

Smart RFID and Face Recognition Based Automated Attendance Management System

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ABSTRACT: The RFID Face Attendance System is an automated method for recording attendance using RFID cards and face recognition. It replaces manual attendance, which is slow and error-prone. Each student is identified using both an RFID card and facial verification, ensuring accuracy and preventing proxy attendance. The system stores data digitally, allowing easy access, report generation, and real-time monitoring. It saves time, reduces effort, and improves reliability in attendance management..

I. INTROUCTION

The system is designed to modernize attendance tracking in educational institutions. It combines RFID technology and facial recognition to record attendance quickly and securely. Students use RFID cards, and their identity is confirmed through face recognition. This dual system avoids errors and fake attendance. The data is stored digitally and can be used for analysis and reporting. Overall, it improves efficiency, security, and classroom management.

II. RELATED WORK

2.1 Internet of Things-Based Intelligent Attendance System

This paper explains an attendance system that uses IoT devices to automatically identify students and record attendance. It collects data in real time using sensors and wireless communication. The system reduces human errors and improves efficiency. It also increases transparency and reliability in managing records. The authors tested the system and proved that it is accurate and scalable.

2.2 QR-Based Smart Student Attendance System

This study presents a system where students use QR codes to mark attendance. Each student scans a unique QR code for every class, and the data is instantly stored in the database. It reduces manual work and prevents proxy attendance. The system uses cloud storage for security and easy access. It is also low-cost and easy to implement.

2.3 Facial Recognition with Face Mask Detection

This paper introduces a facial recognition attendance system that works even when students wear masks. It uses deep learning techniques to identify faces accurately in different conditions. The system allows contactless attendance, making it safer and faster. It is especially useful in post-pandemic situations and works well with real-world data.

2.4 Face Segmentation and Recognition-Based System

This research focuses on improving accuracy using face segmentation. The system first separates individual faces and then applies recognition techniques. This reduces errors in identifying students. It automatically records attendance and stores it digitally. The system is more efficient than traditional image-based methods.

Volume 15, Issue 4, April 2026**|DOI: 10.15680/IJRSET.2026.1504090|****2.5 Face Recognition (LBPH vs CNN) Review**

This paper compares two face recognition methods: LBPH and CNN. It studies their accuracy, speed, and challenges. The results show that CNN performs better in different environments. The study highlights the importance of AI in attendance systems and suggests improvements for future research.

2.6 RFID-Based Attendance Monitoring System

This research explains an attendance system using RFID technology. Each student has an RFID tag that is scanned when entering. The system records attendance automatically and updates data in real time using IoT. It reduces errors and improves efficiency. The model is flexible and can be used in different institutions.

2.7 IoT-Based RFID Attendance System Review

This paper reviews different RFID-based attendance systems using IoT. It analyzes their performance in terms of speed, accuracy, and reliability. The study discusses challenges like data privacy and signal issues. It concludes that combining RFID with IoT improves attendance tracking and suggests using hybrid systems for better results.

2.8 Smart Classroom Attendance Using IoT

This paper presents an IoT-based system for smart classrooms. It connects RFID and sensors to a central database for automatic attendance tracking. Teachers can view reports and analyze student participation. The system reduces manual work and improves accuracy. It also ensures secure data transfer.

2.9 Face Recognition Attendance System

This study develops a system that uses facial recognition to mark attendance. It can identify students in different lighting and classroom conditions. The system replaces manual methods and prevents proxy attendance. It stores data digitally and allows easy access to records. It can also detect multiple faces at once.

2.10 Machine Learning-Based Attendance System

This research uses machine learning techniques for attendance tracking. The system captures facial images and uses trained models to identify students. It provides accurate and automated attendance marking. Data is stored securely, and the system includes dashboards for analysis. It is adaptable and suitable for different educational institutions.

III. EXISTING SYSTEM

Traditional attendance methods involve manual processes like calling names or using paper registers. These methods are time-consuming and prone to errors. Some institutions use biometric or barcode systems, but they still have issues like delays, hardware problems, and proxy attendance. Overall, existing systems lack efficiency, accuracy, and real-time tracking..

3.1.1 DISADVANTAGES :

- Manual attendance wastes class time
- High chances of human errors
- Proxy attendance is possible
- Difficult to store and analyze data
- No real-time updates or monitoring

IV. PROPOSED SYSTEM

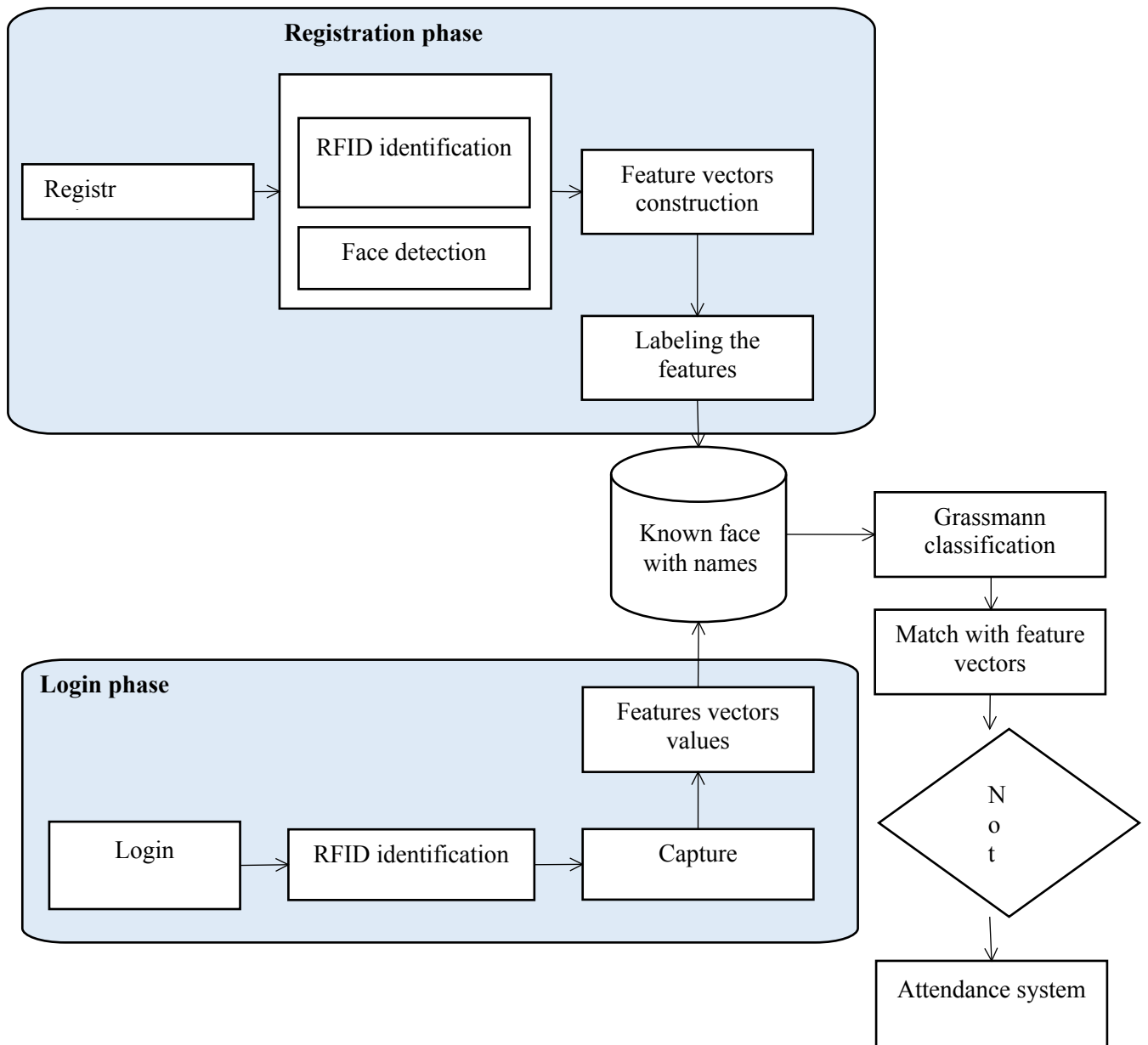
The proposed system uses RFID cards and face recognition together to automate attendance. When a student enters, the RFID card is scanned, and their face is verified. Only after successful matching, attendance is marked. The system stores data digitally, generates reports, and sends updates if needed. It is fast, accurate, secure, and reduces manual work.

4.1.1 ADVANTAGES :

- Fully automatic attendance system
- High accuracy with dual verification

- Prevents proxy attendance
- Easy data storage and report generation
- Saves time and reduces manual effort
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V. SYSTEM ARCHITECTURE



VI. CONCLUSION

The RFID Face Attendance System is a modern solution that improves traditional attendance methods by combining RFID and facial recognition technologies. It automates attendance recording, reduces errors, and saves classroom time by marking attendance accurately in real time. The dual-verification process ensures security by preventing proxy attendance. It also stores data in a centralized system, making it easy for teachers and administrators to access, monitor,

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and generate reports. Overall, the system enhances efficiency, accuracy, and transparency while supporting a paperless and secure academic environment, with potential for future upgrades like mobile and cloud integration.

VII. FUTURE WORK

The RFID Face Attendance System can be improved by adding mobile apps and cloud platforms, allowing users to access attendance data anytime and anywhere. AI-based analytics can help detect attendance patterns and identify frequent absentees for early action. Adding biometric features like fingerprint or iris scanning would increase security through multi-factor authentication. The system can also be expanded for use across multiple campuses and enhanced with advanced face recognition for better performance in difficult conditions. Integration with learning management systems can link attendance with academic performance, while automated SMS or email alerts can improve communication. Overall, these upgrades would make the system smarter, more secure, and scalable.

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