ABSTRACT

Attendance management is a critical process in educational institutions, workplaces, and training environments, ensuring accountability and record-keeping. Traditional attendance methods, such as manual roll calls or signature sheets, are time-consuming, error-prone, and inefficient, especially in large classrooms. Card-based systems and biometric methods, while more automated, have limitations including misuse, hygiene concerns, and dependency on specialized hardware. To address these issues, this project proposes a Face Attendance System that utilizes real-time face recognition for automated, accurate, and contactless attendance marking.

The system is developed as a web-based application using HTML, CSS, and JavaScript, with face-api.js serving as the core library for face detection and recognition. The system operates entirely offline, processing all data locally in the browser to maintain privacy and eliminate reliance on internet connectivity. It captures live video from a webcam, detects faces in real time, and matches them against a pre-stored database of labeled face descriptors. Attendance is marked automatically, with mechanisms in place to prevent duplicate entries and ensure accurate verification. Additionally, the system captures snapshots of recognized faces as an audit trail, providing verifiable evidence for administrative purposes.

The application also includes features such as dynamic member management, allowing administrators to add new members with multiple reference images, and exportable CSV reports for record-keeping and analysis. The intuitive interface supports camera toggling, attendance resetting, and efficient visualization of recognized faces.

By combining accuracy, security, scalability, and user-friendliness, the Face Attendance System addresses the limitations of traditional and existing automated systems. It offers a modern solution suitable for educational institutions seeking efficient, contactless attendance tracking. Future enhancements may include mobile compatibility, cloud-based synchronization, and integration with institutional management systems, making it a comprehensive and adaptable tool for attendance management.