AI Based Attendance and Access Control Security System Using Raspberry Pi

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Abstract: *This paper presents an AI based attendance and access control system using a Raspberry Pi platform, designed to improve security and automate traditional attendance methods. The system uses face recognition to automate attendance and improve security. It reduces manual work and prevents proxy attendance. Conventional attendance systems such as manual registers, RFID cards, & fingerprint scanners have limitations like proxy attendance, time consumption, and hygiene problems. To overcome the issue the proposed system uses a camera module integrated with Raspberry Pi and applies face recognition techniques using RealVNC and machine learning algorithms. This system is cost effective, efficient, and scalable for real world applications such as schools, offices and secure environments. The system captures real time facial images, detects and recognizes faces, and compares them with a stored database to mark attendance automatically. Additionally, the system controls access by allowing only authorized individuals to unlock the door using a relay module, while unauthorized attempts trigger alerts. Experimental results show that the system provides high accuracy, reduces manual effort, and enhances security in institutions and workplaces*

Keywords: RFID, Face recognition, Detection, Accuracy, RealVNC, Raspberry Pi, Camera.