A STUDY ON ANDROID MOBILE: MECHANISM TO TRACK LOST MOBILE

[1]Vaibhav Jain, [2] Liu Lang,[3]Deeksha Tilak,[4]Sheetal V.A.
[1,2,3]Pursuing Computer Science and Engineering
[4]Assistant Professor
BMS College of Engineering, Bangalore

Abstract: **Since the usage of mobile phones has tremendously increased, the vulnerability of mobile phones has also increased. Android mobile phones are available in various ranges and caters mass crowd. The protection of people's personal and confidential data has become a major issue. There exists various techniques for the protection of Android mobile phones. The GPS tracking system, Image capturing, password security, and many more techniques are available.**
*Key words-* **GPS Tracking, Image capture, Password Changing, SIM Detection.**
_____

I.   Introduction:

The android phones suffer with less efficient security systems, different techniques using GPS tracking system, Image capturing, Password changing features for mobile protection are not easily available. These features are available separately and are less effective and occupy more space and these are also inconvenient for the users. The literature survey shows us that more research has been done, these researches gives us a fair idea about the methods which are efficient and useful.

II.   Android Operating System:

According to the survey, Android mobile phones are used by a maximum number of people in the world, so the Android mobile phones are most commonly available. Due to its open source nature the Android mobile phones are most vulnerable for any kind of security breach which even includes theft [1]. The Android OS provides a vast verity of applications in the play store which allows a user to access N number of applications. Professional users can also store and work on the confidential data using their Android mobile phones. The users can also store their personal data in the device. This benefit with the Android mobile phones allows the user to carry their data with themselves [2].
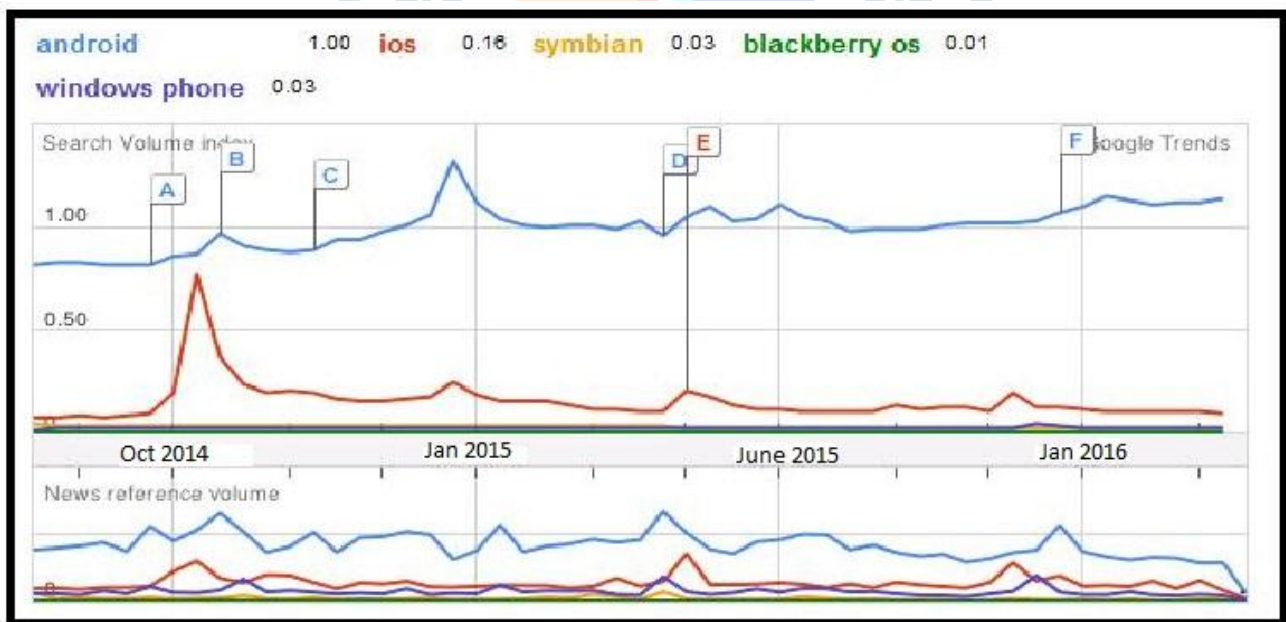
(2)

III. Advantages:

- The Android OS allows the user to carry big amount of their data in their mobile phones.
- The user interface is very simple and has an easy accessibility.
- The data stored in the cloud can also be easily accessed through the mobile phones.
- The Android mobile phones has a very vide range cost, which allows more users to buy these smartphones.

Disadvantages:

- The open source system leaves the Android mobile phones vulnerable.
- The simplicity of Android mobile phones can let the thief get an easy access.

- It is very easy to flash Android mobile phones for any professional thief.
- The available tracking systems for Android mobile phones do not show much efficiency.

IV. Literature Survey:

A thorough research was done on various methods adopted for mobile tracking system. This is the list of some of the important methods and schemes:

MMS or SMS Technology:

Kalle et al explains the schemes based on new technologies like MMS instead of just SMS, used by many applications to communicate with the server. Hardware based technique to send video clips or images or text messages which helps in communication. This communication can be very useful, if used for protection of the mobile devices. There can be two basic ways for an Android mobile phone to communicate with the server for sending and receiving information: MMS or SMS Technology. In MMS Technology, video clips, images, or even locations can be sent, but in SMS Technology only text messages can be sent or received [3].

Ivo Dias et al observed that the sending or receiving of the video clips or images using MMS Technology is becoming more and more trending in today's world. SMS or MMS Technology has now become an integral part of the Android mobile devices, it is an in built software which was created to send and receive video clips, images, text messages or even locations through SMS or MMS Technologies. They also observed that with the availability of these technologies, communicating with other users or server through images or video clippings or text messages have become much easier. But there is a drawback of having a limit of only 160 characters in one message which does not allow lengthier messages to be sent [4].

MMS Technologies provides location tracking functionality for Android device. It works on GSM text messaging services which makes applications to be a simple one. It also allows communication between the Android mobile phones, other users and the server [5].

GPS Tracking:

1 in 10 U.S. smartphone owners are victims of phone theft. 68% of victims were unable to recover their device after the theft occurred. Out of these thefts 44% of the thefts occurred because people had left their phones in the public and it was their forgetfulness. With the introduction of GPS Tracking Technology the percentage of recovering those lost Android mobile phones have increased. The GPS Tracking Technology requires the location option of the Android mobile phones to be activated. This technology uses the mobile Internet data to track the location of the Android mobile phones. The tracking system works on the Google maps application of the Android mobile phone, these maps allow the usage of the mobile Internet data to communicate with the server and continuously sends the detailed information of the location of the phone [6].

Mirza Mohammad et al explained that the features such as GPS Tracking, SIM card detection, call monitoring, profile changing, sending the images to the predefined email address and deleting the project specific incoming and outgoing messages are essential for mobile security purpose. Since people are experiencing their mobile phones being misplaced or lost or stolen, it is highly a need for an application for tracking those mobile phones to prevent those mobile phones to be lost or stolen [7].

The GPS Tracking system is one of the most efficient method used for tracking or locating Android mobile phones. This system allows the user to track their lost or stolen Android mobile phones using Google Maps and hence allowing the Android mobile phones to be located before anything Naïve happens [8].

SIM Card Detection:

Sonia C. V. et al observed that in real time almost every individual owns more than one SIM card. Some of the phones are dual SIM and the alternate number may also be located in that phone. Embedded with features such as wiping content, location tracking, detecting change in SIM card, application locking, and profile changing can allow the lost Android mobile phones to be recovered without any major damage. This feature has a drawback that if the same person changes the SIM may lead to destroying their own data [9].

The server should be such that it gives location update information in interim of one minute through email. The SIM card is changed and the mobile is turned on or restarted then the application will start running in the background without the user's notice. Only through a password that this administration can stop. The manufacturers should provide a user lock in the settings so that no one can factory reset or flash the mobile. This will help buy some time for the investigation team to track and locate the stolen mobile phone [10].

Password Changing Technique:

The password of the phone is changed to a pre-set password as a change in SIM number is detected. Biometric lock prevents any other person to access the personal data. Combination of biometrics with dongle technology is believed to be the ideal solution for limiting the black market of stolen cell phones. Without the biometric charger/dongle, the stolen cell phone would be rendered useless [11].

The biometric lock is considered as one of the most efficient method for protection of the Android mobile phones from the professional thieves. The password changing can be done in many ways, there are various locking methods such as pattern lock, pin lock, number lock, etc. [12].

The password lock applied to the settings of the Android mobile phones can prevent the professional thief from flashing the Android mobile phones without the password. The hacking of the password may take some time to complete, hence allowing the phone to be located [13].

Image Capturing:

Most of the Android mobile phones have rear camera as well as front camera facility. The image capturing process can be carried out in the background, without the user's knowledge. As soon as the SIM change is detected the front camera gets activated and starts clicking images [14].

The image capturing process allows the user to capture the images with the camera of the Android mobile phones. This method uses the camera of the Android mobile phones to click the images of the thief or the surrounding in which the thief is located. This process is performed in the background to safeguard the process from getting force stopped [15].

V. Conclusion:

Most the methods adopted for the protection of the Android mobile phones include GPS Tracking System, Image Capturing, Password Changing/Biometrics, etc. These methods are followed by various other steps which allow the server to communicate with the lost mobile phones with the help of GPS tracking system and also communicate with the alternate SIM number via SMS or MMS system which in turn allows lost or stolen Android mobile phones to be found.

VI. Acknowledgment:

References:

[1] Kalle Tomingas, Tanel Tammet, Margus Kliimask and Priit Jriv. 'Automating Component Dependency Analysis for Enterprise Business Intelligence', Thirty Fifth International Conference on Information Systems, Auckland 2014

[2] Ivo Dias and Maria José Sousa. 'Business Intelligence Applied to Human Resources Management', Volume 354 of the series Advances in Intelligent Systems and Computing pp 105-113

[3] Zijada Rahimića, Emina Resićb, Amra Kožoc. 'Determining the Level of Management Competences in the Process of Employee Motivation', International Conference on Leadership, Technology and Innovation Management

[4] Trakstar. http://www.trakstar.com/

[5] Appraisd. http://www.appraisd.com/

[6] Fego.In. http://www.fego.in/

[7] Aligarh Muslim University, Aligarh 202002, India. IEEE Transactions on Advance Computing Conference, Feb. 2014

[8] Lookout Magazine survey report on anti-theft in America 2014

[9] AALTm: An Android Application to Locate and Track Mobile Phones - Sonia C.V, Dr. A.R.Aswatha Page 1864

[10] An Intelligent Anti-Theft Android Application - D. Abirami, S. Anantha Surya, S. Annapoorani, Ms. M. PadmaPriya - © 2014 IJIRT | Volume 1 Issue 10 | ISSN: 2349-6002; IJIRT 101565

[11] Tracking a Cellular Phone in a Stolen Phenomenon-http://dx.doi.org/10.14257/ijunesst.2014.7.6.12 ISSN: 2005-4246 IJUNESST Copyright © 2014 SERSC

[12] Mobile Tracing Software for Android Phone - Anuradha Sharma, Jyoti Sharma, Dipesh Monga, Ratul Aggarwal; International Journal of Engineering Research and General Science Volume 2, Issue 5, August-September, 2014- ISSN 2091-2730;

[13] H. J. Yoon. A Study on the Password Changing through Biometric Security for Android Platform. International Journal on Computer Science and Engineering, 4 (4), (April 2012), p. 532

[14] International Journal of Scientific & Engineering Research, Volume 6, Issue 3, March-2015 1542 ISSN 2229-5518

[15]https://en.wikipedia.org/wiki/Anti-theft_system