

# Biometric Authentication Based Attendance System using GPS for Smart Phone

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**Abstract:-** Attendance System is an attendance computation arrangement of a representative. The presently accessible unique mark innovation Attendance system has a few disadvantages.

Attendance system which as of now exists still has shortcomings. The first is about the long line before the attendance machine at the season of coming to work and leaving from work. The second one is about tricking; representative can ask her/his companion to do participation prepare. The third, for the most part participation framework has not been associated with the installment framework in HR Programming or in the fund division. The forward disservice is identified with Employees who work outside the workplace can't do participation prepare. An Attendance Monitoring System (AMS) in light of and GPS utilizing a cell phone incorporated with installment framework that will wipe out all the above issues said. There won't be a line for the participation before participation machine. Companions can't put immediately participation. For this proposed system we are foreseeing that all the PDAs will have unique mark examined in next three years.

**Keywords:** GPS, AMS, Android Application, Fingerprint.

## 1. INTRODUCTION

Presenting a attendance system utilizing fingerprint scanner and GPS on cell phone or cell phones [1]. The current fingerprint attendance system is a biometric participation calculation that utilizations finger impression identification technique. This biometric fingerprint attendance system was presented and utilized since 1997. Designers and makers of this innovation understand that each human have distinctive fingerprint gesture. Truth be told, even indistinguishable twins have diverse state of fingerprints. This is incorporating the fingerprint into attendance machine. In any case, they don't know about the downside of long line before machine.

Attendance system has been known since antiquated time. In the first place, attendance system utilizing just paper and performed physically by calling the name of current name recorded and set apart as present or not present alongside the notes.

The first attendance machine was exceptionally basic, the representative simply emboldening's the attendance paper or called timesheet into the machine, and the time will be imprinted on the timesheet. Essentially, this attendance machine comprises of a manual card opening or gap to embed the timesheet workers and simple clock demonstrating the present time. The time when the

workers embed the card into opening is the thing that will be imprinted on the timesheet. This machine additionally has a few disadvantages. The second era of attendance system is advanced attendance machine which is the attendance machine that uses a computerized strategy to record representative attendance and this framework was presented in 1970.

All in all, advanced attendance machine has a couple catches comprising of numbers and letter sets and computerized display that demonstrate the time or the content to be shown. Alongside the machine, there are number and letters in order keys to enable workers to enter a secret key. Conning workers are still liable to happen in the utilization of computerized attendance machine since they may impart the PIN to companion to do participation.

## 2. RELATEDWORK

In this segment investigation of relative advancement has been finished. For instance, attendance Management utilizes username and passwords for verification. The administrator confirms the client in light of username, secret word and individual data. On the off chance that client overlooks the secret keys; he/she won't have the capacity to get the framework [2]. Some attendance framework is depending on RFID technology [4, 9]. RFID based systems have the disadvantages that student convey to carry RFID cards. Management also has to carry RFID detectors. Geolocation [5] is the first way to provide location based service. The widely used location technologies are like Global Positioning System (GPS) [1], Wi-Fi [7], Cellular Network [4] and Radio Frequency Identification (RFID). Engineers worked on these technologies for improving the also be improved by combining two or more location technologies.

## 3. METHODOLOGY

User authentication is one of the major factors in the proposed system. Every student is authenticated based on his/her unique user identification number. This unique identification number is the number which is given by the college. The identification number along with other information is also saved in the student device.

At first student has to install the required system APK files into their android device. Mobile location service has to be on when the system was running. If mobile location service is off then the whole process will not go further. Mobile location service helps to trace the student

location. When the student enters the college area, android device of the student is automatically connected to the office internet and a message is sent to the office sever with the student id and local time of the device which is counted as login time of that student. When

student leaves the office area, a message is sent to the college server with student id and local time which is counted as logout time. Figure 1 depicts the overall methodology of our proposed system.

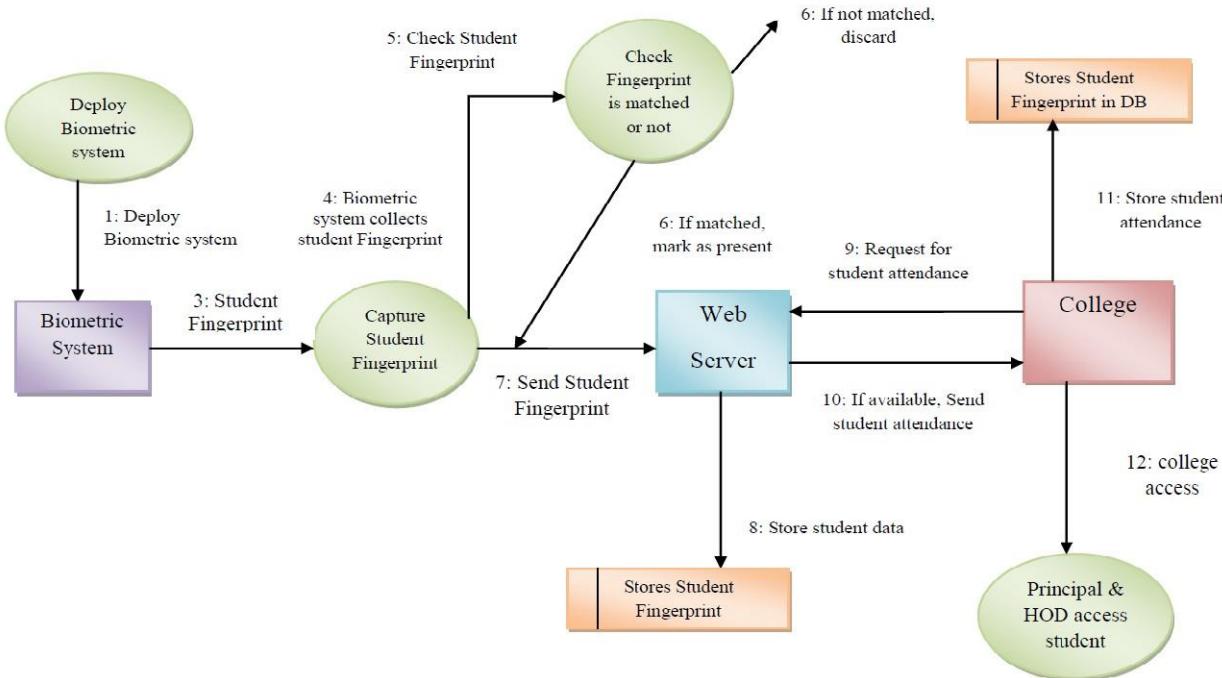


Fig 1: Flow of operation for the proposed system

#### 4. PROPOSED ATTENDANCE SYSTEM OVERVIEW AND DESIGN

##### 4.1. System Overview:

The proposed systems provide a solution to manual attendance taking problem. This system is Biometric authentication based attendance system using gps for smart phone a based on the concept of web services which is implemented as an android mobile application. The student has to install the respective APK files developed for them on their android devices. At first it is important to save the college coordinates by entering the latitude, longitude and radius of area. Student has to save the IP (internet protocol) address of the office internet. At the same time one student can save their information through the info menus of the App. This biometric attendance system using geo-tag locates your position and logs your login and logout time. As the employee enters his workplace area, the system connects to the office internet and sends the student id and local time to the server. Then the server gets the local time and stores the information in a database. To run the whole system accurately it is important that both the student device and college server is in the same internet connection.

##### 4.2. System Design

The Biometric authentication based attendance system using gps for smart phone is a client-server approach and follows specific hardware and software architecture. Integrating the hardware and software is the main challenge here and the hardware and software works together.

###### 4.2.1 SOFTWARE ARCHITECTURE

The software architecture consists of: the database, the application program and the server.

- **Database:** The database consists of a number of tables, which stores records. We used apache derby database which is easy, fast and efficient and can store a large number of records and requires a little configuration.
- **Application Program:** The application program is developed with Android programming language using Eclipse framework. The application program provides user interface to both the student and college server. Programming in Android is simple, user friendly and android offers an excellent data connectivity.
- **Server:** The server is deployed on the personal computer using apache-Tomcat7. Tomcat7 is free, robust and easy to deploy.
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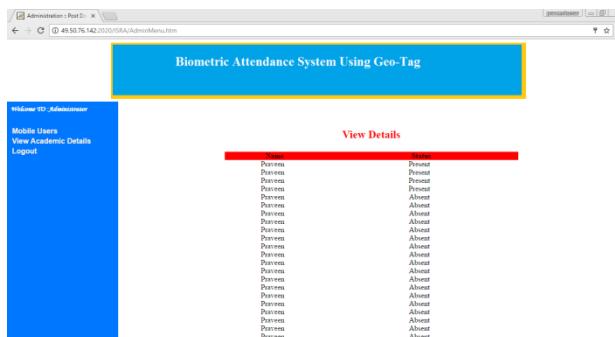
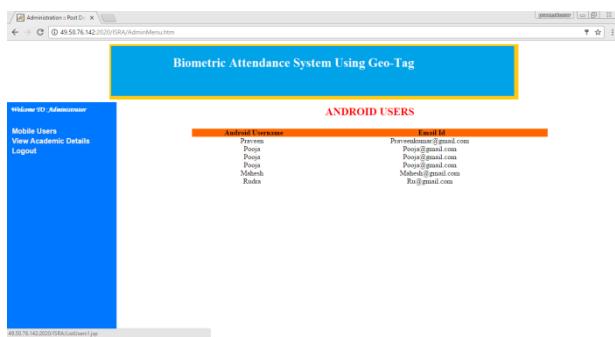
#### 4.2.2 HARDWARE ARCHITECTURE

The basic requirement of the Biometric authentication based attendance system using gps for smart phone is an android device, which will run the application, with the help of which the student will mark their attendance and take their login, logout time automatically without any hassle. The other requirement is a personal computer on the server side, which will store the database.

## 5. RESULT AND DISCUSSION

Based on attempts in respondents, found the matching percentage of respondents compare to my finger print shown in below table. The table showed that our proposed matching finger algorithm can be used in our system absence because all the result is less than 50%.

Table: Matching fingerprint



As shown in figure, there are several menus on the main screen applications, such as About Application and Registration, which is classified as a menu bar.

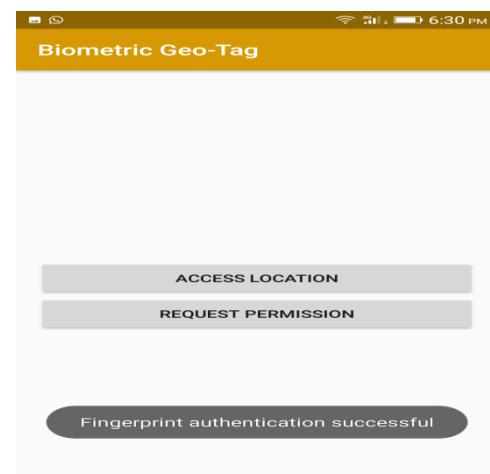
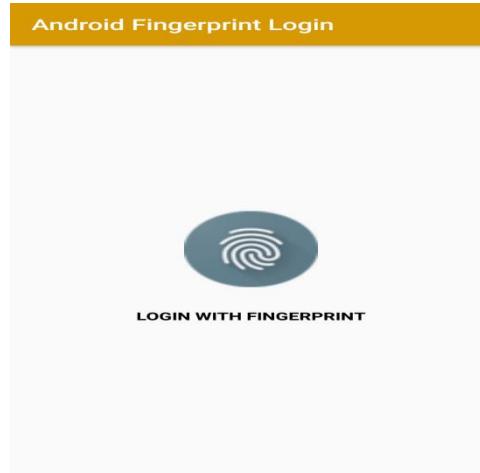
When users want to use this application, firstly the device and user data have to be registered in the employee payroll application on the admin side, if the user has not registered, it can choose the registration menu form as shown in figure.

The user must first active the finger print scanner on their devices or if the devices do not have finger print scanner, they can connect to the external finger print scanner. Then put his finger over the fingerprint sensor and press a button that will send the data capture device and a fingerprint scan results to the server, the server will check if the device has been previously registered or not and send the response returns the device

## 6. CONCLUSION

- Fingerprint as one way to do identification employee and can be collaborated with GPS and mobile technologies to create an accurate attendance applications.
- Method comparison/matching fingerprint can still be optimized by using image segmentation on the fingerprint. Then transform pixels into a binary array and compare based binary so that it can expedite and accelerate matching process. Some of the methods that can be removed to optimize the matching time are the search direction and method of detecting fingerprint ridge detail/minute as fingerprint ridge ending and bifurcation.
- Our proposed method can solved the issues that came up in conventional absence or attendance system such as the queue in front of the finger scanner, the absence data are not integrated with Human Resources Systems, the employees who work outside the office that cannot do attendance, and cheating (The employee asking friends to fill the attendance his/her friend)
- The proposed absence system also can save the cost to provide and maintain the finger print scanner because the employee will use their own devices to do the attendance.

Fig. screen to do fingerprint



## 7. ACKNOWLEDGMENT

This paper is made possible through the help and support from everyone, including: parents, teachers, family, and friends. Especially, please allow us to dedicate our acknowledgment to Naveen Mirajkar, Associate Professor SDM College of Engineering & Technology, Dharwad for his most support and encouragement.

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