EFFECTIVE ANDROID MOBILE ANTI-THEFT APPLICATION WITH CONTINUOUS TRACKING AND USER PROFILE RECORDING

M. Ancy Rose*, S. Hemalatha**, P. Saravanan#

***Student, #Assistant Professor, Department of Information Technology.
Faculty of Computing, Sathyabama University, Chennai, Tamilnadu, India.

Email: ancyrose100@gmail.com

Received on 28-04-2016

Abstract

Increase in the use of smart phones in today’s world has led to a drastic rise in the number of mobile thefts. Though there are a number of applications that have been introduced in order to resolve this problem, we have come up with a system which addresses this issue in a more efficient way. In this paper, we proposed an android application which is deployed with an initial registration of another mobile number. If the phone is stolen and SIM card isn't modified, original user can send SMS through the registered mobile number to trace and verify the location of the stolen mobile along with other details of the thief. GPS, camera and voice recording are initiated only when theft phone receives a particular keyword from registered number. While the SIM card is changed, the units includes GPS, camera, and audio recorder are automatically initiated. Stealer’s picture is captured by automatic camera initiation and the URL of both the stored image and voice are sent to registered number through SMS. Stealer’s picture is sent to E-mail ID of original user. The proposed work has been tested in various scenarios and has shown to have successful implementation.

Keywords: Location tracking; Android; Smartphone; with and without sim.

Introduction

Location privacy has become an issue because of the increase in GPS devices, location based services, WLAN and cell ID based on positioning technologies. A lot of research has gone into finding a wireless device for security reasons. Localization is often passive or active. In passive localization, the device is not carried however in active localization the device is carried. In active localization, with the help of certain elements like GPS (Global Positioning System), users can find their or others’ location. A mobile phone without this element can send its position through radio waves. The various types of principles that can be applied in order to get the position of an object are:
• Network-based approach
• Terminal-based approach
• Network-assisted approach
• Terminal-assisted approach

In Network-based localization approach, the network (base station) identifies all the required values. The values are sent to a typical location center, which belongs to the core network. This center is responsible for the crucial computation of the object’s positions. In Terminal-based approach, position is determined by the terminal. This approach involves high battery consumption and desires correct instrumentation; it's solely used in heritage terminals. In Network-assisted the terminal seizes the crucial calculation of the object’s position. This could be done during a pull manner or during a push manner. In Terminal-assisted a hybrid implementation is used. The terminal measures the incoming signals from a server and reports are supplied to the network. The central location is responsible for calculating the ultimate location. The easiness and practicality of localization can be attributed to large number of electronics like smart phones, tabs, laptops, net books, radio-carpal joint watches, televisions etc. which use varied detectors like accelerometers, temperature gauges, GPS receivers, gyroscopes, etc. and wireless web. Since good wireless devices include detectors like measuring instrument etc., it's doable to form chase systems which are not solely aware of location but the context as well. Context may include location however it additionally includes other situations like if the user is moving, if he's taking turns etc. which makes it beneficial particularly for police work. As an example, if phone is taken, its precise position can be identified if the context is understood. Furthermore context data are often required to reduce network knowledge transfer.

As an example, frequent updation of a device, which is not moving or moving steadily, is not required. But efficiency of context detection depends on varied alternatives like whether the device is in the user’s pocket, hand etc. As a result, during this paper, a service for context chase of good hand-held’s is projected, which considers the entire context for higher police work. This method is often used for finding lost mobiles, people etc. in a power-saving, user friendly way.

Related Works

In [1], the authors have created an application in order to find the lost device. The application installed finds the android device by using either GPS or Network Service-Provider and sends the details to the server via internet. But in this application the mobile can be tracked only till the number is not changed.
If the mobile number is changed then there is no use to the application. Web Server is another hurdle as only the coordinates are stored thus making it difficult to track the position. Moreover it is unknown whether the application needs to keep running even when the mobile is not confiscated and also even if the application need not keep running what should be the trigger in order to start it is not clear.

In the paper by M.Umamaheswari, S.Pratheepa Devapriya, A.Sriya, Dr.R.Nedunchelian[2], an application is created to track a mobile device. It is based on in-built GPS feature in smart phones. When the sim card of the theft mobile is changed then the longitude and latitude details are sent to a backup number. Using these values the exact location can be found using Google maps. The drawback of this application is that the mobile position can be found only when the thief changes the sim card. If the SIM card is not changed then there is no use to the application. Moreover it sends only the longitude and latitude details from which it is difficult to continuously track the stolen mobile phone.

In the paper ‘Smartphone Tracking Application using Short Message Service’[3] a method is proposed to track lost phone. This application uses SIM serial number. Mobile tracker is used such that whenever the SIM is changed the owner will be notified about the new mobile number via SMS sent to the mobile number stored in the mobile tracker. The main disadvantage of this application is that only the SIM card number will be sent and the current location of the phone is not sent. And also this application will fail to track the device if its SIM card is never changed.

In [4], SMS is used to access a stolen android device from a remote location using a backup mobile terminal, which need not be android. The stolen phone can be locked from a remote location.

There are various other android apps in Google PlayStore such as LocateMyDroid, SeekDroidLite, AntiDroidTheft, GPS Tracking Pro, Where’s My Droid, Plan B etc. that helps to find a stolen mobile phone using Google Map interface but most of these require high power consumption due to the requirement of accessing the present location through GPS or monitoring behaviour to check for deviations.

Apps like Locate MyDroid have been developed that can be operated aloof over a web interface. Google Device Manager locks phones once they are lost (like the work described in [4]) and also shows the location of the mobile where it was last detected.

**Proposed Work**

Android Application is deployed with signing up of substitute Mobile number. If the phone is stolen, original user will send SMS through a normal phone or through an application deployed in another Android phone to track and verify the location of the theft Mobile.
If the Thief changes the SIM card immediately location details are sent to the alternative Phone number of the original. Both the logic of tracking the Theft Phone with SIM Card & Theft Phone with changed SIM Card is tracked continuously.

Thief Photo is captured by automatic Camera Initiation and Voice is recorded and uploaded in the server. Both the Location and Voice are sent as SMS Alert to the Alternative Mobile number of the Original User.

Advantages of Proposed System

It is found that the proposed system possess many advantages, few of which are listed below.

- Less power consumption
- Less time consumption
- Reliable
- High security

Proposed System Architecture

![Architecture Diagram](image)

Material and Method

The entire process is further decomposed into various modules which are listed below.

- Mobile client registration
- Server – Mobile communication
- Tracking IMSI number
- Capturing Photo, Audio
- SMS, Email alert
- Google Earth Initiation and SMS Alert
Mobile Client Registration

Mobile Client is an android application, which is created and transferred to the user’s android device in order to perform the activities. The application’s first page consists of the user registration process which is given in Fig.2. Using this APK user will be registering with the server by providing alternative mobile number & Email ID. User’s IMSI number is also captured by the server.

![Image of Mobile Client Registration](image1)

**Figure-2: Registration**

Server – Mobile communication

The server application is employed to speak with the mobile. The Server will communicate with its mobile consumer by GPRS and GPS. Server can track the user with user’s IMSI number.

![Image of Server](image2)

**Figure-3: Server**

Tracking IMSI Number

In this module if mobile is taken by some anonymous person then we can track the anonymous person by exploiting phone’s IMSI no through our application. Our application can listen to the registered IMSI range. When the thief changes the sim card, the application which keeps monitoring the IMSI number will detect the change in the IMSI.
number and then automatically camera is initiated to capture the picture of the anonymous person, voice is recorded and GPS is initiated.

**Capturing Photo, Audio**

In this module camera is initiated and photo is taken so that anonymous person is captured by the automaton application. This photo is uploaded to the server. Once when the photo is uploaded to the server, that link is captured & that link is sent as SMS to the alternated number of the initial user. The photo is sent to the user’s email id as well. In addition, anonymous person’s voice is additionally recorded for higher identification of that person. Once the audio is captured it is stored in the server and the corresponding link is sent to the user’s registered number through SMS.

![Figure 4: Capturing photo and audio](image)

**Figure 4: Capturing photo and audio**

**SMS and email alert**

During this method photo and voice is captured and each are sent to the first user’s email ID. Photo of the anonymous person is once more saved to the server so that the server link is sent as text message to the user’s different mobile number. If the user clicks on the link then automatically image would be opened to the user.

![Figure 5: SMS Alert](image)

**Figure 5: SMS Alert**
Google earth initiation and SMS!

In the module if the mobile is taken then the location of the anonymous person is derived from the GPS application within the mobile. It updates each movement of criminal location and sends the location to the owner of the mobile. GPS location of the criminal is sent to the owner as SMS so that the location of the anonymous person can be traced by clicking the link of the address that was sent as SMS.

Result and Discussion

Tracking the stolen phone continuously whether the SIM card is removed or not. Criminal’s photo is captured by automatic camera initiation and voice is recorded and uploaded within the server. The captured photo, recorded voice and coordinates of the thief are sent to the user through SMS. The advantages of this system are less power consumption, less time consumption, reliable and high security.

Conclusion

In this paper, a tracking service is designed and implemented in order to track individuals and hence can be used to find missing mobiles or lost users. GPS is used in order to track the position and updates are sent to the registered number. Camera and voice recording are also triggered as they are a part of the context. This process can be remotely triggered from any device which need not be android.

References


**Corresponding Author:**
M. Ancy Rose*

**Email:** ancyrose100@gmail.com