AUTOMATED PAYROLL USING GPS TRACKING AND IMAGE CAPTURE

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Abstract — The main theme of this paper is tracking the employee using an android device and calculating payroll for the working hours he worked. From olden days there are many methods for evaluating the attendance, for example, paper and pen method in this method either the supervisor will take the attendance or under his control, the workers used to sing with their names, but this process had many backlogs and many proxies can be generated. Later on the technology developed to great extent in the similar way the way of taking attendance also developed a lot for example in current days they are using RFID chips, biometric devices, etc. but each of the methods is having a same or different backlogs to eradicate the disadvantages and for accurate result we are introducing attendance method using GPS tracking. Now a day’s people or any organization wants their work to be completed fast without taking any time one of the examples payroll allotment so we also include a module for paying payroll according to the number of days that they worked. This project contains two phases one is the mobile phase i.e. android app for field workers for tracking their position for every 5 minutes and there is a web phase where the HR and admin will monitor the employees and for security purpose they are allotted with the employee identification number and password and in the web phase the tracking is done under the control of HR and admin.

Keywords — GPS tracking, image capture, automated payroll, employee, HR, admin, SQL database.

1. INTRODUCTION

Now a day, monitoring, tracking employees had became a major task for the private and for public institutions and companies. From olden days there are many methods for evaluating the attendance, one of the oldest one is pen and
paper system there are many drawbacks and disadvantages mainly eradicating the attendance proxy is the main theme of the project to eradicate the proxy attendance and taking attendance in that way takes more time. Day by day there are many changes in rapid technology as the technology changes the way and systems of taking attendance also gradually changed some of the processes are using RFID sensors, electronic tags, biometric devices like eye scanning, face scanning. All these processes have different issues to eradicate all the issues and disadvantages we introduced software called automated payroll with GPS tracking and image capture. It will track the employee for every 5 minutes the geographical coordinates and help to calculate the payment details.

![Fig.1.1 GPS tracking and Image capture](image)

1.1 RELATED WORK

Sonal in 2016 developed a project called Employee Tracking and Monitoring System with Android Device. In this paper they provided different security system on same android phone i.e. they provide different logins and passwords to different employees respectively. They used dynamic centralized SQL database utility which retrieves data or information from the database. They provide a mode whenever he/she enters into the company surroundings. Through the android mobile all information about the workers mobile like outgoing call data, SMS, incoming call data, missed call data, employee geographical location coordinates, data usage, unauthorized call data and web browser data, browsing details are tracked. The necessary conditions are that employees should have an android phone where as Manager Functions are also tracked in web phase.

Aparna in 2013 developed software called Smartphone Monitoring System; this is software helps to monitor the employee's office mobile phone and data used by the user. All incoming call details, outgoing call details, text details, emails, images and multimedia messages can be seen and disturbed by the managers and are saved in a centralized SQL database, the manager can also monitor where their employees are, present in the given surroundings or not if anyone is getting out of his given area they receive a text or SMS’s or messages, the manager can track whether the employees are receiving texts from unapproved numbers or calls or messages from by the unauthorized people. This software helps managers to monitor their employees with the help of mobile phones.

Priti in 2015 developed software called monitoring employee’s smart phone using android application. This software uses android based mobile phones for the software to be executed. The mobile phone with the worker should have android device, and the managers does not have any mobile device and also he will have web inter phase to view the activities of the field workers as the manager is going will receive alert messages from the worker through SMS only. Alert SMS are stored in the database server like the details of incoming call, multimedia messages and text and the location coordinates update of their Employee and their attendance. The manager can log in to the server and see the view of their Employee’s mobile usage.

Shermin in 2015 developed a Smart, Location Based Time and Attendance Tracking System Using Android Application. This software is proposed for tracking employees using mobile GPS location rather than the biometrics or any sensors. Using the android phone, the GPS location, the employee geographical location is tracked. GPS location is tracked in our mobile, and it is tracked in the personalized computer by the admin and the HR.

Nirmal in 2016 developed a project called Employee Surveillance System Using Android Smart Phone, Their system is contains of employee tracking and GPS location Tracking System using Android device. All the activities and functions of the Employee will be tracked and viewed using this system. The system works on 3G/4G network or WIFI network communication between the ends. All the functions of a field worker on his android phone and personal computer, like outgoing calls, data usage and all incoming and web browsing, secured...
document changing and unauthorized transfer of company’s information like a blueprint, stocks, projects, contacts, etc. will be tracked by the admin, HR or manager. Not only this, the location of the employee will be tracked using GPS location. Therefore, the organization or institution will be tracked that will stop the unauthorized usage of its resource files by the workers during working hours. The system was beneficial for the growth of the company and allows the HR and admin to check the working activities of the employees.

Ashwini in 2015 developed software called Employee Monitoring System Using Android Smartphone. In this software, all the functions like incoming call data, missed call data, outgoing call data, SMS history, web history, data usage, unauthorized call list/website list are saved in the centralized database server. The manager can monitor the history by logging into the SQL server. The manager can also track employee’s geographical location through GPS. If the employees are going outside of the field surroundings then, the manager gets an alert message in SMS format. They analyzed the employee behavior, by checking the unauthorized call data, messages data whether it is good or average or loyal or bad. An Android device is given to the user. The manager doesn’t need the Android mobile instead of that he is given with a web inter phase. This software is helpful to the manager to view the activities which are done by the employee.

2. SYSTEM OVERVIEW:

This software automated payroll using GPS tracking and image capture mainly consists of two phases one is application phase and another one is web phase. First one the application part, the APK is installed in the employee’s Android mobile and the employee will in by the given credentials i.e. username and password, after logging in the application will track the geographical coordinates and send to the main server for providing more security we are capturing the person’s image and sends to the server there in the server image will be verified and the account will be verified. During the logging of time also, it will track the geographical coordinates and sends to the server and finally for security purpose again an image will be captured and send to the server. While the web inter phase it tracks the employee location coordinates. There are many features like adding and deleting an employee, changing the password of the employee, we can calculate the working days and based on that we can calculate the payroll of the employee.

2.1 System Design:

The automated payroll using GPS location tracking and image capture is client-server based software and follows unique hardware and software architecture. Combining both the hardware and software is the main and important part and the hardware and software work together. The whole software is divided into two parts.

1) Application for android mobile
2) Application for personal computer.

2.2 Software Architecture:

The software architecture contains the centralized SQL database, the application program, and the server.

- Database: The database contains a large number of data tables which store data of the worker such as employee id, employee name, geographical coordinates, images, working hours and salary details. We use the SQL database which is easy, fast and efficient and can store the records and requires a little configuration.

- Android Application: The android application program is developed with Android language using the Eclipse framework. The application program provides the UI (User Interface) to both the employees, hr and admin office server. Programming using Android language is simple, user-friendly and Android offers a good data connectivity.

- Web phase application: The web phase application is developed and deployed on the personalized computer using Apache-Tomcat 7. Tomcat 7 is free, easily deployable and robust.
2.3 Hardware Architecture:

The basic requirement of the automated payroll using GPS location tracking and image capture system is an Android device, which will run the Android application, with which the employees will log in using their credentials and sends the data for every 5 minutes, mark their attendance and take their login, logout time automatically without any inconvenience. The other basic requirement is computed on the database, which will store the data in the data tables. Using this web phase, the hr and admin able to monitor the employee presents the given location and tells the payroll details of the employee.

3. Methodology:

Employee security and authentication are one among the factors in the current system. Every employee is secured based on their unique user employee identification number. This unique employee identification number is the number which is given in the office to secure their account. The employee identification number along with other information such as location coordinates; images are also saved in the employee’s Android device. Firstly the employee has to install the required APK files on their Android mobile. Login by his/her login credentials and takes an image for security purpose. The GPS mobile location service has to be turned on when the system was running for tracking the location. If mobile location service is off then the process won’t go to further process and a SMS is sent to turn on the GPS location. The GPS mobile location service helps to track the employee longitude and latitude positions. When the employee enters the working area, the Android device of the employee it should be referred to through the internet access or any WIFI and a SMS is sent to the server which is present in the office, with the employee identification number and local time of the android device which is referred as login time of that employee. When an employee leaves the working place, a SMS is sent to the office computer with employee id and local time which is referred as logout time and for security purpose, an image is taken to secure the account.
4. **CONCLUSION**

we are introducing automated payroll using GPS location tracking and image capture which uses to view an employee by using the employee’s geographical location and locate the longitude and latitude positions and we can view the path the way he travelled throughout the day and calculates the employee salary, it eradicates the proxy attendances and fake salary calculations.

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