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Face Recognition Automatic System

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Abstract—**In the era of modern technologies emerging at rapid pace there is no reason why a crucial event in educational sector such as attendance should be done in the old boring traditional way.Attendance monitoring system will save a lot of time and energy for the both parties students as well as the class teachers.**

INTRODUCTION (*HEADING 1*)

The purpose of the attendance monitoring system using face recognition is to ease the attendance process which consumes lot of time and efforts , it is a convenient and easy way for students and teacher. The system will capture the images of the students and using face recognition algorithm mark the attendance in the sheet. This way the class-teacher will get their attendance marked without actually spending time in traditional attendance marking. The identification process to determine the presence of a person in a room or building is currently one of the routine security activities. Every person who will enter a room or building must go through several authentication processes first, that later these information's can be used to monitor every single activity in the room for a security purpose. Authentication process that is being used to identify the presence of a person in a room or building still vary. The process varies from writing a name and signatures in the attendance list, using an identity card, or using biometric methods authentication as fingerprint or face scanner

I. II. LITERATURE REVIEW

Several biometric systems like fingerprint and RFID have been implemented for attendance tracking. However, these systems require physical contact or user interaction, which can be unhygienic or time-consuming. Recent developments in face recognition have shown potential in contactless biometric identification. Technologies like Eigenfaces, Fisherfaces, and LBPH have been explored, with LBPH offering a balance between performance and computational efficiency.

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II. III. METHODOLOGY AND SYSTEM DESIGN

A. **System Components:**

1. Face Detection – Utilizes Haar Cascade Classifier to detect faces in real-time from webcam input.
2. Face Dataset Generation – Captures and stores grayscale images of each student for training.
3. Face Recognition – Uses the LBPH algorithm to recognize previously trained faces.
4. Attendance Logging – Records name, ID, date, and time in a CSV file and MySQL database.

B. Technologies Used:

- **Python 3.10**
- **OpenCV (for image processing and model training)**
- **Tkinter (for GUI)**
- **MySQL (for storing user and attendance data)**

C. Workflow:

1. Register student and capture face samples
2. Train model using LBPH algorithm
3. Run live face recognition
4. If face is recognized, mark attendance with timestamp

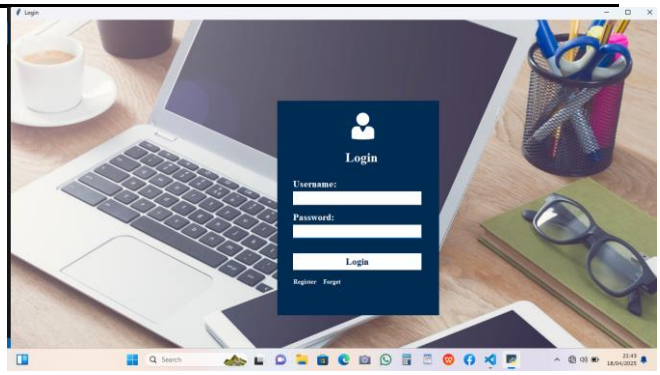
III. IVALG. ORITHMS USED

A. **A. Haar Cascade Classifier**
A machine learning-based approach that uses a cascade function trained from many positive and negative images. It's effective for detecting frontal faces.

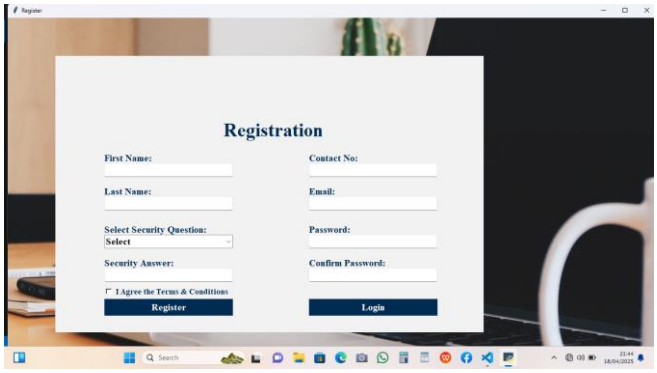
B. Local Binary Patterns Histograms (LBPH)
LBPH converts images into grayscale and computes the local binary pattern for each pixel by comparing it with its neighbors. It then creates a histogram used to match the face with stored datEquations

The equations are an exception to the prescribed specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

Number equations consecutively. Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus (/), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than Testing was conducted with a dataset of 30 individuals, each contributing 100 images. The system achieved 90% accuracy under well-lit conditions. Errors were primarily due to poor lighting or occlusions like masks.

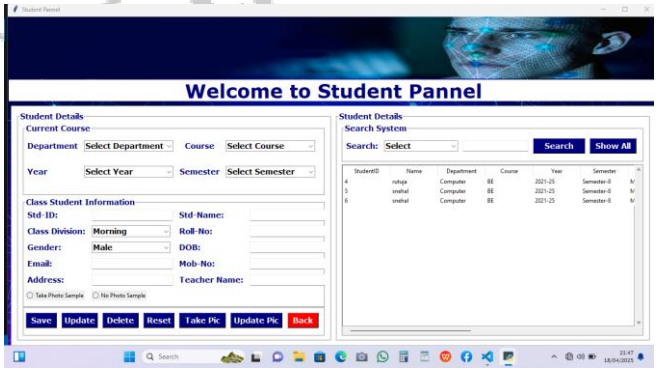


- Figure 1. Student Registration Window



- *Figure 2. Face Detection & Training Window*

- Figure 3. Attendance Panel with Student Data



. Figure 4. Live Face Recognition Intface

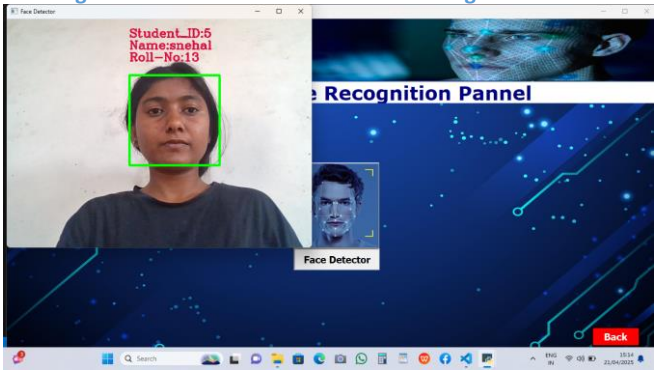


Figure 5. Attendance Report Generated in CSV

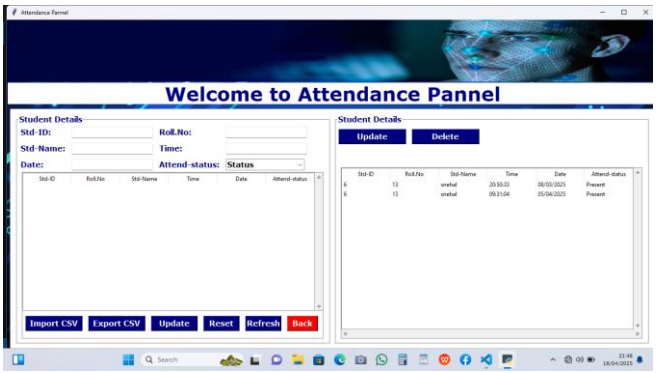


Figure 6. Help and Support Section in GUI

IV. VI. *Limitations and Future Work*

While effective, the current system is limited by environmental factors such as lighting and camera quality. Future enhancements may include deep learning models (e.g., FaceNet, Dlib) for improved accuracy and **the development of mobile or web-based versions for broader accessibility**

V. VII. Conclusion

This project successfully demonstrates a reliable and efficient way to automate student attendance using face recognition. It reduces manual labor, prevents proxy attendance, and paves the way for intelligent attendance systems in smart campuses.

VI. References

[1] Paul Viola and Michael Jones, "Rapid Object Detection using a Boosted Cascade of Simple Features," CVPR, 2001.
[2] G. B. Huang et al., "Labeled Faces in the Wild: A Database for Studying Face Recognition in Unconstrained Environments," UMass Amherst.
[3] OpenCV Documentation: https://docs.opencv.org/