

# Literature Survey on Attendance monitoring and access control system

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**Abstract:** Many organizations and institutions waste a lot of time and effort on a daily basis recording of attendance and providing access to each individual. The use of an attendance tracking and access control system is vital in providing high security to places like educational institutions. Physical access control system is a key for the protection of infrastructure systems, where timely access, maintenance of attendance and the security of sensitive areas are essential.

This project deals with few effective strategies. The proposed work will recommend an appropriate, accessible, dependable, efficient, and cost-effective attendance system as well as access control system. The proposed idea consists of two different methods for attendance monitoring and access control based on the level of security. For the applications with primary level of security, RFID tags are used and for the applications with intermediate level of security, fingerprint based biometric is used. RFID tags are used to provide authenticated access and timely database storage of the user details who access it. Biometric is mainly used for attendance monitoring of students and the data is maintained using IoT. One can look into user access and attendance details from any place at any time.

**Keywords:** Access control, Attendance monitoring, Biometric, IoT, RFID tags.

## INTRODUCTION

With the continuous growth of the digital world, we are becoming increasingly dependent on a huge range of digital applications. The main concern in many instances is that access to these applications should be secure and authenticated. Monitoring attendance and granting access to authorized users is very important in educational institutions and there is an immense increase in the development of such systems.

It is necessary that only authorized users have access to a certain location or area to which they are granted access. Because of the linked issues of impersonation, spoofing, proxy, phishing, and information theft, accurate person-verification and authentication techniques are becoming increasingly critical, in addition to access attendance monitoring.

Biometric technology, which uses fingerprint verification of an individual, is the most practical and reliable technology for big groups of employees or pupils for recording attendance and granting access. Fingerprint verification is the highly accepted, recognized and emerging biometric technology followed by RFID cards, which is another promising technology prioritized after biometrics.

## LITERATURE SURVEY

### **In [1] IOT Based Cloud Integrated Smart Classroom and Sustainable Campus [2021]**

This paper proposed an idea of recording attendance using face recognition technique and storing the data using IoT. In this method arduino uno is used as a microcontroller. Cameras are used to detect the face of an individual or group of pupils. Based on the information that is stored in prior, the faces are recognized and the attendance is recorded and the database is obtained. This method provides better results in short span of time but fails to produce most accurate results. There are some chances of some errors.

### **In [2] Attendance Management System through Fingerprint [2018]**

This paper proposed an idea of recording attendance using biometrics (fingerprint) for tracking attendance and storing the data using LAN. This paper provides a brief description about the usage, accessibility, accuracy, affordability and acceptance of biometric (fingerprint verification) system. In this system the data is fetched from the individual in the form of fingerprint and then it is verified with the data that was stored in prior and marks the attendance of an individual. Finally the database is also obtained. This method provides high accuracy results and consumes less time but it is not cost-effective.

**In [3] Efficient access control system based on aesthetic QR code [2018]**

The idea of granting access based on QR code detection is proposed. In this method the QR code will be checked and if it matches with the stored data then the access is provided for the user or else the access will be denied. This method is well suitable for residential purpose and provides better safety and security. In this method the database is not collected and it is less secure than other modern methods.

**In [4] Student attendance system in classroom using face recognition technique [2016]**

Here this paper gives an idea of recording attendance using face recognition technique. Also this paper provides a detailed description about the results and its analysis obtained from this method. Faces are recognized using cameras and the verification is done. Then the attendance is marked. This method is suitable only for moderate number of people and the results obtained are nearly 87% accurate. This method fails to recognize people in bulk quantity and causes error in results.

**In [5] Attendance monitoring and management using QR code based sensing with cloud based Processing [2019]**

In this paper, attendance monitoring and management using QR Code is introduced which is based on sensing with cloud based processing. This proposed technique solves the problem of deceptive attendance and the trouble of faculties in uploading daily attendance on ERP. It can make the users' attendances more easily and effectively without any hassle. Use of this technique gives less accuracy compared to biometric.

**In [6] Student Attendance Management System [2018]**

The system is a Web-based application developed for daily student attendance in departments within the university. It facilitates access to the attendance of a particular student in a particular class. This system will also help in generating reports and evaluating the attendance eligibility of a student. The system is not only improving the work efficiency, students' study and development, but also can save human and material resources.

**In [7] Web-based laboratory attendance system by integrating RFID-ARDUINO technology [2018]**

The proposed system aims to manage student's attendance recording and provides the capabilities of tracking student absentee as well, supporting information services include students grading marks, daily timetable, lectures time and classroom numbers, and other student-related instructions provided by faculty department staff. Based on the results, the proposed attendance and information system is time-effective and it reduces the documentation efforts as well as, it does not have any power consumption. Besides, students attendance RFID based systems

**In [8] Biometric Attendance System using Iris Recognition[2016]**

This paper proposes an automated attendance management system. This system is based on iris detection and recognition algorithms. It will detect the student automatically when he enters in the class room and attendance is marked by recognizing the student. It can improve the reliability of the attendance records and avoid fraudulent issues that happen when you using a register manually. This system is cost effective.

**In [9]Bluetooth Based Attendance Management[2013]**

The instructors in universities and colleges take the attendance manually either by calling out individual's name or by passing around an attendance sheet for student's signature to confirm his/her presence. Using these methods is both cumbersome and time-consuming. Therefore a method of taking attendance using instructor's mobile telephone has been presented in this paper which is paperless, quick, and accurate. An application software installed in the instructor's mobile telephone enables it to query students' mobile telephone via Bluetooth connection and, through transfer of students' mobile telephones' Media Access Control (MAC) addresses to the instructor's mobile telephone, presence of the student can be confirmed.

**In[10]Attendance Monitoring System of Students Based on Biometric and GPS Tracking System[2017]**

This paper is a study of a fingerprint recognition system based on minutiae based fingerprint algorithms used in various techniques. This line of track mainly involves extraction of minutiae points from the model fingerprint images and fingerprint matching based on the number of minutiae pairings among to fingerprints. This paper also provides the design method of fingerprint based student attendance with help of GSM. This system ignores the requirement for stationary materials and personnel for keeping of records. The main objective of this project is to develop an embedded system, which is used for security applications.

**METHDOLOGY**

Monitoring attendance and granting access to authorized users is very important in places like educational institutions. It is necessary that only authorized users have access to a certain location or area to which they are granted access.

Because of the linked issues of impersonation, spoofing, proxy, phishing, and information theft, providing access and tracking the attendance to authorized user is challenging.

The problems faced are:

- No proper accessing methodology for authorized users as well as visitors.
- No proper monitoring of attendance.

The overall system design consists of following phases:

- Data collection from the user in the form of RFID card or biometric.
- The data is verified using the prior stored data and attendance is tracked and stored using IoT.
- Accordingly access is given to the authorized user and attendance is monitored. Access is denied for unauthorized users.
- To provide access for visitors based on pass-code verification method.

### CONCLUSION

This project can be used for various applications as listed below:

- It can be implemented in educational institutions like schools, colleges and hostels.
- It can be used in offices and workplaces.
- It can also be used in industrial security purpose.
- It can be implemented in banks and malls.
- It can be used for highly restricted areas.

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