

MONITORING ANDROID MOBILES IN AN INDUSTRY

¹S.Pothumani, ²Mrs.C.Anuradha

^{1,2}Assistant Professor, Department of CSE,

BIST,BIHER,Bharath University

¹pothumani@gmail.com

Abstract: The dynamic location of mobile can be tracked by mobile tracking mechanism. Practically, a tracking component is needed to track mobile assets. In this paper a new solution named context-aware personalized route learning is discussed. The centralized server contains all details of mobiles like messages, log entry of calls and location of user. Suppose an organization supplies mobile asset to their employees for company purpose, the manager can able to see all activities of the mobile. The manager can able to read message box, verify log entry and calls of unapproved numbers. The software is implemented in Android based mobiles.

1. Introduction

Mobile is an electronic portable telecommunication device, often referred to as a cellular phone. Mobile phones connect to a wireless communication network through radio wave on satellite transmissions. Mobile serves many purposes other than its regular call and message facilities. Its utilities have been extended into a wide range of applications such as calendar, music player, converter, world clock, gaming applications, browsing, multimedia data sharing and so on. Android is a Linux based operating system designed primarily for touch screen mobile devices such as smart phones and tablet computers[1-5]. Its open source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers. Additionally, android has a large community of developers writing applications that extend the functionality of devices. Android based applications are hitting the market at a fast speed day by day and tend to grasp the interest of all the users widely. Some of the commonly used android applications are National Railway Enquiries, Google Street View Maps, Facebook on Android, Winamp, Google Reader[6-8], iPlayer and so on.

2. Problem Description

Mobile asset tracking denotes the management of the dynamic location of mobile assets. This tracking component is essential for many organizations to keep track of their valuable mobile assets (such as smart

phones) in real time and precisely manage their routing. In present tracking applications, Google maps are installed along with the application which increases the time complexity for the application to be loaded and many complex algorithms are used. SMS and call details are not tracked efficiently and the system is not cost effective. Also change in service provider causes difficulty in tracking the person. So, in order to help the higher official to keep track of their employee in all the situations and aiming to develop a cost effective application, we have developed an Android based application which includes[9-12],

➤ **Location Tracking:** It is a technique which is used to track the location of a specific object at a given time. In our project this object is referred to the employee and the location is tracked using the fixed interval algorithm[13-18].

➤ **Information /Message Tracking:** It is a technique which is used to track the data which is transferred from a sender to a receiver. This also keeps track of the timestamp details.

➤ **Call Tracking:** It is a technique which is used to track the call event happening between two mobile devices along with the timestamp details.

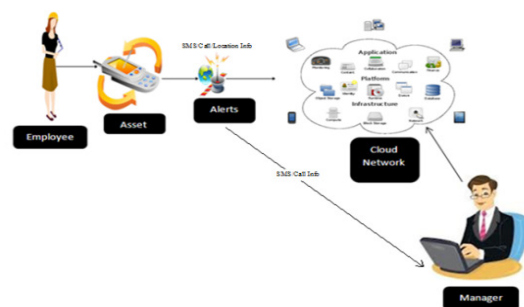


Figure 1. Overall Scenario

In the existing system the details of employee's call and message activities (incoming/outgoing) are present in the bill. The details of their employee can be monitored only by the help of the Service Provider. The manager has to

wait till the bill is received. Many circumstances that allows the employee to misuse his organization's mobile phone cannot be detected accurately. In the existing system the employee can delete the sender/recipient numbers of call and SMS events. Content of the message transferred cannot be monitored. It's not able to find the exact position of a person. In many present applications, google maps are added to it to find the location, therefore loading of maps causes time delay for the application to work.

3. System Architecture

Our proposed system tracks all the incoming or outgoing SMS, calls and GPS location details accurately. Keeping in mind about the cost and latest technology, we have developed our application in Android platform. The mobile phone GPS receiver fetches the GPS location, after calculating the exact location it further creates a GPRS packet which includes the location details, a unique identifier called IMEI number and timestamp details. Even though employee can delete the call log and SMS details manually, the tracking process cannot be interrupted. There is a possibility of the employee to delete the content of message received/sent, but as this information are sent as alerts and stored in the database the illegal activities can always be monitored. It provides a low cost human tracking system as we use android operating system. This application helps to find the position (latitude/longitude) of employee by using both GPS and network provider.



Figure 2. System Architecture

The Tracking application is installed in the employee's android mobile. The three main components involved in our architecture are – Employee's android based mobile phone, Manager's mobile phone and the Centralized server. On the event of call and message sent/received in the employee's phone, a notification message is sent to the manager's number from the

employee's number. Simultaneously, these information are being updated to a centralized server. When the employee changes his/her location, the latitude and longitude values will be updated in the server.

4. System Implementation

This system is implemented using Windows XP as operating system, Eclipse 3.4 as IDE, Micro Emulator 5055 as emulator, MySql as database, Android 2.2. Pentium P4 as processor and mobile phones which are android based. This project is real time application system. Currently a company's higher official can monitor an employee's mobile activities only through the official bill received by the company. But many features like, the content of the incoming/outgoing messages and the current location of the employee are not available in the bill. This project is designed with features, which helps the manager to track his employee's activities using an application which will be installed in the employee's android based mobile phone. Android is a Linux-based operating system designed primarily for touch screen mobile devices such as smart phones and tablet computers. We have chosen android platform for our project, as it is an open source operating system and it paves way to our project of being cost effective.

Monitoring The Messages

As soon as the employee sends/receives a text message, the application will be able to recognize that this particular event has taken place and it will be able to send a notification message via the network provider, to the manager's mobile, specifying the to and from number of the message along with its content. This also sends the information to a cloud database. The manager can monitor their employee's incoming and outgoing SMS activities by receiving SMS alerts from the employee's android based mobile device. Alerts contain the information about the people who are all sending/receiving SMS and the timestamp details along with the content which has been transferred among them. The application checks whether it's an incoming or outgoing message. The application appends the IMEI number of the employee.

Monitoring The Calls

On the event of an incoming/outgoing call to/from the employee's mobile phone, the application will be able to recognize that this particular event has taken place and it will be able to send a notification message via the network provider, to the manager's mobile, specifying the to and from numbers engaged in the call event. This also sends the information to a cloud database. This system allows managers to monitor their employee's incoming/outgoing call activities. The information

contains both the details of the person to whom a call is given and from whom a call is received, and also the exact time the call has been done. The application checks for the different states of the call (ringing, idle, offhook).

Tracking the Employee's Location

When the employee moves from one location to another, the installed application in his mobile phone tracks the location details using the latitude and longitude values and updates this information in a cloud database. This module is specially designed to track the current location (latitude/longitude) of the employee through GPS and Network Provider. It will track the location continuously based on fixed interval algorithm and that information is sent to server. The already reported location and the current location are compared to evaluate the best location with the help of minimum update interval. Minimum update interval is set to 2 minutes. The location which is identified as best is updated to the server and the other location is discarded. Location details of an employee which contains the latitude and longitude values are stored in the server. The latitude and the longitude values which are tracked in our application are used to find the Employee's location with the help of Google Maps.

Mobile Events Tracking

This feature is triggered whenever an employee makes/receives a call/message using the company's mobile phone. The network provider which provides the services to the employee's number is required to send a notification message to the manager's mobile phone when any one of the above actions is triggered. The employee must not be aware of the notification message which is sent after each event. An inbuilt GPS facility is required to send updates about the location information (latitude and longitude) when the employee is in a roaming state in a place which is not closed (i.e. outside buildings). The mobile phone's network provider is needed to provide location information when the employee is under roof. So, when the employee's location changes, the application, with the help of the above mentioned facilities, must be able to update the location information in a cloud database.

Authentication And Authorisation

This feature corresponds to admitting only authorized users to the system and assigning users for specific tasks. This is considered as a high priority feature since it addresses security risks and privacy issues relating to the application. The manager should be provided with a facility which allows him to and maintain the details about the employee's activities. As the information stored are highly confidential to the company, authentication

and authorization plays an important role. The system maintainer user should be able to create users for the system. For a user there should be properties like username and password. Authorization is given only to the manager or any higher official for viewing and maintaining the details. He/she should be authenticated by providing a proper username and password. The application develops a login facility using the "eclipse". Using this username, the manager must be allowed to view the database which contains the appropriate details. There should not be any links to allow users to gain access to unauthorized functionalities through authorized functionalities. Critical User Interfaces constructs with login screen, user management, viewing results. Easy access to above UI's through textual and pictorial links or buttons. Should either keyboard or mouse could be used to perform functionalities. This application requires the very basic supported features of the computer, the keyboard, for the user to sign and view the results. For viewing the notification, the manager must be provided with a mobile.

Maintaining The Details In The Centralized Server

In this, we are maintaining a centralized server in order to store the information about the employee's mobile activities. So that the manager can later access the centralized server to know about the information about their employee's monitored activities. It provides security to the confidential details, this module provides a username and password to view the details. We use Xeround- cloud database to store the employee's information. A website is also created for the manager's access to view the employee's detail. The URL of the cloud database is used to give connection to the website.

5. Conclusion

By using this system, we can be aware of the employee's who are doing activities which are against the company. We can easily identify them through the current location and mobile usages. This system efficiently tracks the dynamic location via GPS. When we check the mobile details like incoming and outgoing calls and text and multimedia messages, easily identify the employee who is supporting the opponent organization. Hence this system provides a tracking system with lowest cost through GPRS GPS on GSM network.

References

- [1] Udayakumar R., Kaliyamurthi K.P., Khanaa, Thooyamani K.P., Data mining a boon: Predictive system for university topper women in academia, World Applied Sciences Journal, v-29, i-14, pp-86-90, 2014.
- [2] Kaliyamurthi K.P., Parameswari D., Udayakumar R., QOS aware privacy preserving location monitoring

in wireless sensor network, Indian Journal of Science and Technology, v-6, i-SUPPL5, pp-4648-4652, 2013.

[3] Brintha Rajakumari S., Nalini C., An efficient cost model for data storage with horizontal layout in the cloud, Indian Journal of Science and Technology, v-7, i-, pp-45-46, 2014.

[4] Brintha Rajakumari S., Nalini C., An efficient data mining dataset preparation using aggregation in relational database, Indian Journal of Science and Technology, v-7, i-, pp-44-46, 2014.

[5] Khanna V., Mohanta K., Saravanan T., Recovery of link quality degradation in wireless mesh networks, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4837-4843, 2013.

[6] Khanaa V., Thooyamani K.P., Udayakumar R., A secure and efficient authentication system for distributed wireless sensor network, World Applied Sciences Journal, v-29, i-14, pp-304-308, 2014.

[7] Udayakumar R., Khanaa V., Saravanan T., Saritha G., Retinal image analysis using curvelet transform and multistructure elements morphology by reconstruction, Middle - East Journal of Scientific Research, v-16, i-12, pp-1781-1785, 2013.

[8] Khanaa V., Mohanta K., Saravanan T., Performance analysis of FTTH using GEPON in direct and external modulation, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4848-4852, 2013.

[9] Kaliyamurthi K.P., Udayakumar R., Parameswari D., Mugunthan S.N., Highly secured online voting system over network, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4831-4836, 2013.

[10] Thooyamani K.P., Khanaa V., Udayakumar R., Efficiently measuring denial of service attacks using appropriate metrics, Middle - East Journal of Scientific Research, v-20, i-12, pp-2464-2470, 2014.

[11] R.Kalaiprasath, R.Elankavi, Dr.R.Udayakumar, Cloud Information Accountability (Cia) Framework Ensuring Accountability Of Data In Cloud And Security In End To End Process In Cloud Terminology, International Journal Of Civil Engineering And Technology (Ijci et) Volume 8, Issue 4, Pp. 376–385, April 2017.

[12] R.Elankavi, R.Kalaiprasath, Dr.R.Udayakumar, A fast clustering algorithm for high-dimensional data, International Journal Of Civil Engineering And Technology (Ijci et), Volume 8, Issue 5, Pp. 1220–1227, May 2017.

[13] R. Kalaiprasath, R. Elankavi and Dr. R. Udayakumar. Cloud. Security and Compliance - A Semantic Approach in End to End Security, International Journal Of Mechanical Engineering And Technology (Ijmet), Volume 8, Issue 5, pp-987-994, May 2017.

[14] Thooyamani K.P., Khanaa V., Udayakumar R., Virtual instrumentation based process of agriculture by automation, Middle - East Journal of Scientific Research, v-20, i-12, pp-2604-2612, 2014.

[15] Udayakumar R., Thooyamani K.P., Khanaa, Random projection based data perturbation using geometric transformation, World Applied Sciences Journal, v-29, i-14, pp-19-24, 2014.

[16] Udayakumar R., Thooyamani K.P., Khanaa, Deploying site-to-site VPN connectivity: MPLS Vs IPSec, World Applied Sciences Journal, v-29, i-14, pp-6-10, 2014.

