Automation of Attendance System Using Face Recognition Technique

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Abstract: In today's schools and universities, attendance is the main problem. Using the current system, where teachers take attendance, the pupils will skip class or give a proxy attendance. Teachers may also give incorrect information about a student's attendance to higher board officials or to the management. In this project, we put into practise a system that automatically records the attendance taken using a facial recognition technology. This technique allows us to forbid proxy attendance and prevent teachers from deceiving higher board officials. This system will automatically create an attendance record for the relevant teachers. Additionally, we use the idea of a single display board to show the current class. In the second section, if attendance of student is less than 60 percent then SMS will send to registered mobile number.

Keywords: Face Recognition, Attendance, Open CV.

I. INTRODUCTION

Development is mostly based on education. It is one of the most effective tools for decreasing poverty and inequality and builds the groundwork for long-term economic growth. With this goal in mind, our government has recently placed a strong emphasis on the educational sector. Among the major steps that have been taken in both primary and secondary schools are initiatives to improve schools, such as providing teachers with ongoing professional development, educating and upgrading teachers, and equipping schools with labour and resources. One of the key instruments for facilitating and simplifying these tasks is an automated school management system.

This programme is frequently utilised in educational institutions and businesses. Where both the time and attendance are huge problems. Comparing this use to the conventional system of attendance. It may also be used in large workplaces where keeping track of employees' entrances and exits is necessary.

II. PROBLEM STATEMENT

The following is a problem statement for the automated attendance system employing facial recognition technology:
- To do real-time facial recognition.
- Enhance the speed and perform recognition using high-resolution cameras.

III. OBJECTIVE

The following are the objectives of the automated attendance system using face recognition technology:

- To enhance the Face Recognition System Frame/sec, such that real-time recognition is accomplished.
- We are now working on 30 frames per second, but our goal is to eventually reach higher or better frames per second

IV. LITERATURE SURVEY

A. Existing work
Student's attendances are taken manually by using attendance sheet given by the faculty members in class, which is a time-consuming event. Moreover, it is very difficult to verify one by one student in a large classroom environment with distributed branches whether the authenticated students are responding or not.

Now days, the attendance is the major issue in schools and colleges. The students will bunk the classes or giving proxy attendance using the existing system by which attendance will taking by teachers. Teachers also misguide or giving wrong attendance of the student to the higher board authorities or to the management.

B.   Proposed work

Our project proposes solutions to all the above-mentioned problems by providing an automated attendance system for all the students that attend the lecture at its specific time, thus saving time, effort and reducing distractions and disturbance. In addition, an automated performance evaluation would provide more accurate and reliable results avoiding human error.

We propose a system that takes the attendance of students for classroom lecture. Our system takes the attendance automatically using face recognition.

The proposed system of Automation of Attendance System Using Face Recognition Technique, in which first part of Face Recognizer takes or capture the image of student and sends this captured image to the database. The next process of system is to identify whether the captured image is present in database or not, if captured image matched with any database image then attendance of that student is marked. Like this all-registered student's attendance is marked into the database and saved for future use. The processing of this discussed technique is done by using of .Net programming. Then system sends the SMS to the parents of the students who have attendance below sixty percent.

V.   HARDWARE AND SOFTWARE USED

1] Software Used:

1. Operating System (Windows 10)
2. Database (SQL server)
3. Web browser
4. Visual Studio 2022
5. Camera driver

2] Hardware Used:

1. Server
2. A desktop or laptop computer for the system users with the following specifications:
    - Intel core 2 duo processor 2.4 MHz or next
    - Minimum 2 GB RAM DDR2 or HIGHER
    - Minimum 250 GB storage space

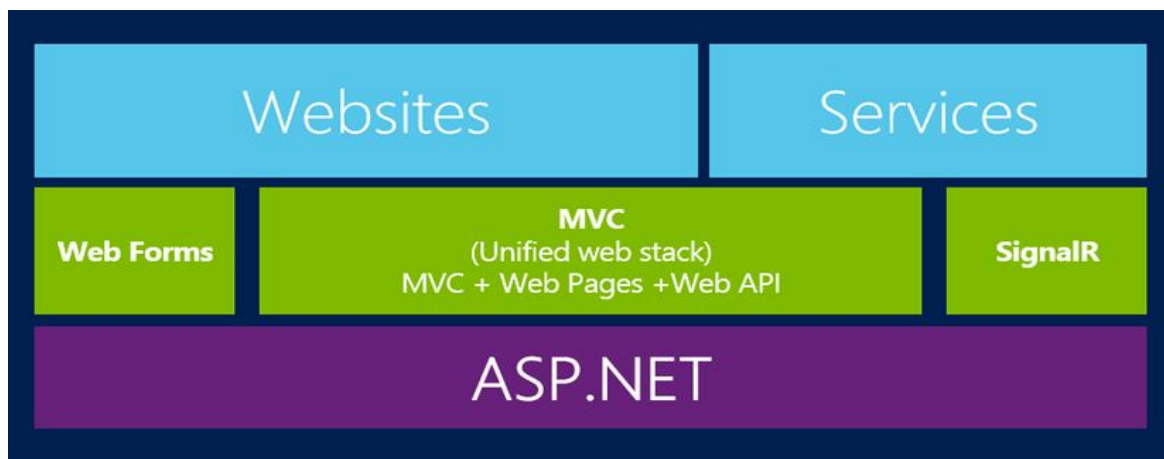## VI.   TECHNOLOGY DETAILS

Fig. 1.1 ASP.NET Framework

ASP.NET provides services to allow the creation, deployment, and execution of Web Applications and Web Services.

- ASP.NET is a server-side technology
- ASP.NET comes with built-in Web Forms controls, which are responsible for generating the user interface.

VII. OPEN CV

A. Open-CV (Open-Source Computer Vision Library) is a BSD-certified, open-source library that contains a tonne of computer vision algorithms. Due to Open-modular CV's design, the package comprises of a number of shared or static libraries.

There are the following modules accessible:

1. Fundamental Functioning
2. Image Processing
3. Video
4. Calib3D
5. Features2D
6. Object
7. High GUI
8. Many additional

B. Modules of Project

MODULE ONE:

1] Attendance Processing-
Take attendance by using Biometric system i.e., using Face Recognition Technique. Save attendance into Database by Student's register id.

MODULE TWO:

2] Display Board:
    One LCD screen will be taken & its screen is divided in to two different parts.
        1. Second part displays a message, notice or any comment given by administrator.
        2. The name list of students will be sliding continuously like marquee.

MODULE THREE:

3] Application Users:
    This application gives each user, a username & a password at the time of registration. The administrator users have authority to post the important comments or notice to the display board. In addition, he can see the mails of attendance, which are coming to his account. Some new ideas will be implemented at the time of design in this module.

MODULE FOUR:

4] SMS:
    We create a module in which we send the SMS to the parents to which student has the attendance below the 60% by using bulk SMS or using another technique
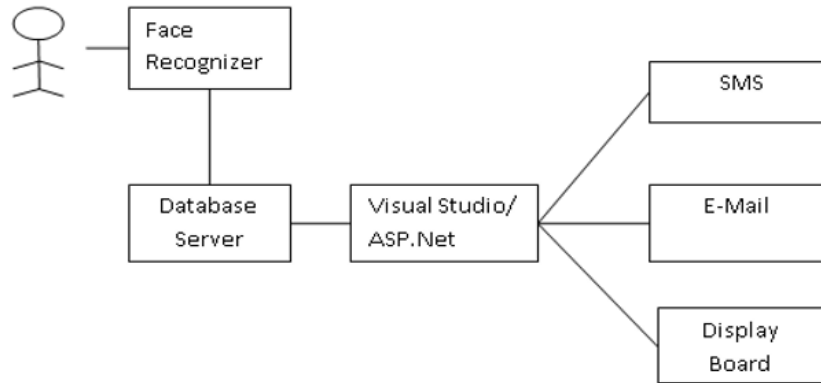
C. System Architecture

Fig 1.2 System Architecture
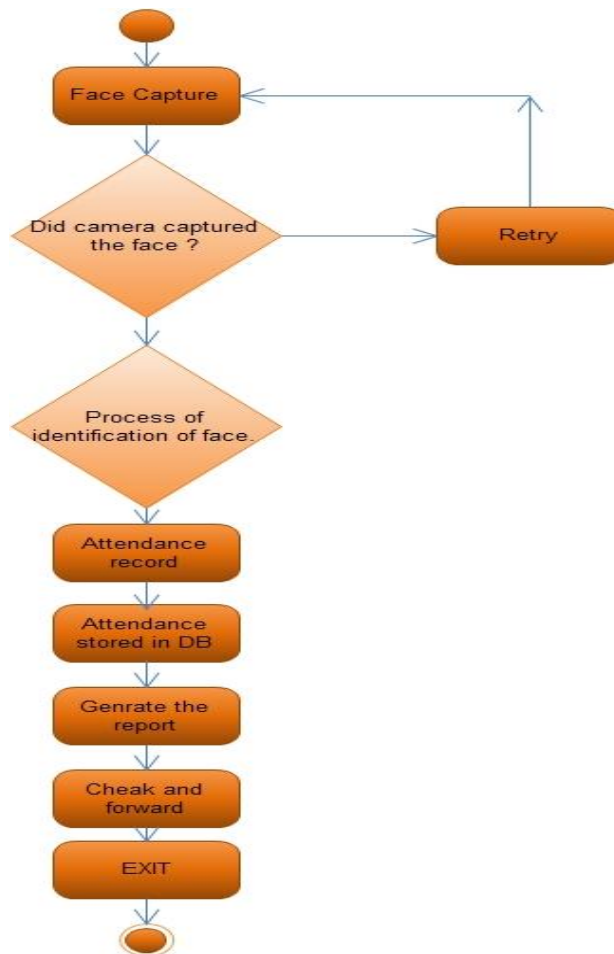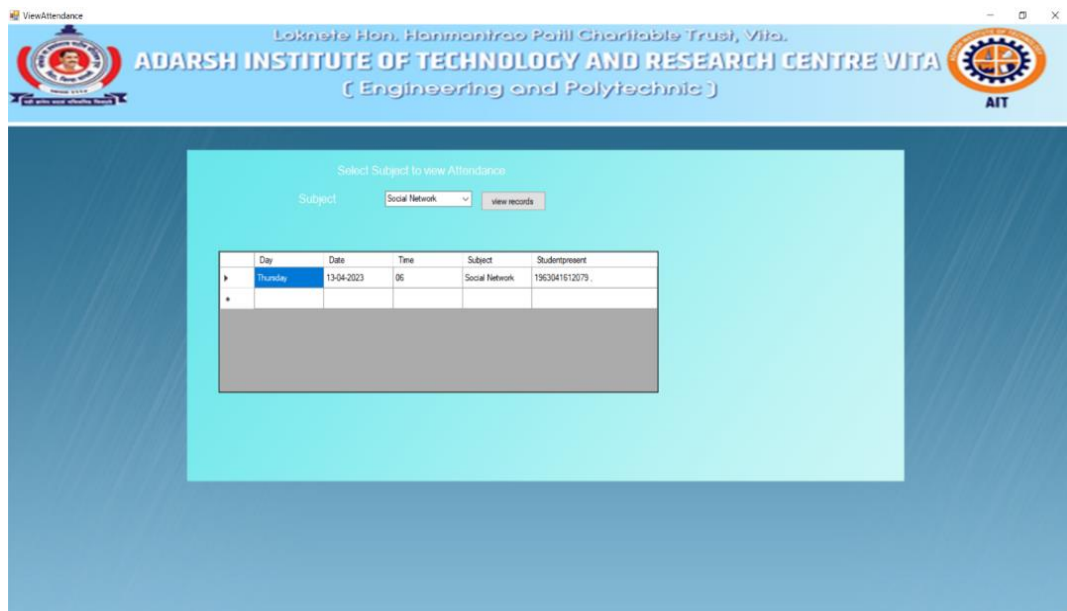
D. Activity Diagram

Fig 1.3 Activity Diagram

RESULTS:

1. Attendance Processing Demo

2. Attendance Report

VIII.   ADVANTAGES

1. Saving time
2. High Security
3. Quick Time Monitoring
4. Efficiency
5. Simple to control

IX. APPLICATIONS

1. Security and defence: By far the most widely used face recognition uses, Technology has been used by law enforcement authorities for both public and private security. Accessing personal information and, most notably, mobile devices is a component of personal security.

2. Marketing and retail: Technology is now widely used in retail establishments to deter stealing and lessen crime inside of their establishments. As customers enter, their faces are taken and compared to a database to identify persons who have a history of both violent and minor crimes. According to some estimates, this technology can lower shoplifting by over 30%.

X. CONCLUSION

Face recognition technology is effectively used to record student attendance. Along with difficulties like poor lighting and image orientation, faces are identified and attendance is updated. All faces entered into the system are picked up and recognized without any information being lost.

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