Face Recognition Attendance Management System

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1. Introduction

Face Recognition Attendance Management System is an automated attendance system which takes attendance by recognizing the faces of students in a class and helps to avoid proxies in attendance. The system also provides the facility to store the attendance, manage attendance etc.

2. Objectives

To design an automated attendance management system which avoids proxies and makes it easier for the teacher to take the attendance and also to maintain/manage the attendances of different classes.

3. Problem Description

Taking attendance manually specially in a class where students are in large number is a tedious task which consumes a lot of time of the class and diverts the attention of the class as well as the teacher. Some students don't even take classes and their friends / other students mark their attendance as a proxy. Storing, maintaining and managing attendances of different classes manually is also a headache for the CR, Teacher and management. By moving to automated attendance system, 75% attendance policy can easily be implemented as the attendance of a student will only be marked if he/she comes to the class physically. In this way students will be more punctual and regular towards their classes.

4. Methodology

The system will provide the facility of creating users, user's log in and log out. The abstract users will be Admin (Most likely the program office of a department), other users are the teachers who will take attendance of the classes through face recognition. Both the admin and normal users (teachers) will be given username (University Email Address) and password of their choice.

Admin will be provided with the functionality of adding teachers as users, adding students. When the admin will add a student, he/she will add the data about student e.g., Roll No., Name, Father Name, Batch, email etc. and one more thing will be the dataset for the particular student which will be used to train the face recognition model. The system will take some sample photos through the camera feed of the admin system which will be stored as the dataset of the student. The system then trains itself with the dataset of the students after that the system can recognize that student when a teacher takes attendance through face recognition. The system will also provide the facility to take the attendance manually if somehow the face recognition functionality is not working or the camera is malfunctioning. If during face recognition some students are not recognized then the system alerts the teacher with the photos of that students and gives the attendance sheet of

the recognized students to make any changes to the attendance if necessary. OpenCV-python library will be used for face recognition in the project.

5. Project Scope

This project will be a web-based project. Different users can use it on their own devices. The data will be stored at a centralized database e.g., user's data, students' data, students' datasets, model trainer data, attendance records etc.

6. Brief Feasibility Study

The system being developed is efficient and highly reliable with respect to student attendance. It is effective in the sense that it has eliminated the attendance work completely. The system is also time effective because the attendance is automated.

1. **Risks Involved**:
   - Face recognition technology not working properly
   - Any accident happens with a project member.
2. **Resource Requirement**:
   - A fast, modern and reliable laptop with a reliable and fast internet connection.
   - A good quality camera for face recognition

7. Solution Application Areas

The project is of great value for the Schools, Academies, Madaris, Universities etc. These institutions can automate their manual attendance system to this modern and automated system and reduce the work load for the management and the teachers.

8. Tools/Technology

1. **Software**
   - Python (Django)
   - PyCharm
   - MySQL
   - HTML/CSS
   - Visual Studio Code
2. **Hardware**
   - Laptop
   - Camera

9. Expertise of the Team Members

The project is of equal interest to both team members.

Both team members are pre-equipped with the level of knowledge needed for the successful completion of this project and have studied the relevant courses as well.

10. Milestones

1. Planning
2. Research
3. Designing
4. Implementation
5. Testing

11. References

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- Internet Web Page: Parul Pandey. "Face Detection with Python Using OpenCV" December 20, 2018. https://www.datacamp.com/community/tutorials/face-detection-python-opencv [2]