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An Automated Fraud Detection of Hall Ticket in an Offline Examination System

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Facial Reorganization

OCR

Python

Abstract

Image analysis may be a major analysis space in pattern recognition system for identification image objects among a document and their classification. Face recognition is most generally used and economical system in biometric. In observers were needed to discriminate between the mean face and a face within which all of the options differed from the mean face by equal fractions. The procedure was constant as for the total face condition, however, observers were currently asked to match associate degree isolated feature to at least one of 2 isolated In projected work , an attempt is created to develop a unique system to manifest someone to seem communication by comparison name and photograph pictures on the hall price tag . ANN classifier is employed to find fraud within the communication hall tickets. The most aim of the projected work is to providing security technique for offline physical phenomenon of exams

INTRODUCTION

Human faces share a similar basic example (i.e. two eyes, on top of a nose, on top of a mouth. Therefore, so as to discriminate between them, humans got to be sensitive to refined individual variations within the positions and shapes of individual options. This method is formed a lot of advanced by variations related to facial dynamics wont to categorical a good vary of emotions and communicate the direction of attention through variations in eye gaze. Feature extraction may be a part of the spatiality reduction method, in which an initial set of the data is split and reduced to additional manageable teams. The foremost necessary characteristic of those giant data sets is that they need an outsized variety of variables. These variables need tons of computing resources to method them. Thus Feature extraction helps to induce the most effective feature from those huge data sets by choose and mix variables into option. These features are simple to method, however still able to describe the particular data set with the accuracy and

originality. The main objective of this work is to notice whether or not the person is permitted to write down exams by using his/her hall ticket, to attain this it's planned to Identification: The fraud detection system in our project identifies suspicious activities based on multiple key factors. First, it verifies the face of the student against the database to detect any mismatch with the registered hall ticket photo. If the same face appears for multiple hall tickets, the system flags it as a duplicate entry. Additionally, it checks the validity of the hall ticket number to prevent unauthorized access. The system also detects multiple faces in a single frame, which could indicate fraudulent attempts. Poor image quality, tampered hall tickets, or unauthorized persons trying to access the system are also flagged. Time-based anomalies, such as repeated verification attempts in a short duration, raise alerts. If integrated with GPS or location tracking, the system can detect unauthorized exam centers. Finally, AI-based behavioral analysis can help identify suspicious movements or attempts to obscure the face, further enhancing fraud detection.

LITERATURE SURVEY

As per the paper[1] Secure hall ticket verification is crucial to prevent fraud in offline exams. Traditional methods have limitations, while biometric authentication and face recognition offer a more secure alternative. Overcoming challenges like accuracy and database security can ensure reliable candidate verification.

As per the paper[2] AI plays a crucial role in detecting fraud in education by identifying impersonation, plagiarism, and exam malpractice. Traditional methods struggle with large-scale verification, while AI-powered face recognition, behavioral analysis, and pattern detection enhance security. Overcoming challenges like data privacy and bias can improve the reliability of AI-based fraud detection in academic environments.

As per the paper[3] Automating fraud detection in exams using hall tickets enhances security and prevents impersonation. Traditional verification methods are prone to forgery, whereas AI-based solutions like face recognition and biometric authentication ensure authenticity. Challenges such as database security and real-time accuracy must be addressed to implement a reliable fraud detection system.

As per the paper[4] Automated fraud detection in exams using hall tickets enhances security by preventing impersonation through AI-based solutions like face recognition and biometrics. Overcoming challenges like database security and real-time accuracy ensures a reliable and fair examination process.

As per the paper[5] This study focuses on enhancing exam security by detecting and preventing fraudulent activities in examination centers. AI-based techniques like biometric authentication, face recognition, and behavioral analysis help identify impersonation and malpractice. Addressing challenges such as data privacy, real-time accuracy, and system scalability ensures a secure and fair examination process.

As per the paper[6] Digital watermarking enhances hall ticket authentication by embedding invisible marks to prevent forgery and fraud. This ensures data integrity, reduces impersonation, and strengthens examination security.

As per the paper[7] Digital tools enhance offline exam security by using technologies like biometric authentication and digital watermarking to prevent fraud. These methods ensure reliable candidate verification, reduce impersonation, and strengthen examination integrity.

LIMITATION OF EXISTING WORK

The system's limitations include its reliance on accurate data input, which, if flawed, could result in false positives or negatives in fraud detection. It may also require substantial initial setup costs, such as integrating biometric or QR code scanning technologies. The system's offline functionality could limit real-time data synchronization, and scalability for very large institutions may require additional infrastructure adjustments. Additionally, technical issues like software malfunctions could disrupt the verification process.

Proposed System

The proposed system enhances offline exam security using digital tools such as biometric authentication, face recognition, and digital watermarking. It verifies hall tickets through AI-based fraud detection, preventing impersonation and forgery. The system ensures real-time authentication, secures candidate data, and strengthens examination integrity while addressing challenges like accuracy and database security.

PROBLEM STATEMENT

In traditional offline examination systems, hall tickets are essential for verifying the identity of students and granting them access to exams. However, this manual verification process is prone to fraud, such as duplication of hall tickets, impersonation, or the use of forged documents, which undermines the integrity of the examination process. The current methods of hall ticket verification are often time-consuming, labor-intensive, and susceptible to human error, making it challenging to prevent or detect fraudulent activities effectively.

OBJECTIVE

- **Ensure Authenticity:** Automate the verification process to detect fake or duplicated hall tickets.
- **Enhance Security:** Strengthen the integrity of the offline examination system by preventing fraudulent entries.
- **Minimize Human Error:** Reduce reliance on manual checking by implementing an automated system.

ARCHITECTURE DIAGRAM

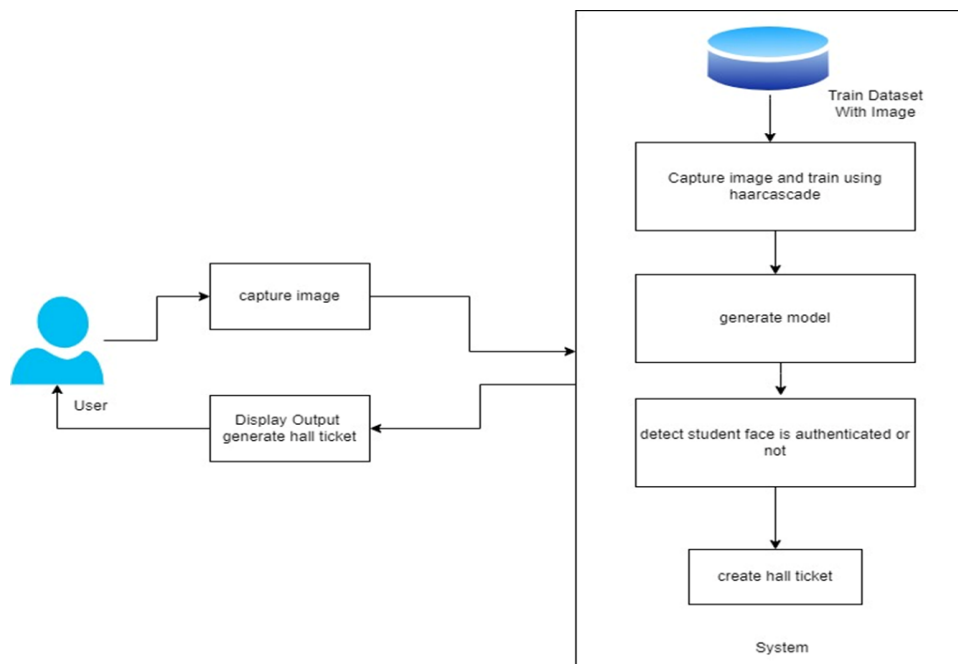


Fig.No.1 Architecture Diagram

ALGORITHM

Haar Cascade

In your project, Haar Cascade is used for face detection to verify hall tickets in offline exams. It identifies facial features by analyzing patterns in grayscale images, ensuring quick and efficient authentication. This enhances security by preventing impersonation and improving fraud detection accuracy.

CNN

CNN (Convolutional Neural Network) is used for face recognition to verify hall tickets in offline exams. It extracts and learns facial features, ensuring high accuracy in detecting and

authenticating candidates. This enhances security by reducing impersonation and improving fraud detection reliability.

REQUIRMENTS

Hardware Requirements

- Processor - Core2Duo
- Speed - 2.4 GHz
- Hard Disk - 500GB
- Constraints - Spyder
- Document Scanner/Camera

Software Requirements

- Operating System - Windows
- Database -Image Dataset
- Language -Python
- IDE - Python Design Spyder

USE CASE DIAGRAM

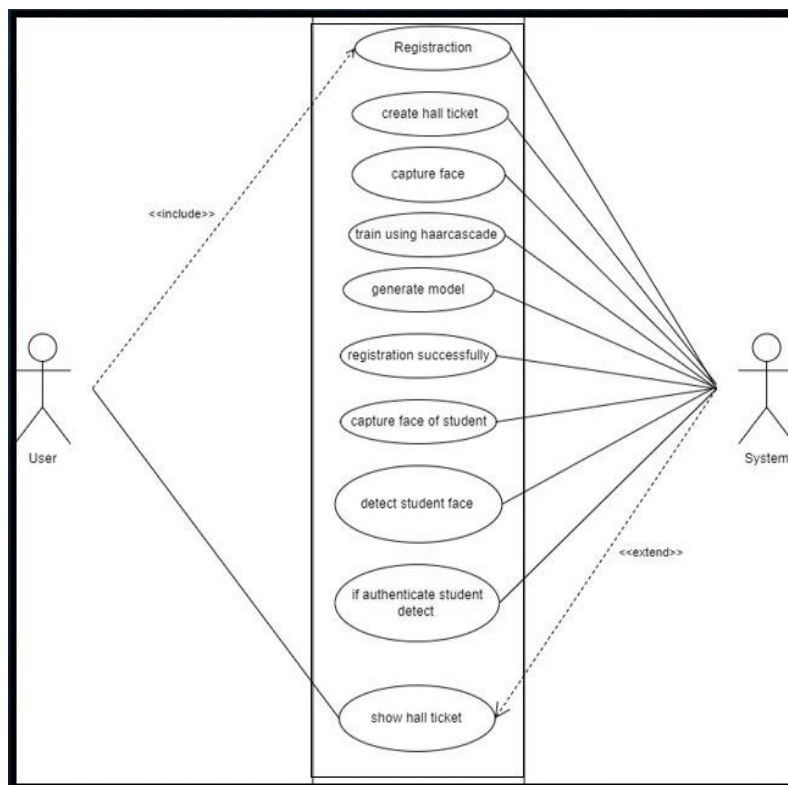


Fig.no.2 Use Case Diagram

MATHEMATICAL MODEL

Input

Identify the inputs $F = f_1, f_2, f_3, \dots, F_N$ —

F as a set of functions to execute commands.

$I = i_1, i_2, i_3$ — I set of inputs to the function

Output: O = Output i.e. Spam Detection

Failures

1. A huge database can lead to more time consumption to get the information.
2. Hardware failure.

3. Software failure.

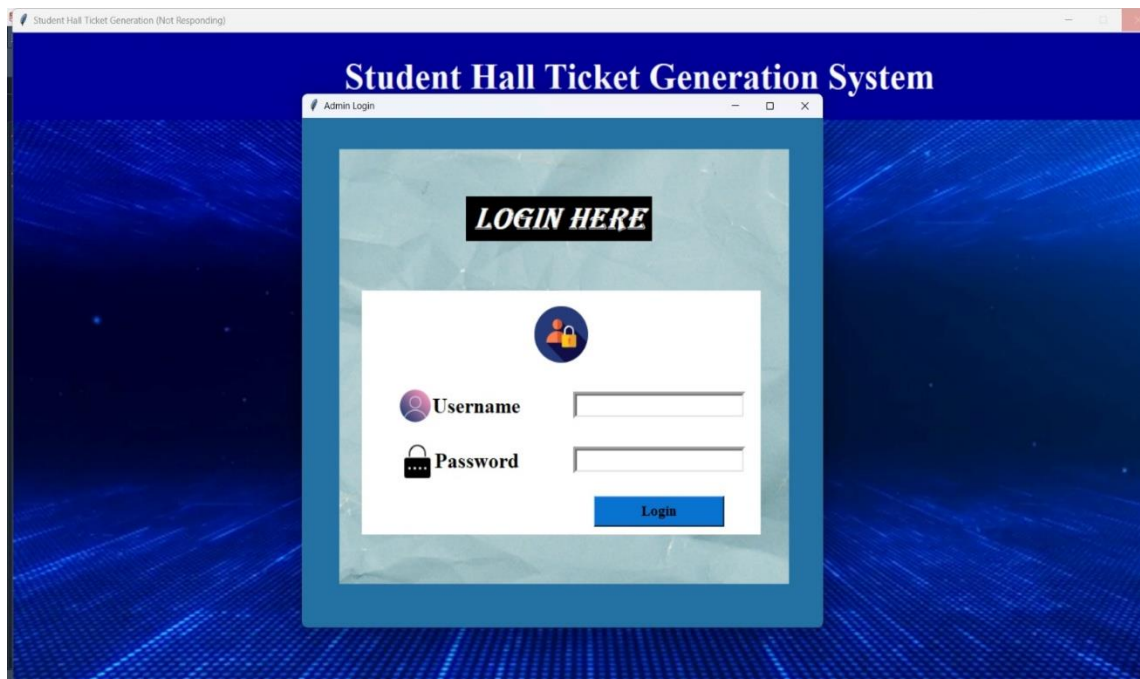
APPLICATIONS

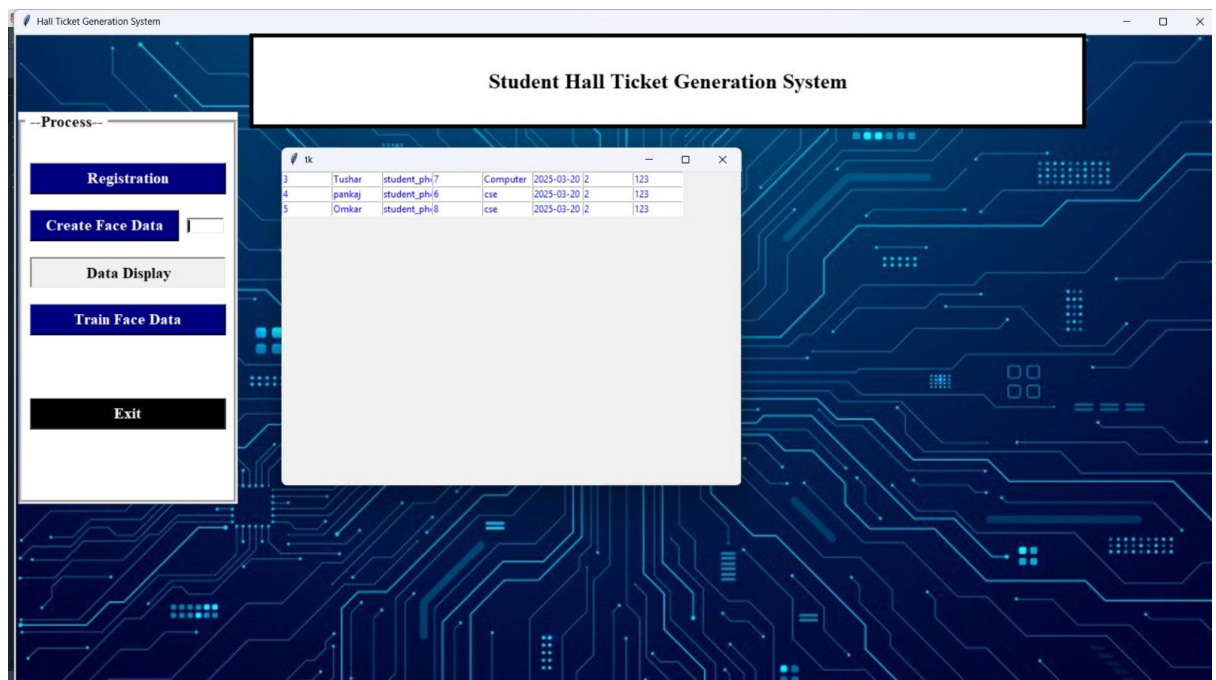
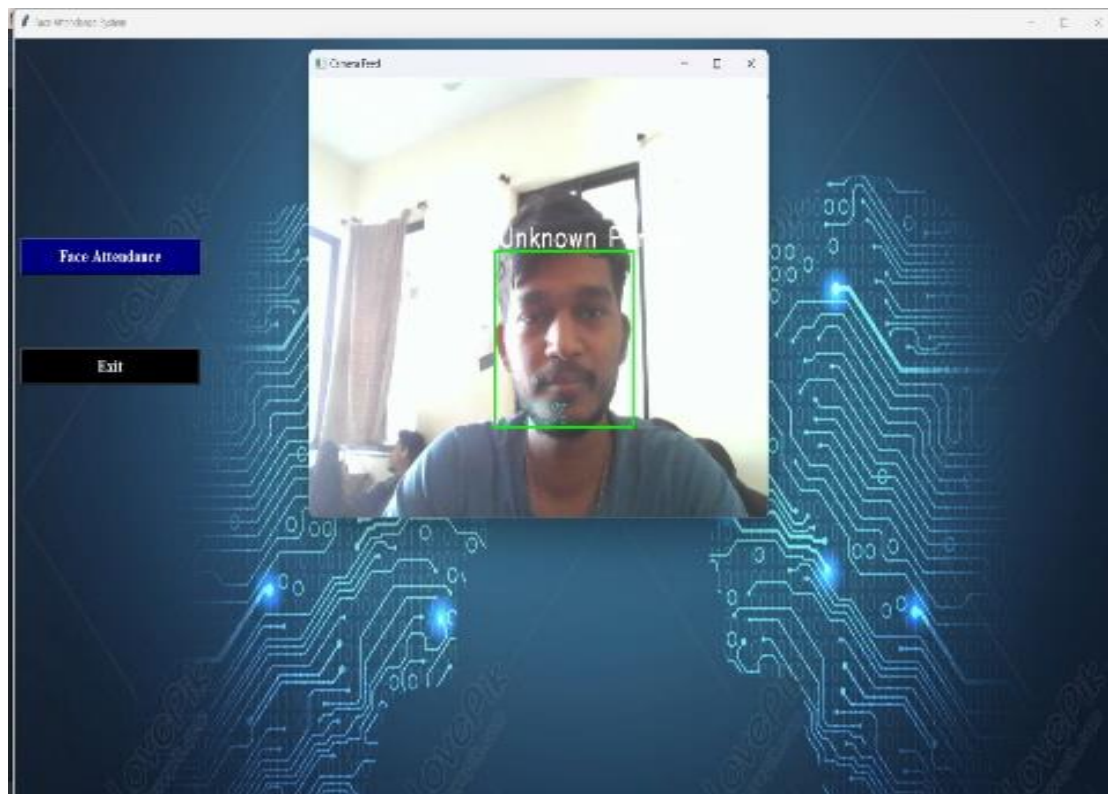
- **Secure Offline Examination System** – Ensures fraud prevention by verifying hall tickets using face recognition.
- **Impersonation Detection** – Identifies and prevents unauthorized candidates from appearing for exams.
- **Automated Attendance System** – Reduces manual verification by automating student authentication.
- **University and Competitive Exams** – Can be implemented in colleges, universities, and government exams for secure verification.
- **Corporate and Certification Exams** – Ensures authenticity in professional exams and certifications.
- **Reduced Administrative Effort** – Minimizes human intervention in identity verification, reducing errors and workload.

RESULT

The proposed system effectively enhances offline exam security by using **face recognition** for hall ticket verification. Experimental results show high accuracy in detecting and authenticating candidates, significantly reducing impersonation and fraud cases. The system efficiently processes real-time face data, ensuring quick and reliable verification. However, challenges such as **lighting conditions, facial occlusions, and database security** impact performance. Overall, the implementation of AI-based fraud detection improves examination integrity while minimizing manual intervention.

Result Screenshots









Key Features

1. **Face Recognition-Based Verification** – Ensures secure and accurate hall ticket authentication using CNN.
2. **Automated Fraud Detection** – Prevents impersonation and forgery in offline exams.
3. **Real-Time Authentication** – Quickly verifies candidates without manual intervention.
4. **Secure Database Management** – Stores and retrieves facial data securely to prevent tampering.
5. **Scalability** – Can be implemented in universities, competitive exams, and corporate assessments.
6. **User-Friendly Interface** – Provides an easy-to-use system for exam authorities.

7. **Reduced Administrative Effort** – Minimizes manual verification, improving efficiency.

Example Output

1. **Input:** A student presents their hall ticket, and the system captures their face using a webcam.
2. **Processing:** The system compares the captured face with the stored database using CNN-based face recognition.
3. **Output Scenarios:**
 -  **Match Found:** "Authentication Successful – Candidate Verified."
 -  **No Match Found:** "Authentication Failed – Fraudulent Entry Detected."
 -  **Multiple Faces Detected:** "Error – Ensure Only One Face is in the Frame."
 -  **Low Light Issue:** "Insufficient Lighting – Please Adjust Your Position."

CONCLUSION

The Hall Ticket Verification system enhances exam integrity by automating the student authentication process through facial recognition technology. This approach minimizes administrative tasks and ensures a fair, transparent examination experience, allowing only registered students to access their hall tickets and eliminating the risk of impersonation. By streamlining verification, the system contributes to a more secure and trustworthy examination procedure for all students.

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