SMART ATTENDANCE CAPTURING SYSTEM

Sudha.M[1] ,Abhirami.B[2], Janani.R[3], Mohammed Muzakeer.M[4], Vishal.D[51]Assistant Professor/IT,[2,3,4,5] UG Scholar/IT

Karpagam Institute Of Technology,Coimbatore

ABSTRACT

Organisations can benefit greatly from an attendance system. It enables a company to completely regulate every employee's working hours. By decreasing overpayments—which are frequently brought about by transcription error, interpretation error, and purposeful error—it helps keep labour expenses under control. The staff required to maintain manual procedures is also removed. Although following labour laws can be challenging, a time and attendance system is crucial for ensuring that laws requiring proof of presence are followed. Every organisation has a precise location that the GPS pinpoints. A GPS device (such as a mobile phone, GPS watch, or other GPS-enabled device, etc.) can be used to locate an employee. It should be considered that an employee is in the office if their approximate locations are the same as the location of their employer. In parallel, face recognition is used to confirm a user's identification.In this work, a novel attendance system based on location is developed and location is used as an evidence of attendance.

KEYWORDS: Access control, Attendance monitoring, Biometric, IoT, RFID tags,GPS.

I.INTRODUCTION

An activity that takes a lot of time in any business or institution is keeping track of the staff. For instance, taking attendance eats up the employee's time as well as the workday. Users' and workers' attendance has been monitored and recorded on a regular basis using a variety of human and automated tracking methodologies and techniques. It's nice to know that studies have been done to address this issue; researchers have attempted to benefit from the different technologies that have been made accessible so far, including biometric- related systems, which use information about a person to identify them. To work properly, biometric technologies need precise data on distinguishing biological characteristics.A biometric system is connected to the input of data into algorithms for a certain output, often connected to the identification of users or other personnel. The numerous biometric technologies that are available, which are the most effective but also demanding solutions to create a system fully automated, include face, GPS, Barcode, QR Code, fingerprint identification and location confirmation is used. For instance, location will increase the accuracy of recording an employee's attendance. Only users who have been allowed access must be able to access a certain location or area. Accurate person-verification and authentication approaches, in addition to access attendance monitoring, are becoming more and more important because of the related challenges of impersonation, spoofing, proxy, phishing, and information theft. The conclusion of the study also provides a brief summary of the many different types of attendance management systems, their importance, and how they might be used with current technology to address contemporary difficulties.

II. RELATED WORKS

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 aurdino 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.

III. PROPOSED WORK

A. System Overview

The system replaces the traditional Identification Card by a mobile application. The application was installed on users mobile. A unique user ID and location (GPS coordinate) was associated with the application. A time and attendance software was installed on workstation for process the data receive from user mobile and store the information (time, entry and leaving) to the Database.

B. System Architecture

This system uses the four hardware and software elements listed below. The smartphone has a GPS receiver built in, which can pick up radio signals from GPS satellites. The programme can do geo- locationing to ascertain the user's present location using the Google Maps API (programme Programming Interface), which is employed here to determine a user's meaningful personal location. After that, the app sends the user ID and location to time and attendance management software for additional processing. Data is stored in a database after being processed by management software.

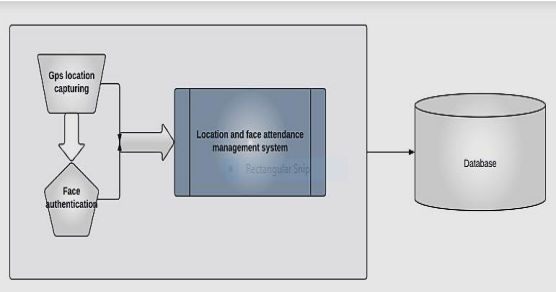

Fig 1. Basic flow diagram

C. Flow of Operation

1) Determine the location using GPS

2)Check the location with pre-stored (office/workspace) location

3) Verify the face of an user

3) Encrypts user ID , Location and face

4) Send information to the system

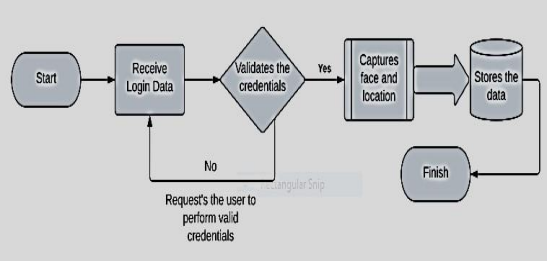

Fig 2.Flow of operation

The application uses GPS to determine the position first. The programme then creates a data packet including the user ID and location, encrypts it, and sends it to the management system after checking the location against a previously saved (office/workspace) location.Additionally, the face of a user is confirmed by matching it to the user data that has already been stored.

The flows of operation of the management softwareare:-

1) Receive data from Mobile application

2) Decrypts the data

3) Retrieve user ID from Database

4) User Identification

5) Store the information.

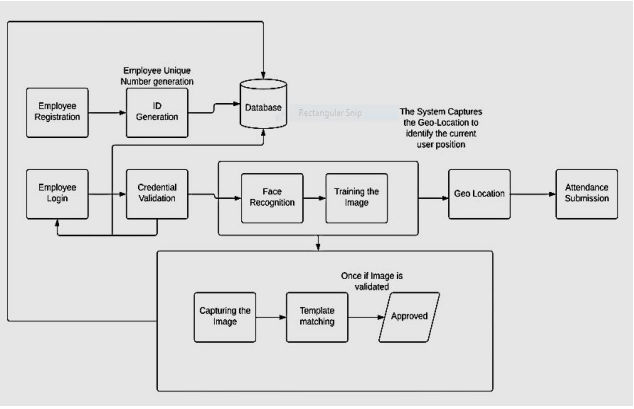

Fig 3.Blockdiagram

IV.IMPLEMENTATION

The proposed model is incomplete due to the short time frame. Android-powered devices with GPS capabilities are required, as with any other devices used as user identification tools. A time and attendance management system that communicates with user devices is necessary. In order to store data, the software is also connected to a database. The development of time and attendance management software can be done using a variety of tools and techniques, including.Net, Java, PHP, and others. To create the Android (Mobile) application, Eclipse IDE with Android Development Tools will be utilised.

VI.FUTURESCOPE

An evolving system is the attendance management system.The accuracy of GPS and facial recognition, according to our paper's proposal, make the procedure of taking attendance secure and exacting.Any of the available biometric scanner devices can be used to extend this technology. The administrator will have information about the workforce that is almost entirely accurate in this way. Our system can manage student data as well as a wider database for operation and handling.

V.CONCLUSION

This study introduces a location-based attendance system that uses face recognition as the key to attendance. A GPS device can be used to determine the coordinates of a company and a worker; if the coordinates match, the worker is present in the company. We are currently working on a solution for Android-capable smartphones and tablets. We will eventually expand our technology to support iPhones and other mobile phones.

VII.REFERENCES

[1] Time and Attendance. [Online]. Available: http://www.en.wikipedia.org [2] A Short Course on Fundamentals of Touch Technologies and Applications, Geoff Walker Principal Analyst IMS Research, 2010. [3] Automated Time and Attendance System. [Online]. Available: http://www.gatekeepersolutions.com [4] C. Y. Lin and M. T. Hung, A Location-Based Personal Task Reminder for Mobile Users, Springer Verlag, London, 2013. [5] O. Shoewu, O. M. Olaniyi, and A. Lawson. ―Embedded computer-Based lecture attendance management system,‖ African Journal of Computing and ICT, vol. 4, no. 3, pp. 27–36, 2011. [6] K. Cheng, L. Xiang, T. Hirota, and K. Ushijimaa, ―Effective teaching for large classes with rental PCs by web system WTS,‖ in Proc. Data Engineering Workshop (DEWS2005), 1D – d3 (in Japanese), 2005. [7] O. Shoewu, and O. Badejo, ―Radio frequency identification technology: Development, application and security Issues,‖ Pacific Journal of Science and Technology, vol. 7, no. 2, pp. 144-152, 2006. [8] S. Pankanti, S. Prabhakar, and A. K. Jain, ―On the individuality of fingerprints,‖ IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 24, no. 8, 2002.