Check In And Check Out Logging For Employee Managemnet

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Abstract: ***Face recognition is important nowadays for automatic attendance system used in different private and government organizations. Proposed system is designed to improve the attendance system using face recognition and updating in both xlsheet and web browser. First each student will get registration with application by face and generates unique ID for each student. After registration the web camera will get start and when any student comes in front of camera then his/her attendance is logged. The attendance is shown on both browser and xlsheet.***

Keywords: face recognition, attendance management, browser updating , xlsheet Updating with attendance.

I. INTRODUCTION

In Workforce management must include automation and security features as an essential part in the present digital age. Employee attendance systems which rely on manual registers and RFID-based methods tend to have problems with inefficiencies and produce inaccurate results and lack security features. Face recognition technology has demonstrated itself as a strong solution to track employee attendance effectively because of its ability to meet current operational challenges. The "Employee Face Recognition System with Check-In/Check-Out Logging" project implements face recognition technology to create automated employee attendance systems which maintain both security integrity and user-friendly operation.

The system includes an administrative section which lets administrators record employee details by collecting webcam video of facial characteristics during registration. Secure data storage occurs through the integrated use of MySQL together with the system framework. Organization employees receive instant authentication while their check-in-out activity logs automatically since the face recognition model functions in real time. The system has a feature for recording check-in and check-out logs through an Excel file where all records remain accessible for analysis.

This system takes away fraudulent attendance problems specifically through preventing buddy punching behavior found in conventional attendance monitoring systems. The individual-based nature of face recognition proves valuable for security purposes since it blocks unapproved users from unauthorized entry. The system functions with minimal human involvement to decrease administrative tasks and create better tracking systems for employee attendance records. Operation of the project depends on Python 3.7.2 along with the libraries mentioned in requirements.txt.

A script file includes all database configurations leading to a straightforward setup of MySQL database. After system installation users gain access through a web interface which enables the administrator to easily handle employee records. This technology features a user-friendly design which enables organizations to implement and launch their deployment of the system with limited technical experience.

As an added feature the system maintains a detailed logging module which enables administrators to observe full attendance records of employee check-in and check-out activities. Better workforce management becomes possible with this system because it enables administrators to verify employee adherence to their work hours schedules. Payroll processing together with performance evaluation and compliance reporting both become more efficient through the logging system's information.

The "Employee Face Recognition System with Check-In/Check-Out Logging" provides businesses with an advanced system for secure attendance management processes. The system achieves better workplace safety and lower administrative costs while precisely monitoring employee hours because of its built-in facial recognition capabilities. This project provides modern

businesses an easy-to-use system backed by automatic logging which leads to reliable workforce management solutions.

II. LITERATURE SURVEY

Face recognition is used to identify or verify individuals through images, videos, or real-time streams. This project authenticates students, faculty, and staff for library access, maintaining login and logout records efficiently. It automates entry-exit tracking, eliminating manual record-keeping and reducing data loss. Traditional methods like RFID require manual effort, making them time-consuming. The project employs CNN for accurate face recognition and AWS for secure cloud storage, ensuring data accessibility from anywhere. [1]

A computerized visitor management system together with facial recognition features gets introduced at Dynac Sdn Bhd to eliminate their present manual visitor registration flaws. The system digitalizes visitor registrations through a web camera for face recognition along with strengthened security features. The implementation leads to operational improvements because it enhances security controls while delivering more efficient visitor handling. The system development should focus on both broadening visitor categories while implementing new notification mechanisms and improving facial recognition performance. The tests conducted with target users led to complete success in the security checks which confirmed the reliability of user and system log management. [2]

The study evaluates how effectively a virtual environment works for implementing Check-In/Check-Out (CICO) procedures under the Tier 2 framework within the Multi-Tiered System of Support for Academics and Behavior. Marking CICO implementation as challenging due to limited resources and inadequate administrative staff members. A research explores the extent to which a virtual platform resolves such concerns. Staff members recognize virtual CICO implementation as beneficial for student-staff relationships and accountability systems and facilitative of addressing staff shortage challenges. The level of efficiency in this case depends on three main factors including accessible technology systems and effective time management alongside qualified staff. [3]

Jafri and Arabnia (2009) produced an extensive review of face recognition methods which divided the approaches into three categories: appearance-based, feature-based and hybrid. This research document evaluated performance-limiting issues which include illumination changes and position variations and object blocking while identifying faces. The research examined typical recognition methods that included Eigenfaces together with Fisherfaces and Elastic Bunch Graph Matching (EBGM). The researchers highlighted the necessity of developing stronger algorithms which could operate under real-life conditions and supported their recommendations with 3D face model implementations and multi-modal biometric solutions.[4]

Parkhi et al. (2015) implemented CNN-based deep learning for face recognition through their work. This research used VGGNet because it constitutes a deep architecture which received training from a large-scale face recognition dataset. The research results established deep learning techniques as superior to conventional methods by reaching high verification and identification precision levels in facial recognition systems. Research showed that both big labeled datasets together with data augmentation help CNNs achieve better performance. The research team achieved results that surpassed all previous models in deep face recognition work. This achievement established a new benchmark in this area.[5]

Object detection reached a new milestone through the work of Viola and Jones who developed a simple features cascade structure (2001). The team developed Haar-like features as well as an integral image technique which improved processing speed. Across their method they employed AdaBoost to pick the vital features for building a fast face detection cascade classifier system. The improved detection speed made it possible to carry out real-time face detection through this method. This framework served as the basis for multiple following face recognition systems especially in time-sensitive applications.[6]

The machine learning library called Dlib-ml represents an open-source toolkit which was launched by King (2009) specifically for high-performance computing needs. The toolkit provided multiple functions including tools that identified faces as well as enabled object identification and feature extraction methods. The library deployed both support vector machines (SVMs) and deep neural networks as part of its advanced machine learning algorithm deployment. Facial landmark detection capabilities of Dlib made it popular since researchers used these capabilities extensively in face recognition systems. According to research there is a critical requirement for both efficient modular tools and research speed-up mechanisms to advance machine learning development.[7]

III. PROPOSED METHOD

The proposed method develops an automated Employee Face Recognition System that features Check-In/Check-Out Logging by combining Django with OpenCV and Face Recognition Library. The system functions to provide both secure employee authentication and automatic elimination of attendance tracking processes.

Steps of the Proposed Method

1. **Data Collection and Employee Registration** An administrator uses the system to enter employee particulars which include their identification number along with personal name information. The system stores face images received from the webcam that performs the capture procedure. The face_recognition library generates encoding data that gets saved into a database.

2. Face Recognition Model Initialization The system retrieves stored face encodings data from encoding.npy and names.npy files. Real-time face detection occurs through the application of Haarcascade Frontal Face Detection.

3. Real-Time Face Detection and Recognition Through its webcam connection the system obtains a streaming video image. The face_recognition.compare_faces() function checks the detected face against the stored encodings. A match with confidence score under 0.25 will trigger the retrieval of employee IDs.

4. Check-In and Check-Out Logging The system saves the entry time of employees in logging.csv when they enter. The system automatically records the employee check-out time when they are currently checked in. The Employee ID together with Name as well as Check-in and Check-out timestamps get stored in the log file.

5. Admin Dashboard & Log Management The system gives admin full access to view and modify or remove employee records. The logs display in a table structure that features employee images in addition to timestamp data. The system gives Admin the ability to modify records at his discretion.

6. System Deployment and Accessibility The Django-based web application provides deployment for this system. Authorized personnel can access data stored within the MySQL database.

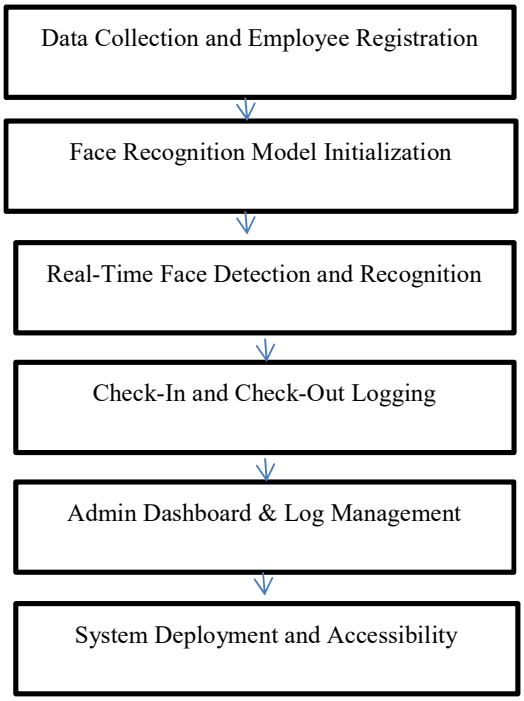

Fig. Block diagram

Proposed system modules

1) Add Student Details: user can add details like ID, name and can capture photo from webcam and all this details get saved

inside MYSQL database. Student ID will be auto generated

2) View/Update Student details: admin can view list of available details and then can update names of existing s
3) Start Webcam: webcam will be started and start detecting and recognizing faces and once any face recognizing then all start and end time will be recorded in excel file
4) View Logging: using this module admin can view all marked logging details

Advantages of the Proposed System

- The system performs automated tracking of employee attendance and lowers manual work requirements.
- The system guarantees better security through its functionality to block unwanted access to data.
- The system performs real-time tracking of employees as they come and go from work premises.
- Easy management via an admin dashboard.
- Scalable and adaptable for future improvements.

IV. RESULTS

Application main page

Fig. Student Registration

Fig. generated ID is 1 for first student/Employee

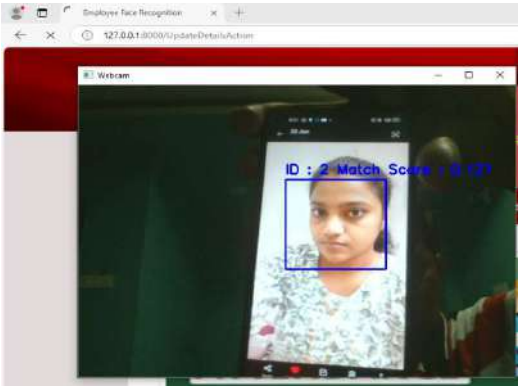

Fig. Face Recognition with Match Score

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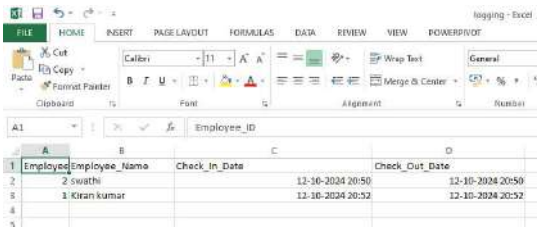

Employee	Employee_Name	Check_In_Date	Check_Out_Date
2	swathi	12-10-2024 20:50	12-10-2024 20:50
1	Kiran kumar	12-10-2024 20:52	12-10-2024 20:52

Fig. Face Attendance Updating In Xlsheet

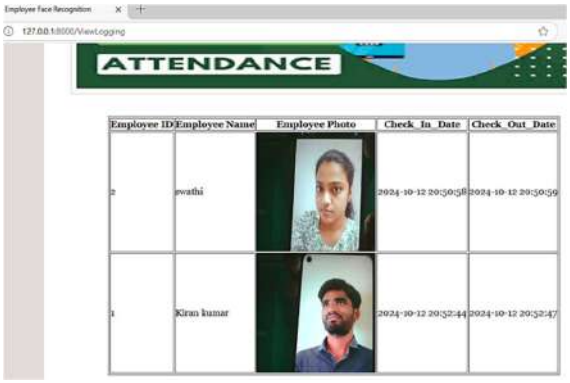

Fig. Updating In browser for face attendance

V. CONCLUSION

Employee Face Recognition System with Check-In/Check-Out Logging operates as an automated system which effectively tracks employee attendance data. Pushing face recognition tech into a MySQL database gives the system the capability to record employee entries and exits accurately and securely. A webcam system for real-time facial identification eliminates manual record maintenance which decreases errors and generates higher efficiency. Through this system administrators can make simple employee details updates while automatically logging attendance in real time which results in improved workplace management capabilities. The system provides administrators with a time-efficient secure automated attendance tracking solution that replaces conventional monitoring practices through its reliable access features. Better scalability would emerge from integrating cloud storage while enhancements to recognition systems need improvement.

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