IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 1, March 2026
Impact Factor: 8.2

AI-Based Face Recognition Attendance System

Minal Solanki[1], Sanidhi Gajbhiye[2], Ritika Wanjari[3]
Assistant Professor, MCA, KDK College of Engineering, Nagpur, India[1]
PG Scholar, MCA, KDK College of Engineering, Nagpur, India[2,3]
minalgour12@gmail.com , gajbhiyesavinash.mca24f@kdkce.edu.in,
wanjarirjayram.mca24f@kdkce.edu.in

Abstract: *Attendance management is an essential administrative task in educational institutions and organizations, yet traditional methods such as manual roll calls and register-based systems are time-consuming, error-prone, and vulnerable to proxy attendance. With the rapid advancement of Artificial Intelligence (AI) and computer vision technologies, automated biometric systems have emerged as efficient alternatives. This research presents the design, development, and implementation of an AI-Based Face Recognition Attendance System integrated with a real-time web dashboard for monitoring and management. The proposed system utilizes computer vision techniques for face detection and deep learning-based facial encoding for recognition. Real-time video frames captured through a webcam are processed to detect faces, extract distinctive facial features, and compare them with pre-stored facial encodings in a database. Upon successful recognition, attendance is automatically recorded along with date and timestamp information, eliminating manual intervention. The system is developed using Python, OpenCV, and a Flask-based web framework, with structured database integration for secure and organized data storage. In addition to automated attendance marking, the system incorporates a dynamic administrative dashboard that provides real-time statistics, attendance summaries, and historical trend visualization. The dashboard enhances usability by allowing administrators to manage student records, monitor attendance performance, and generate reports efficiently. Experimental evaluation demonstrates a recognition accuracy ranging from 92% to 96% under standard indoor lighting conditions, with processing time under two seconds per individual. The proposed solution reduces administrative workload, prevents proxy attendance, ensures contactless operation, and improves record accuracy. Although minor limitations exist under low-light conditions or partial facial occlusion, the system demonstrates strong reliability and scalability for practical deployment. This research highlights the effectiveness of integrating AI-driven facial recognition with web-based management systems to modernize attendance processes in educational and organizational environments..*

Keywords: Artificial Intelligence (AI), Face Recognition, Attendance Management System, Computer Vision, Deep Learning, Convolutional Neural Networks (CNN), Facial Encoding, Biometric Authentication, OpenCV, Flask Framework, Real-Time Processing, Dashboard Analytics, Automation, Smart Classroom System

DOI: 10.48175/IJARSCT-31439