content** | **Description** |
| HDD | 20 GB Min  40 GB Recommended |
| RAM | 512 GB Min  1 GB Recommended |

# **SOFTWARE REQUIREMENTS**

|  |  |
| --- | --- |
| **Content** | **Description** |
| OS | Windows XP with SP2 or Windows Vista, Android |
| Database | MS-SQL server 2005\SQL LITE |
| Technologies | JAVA ,Android |
| IDE | Eclipse indigo,SDK,JDK 7 |
| Browser | IE |

**INNOVATIVENESS AND USEFULLNESS**

Attendance of students in the college is one of the essential day to day activities. Additional Operations within this smart system includes the software that provides

1. Marking of daily students’ attendance.

2. Daily provision to check in personal attendance by employee of the college (teaching and certain non-teaching staff).

3. The software is installed to produce the attendance statistics which can be viewed by HOD, directors and staff on daily, monthly and yearly basis.

**CURRENT STATUS OF DEVELOPMENT**

This project was labelled man-machine because the human extracted the coordinates of a set of features from the photographs, which were then used by the computer for recognition. Using a graphics tablet (GRAFACON or RAND TABLET), the operator would extract the coordinates of features such as the centre of pupils, the inside corner of eyes, the outside corner of eyes, point of widows peak, and so on. From these coordinates, a list of 20 distances, such as width of mouth and width of eyes, pupil to pupil, were computed. These operators could process about 40 pictures an hour. When building the database, the name of the person in the photograph was associated with the list of computed distances and stored in the Tablet. In the recognition phase, the set of distances was compared with the corresponding distance for each photograph, yielding a distance between the photograph and the database record. The closest records are returned. This brief description is an oversimplification that fails in general because it is unlikely that any two pictures would match in head rotation, lean, tilt, and scale (distance from the camera). Thus, each set of distances is normalized to represent the face in a frontal orientation.

To accomplish this normalization, the program first tries to determine the tilt, the lean, and the rotation. Then using these angles, the computer

Undoes the effect of these transformations on the computed distances. To compute these angles, the computer must know the three-dimensional geometry of the head. Because the actual heads were unavailable Bledsoe (1964) used a standard head derived from measurements on seven heads

* **COMPETITIVE ADVANTAGE**

In all government and private offices this system can be deployed for identification, verification and attendance.

In respect with the smart application doesn’t work for AMS, it is also useful for identifying any new stranger who comes inside the classroom.

Avoids a proxy attendance of the student and ensures that the students of other class are not entering. The stranger can be the people who are not allowed to the particular environment. By which security is enhanced.

This enhanced technology development can be used in various departments of government for taking attendance for their working employees and ensure security over there.

* **ANYTHING ELSE WHICH YOU WANT TO ADD**

Over last couple of years, face recognition researchers have been developing new techniques. These developments are being fuelled by advances in computer science vision techniques, computer-aided design, sensory design, and interest in the field of face recognition systems. Such advances in the various fields of interests hold the promise of reducing the error rate in face recognition systems by an order of magnitude over Face Recognition Vendor Test

**Prof. B.J.Gorad Prof. M.I.Mullani Prof. O.D.Joshi**

**Guide Coordinator HOD CSE**