iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** V **Month of publication:** May 2026

DOI: https://doi.org/10.22214/ijraset.2026.82826

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue V May 2026- Available at www.ijraset.com

RFID-Based Smart Attendance Management Systems Using IoT and Cloud Platforms

Kusum Kumari[1], Goutam Shaw[2], Debosmita Sukul[3], Anurima Majumdar[4], Antara Ghosal[5]
[1, 2, 3]*Undergraduate Student, Department of Electronics and Communication Engineering, Guru Nanak Institute of Technology, Kolkata – 700114, India*
[4, 5]*Assistant Professor, Department of Electronics and Communication Engineering, Guru Nanak Institute of Technology, Kolkata – 700114, India*

Abstract: ***Nowadays, attendance management is a very essential task in educational institutions, but traditional manual methods like registers or simple digital sheets are time-consuming, and the chances of getting errors increase. The common problems are proxy attendance, data loss, and record maintenance. There has been so much research done on automated attendance systems in the last few years to solve these problems. This review paper presents a detailed study on RFID-based attendance management systems using the Internet of Things (IoT) and cloud platforms. The paper analyses existing research works, which include RFID, biometric, QR code, and cloud-based attendance systems. The advantages, limitations, and challenges of different approaches are compared. Along with this, the areas of research gaps and future improvement are identified. This review paper gives a clear direction to understand current trends and future research of automated attendance systems.***
Keywords: RFID, Automated Attendance System, Internet of Things (IoT), Cloud Computing, Smart Education, Attendance Management

I. INTRODUCTION

Manually tracking the attendance of students in educational institutions as well as the attendance of employees in the workplace has been the tradition. The disadvantage associated with these systems has made them inadequate in the modern era of technology because the process is time-consuming, involves proxy attendance, and the analysis of the results obtained from the attendance taken rapidly is impossible. Manually recording the attendance of students results in loss of files, inaccuracy, and consumes up to 20% of the total time in large groups, while proxy punches and human errors affect the process.

In the current environment of rapid-paced learning and work, there is a need to find efficient and scalable solutions in institutions. Automation ensures that these requirements are met by making the process more efficient, reducing the costs of labour, and making the system more secure from fraud.

This paper therefore proposes an RFID-enabled smart attendance management system based on the use of IoT devices for real-time scanning of the tags as well as the acquisition of the data through the use of cloud technology for security reasons. Through the use of microcontrollers such as Arduino or ESP32 in conjunction with affordable RFID readers, academia and corporations.

II. BACKGROUND OF ATTENDENCE MANAGEMENT SYSTEMS

Attendance management has moved beyond traditional techniques, which include rolling calls or paper-based registration, which could result in proxy presence and waiting in line, to technological solutions. These early solutions relied on punch cards or barcode scanners, which had limitations in terms of precision and scale. There have been innovations in the use of biometric solutions, including fingerprint, facial recognition, since 2010, which entail cloud services.[1]

The use of RFID technology escalated because of contactless identification, overcoming the drawback of manual identification through fast scanning of tags without the need for line-of-sight scanning. Together with the use of IoT microcontrollers like Arduino or ESP32, the identification processes the information automatically and sends the details to the cloud hosting platforms such as Firebase for analysis and storage. According to literature, the use of RFID technology is much accurate compared to the traditional method, with an error reduction of up to 95% in institutions. [2]

A systematic review of other 21 papers published for IoT-RFID technology asserts that automation removes time-wasting and problems of proxying by eradicating such processes by adopting real-time tracking. In other surveys, RFID-IoT technology is surveyed to deliver better security and performance than paper technology. Recent studies have implemented facials hybrid models for verification processes using cloud scalability.[3]

©IJRASET: All Rights are Reserved

Although there are some advantages, there are also challenges in biometrics such as high startup costs and privacy issues. Emerging areas are the use of AI for analytics in biometric technology and multi-modal biometric systems for hybrid environments.[4]

III. OVERVIEW OF RFID TECHNOLOGY IN ATTENDENCE SYSTEMS

A. *RFID Basics*

Radio Frequency Identification (RFID) Automatic identification of tags attached to objects makes use of radio waves via electromagnetic fields, without physical contact or line-of-sight. The tags store a unique ID that can be read by RFID readers from a distance of up to several meters, using frequencies such as LF (125-134 kHz), HF (13.56 MHz), and UHF (860-960 MHz). In attendance systems, passive tags that are powered from the signal of the reader may be used for cost-effective, low-power deployment.[5]

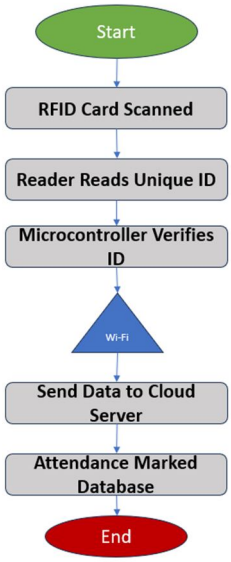


Fig. 1. Architecture of RFID-Based IoT Attendance Management System

B. *System Architecture*

Core components include RFID tags or student cards, readers such as MFRC522 modules, IoT microcontrollers like Arduino Uno, ESP32/ESP8266, and cloud backends like Firebase and AWS. Readers scan tags for their IDs and further relay data to the cloud database via Wi-Fi for real-time storage and verification. Process flow: proximity of tag generates a trigger to read → processing by microcontroller → IoT uploads in cloud → notification sent on app for attendance.[6]



Fig. 2. Flow Diagram of RFID-Based Attendance Process

C. *Attendance advantages*

RFID allows for no proxy fraud; it also cuts recording time by as much as 90% and allows analytics, such as absenteeism reports, which are usually not possible with either manual methods or barcodes. Accuracy in large-scale trials has been independently confirmed at 99%, and scalability for thousands of users. [7]

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

D. Reference studies

Studies Referred to A systematic review details RFID-IoT setups in 21 papers for resolving the problems brought about manually, such as time and sheet waste. Other implementation involves the use of ESP8266 nodes for real-time, low-cost monitoring. Unique ID-based employee tracking has been validated through IEEE work.[8]

IV. LITERATURE REVIEW

A. RFID-Based Attendance Systems

Radio Frequency Identification (RFID) technology has been widely explored by researchers to automate the attendance process, especially in educational institutions. Manual attendance systems like registers or roll calls are prone to errors, time inefficiencies, human errors, and proxy attendance.

K. Ishaq and S. Bibi analysed various RFID-based attendance models and concluded that RFID automation is more accurate and efficient in comparison with manual systems. [9]

In similar research, Ratna Kishor et al. proposed an RFID-based attendance system that can be used in school as well as college, emphasizing that RFID systems are not only useful for attendance but also for other applications like staff monitoring and assisting in payroll processes. [10]

Another implementation by Nivetha et al. demonstrated the effectiveness of using RFID with a microcontroller to store the attendance directly in the database, showing no need of manual entry and reduced administrative workload. [11]

Despite these advantages, researchers noted that the use of only RFID-based systems increases security issues, like proxy attendance through card exchange. So, many researchers suggest that RFID should be integrated as an additional verification method. [12]

B. IoT-Based Smart Attendance Systems

Much research has proposed smart attendance systems by combining RFID and IoT. In these systems, the RFID reader collects the data sent to the cloud server or database through the microcontroller.

K. Ishaq and S. Bibi proposed that through IoT integration, attendance systems become more scalable, flexible, and efficient, as data can be accessed and analysed in real time. [9]

Samaddar et al. designed an IoT & cloud-based smart attendance management system in which an RFID module and Arduino microcontroller are integrated with Amazon Web Services (AWS). Results show that this system is more accurate and efficient than a manual system, as it allows real-time tracking. [13]

Aprilia and Waluyo proposed an IoT- and RFID-based attendance system that uses NodeMCU and stores attendance data in a cloud database. [14]

Other than this, some systems use cloud services like Google Sheets to build lightweight and scalable attendance solutions so that data can be accessed from anywhere. [15]

C. Biometric-Based Attendance Systems

Sun et al. proposed a fingerprint- and face-recognition-based attendance system that uses both fingerprint and camera to get accurate attendance. The automation of attendance is possible without verifying biometric features manually, and proxy problems are significantly reduced. [16]

Li et al. developed a biometric attendance model in which 3D face recognition is used. This experiment shows that 3D face recognition can give identity authentication in complex lighting and face angle changes.[17]

Zang and Jain, in their paper, discussed advanced algorithms to improve fingerprint pattern extraction and match accuracy. Fingerprint biometric system is still a reliable identification method for attendance applications, but its sensor cost and hygiene concerns are also highlighted. [18]

More studies showed hybrid biometric methods (face + fingerprint) through which system robustness improved.

These approaches are more accurate than traditional roll-call attendance and card systems and provide secure results, but specialized hardware is required for deployment. [19]

D. QR Code and Mobile-Based Attendance Systems

Typical QR code attendance systems generate unique QR codes, which students scan with their smartphones. Systems store the data in a server or database, and attendance gets updated in real-time, and paper-based problems like time waste, manual errors, and misplaced records get reduced. [20]

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Perwitasari et al. implemented a QR code attendance system in a high school environment that shows this method significantly reduces attendance time and improves data accuracy, which makes the work easy for the teachers and administrators. [21]
Karnita Sumbaluwu et al. integrated a WhatsApp gateway in the QR code attendance system, which sends a notification to the parent's WhatsApp after an attendance update, which makes the monitoring and communication efficient. [22]
Through literature it shows that QR codes and mobile-based systems are faster, scalable, and relatively provide low-cost solutions in comparison with traditional attendance tracking. But these systems are dependent on internet and smartphone ownership, which can be optimized in future research. [23]

E. Cloud-Based Attendance Management Systems

Nwazor & Olusolape, in their research, developed a cloud-based attendance management and information system. In their study attendance records can be transferred securely to a cloud server and managed through a web interface so that data can be easily reviewed by teachers and admins. [24]
In a comprehensive literature survey, Ardebili et al. studied the role of cloud computing infrastructure, which shows that cloud technology provides a significant impact on employee attendance systems like data storage, remote reporting, and management effectiveness. [25]
Apart from this, research on IoT and cloud integration has also been done in which attendance capture through RFID devices is uploaded to cloud platforms, which makes real-time access, low-cost infrastructure, and enhanced record keeping possible. [26]
It is clear through literature that cloud-based attendance solutions make attendance data secure, scalable, and easily accessible, but the challenges like data privacy, security, and reliable internet connectivity need to be addressed in the future.

V. COMPARATIVE ANALYSIS OF EXISTING SYSTEMS

The comparison of different approaches of attendance systems is important to understand which system solves what problems and what challenges it faces. Table 1 represents a comparative overview in which the features and limitations of RFID-based, IoT-based, biometric, QR code/mobile, and cloud-based systems are done.

System Type	Accuracy	Security		Cost	Ease of Use	Real-Time Access	Major Limitation
RFID-Based	Medium	Medium		Low	High	Low	Proxy tags, manual DB
IoT-Based	High	Medium		Medium	High	High	Internet dependency
Biometric	Very High	Very High		High	Medium	Medium	Hardware cost & privacy
QR/Mobile	Medium	Medium		Low	High	High	Smartphone + internet
Cloud-Based	High	Medium	Medium	High	High	Security + connectivity	

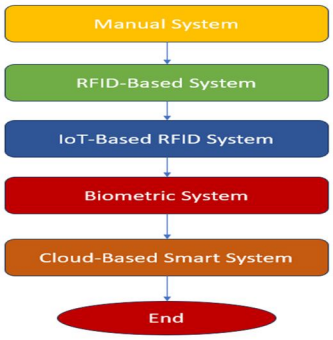


Fig. 3. Comparison of Different Attendance Management Approaches

RFID-Based Attendance Systems: RFID systems automate the attendance and save time by manual methods. Panchal et al. discusses RFID attendance systems that scan student entry in departments that store data in the database, which reduces error and manual effort. [27]

IoT-Based Smart Attendance Systems: IoT-Based Smart Attendance Systems: RFID systems became smart with IoT integration. Samaddar et al. proposed IoT and cloud-based smart attendance architecture in which an RFID reader collects the attendance and the AWS cloud tracks the attendance, which makes remote monitoring and reporting possible. [28]

Biometric Attendance Systems: Biometric methods like fingerprints or face recognition attendance eliminate proxy attendance and provide high accuracy. In research reviews, biometric systems are highlighted because of accuracy and reliability, but the noted sensor cost and privacy concerns are also mentioned. [29]

QR Code and Mobile Attendance Systems: QR Code and Mobile Attendance Systems: Studies show that it is of low cost and provides user-friendly solutions, which gives real-time updates, but it is dependent on smartphones and the internet. [30]

Cloud-Based Attendance Management Systems: In cloud-based attendance solutions, the attendance data is stored in a cloud server, which provides anywhere access and scalability. [31]

VI. RESEARCH GAPS AND LIMITATIONS IDENTIFIED

A. Research Gaps

1) Lack of Multi-Factor Authentication

Most of the time researchers use Radio Frequency Identification. They do not do a lot of research on Radio Frequency Identification systems that combine Radio Frequency Identification, with biometrics or facial recognition. These Radio Frequency Identification systems use Radio Frequency Identification and something else like biometrics or facial recognition together.[32]

2) Insufficient Focus on Data Privacy and Security

Most papers do not talk about encryption. They also do not talk about authentication. The papers do not talk about following the rules to protect data. Encryption is something that the papers just do not cover. The papers do not cover encryption well. They also do not cover authentication well. Encryption and authentication are important, for protecting data.[33]

3) Limited Large-Scale and Real-World Validation

Most of the research that exists is based on prototypes. The problem with the research is that the research has not been tested in institutions for a time. This is an issue with the existing research on this topic the existing research, on prototypes and the existing research.[34]

4) Absence of Standard Evaluation Benchmarks

There is no standardized framework to compare accuracy, efficiency, or scalability across RFID attendance systems.[35]

5) Poor Integration with Advanced Technologies

RFID systems and Artificial Intelligence are really interesting. You can do a lot of things with RFID systems and Artificial Intelligence. The thing is, people have not done a lot of research on using RFID systems with Artificial Intelligence or with cloud analytics or with machine learning to get some insights.[36]

We do not know a lot about what happens when you use RFID systems and Artificial Intelligence together. The same thing goes for using RFID systems with cloud analytics or machine learning to get insights from RFID systems.

B. Limitations

1) Proxy Attendance Possibility

People can actually swap their RFID cards. This is a deal. It is going to cause problems, with the attendance records. The main problem is the RFID cards. They can be exchanged with people. Then the attendance records for the RFID cards will not be right. The RFID cards are the issue here. They are the reason the attendance records for the RFID cards will be wrong.[37]

2) Hardware Dependency and Failure

The system works well if the RFID readers work properly. The RFID readers are really important. They need to work with the tags and the power supply. If the RFID readers and the tags and the power supply are good then the system will be fine.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

The RFID readers and the tags and the power supply have to be reliable for the system to work. The system really needs the RFID readers and the tags and the power supply to be working.[38]

3) Scalability Issues

The system does not work well when there are many users. It also does not work well when many scans are happening at the time. This makes the system slow down. The system performance is not good, in these situations because the computer has to do a lot of work to keep up with all the users and all the scans. The system has to work to keep up with many users and many scans, which is why the system performance is not good.[39]

4) Network and Infrastructure Dependence

Internet of Things based radio frequency identification systems need to be connected to the internet. This way the data, for Internet of Things based radio frequency identification systems will always be current.

Internet of Things based radio frequency identification systems will not work correctly without this internet connection. It is very important for Internet of Things based radio frequency identification systems to have this.[40]

5) High Deployment and Maintenance Cost

Initial setup cost, periodic maintenance, and replacement of RFID components increase operational expenses.[40]

VII. CHALLENGES IN AUTOMATED ATTENDANCE SYSTEMS

Automated attendance systems specially Internet of Things based systems but are very useful, but associated with many challenges. Every IoT based system's working and design are different that's why reliability become a common issue. Sometimes hardware devices, sensors, networks connectivity does not work properly which cause errors in attendance marking and users get frustrated. Software applications can be complicated which become difficult to understand and use for students, teachers, and administrators.

Apart from this data security and privacy is also a major concern. IoT-based attendance systems store sensitive personal information, which is important to protect from unauthorized access, cyber threats, and data misuse. If strong authentication, encryption, and security mechanisms are not properly implemented that it increases risk of data breaches which affect privacy directly. Therefore, it is important to give special focus to usability along with data security and privacy while designing automated systems.

VIII. FUTURE RESEARCH DIRECTIONS

We need to think about what we can do tomorrow. We have to consider our work and what it means for us. We need to improve the security features so that the security features are really helpful.



Fig. 4. Proposed Hybrid RFID and Face Recognition Attendance System

Convenience, alongside efforts for scalability and performance optimization and continuous user interface enhancements. The RFID-Based Attendance Management System can be integrated with College ERP systems for easy attendance tracking, academic performance analysis, and automated report generation; supplemented with a hybrid Face Recognition + RFID system to prevent proxy attendance by verifying student identity through AI-based recognition models; integrated with SMS/Email alerts to notify students, parents, and faculty about absenteeism or irregular attendance patterns; upgraded to a fully cloud-based system using platforms like Firebase, AWS, or Microsoft Azure for improved security, real-time analytics, and mobile dashboard access; extended to entry gates and access control to restrict unauthorized access to lecture halls, laboratories, hostels, and libraries, offering a comprehensive student movement monitoring solution; and supplemented with an in-built lecture scheduling feature to automatically assign classroom sessions based on faculty availability and student timetables, ensuring efficient academic management.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

IX. CONCLUSION

In this review paper, a detailed analysis of automated attendance management systems has been done, which mainly focuses on the study of RFID-based systems with IoT and cloud technology. It is cleared from the literature review.

Traditional manual attendance methods like roll call and registers are time-consuming, and the chances of proxy attendance, data loss, and human errors are higher. Automated systems like RFID, biometric, QR code, and cloud-based attendance solutions solve these problems to a better extent.

RFID-based attendance systems are low-cost and easy to use, and when integrated with IoT, real-time storage and real-time monitoring are possible. But using RFID only shows some limitations, like proxy attendance through card swapping, hardware dependency, internet requirements, and data security issues. It was also noticed in reviews that most of the research is limited to the prototype level, with very little real-world large-scale implementation.

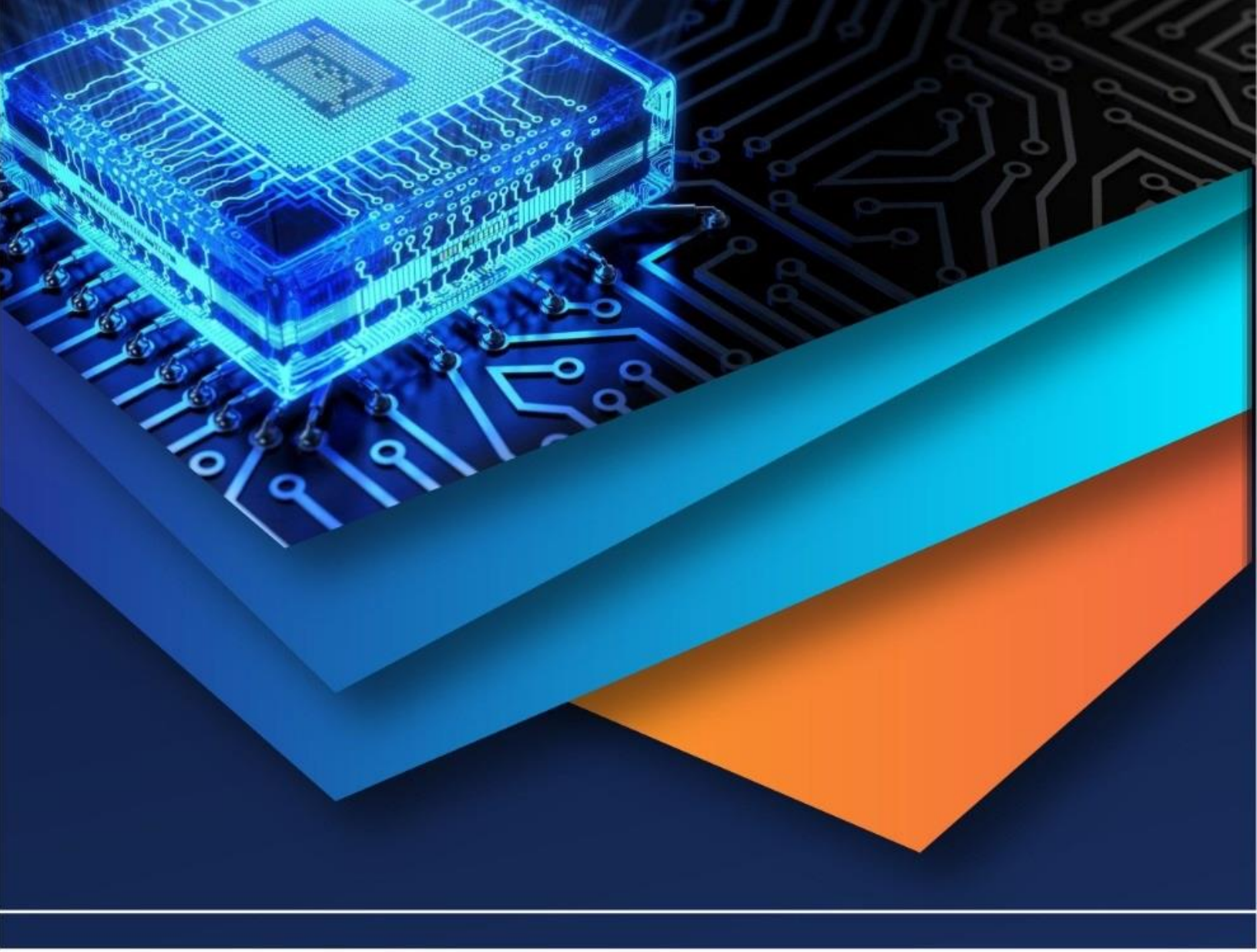
Future research should focus on hybrid systems like RFID, which should be used with face recognition or biometrics or better encryption techniques and AI-based analytics. These systems make attendance management more secure, scalable, and intelligent.

REFERENCES

[1] Nabeel Salih Ali, Ahmed Hazim Alhilali, Hasanein D. Rjeib, Haider Alsharqi, Basheer AI-Sadawi**,** "Automated attendance management systems: systematic literature review", International Journal of Technology Enhanced Learning, vol. 14, No. 1, 2022.
[2] Vaibhav Borkar, Parveen Vishkarma, Lochan Yadav, Vaibhav, "Smart Attendance System", IJCT, vol. 12, Issue 4, 2025.
[3] R. Izza Aprilia and A. F. Waluyo, "An Internet of Things (IoT)-Based Attendance System That Uses Radio Frequency Identification (RFID) Technology to Record Employee Attendance," International Journal of Engineering Business and Social Science, vol. 3, no. 2, 2025.
[4] Ankita Sarkar, Rohan Kumar Banerjee, "A Review on Fingerprint Based Biometric Attendance System", PREPARE@u,2020.
[5] Arka Rajak, Saptarshi Majumder, Sneha Kumari Shaw, Rittika Ghosh, Biswarup Neogi, "RFID-Based Smart Attendance System", IJCRT, vol. 12, Issue 5May, 2024.
[6] Arun Soni, Isha Tiwari, Ashutosh Gautam, Arihant Jain, "RFID Attendance Management System using ESP8266", IRJET, vol. 12, Issue: 04, Apr 2025.
[7] Prof. Ch. Ganapathy Reddy1, Sunkari Bala Harini2, Abbinenei Pranathi3, Perumalla Serene, Vancha Vidhisha5, "IoT Based RFID Attendance System", IJCRT, vol. 11, Issue 11, November 2023.
[8] Unnati Koppikar, Shobha Hiremath, Akshata Shiralkar, Aksha Rajoor, "IoT Based Smart Attendance Monitoring System using RFID", IEEE, July 2019.
[9] K. Ishaq and S. Bibi, "IoT Based Smart Attendance System Using RFID: A Systematic Literature Review", 2023.
[10] D. Ratna Kishor et al., "RFID-Powered IoT Attendance Management System for Schools and Offices, International Journal of Engineering Research and Science & Technology", 2025.
[11] R. Nivetha et al., "Student Attendance System using RFID, International Journal of Research in Engineering, Science and Management", vol. 3, no. 10, Oct. 2020.
[12] S. Kotresh et al., "Radio Frequency Identification of Attendance System", IJRASET, 2024.
[13] R. Samaddar, A. Ghosh, S. D. Sarkar, M. Das, A. Chakrabarty," IoT & Cloud-based Smart Attendance Management System using RFID", International Research Journal on Advanced Science Hub, 2023.
[14] A. R. I. Aprilia and A. F. Waluyo," An IoT-Based Attendance System Using RFID & ESP8266", International Journal of Engineering Business and Social Science, 2025.
[15] Dr. Ravi Bolimera et al., "Smart Attendance System Using RFID and Google Sheets", International Journal of Data Science and IoT Management System, 2025.
[16] X. Sun, J. Liu, and Y. Jia, "Biometric Attendance System Using Face and Fingerprint Recognition," IEEE Access, vol. 7, pp. 120123–120135, 2019.
[17] Y. Li, J. Li, and W. Zheng, "3D Face Recognition for Reliable Attendance Systems," Pattern Recognition Letters, vol. 131, pp. 487–493, 2020.
[18] D. Zhang and A. K. Jain, "Fingerprint Recognition: Advances and Challenges," Proceedings of the IEEE, vol. 85, no. 9, pp. 1390–1426, 1997.
[19] R. Saeed, A. A. Khan, and F. Ahmed, "Hybrid Biometric System for Secure Attendance Tracking," Journal of Universal Computer Science, vol. 26, no. 3, pp. 305–330, 2020.
[20] T. Sai Santhoshi, A. Triveni, A. D. P. Reddy, A. U. Ganesh, A. Shashanka, "QR Code Based Attendance System, International Journal of Information Technology and Computer Engineering", vol. 12, no. 1, 2024.
[21] I. D. Perwitasari, J. Hendrawan, N. A. Putri, Y. T. Bilqis, "QR Code Based Attendance System as an Innovation for High School Management", Journal of Informatics Management and Information Technology.
[22] H. F. Karnita Sumbaluwu, D. S. Angreni, M. Y. Pusadan, C. Lamasitudju, N. T. Lapatta, Implementation of QR Code in Student Attendance Information Based on WhatsApp Gateway, JIPI Journal, 2025.
[23] D. Rahmawati, F. W. Putro, A. Y. Wicaksono, A. Nurdin, "Student Attendance System using QR Codes, International Seminar on Information and Communication Technologies", 2019.
[24] Dr. Nkolika O. Nwazor & Mumuni M. Olusolape, "Cloud based Attendance Management and Information System, International Journal of Engineering Research & Technology", (IJERT), Vol. 10, Issue 09, 2021.
[25] Afshin Ardebili, Ahmad Latifian, Chya Fatah Aziz, Rima BinSaeed, S. M. Alizadeh & Evgeniy V. Kostyrin, A Comprehensive and Systematic Literature Review on Employee Attendance Management Systems Based on Cloud Computing, Journal of Management & Organization, 2023.
[26] Dr. Ravi Bolimera et al., "Smart Attendance System Using RFID and Google Sheets", International Journal of Data Science and IoT Management System, 2025.
[27] K. Panchal, P. Jingar, O. Vataliya & H. Rathod, "RFID Based Attendance System for Department," International Journal of Intelligent Systems and Applications in Engineering, 2024.

[28] R. Samaddar, A. Ghosh, S. D. Sarkar, M. Das & A. Chakrabarty, "IoT & Cloud-based Smart Attendance Management System using RFID," International Research Journal on Advanced Science Hub, 2023.
[29] Arduino-Based Fingerprint Attendance System Researchers, "Arduino-Based Fingerprint Attendance System: Enhancing Security and Record Integrity…" International Journal of Research and Innovation in Social Science, 2025.
[30] H. Elbehiery, "Enhancement of QR Code Student's Attendance Management System using GPS," IOSR Journal, 2025.
[31] N. O. Nwazor & M. M. Olusolape, "Cloud Based Attendance Management and Information System," IJERT, 2021.
[32] A.K. Jain, A. Ross, S. Prabhakar, "An introduction to biometric recognition", IEEE Xplore, vol.14, Issue 1, 2004.
[33] Klaus Finkenzeller, "RFID Handbook: Fundamentals and Applications in Contactless Smart Cards, Radio Frequency Identification and near-Field Communication", 2010.
[34] Nitin Chavan, Arnold James, Md Sameer Ahmed, Tipu Sultan, Prof. Pratik Shankar, "RFID-Based Attendance System with Camera Screen", IJRASET, ISSN: 2321-9653,2025
[35] E. O. Badmus, O. P. Odekunle, and D. O. Oyewobi, "Smart Fingerprint Biometric and RFID Time-Based Attendance Management System," European Journal of Electrical Engineering and Computer Science, 2021.
[36] Yu Cheng, Duo Wang, Pan Zhou, Tao Zhang, "Model Compression and Acceleration for Deep Neural Networks: The Principles, Progress, and Challenges", IEEE Xplore, vol. 35, Issue 1, 2018.
[37] A. R., S. Sushmitha, V. K., and B. Ananth, "Literature Survey on Attendance Monitoring and Access Control System," IARJSET.
[38] Carman Ka Man Lee, Tan Wil, Sern and Eng Wah Lee, "Design A Reverse Logistics Information System with RFID",
[39] Irfan Israil Sheikh, Dr. Pankaj B. Dhumane, "Challenges and Limitations of IoT Attendance Systems Without Blockchain Integration: A Comprehensive Analysis", IJSAT, vol. 16, Issue 2, April 2025.
[40] Roshan P. Singh, Luqman Khan, Joyson J. Pereira, Aashray S. Singh, Saurabh Maurya, "Cost Effective IoT-RFID Attendance Database Management System using ESP8266", IRJAEM, vol. 02, Issue 04, April 2024.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)