

ABSTRACT

Student attendance is an essential component of the learning process in educational institutions. However, conventional attendance methods such as name calling, the use of Quick Response (QR) codes, or Radio Frequency Identification (RFID) still present significant weaknesses, including vulnerability to fraud, lack of practicality, and device limitations. The main issue in this study is the absence of an effective, accurate, and fraud-resistant attendance system.

This study proposes a solution in the form of an automatic attendance system based on facial recognition using GhostFaceNets, which is capable of identifying student faces in real time. The system is designed to minimize the potential for fraud, accelerate the attendance process, and provide high face recognition accuracy. The implementation of facial recognition technology is integrated with a web-based interface to facilitate attendance data management.

The test results show that the system is capable of performing attendance in under 4 seconds on average, with a face recognition accuracy of 96% and a high level of security, indicated by a FAR of 0.14% and FRR of 2.20%. The liveness detection test also confirmed the system's ability to distinguish real faces from fake media such as photos on smartphones, student ID cards, or videos, proving its effectiveness in preventing attendance manipulation. In terms of user experience, the system received a System Usability Scale (SUS) score of 82.9, placing it in the "Excellent" category. Stress testing demonstrated that FacioVis remains stable at up to approximately 450 requests per second and can reach 1250 requests per second before hitting 90% vCPU utilization. All testing confirmed that FacioVis performs well in terms of speed, reliability, and user-friendliness.

Keywords: Artificial Intelligence, Attendance System, Face Recognition, GhostFaceNets, Liveness Detection.