

Automated Attendance System Using Face Recognition

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Abstract: *Biometric is a fast and popular method used nowadays to attain security as everyone has a unique biometric pattern either on his hand, eyes, DNA samples etc. This biometric defined the individuality of every distinguished persona in existence. Rather than this security mechanism this Biometrics can be applied to various technology and used for various different purposes. Our project is an approach to involve this unique patterns to develop and individually identify candidates to mark their attendance they are attending the lectures without disturbing the valuable time of the teacher and students in the classroom.*

Keyword– EIGEN FACES, BIOMETRICS, ADMIN MODULE, CAMERA, FACIAL RECOGNITION, AUTOMATED ATTENDANCE.

I. INTRODUCTION

Classroom periods are in general mostly an hour long or so in this one hour it is observed that the teacher is only able to use the 45 to 50 minutes of the lecture and the remaining 10 to 15 valuable minutes of the lectures are utilized to mark attendance of the entire class. This manual process takes a lot of effort and time from both the ends i.e. from the users and the students as well, the time which could have been used in studying something has been wasted in marking the attendance of the class. To overcome this problem we decided to device a system which would mark the attendance of each individual automatically without the user knowing it and also not wasting his time in the process. So in our project “Automated attendance system using face recognition” we devised a plan to combine the face detection technique using a hardware mechanism with a certain developed software which would detect individual person and mark his attendance on the machine.

II. LITERATURE REVIEW

The given below literature survey consists of the overview of the different pre-developed projects which we used as a base or study materials to get an overview of what technologies are existing in the market and how we can use and upgrade this technologies to develop our system.

Our base system was a software which made use of Eigen techniques for face recognition and made use of raw data to perform the processing but it has a major flaw that it was very slow at processing data [1].

The second system was “representation and matching of pictorial structures” this project was good for categorical object recognition but was mostly applicable on 2D objects which was one of its observed major flaw [2].

The name of our third base paper was “machine reorganization of human face” it used low or moderate level of details for processing but there was a major disadvantage to the system that that it did not work in uncontrolled environments[3].

The next study paper of our survey was “simulating evolution” which gave better qualitative results but its flaw with it was that with changing poses the ability of the system to recognize face would also decrease too[4].

The next paper of our literature survey is called, “component analysis in face recognition” it was used as patch which would smartly fill the blank spots on the detected face by the system, but a major downfall was that each patch takes over a 1000 pixels to build which was too hefty task to complete[5].

The last project paper was “3D facial recognition” it was able to detect face by treating the person’s face as 3D objects but its performance degraded as there would occur a high change in illumination and pose[6].

III. PROPOSED SYSTEM

As we know that time is one of the most valuable aspect in today's world so we decided to collaborate biometrics with system software to develop an attendance marking system for the educational firms. This system has a simple easy and understandable flow of working which elaborated below the system's architecture.

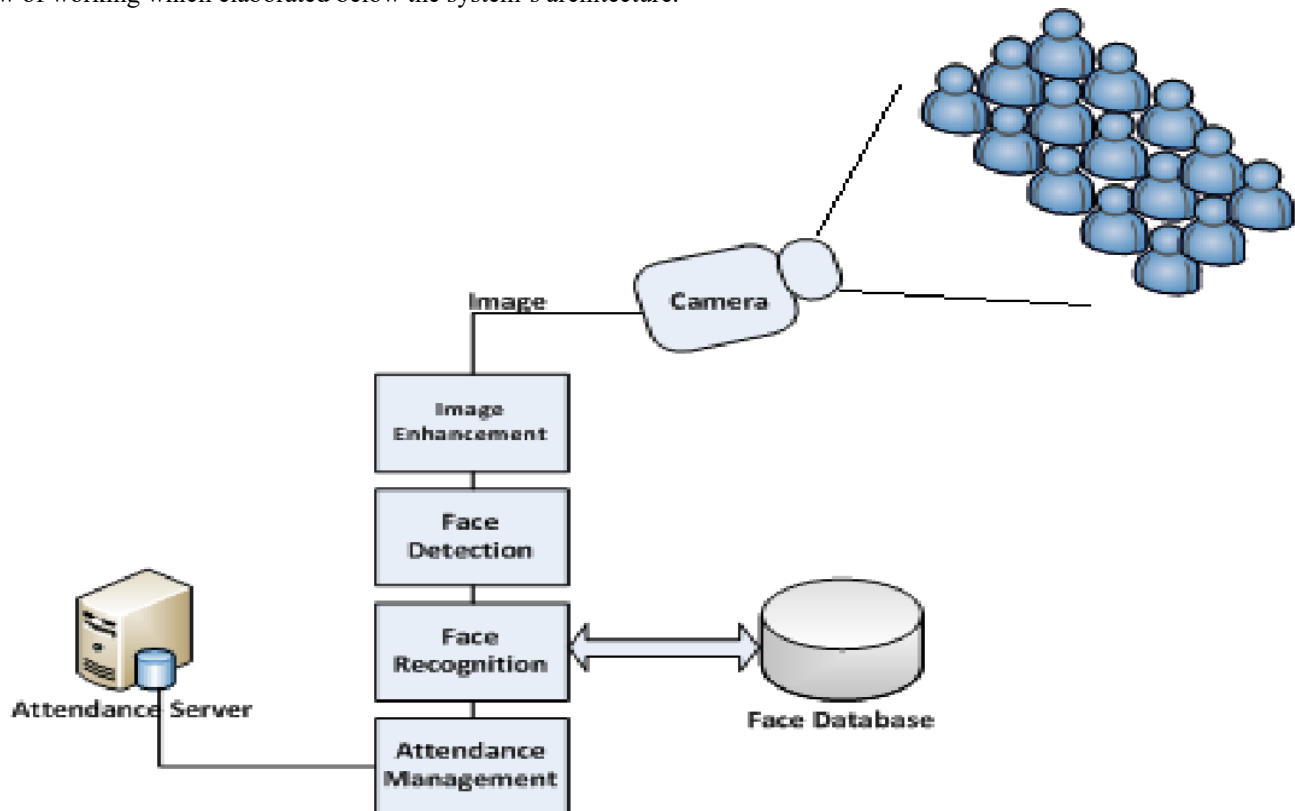


Fig 1- Architecture diagram of the system

The software will scan the faces of the students using a camera and then the captured image is sent to the system software where the software applies various image enhancement techniques to improve the captured image. After this, the detected face from the image is recognized and compared with the pre-scanned faces from the face database. After finding a proper match, the attendance of the student is marked in the database.

Following are the Modules of the system

1) ADMIN MODULE:

The Administrator module consists of all the rights and controls in the system. This module is only handled by the teacher of the respective subject. The teacher is able to perform a distinct amount of processes, some of which are as follows:

PROCESS:

- **REGISTRATION:** In this process, the admin is adding the data of a new candidate or student to the database so that he can mark the attendance of the student in later lectures.
- **MARKING ATTENDANCE:** It allows the teacher to mark the attendance of the class whenever he is taking a lecture.
- **ATTENDANCE CALCULATOR:** This feature automatically calculates the attendance of the individual student.
- **EMAIL:** The admin can send personalized emails to individual students if they are in the defaulters list.

IV. COMPONENT

The components are the building blocks which are gathered to create the entire system. The system has mainly two types of components: they are:-

A) Hardware Components-

The part of the system which is visible to the user all the time is made of the hardware components which is collectively called as the hardware architecture of the system. This system consists of the many different hardware components which are given below:-

- CAMERA- the camera is used to detect the face of the students and capture the image.
- COMPUTER- the computer is used to control the software which helps the admin to direct the hardware components.
- DATABASE SERVER- This servers save the past and present student related data for the admin so that he can utilize it for later purposes.

B) Software components-

The software part comprises of the system software which the admin will use to communicate and interact with the system. This is the part which does the actual processing and its processing in the background is invisible to the user he can use the system using the USER INTERFACE provided to him by the software.

SYSTEM REQUIREMENT

A system requirement specifies all the mandatory pre requisites that are supposed to be present in the system for the smooth and efficient working of the system.

a) Software :

- Windows 7 or higher, SQL and Visual Studio

b) Hardware Requirements:

- Dual Core or Above
- 2GHz Processor
- 80GB Hard Disk
- 2GB Ram
- Web Camera

V. MAINTENANCE


As the system is deployed for usage it is destined for a maintenance call after a certain time period which assures the smooth working of the system .Maintenance is a must as there are hardware components such as camera involved in the system which if not maintained would prove fatal for the system in the future. In some cases maintenance has brought more revenue to the system developers. Maintenance does not only involve hardware components maintenance but it also includes generating software patches for the system or enhancing the system software problem by installing a system update for the software.

VI. FEATURES:

- It has an easy to use and efficient user interface.
- It takes less time.
- Provides easy access to one's data.
- It becomes easy for the teacher to find information about any student with the help of the system.
- It reduces the manual labor involved to a great extent.

VII. RESULT:

Below shown images contain actual view and interface provided to the admin's to operate the system.



User name

Password

Teacher LOGIN Mark Attendance



ENTER STUDENT NAME

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Student Roll no.

Enter Student Name


Student Std

Parent's Mobile No.

Parent's Email ID

ADD SAVE Attendance

UPDATE CANCEL Logout



Attendance AttendanceChart DefaulterList TimeTable	<p>ENTER STUDENT ID <input type="text"/> <input type="button" value="SEARCH"/></p> <p>SELECT DATE <input type="text"/> <input type="button" value="SEARCH"/></p> <table border="1"> <thead> <tr> <th>Title 1</th> <th>Title 2</th> <th>Title 3</th> <th>Title 4</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Title 1	Title 2	Title 3	Title 4																
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VIII. CONCLUSION:

The developed system saves time and effort which were required and wasted at first by the user in marking attendance of all the students and stores the data as proposed in the system's database safely and securely for the admin's later use.

IX. ACKNOWLEDGMENT:

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