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AI-Driven Automated Attendance System Using CCTV and Facial Recognition in Educational Institutions

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Abstract: *In modern educational institutions, traditional attendance systems are often prone to inefficiencies, manual errors, and proxy attendance. This paper presents an AI-powered automated attendance system that utilizes facial recognition technology integrated with existing CCTV infrastructure to provide a seamless, contactless, and real-time attendance solution. The system captures video frames at the beginning and end of each academic period, detects and identifies students using pre-trained deep learning models, and logs their attendance in a structured SQL database. Photos and video clips are stored locally, named according to unique ERP IDs for easy traceability. The solution reduces human intervention, enhances accuracy, and ensures consistent monitoring throughout the day. Implemented in a classroom environment with 50 students, the system demonstrates high reliability, scalability, and practicality, making it a promising step toward smarter academic administration.*

Keywords: AI Attendance System, Facial Recognition, CCTV Monitoring, Real-Time Attendance, Automated Attendance System, Deep Learning, Smart Campus, Student Tracking, Education Technology, ERP Integration

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