WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

CROSS CHECK CV

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A B S T R A C T :

This study introduces Cross Check CV, an intelligent attendance monitoring system that automates and increases the accuracy of attendance tracking by using facial recognition. The system takes real-time facial image data using OpenCV and TensorFlow Machine learning models, compares it to a database that has been stored beforehand, and records attendance when the image is successfully identified. The model guarantees secure data handling, removes proxy attendance, and minimises human error. The outcomes show a high recognition accuracy and the ability to process information in real time, which makes it appropriate for both corporate and academic settings.

INTRODUCTION

In both professional and educational settings, keeping accurate attendance records is an essential but frequently difficult task. Proxy attendance can be used to manipulate traditional systems, which are prone to mistakes. Advances in AI have made facial recognition an effective and non-intrusive solution. In order to automate and secure the process, this paper presents Cross Check CV, a real-time, AI-powered attendance system that uses facial recognition.

Traditional attendance systems like manual registers and biometric scanners are becoming more and more viewed as ineffective, prone to mistakes, and vulnerable to abuse, including proxy attendance, in today's technologically advanced and fast-paced world. In addition to taking time, these techniques raise hygienic issues, particularly in the wake of a pandemic. Facial recognition technology shows up as a dependable and contactless way to deal with these issues. By utilising machine learning and artificial intelligence, it provides a smooth method of identity authentication with little assistance from humans.

REVIEW OF LITERATURE

2.1 Technology for Facial Recognition

One of the most important tools in contemporary biometric systems is facial recognition. The foundation for face matching was established by early methods like Eigenfaces and Fisherfaces, but more recent developments like convolutional neural networks (CNNs), FaceNet, and deep metric learning greatly improved accuracy and speed. These models perform exceptionally well at learning high-dimensional facial embeddings that hold true under various lighting and angle conditions.

2.2 Integration of AI and Computer Vision

Finding faces in a variety of settings has become easier thanks to AI-driven face detection frameworks like MTCNN and OpenCV's DNN module. Building and training custom models that can handle complex datasets and function with high reliability is made possible by TensorFlow, Keras, and PyTorch. Additionally, these frameworks facilitate GPU acceleration, allowing for real-time performance appropriate for implementation in operational systems.

2.3 Identity Verification Through CVs

The literature suggests that future developments in timetable generation will increasingly incorporate artificial intelligence and machine learning. These technologies promise to enhance predictive capabilities, allowing for more sophisticated analysis of scheduling patterns and resource utilization (Cheng & Zhang, 2020). Furthermore, the integration of mobile and cloud-based solutions is anticipated to increase accessibility and collaboration in timetable management.

EXISTING SYSTEMS

Numerous models have already been created for attendance systems that rely on facial recognition. Real-time face detection and matching against a preloaded database of facial images is usually the basis for these. Typical implementations employ deep learning models like FaceNet or Dlib for recognition and algorithms like Haar cascades for face detection. Even though these models have shown promise in recognising people in everyday situations, they frequently fail to provide identity verification that goes beyond facial recognition. The majority of systems are susceptible to spoofing attacks using printed images or videos since they lack historical or document-based verification. Furthermore, they rarely support cross-platform or mobile deployment and are typically made for closed environments with limited scalability. By cross-checking real-time facial data, our system fills in these gaps.

Many current models have been created for attendance systems based on face recognition. These usually depend on real-time face detection and matching against a preloaded database of facial pictures. Common uses employ Machine learning models recognition and Open CV for face detection. Although these models have shown to be successful in spotting people under normal circumstances, they sometimes fail when it comes to confirming identity beyond only facial matching. Most systems are open to spoofing attacks using printed photos or videos since they do not include historical or document-based verification.

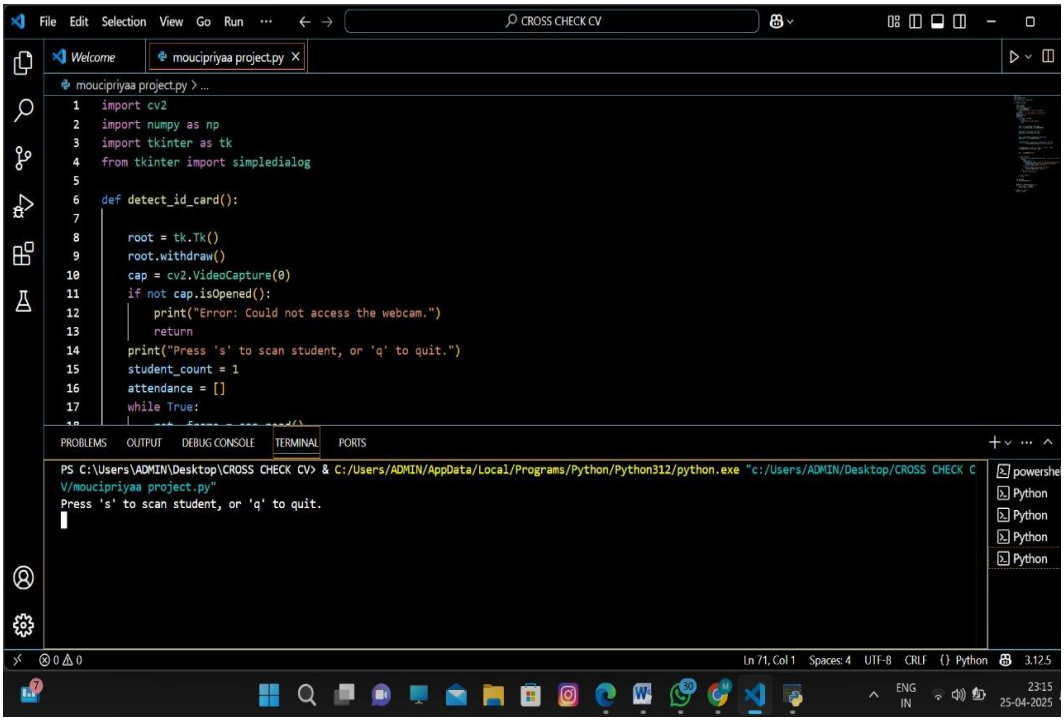
FIELD OF THE INVENTION

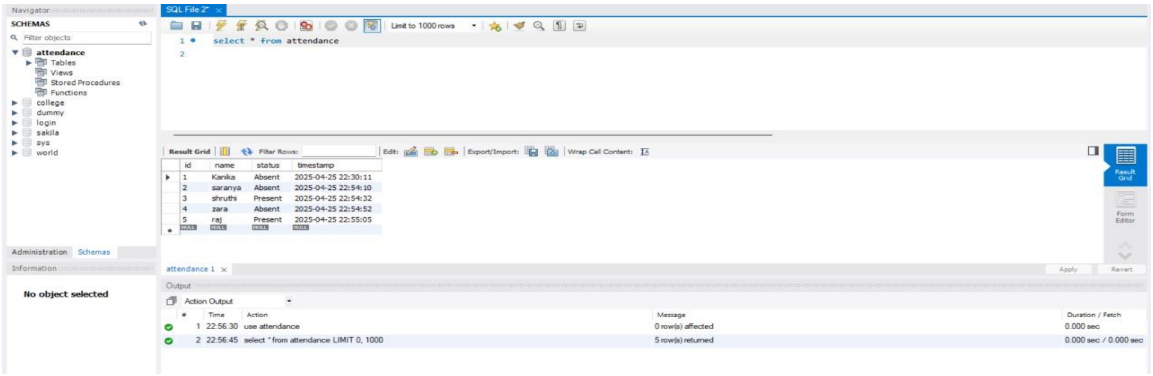
This invention focusses on biometric authentication and intelligent attendance management, specifically the use of facial recognition in conjunction with identity validation from pre-existing personal records, such as institutional databases or resumes. Only authorised individuals are confirmed and marked present thanks to advancements in workforce monitoring and educational technology. This system combines document validation, machine learning, and computer vision techniques to help with automated and secure attendance tracking. In addition to increasing accuracy, it reduces the possibility of identity theft, proxy attendance, and human error. Beyond the classroom, the invention may find application in corporate settings, testing facilities, remote interviews, secure access control, and online exam proctoring.

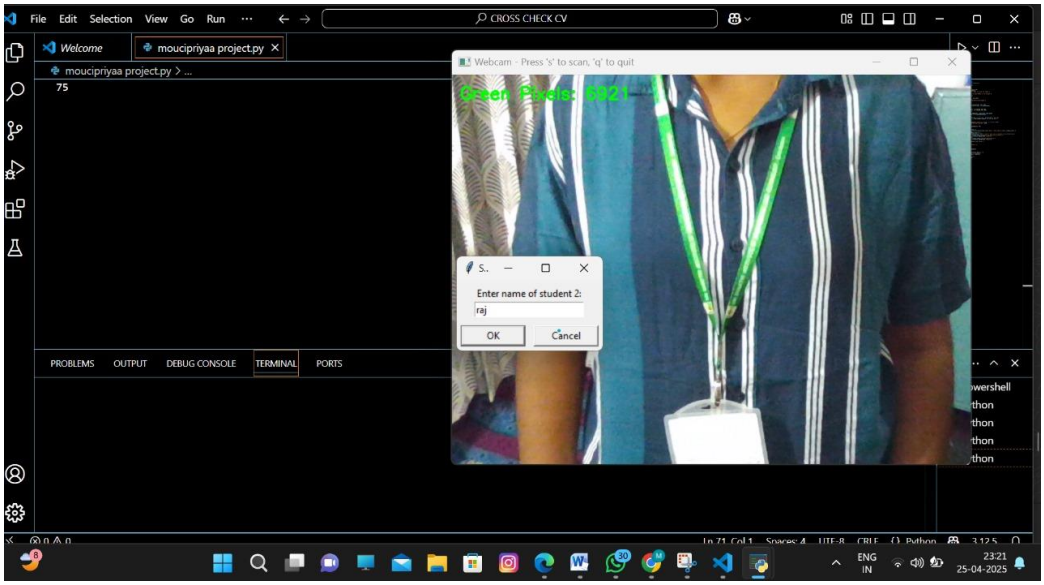
SOFTWARE DESCRIPTION

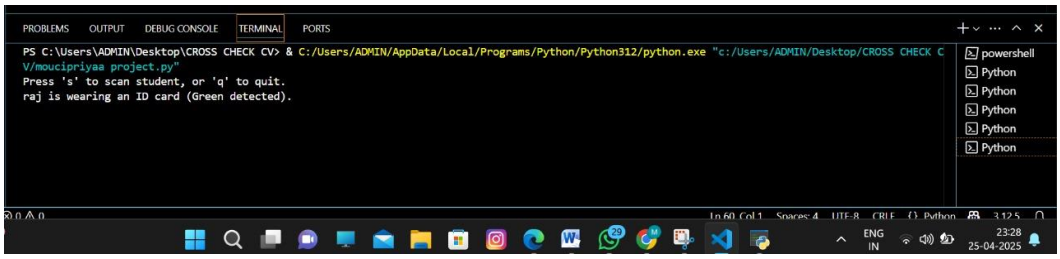
- MACHINE LEARNING
- PYTHON
- OPENCV
- MYSQL
- YOLO
- CNN

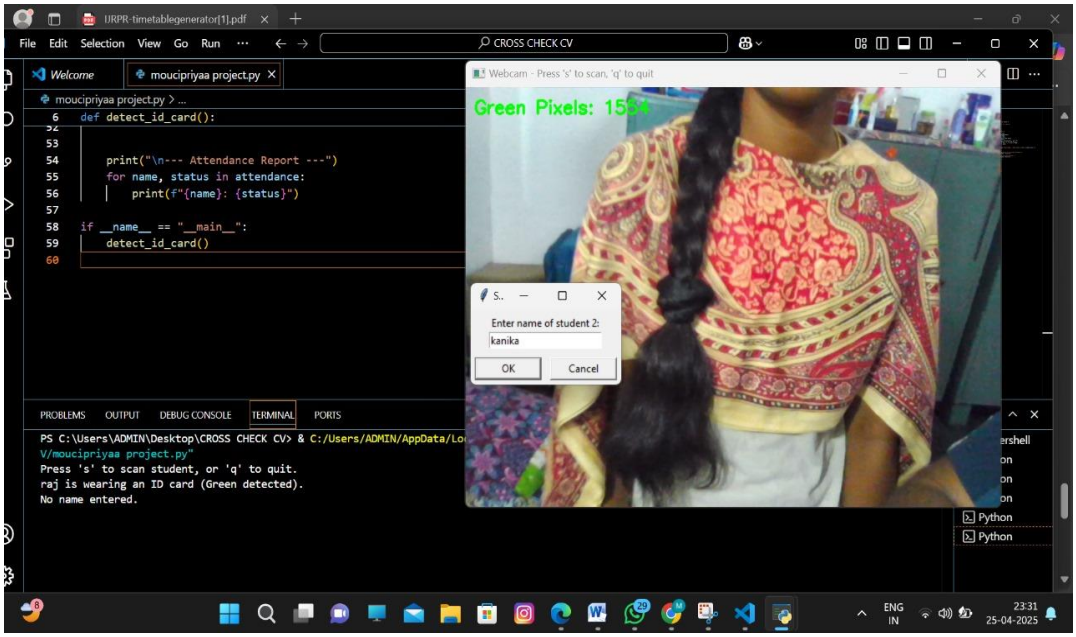
SCREENSHOTS

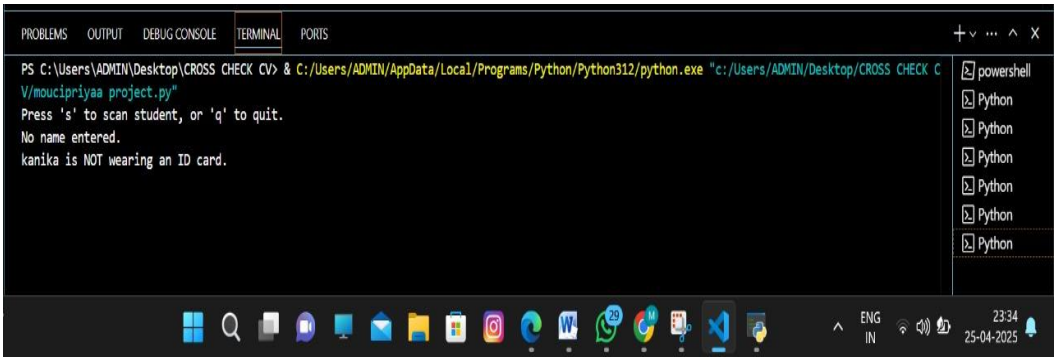



SQL File 2*
select * from attendance
Result Grid
id name status timestamp
1 Kanika Absent 2025-04-25 22:30:11
2 saramya Absent 2025-04-25 22:54:10
3 shruthi Present 2025-04-25 22:54:32
4 zara Absent 2025-04-25 22:54:52
5 raj Present 2025-04-25 22:55:05
No object selected
Action Output
1 22:56:30 use attendance 0 row(s) affected 0.000 sec
2 22:56:45 select * from attendance LIMIT 0, 1000 5 row(s) returned 0.000 sec / 0.000 sec


File Edit Selection View Go Run
CROSS CHECK CV
Welcome
moucipriyaa project.py
Webcam - Press 's' to scan, 'q' to quit
Green Pixels: 6921
Enter name of student 2:
raj
OK
Cancel
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
ENG IN
23:21
25-04-2025


PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ADMIN\Desktop\CROSS CHECK CV> & C:/Users/ADMIN/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/ADMIN/Desktop/CROSS CHECK C
V/moucipriyaa project.py"
Press 's' to scan student, or 'q' to quit.
raj is wearing an ID card (Green detected).
powershell
Python
Python
Python
Python
Python
ENG IN
23:28
25-04-2025





CONCLUSION

Cross-Check CV for Face Attendance adds a layer of biometric verification linked to pre-existing identity data, redefining the way attendance is tracked. By ensuring that only authorised individuals are marked present, this hybrid approach lowers manual errors and improves security. In addition to lowering administrative burden and manual labour, this solution gets rid of common problems like identity theft and proxy attendance. It works very well in places that require precise and safe verification, like colleges, workplaces, government agencies, and online testing platforms.

Acknowledgements

I would like to express my sincere gratitude to my mentor, the department staff, and the Head of Department (HoD) for their invaluable guidance, support, and encouragement throughout the course of this project. Their expertise and constant assistance have been instrumental in the successful completion of this work.

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