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Overview of a Class Room Electronic Attendance Management System Using "Face Recognition" Technology

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ABSTRACT: The attendance management system is a system that is required for university learning activities. The attendance management system has been deployed tapping system that uses NFC technology in various universities. Actually, that attendance management system works well for keeping track of all attendance data. However, various cheats for this attendance system can still be found. Leave their cards with their classmates and tell them to tap for them, for example. Adding facial recognition technology to the current attendance system is one of the many excellent solutions to this problem.

We learned from our experiment that adding face recognition to the present attendance management system requires a camera as well as a face dataset. To allow the system to recognize one's face, we need at least 9 photos with various emotions and face orientations at first. We would update the face dataset in every face recognition procedure to make this system more accurate at recognizing one's face.

Index Terms **- Face recognition, NFC, camera, Infrared, face, and face dataset, attendance management system.**

I. INTRODUCTION

An Artificial Face Recognition system is a computer science technology that allows a person's identity to be identified and recognized from a digital picture or a video frame from a multimedia source. Face recognition systems operate in a variety of ways, but in general, they compare chosen facial traits from a given image with faces in a database. As part of the Biometric Artificial Intelligence definition, a person can be uniquely identified by evaluating patterns based on the person's facial textures and shapes [3, 5, and 9]. Face recognition technology has been utilized in many facets of daily life, particularly on smartphones.

For instance, the Snapchat app uses one's face and plays a key role in Artificial Recognition that relates to the location and form of the face location. The Snapchat app is an example of an application that is related to Application Recognition. This technology can also be used as biometric authentication for a mobile security system, replacing fingerprint-based systems. Facial ID is an artificial face recognition sensor that consists of two parts: an "Alpha" module that projects over 10,000 infrared dots into the user's face, and a "Beta" module that interprets the pattern. Face recognition can still work in the dark because to the application of Information Retrieval Technology [8, 11].

The attendance management system is a system that is required for University learning sessions. As we all know, there are many different types of attendance systems, such as manual attendance management systems (using attendance notes), tapping/card readers, fingerprint readers, biometric hand readers, face readers, and so on. The attendance management system has been deployed tapping system that uses NFC technology in various universities. Actually, that attendance system is already

Capable of efficiently managing each piece of attendance data. Nonetheless, many college students continue to cheat for this attendance system. Giving their card to a classmate and instructing them to tap it is one example. . As a result, incorporating facial recognition technology into the present attendance system is one of the most effective ways to fix the problem. With facial recognition capabilities that can detect and identify someone based on their face, the attendance management system can be more effective in terms of regulating college student attendance and ensuring that college students attend class sessions [12].

We got the idea for this project in class when we witnessed how much time had to be skipped for attendance and how nonchalant students who had previously recorded their attendance were, causing the process to be further delayed. We then determined that image processing, recognition, and other related topics would be an excellent and intriguing field to explore for our Project because they have a wide range of applications and would help us cultivate our skills and prepare us for the future.

II. BACKGROUND

2.1. Face Recognition Technology

A. Camera

The most popular method for recognizing a face is to utilize a camera. To begin, we can obtain every frame from a video source captured by the camera previously. The frame was then processed in the face image detector module to detect a face in it. After this module has successfully detected a face, the facial features extractor module will turn the pixels of the facial image into a meaningful vector representation. After that, the face recognizer module will process this facial feature.

It will be compared to every face image in the face database in this module. This face recognition system will not recognize that face if this module is unable to find any face in the person database that matches that face. However, if this module can discover any face in the person database that matches that face, the system will recognize it.

2.2. Face Recognition Algorithms

There are numerous ways that researchers have used to construct various recognition algorithms. We will simultaneously debate and expound on two issues. The Karhonen-Loeve method will be used (KL). The eigenface method transform is used to extract features. Indeed, it has a significant impact on reducing the size of face features while maintaining an acceptable discriminating capacity.

There are many variations of the neural network approach that can be used for feature extraction. We could utilise a complex modelling technique to estimate probability densities in the pattern recognition phase [6, 10, and 11].

III. LITERATUREREVIEW

Customers The In most universities, the attendance monitoring system begins 30 minutes before the class activity begins. 30 minutes after the class activity begins, the attendance management system will be closed. This validation mechanism is used by college lecturers and students. We can update some of the current validation systems to make the attendance management system with face recognition operate better. After the lecturer taps her/his card between 30 minutes before and 20 minutes after the class activity began (for students, 30 minutes after the class began), the attendance system will be activated. A verification session is required to ensure that college students attend class. It was unlocked 30 minutes before the last class activity. This change was made to limit the likelihood of students cheating their attendance management system, such as leaving class after attendance was checked.

IV. PROBLEM STATEMENT

The problem of automatic attendance marking has been widely solved through the use of common biometrics such as finger prints and radio frequency identification tags, but these systems are unreliable. Face detection and identification algorithms are used in this suggested project to create an automated attendance marking and management system.

V. CONCLUSION AND FUTURE WORK

Based on what we discussed at the outset, we've come to the conclusion that, in order to improve every University's security system for managing attendance information, we'd like to add a new security system that uses face recognition once college students tap their identity card. It means that each class will conduct a double-verification system using face recognition (before to the start of class) and manual absenteeism (before the class session ends).

It will considerably limit the likelihood of students falsifying their attendance records, and they will no longer provide their cards to their pals. In general, this technology is more effective than previous technology.

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