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DESIGN THINKING BASED REAL-TIME STUDENT ATTENDANCE MANAGEMENT SYSTEM

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ABSTRACT

Traditional attendance management system is being facilitated through ERP or biometrics to be in the start of automatic attendance monitoring. Smart city is an evolving field that customizes all the human power to the automated system. So using a traditional system is out-dated and also it takes more time. To avoid the time consumption and errors due to traditional method, automatic process which is based on image processing. Real-time Student Attendance Management uses face detection and face recognition system. The first phase is preprocessing where face detection is processed through the step image processing. It includes the face detection and face recognition process. Second phase is feature extraction. Step by step execution of these techniques helps to achieve the final output. It can recognize faces and mark attendance for the recognized faces in an excel sheet.

KEYWORDS: Attendance management system; Machine learning; Python opencv; Automated attendance system; Smart cities; Face recognition.

1. INTRODUCTION

In today's competitive world, with increasing working hours and less classroom time, teachers needed Tech tools which help them manage precious class time efficiently, Instead of focusing on teaching, faculty members are often stuck with completing formal duties for eg., taking daily student attendance. Manually taking attendance and registering it in files will be tedious job for the faculties and unnecessarily consumes the class time. Real-time Student Attendance Management System enables school administrators to record, manage and compile daily student attendance data. Along with

student attendance, this software also allows teachers to generate 100% accurate attendance reports.

2. LITERATURE SURVEY

The instructors in universities and colleges take the attendance manually either by calling out individual's name or by passing around the attendance sheet for student's signature to confirm his/her presence. Using these method is both cumbersome and time-consuming. Therefore this paper gives an idea of recording attendance using face recognition technique. Also this provides a detailed description about the results and its analysis obtained from the method. Faces are recognized using cameras and the verification is done. Then the attendance is marked in the excel sheet.

3. SYSTEM ANALYSIS

3.1 Problem Statement

Taking attendance is mandatory in various places like schools, colleges, etc. Traditional attendance management system is being facilitated through manual process like calling out the names of the student and marking attendance in the register. Taking attendance manually and maintaining the record book will be tedious work for the faculty members. Also it takes more time as we call each and every one of their names and it affects the lecture time. It is ineffective, outdated and it contains too much paper work.

3.2 PROPOSED SYSTEM

To overcome the drawbacks of the existing system, the proposed system has been evolved. This project aims to reduce paper work and saving time to generate accurate results from the students attendance. The efficient report can be generated by using this proposed system.

3.2.1 Advantages of proposed system

- It is trouble free to use.
- It is relatively fast approach to enter the attendance
- It is highly reliable, approximate result from user.
- It generate efficient results.

4. SYSTEM SPECIFICATIONS

4.1 Hardware Specifications

S.NO	SYSYTEM REQUIREMENTS	PERFORMANCE
1.	RAM	4 GB
2.	ROM	4-8MB
3.	Processor	Intel core

Table 4.1: Hardware requirements for the project

4.2 Software Specifications

This section gives the details and specifications on which the system is expected to work.

1. Visual Studio 2022
2. Cmake
3. Dlib
4. Face Recognition
5. Numpy
6. OpenCV

5. PROJECT DESCRIPTION

5.1 Existing System

The Existing system is a manual entry for the students. Here the attendance will be carried out in the hand written registers. It will be a tedious job to maintain the record for the user. The retrieval of the information is not as easy as the records are maintained in the hand written registers. This application requires correct feed on input into the respective field. Suppose the wrong inputs are entered, the application resist to work, so the user find it difficult to use.

5.2 Working of proposed system

It uses d-lib to scan the faces whether it is tilted or frontal. They find the facial landmarks, and using those landmarks the images will be processed. Once they get the

image they send it to neural network which is previously trained. As a human measurement might be the difference between the eyes, distance between the nose and size of the lips. But for the network it automatically trains self to find the best measurement. Once the image is fed in it will generate 128 different measurements. Using different measurements it can differentiate peoples.

5.3 Solution

To reduce the time consumption and errors produced in the manual process, real-time student attendance management system is fully automatic. It recognize the faces of the students and mark attendance in the excel sheet. It also mentions the presence of the students with the accurate time, so that the user get to know the entry time of the student.

5.4 Results

The images and names of the students will be trained to the software previously. So that it will recognize the faces of the trained students and mark the attendance accordingly. It recognize faces and generate 128 different measurement to differentiate between one another's face. So there is no possibility of errors like marking attendance for the absentees. Also it recognize the frontal faces as well as tilted faces.

6. CONCLUSION

Project Data Grid works like a component which can access all the databases and picks up different functions. It overcomes the many limitations incorporated in the attendance. Easy implantation environment generate a report flexibly. The main motto of the project is reducing time consumption and errors produced in the traditional method by making it fully automated.

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