

Offline Location Tracking Service and Image Capturing System Using Android Mobile

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Abstract—A smart phone is one of the widely used electronic device and it is the pivot of all smart systems. In this paper we focused to find the stolen or lost android device and provide security to the data stored. The proposed system use a siren sound, when victim try to use the android device by putting wrong password at most three attempts and the background application of camera will automatically runs and capture victims face immediately. Here we use one central web data storage and the mail id to retrieve whole device data where it will already have uploaded. The proposed system use a novel method called Location-Based Delivery (LBD) which combines the Short Message Service(SMS) and Global Positioning System (GPS) and further a realistic system for tracking a target movement is developed. The proposed approach LBD, consists of three primary types: Short message layout, location prediction, and dynamic threshold. Location is predicted using the current location, moving speed, and bearing of the target to calculate its next location. When the distance between the predicted location and the actual location exceeds a definite threshold, the target transmits a short message to the tracker to update its current location. To maintain the location tracking correctness and the number of short messages on the basis of the moving speed of the target, the threshold is vigorously adjusted.

Keywords—Location-Based Delivery, Short Message Service, Global Position System, location prediction, dynamic threshold.

I. INTRODUCTION

Location tracking is a process of determining the precise location. These tracking greatly impact to find location of a vehicle, person or other asset where the device is attached and will record the position of the asset at regular intervals. Now-a-days security is more critical to be implemented for Android smart phone due to the increase in number of worldwide users that involve sensitive personal information in their phones. Hackers are finding new ways to attack through Android applications. The increasing challenges to secure Android system are due to the features of Android security goes beyond the antivirus features. The major risk for Android users and the main incentive to download a security app, viruses aren't the greatest threat. The risk is that someone will get access to Android device either by device lost or stolen. To have a smart phone in your pocket without a remote wipe possibility is a dangerous thing. It's even more risky than misplacing keys to your house. Of course, someone can take your private data using a fraudulent application, but that's certainly the harder way. Using prevention techniques, Android devices are shielded from the threats.

Android system security attacks can be divided into two parts: first, information breach and second, device theft. Today, more than 50% devices are running on Android operating system [4]. Android 4.1.1 version has a major risk that reveals user information breach using vulnerable applications installed on their smart phone [5]. Here the proposed idea is not related to such kind of information breach because as a solution to this many smart antivirus, applications are freely available. Instead of focusing to prevent the information breach that is possible due to theft of Android device. Users may store their personal information into their smart phones. So this private information can be accessible by thief and it may be misused or revealed to world via internet.

The next kind of attack is device theft. In this, we can notice that information breach is becoming possible not mainly because your device is theft. This is caused because, we can't control our device data after theft. Somehow, the theft of device and user information breach is related to each other. If the user can control their device by accessing its location and stored information, then information breach can be prevented even after device theft. To provide this kind of control after theft of device, we will develop a mechanism that will work in any kind of situation. Even though the device

is not running on internet connection, this mechanism will work without internet connection.

II. RELATED WORK

In previous solution contains number of services to prevent against device theft and information breach. While the user registering within application, user will be asked to enter a recovery phone number. This recovery numbers will be used later to start or stop any services if device will be theft or misplaced.

After losing the device, the user will not have physical control over it. In order to control the lost device, user will send different commands to Android device. User will send this commands using phone SMS. To start tracking the device we have to just send one SMS like “START TRACKING” to activate offline location tracking service. By default, this command will automatically start all the other services that are required after device theft. Alternatively, user can also achieve the same after login through web server using web request mechanism (by pressing start services button) but that is not much reliable as it requires running internet connection on Android device. In most cases it is desirable to use both of the options simultaneously.

In order to start or stop application services after the mobile device is theft, the proposed idea here, will work with or without internet connection. These application services are very useful in getting offline location of device, to capture the thief image securely, to do the voice recording of thief securely., Also it helps to wipe out all the private information stored in the device, reveal the thief identity using web history whenever he connects with internet and notify us with the new phone number used by the thief. The data generated by the application services will be stored in a hidden storage. In the device and whenever the device connects itself with internet these data can be moved to the web server and can be deleted to make the room for newer data.

The following figure is the architectural diagram represents mobile tracking and retrieving the contents:



Fig. 1

III. METHODOLOGY

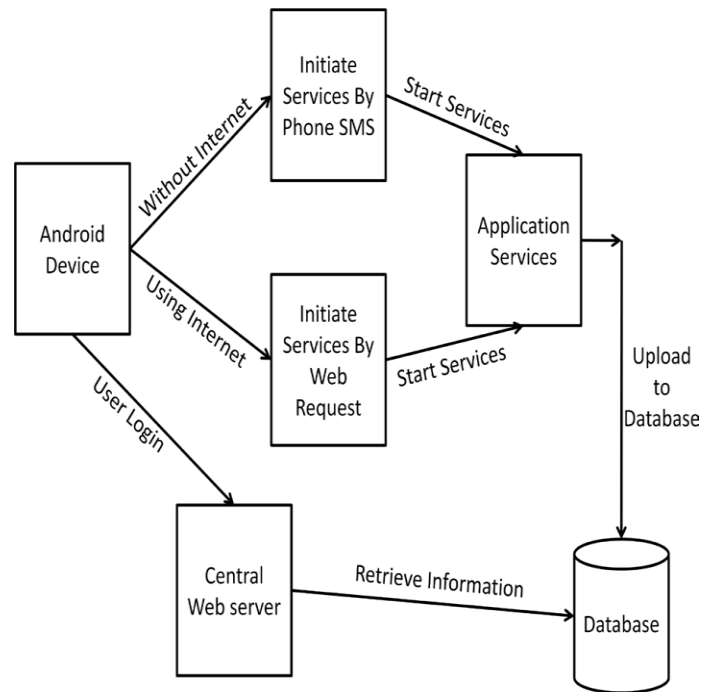


FIGURE 2: BLOCK DIAGRAM

The operation performs on android device is by checking whether the device have the internet connection on or off.

If the device using internet connection the services are initiated by the web request and immediately starting the background applications. When the background application started to Track Location service, Geo Tagging capturing image, voice to text conversion, and loud siren service.

If the device without using internet connection the services are initiated by the phone’s SMS and immediately starting the background applications. Phone’s application sends SMS to owner’s alternative numbers. In Online method we use GPS (Global Positioning System) to identify the thief’s current location even he/she moving around anywhere GPS point out the thief accurately.

Alternatively, in thief’s side we used some advanced mechanisms running on background via web request. Background camera face detection method to capture thief’s face using front camera without the knowledge of thief. Fingerprint capturing is a one advanced feature in our android phone and efficient also to identify the thief when he/she unfortunately press the home button (while the sensor presents in home button) after immediately background application process and capture the finger print and upload our web server.

User can login the Web server and retrieve contents of your mobile data when it is uploaded on thief’s side. When above

online feature will have made and when the mobile found internet connection it will quickly upload the whole device data to the server.

1. User will do registration on designed website.
2. Access location online.
3. Reminder will be entered by user and stored in SQLite database.
4. Location tracking will be performed using the GPS service.
5. Changes in location can be emulated with the help of KML file in Android.
6. The location change will be compared with the database entries to see if there are no tasks associated to the current location.
7. Corresponding task information will be displayed on the mobile screen.
8. Location server will constantly deliver the location information to mobile every 3 seconds.
9. Based on this communication with the backend server for displaying corresponding task will be established[5][7].

IV. RESULTS AND DISCUSSION

The existing system based on android, in which android device is accidentally loss or theft by others immediate request will not sent by the device. SMS alerts are simply notifying by IMEI number and Mobile number. Whole data not compressed because of speed uploading process. If files are splitted into separated drives (like internal and external) data uploading to database will might slow.

Location Tracking Services

Most important factor is getting its current location. If we are able to get the updates about series of location from the beginning, when the device is lost upto the current time, we will get a type of pattern. This pattern will reveal a lot to determine the exact location. Google has a own free location API service. This service is available for public use to get Android device's GPS location. But it requires internet connection in our device for working its operations. So if the device lost we can't assure that device will have internet connection. May be it is possible that the device will connect to the internet once a few days.

So the possibilities to track device location using Google API, which requires internet connection, will not be a reliable way in our scenario. Alternatively, we have to develop the application service which will work even if there is no internet connection in the device. This gives us idea about offline location service. It is possible to get the device location using tower location of device without using internet.

Image Geo-Tagging Service

Today, if we search in the Android market for application that will secure our device and help user to track device's location, we will get number of applications freely available. To track the device, determining device's location is not sufficient enough. Image geo-tagging service will be able to identify thief and will become very useful when we already have device location information[1]. The service will capture the image secretly. The thief will not know it.

Google Places API is an application interface that enables another application to send request to it, and it will return the service about the places, within the specific geographic location. This request is based on HTTP request, for user who input their places based on user location and search. Google Places will return the details about the current location with HTTP response. Depending on the situation and application used; it also enables to add new places into Google Places database. Furthermore, Google places also have autocomplete on place, that user input. Autocomplete is implemented with the query function, Here, on same or alike word will return with few or more option to enable the user to choose their want. Google places categories the users into two type, that meets their requirement, one type of user is normal user type and second is enterprise customer from google.

Proposed System

The solution is to find our android mobile anywhere in the world using some other mechanisms. Here we are using offline and Online method.

In Off-line method SMS alert (consists like IMEI, Local area base station details, SIM details, date and time) were send to owner's number. In Online method, you have to use GPS (Global Positioning System) to identify the thief's current location even he/she moving around anywhere GPS point out the thief accurately.

Alternatively, in thief's side the system used some advanced mechanisms running on background via web request. Background camera face detection method to capture thief's face using front camera without the knowledge of thief. Fingerprint capturing is a one advanced feature in my android phone and efficient also to identify the thief when he/she unfortunately press the home button (while the sensor presents in home button) after immediately background application process and capture the finger print and upload our web server.

LBS

Location Based Services is mobile service that has the capability to provide real time information based on the user's location. In order to provide all the functionalities in LBS, GIS acts as the heart of LBS. First, the location

information has been sent to remote parties by us. Now-a-days, this set of services are commonly used, e.g., in location tracking applications. Second, use location information to make communication decisions, e.g., a user agent may automatically disable instant messaging when driving. Third thing is that, communication actions can be triggered by changes in location, e.g., when a person's user agent gets a location notification indicating the person enters a room, the user agent may automatically turn on the light of the room. Sending location information to remote parties for location tracking. Usually, geospatial coordinates or civil addresses for tracking are used to represent location. We can expect more variety of location-based services. By enabling the user to upload real time location and to create the content "on the spot". The working of LBS contains the following steps [5][6].

- **Step1:** User sends a service request using the application running on mobile device.
- **Step2:** The service request, with user's current location information obtained from the positioning component (GPS data), is sent to service server via the mobile Communication network.
- **Step3:** The service server requests geographic database and other related database to get required information.

Location based Services can be classified in following categories [8].

□ **Public Safety/Emergency Services:**

Mobile carrier will determine the location of the client, hence it finds great use during Emergency since it can be used during the emergency/health hazard to locate the mobile clients.

□ **Consumer Services:**

Now days, smart phones like (Android, Blackberry and iPhone) provide a set of location based applications and services which helps the users to access the multiple services based on the user location. The location of the device can be retrieved by, Mobile Phone Service.

□ **Provider Network:**

The current cell ID is used to locate the BTS that the mobile phone is interacting with and the location of that BTS. It is the most basic and cheapest method for this purpose as it uses the location of the radio base station that the cell phone is connected to. A GSM cell may be anywhere from 2 to 20 kilometers in diameter. Other approaches used along with cell ID can achieve location granularity within 150 meters. The granularity of location information is poor due to Wide Cell Range. The advantage is that no additional cost is

attached to the handset or to the network to enable this service.

□ **Satellites:**

The GPS uses a constellation of 24 satellites orbiting the earth. GPS finds the user position by calculating differences in the times the signals, from different satellites, take to reach the receiver. GPS signals are decoded, so the smart phone must have inbuilt GPS receiver.

If you want some important data from our stolen device this module can more help us to wipe data compressing will compress the whole data by web request and move to web server when we are in online. Here we use to identify web history which we have to go through without thief's knowledge we can watch every browsing activity by these mechanisms. Siren service is a horn service when put wrong password after three times here sirens automatically play the sound loudly this feature is used to prevent from someone try to access our mobile or try to unlock our mobile. When above online feature will have made and when the mobile found internet connection it will quickly upload the whole device data to the server.

V. CONCLUSION AND FUTURE SCOPE

In this report, we have developed an offline location tracking system to track the position of the person. An Android Platform Kit (APK) file, installed in the User's Android Mobile Phone. User registration page is created. Offline or Online modes are initialized. Location is Selected by the user with the required places. To make flexible system improvements on network problems, offline location tracking provides good results. With proper selection of KML parsing it is used to navigate user from source to destination.

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