

# An Intelligent Anti-Theft Android Application

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**Abstract**—Smart phones provide a great choice of features that facilitate the life for the users. The features and capabilities of mobiles are increasing every day and almost everyone might have experienced misplacing or losing their mobile phones. The existing system provides some features in helping the user to trace the android phones by sending messages and mails. But, in real time every individual own more than one SIM card and hence the users find it annoying when the application sends notification messages for the SIM card changes made by them (the real owners). Since the android phones have the dual SIM capability, many users face the situation where the target SIM for sending the notification messages is also placed in the lost phone. The proposed intelligent android Anti-theft application provides the safe and alert mode options (to avoid unwanted notifications). It is embedded with a lot of features such as wiping content, location tracking, detecting change in SIM card, application locking, and profile changing. Thus proves to be different from the existing mobile tracker applications.

**Index Terms**— Smart phones, Location tracking, Profile changing

## I INTRODUCTION

Today everyone has started using smart phones because they are available at a very low cost and the features they provide is also attracting people. There are hundreds of thousands of applications and games available to download from the Google Play store (formerly the Android Market). Smart phones can run applications and can access the internet directly unlike cell phones rely on a carrier to get that.

Android powers hundreds of thousands of mobile devices around the world. The smart phones have become attractive targets for the thief. There are a number of precautions that the users of the android phones can take to reduce the chance of their phone being stolen and to ensure that, in the event that the worst happens, the thief is unable to misuse the private data stored in the memory card.

An android application that demonstrates a system which uses a regular mobile phone equipped with a GPS receptor and connected to a global system for mobile (GSM) network that takes

advantage of these technologies in behalf of the user safety has been summarized in [5].

A mobile location estimation and tracking technique for wireless communication systems has been summarized in [3].

There are already several applications in the market that offer tracking systems and anti theft applications to detect non-authorized SIM cards. Most of these applications provide dedicate solutions using tracking methods to monitor a mobile device. But by just enabling the mobile phones with GPS system and retrieving the information about the new SIM would be insufficient to track the Smartphone. The main issues with these applications was that they send unwanted notifications for the SIM card changes made by the user and also in real time everyone uses more than one SIM card and hence many faces the situation where the target SIM for sending the notification messages is also placed in the lost phone.

The proposed application, an intelligent anti-theft android application overcomes the issue of sending the unwanted notification for the SIM card changes made by the real owner of the android phone by providing the safe and alert modes. It is embedded with features to remotely wipe the content of the memory card, detect the SIM card changes, track the location of the phone and change the target phone to send the notification messages at any point of time. This application uses GPS or global system for mobile (GSM) network to track a mobile device.

All these features work on the SMS basis. So, incoming SMS format plays an important role. The android application running in the Smart phone monitors all the incoming messages. If the SMS is received in a predefined format it reads the SMS and performs the expected task.

## Organization

The paper is organized in the following sections. Section II describes the application development with its Requirements, features and the technologies employed. Section III describes

the application functionality along with experimental evaluation and results. Finally, section IV presents the conclusions and some possible future work.

## II. APPLICATION DEVELOPMENT

The Application development includes the features and requirements for the development of the proposed intelligent android application.

### A System Requirement

The application includes two mobile phones. Any android based Smart phone starting from version Android 2.2 having the proposed application installed in it with GPRS and GPS enabled. And any other OS based mobile phones for sending and receiving SMS.

GPS is used for tracking the lost phone. The current location is fetched and sent to the target phone as SMS. For this the lost android phone must be GPS enabled.

### B. Application Features

During installation the applications reads the target mobile number and the application password from the user. The user interface contains two radio buttons for safe and alert mode. By default the application will always be in the alert mode.

Each SIM card is identified by its Integrated Circuit Card ID (ICC-ID). ICC-IDs are stored in the SIM cards and are also engraved or printed on the SIM card body during a process called personalization.

When started, the application checks if it is in safe or alert mode. If in safe mode, it compares the ICC ID of the current SIM card and the predefined ICC ID, if change is found then it is made by the real owner and the application will not send the notification SMS. If it is in alert mode, then the application will respond, since it is the unauthorized SIM card in the device.

In real life everyone might face the situation where we have misplaced the phone and find it difficult to trace since it is in silent mode or if the person who flicked the mobile phone is still around and has put it in silent mode, then the profile management feature in the application convert the profile of the phone from silent to general and thus helps us in finding it

We retrieve the location by sending one SMS to the lost Smart phone in a particular format. The application sends the single GPS value.

The working of the application in the alert mode is described in the figure 1.

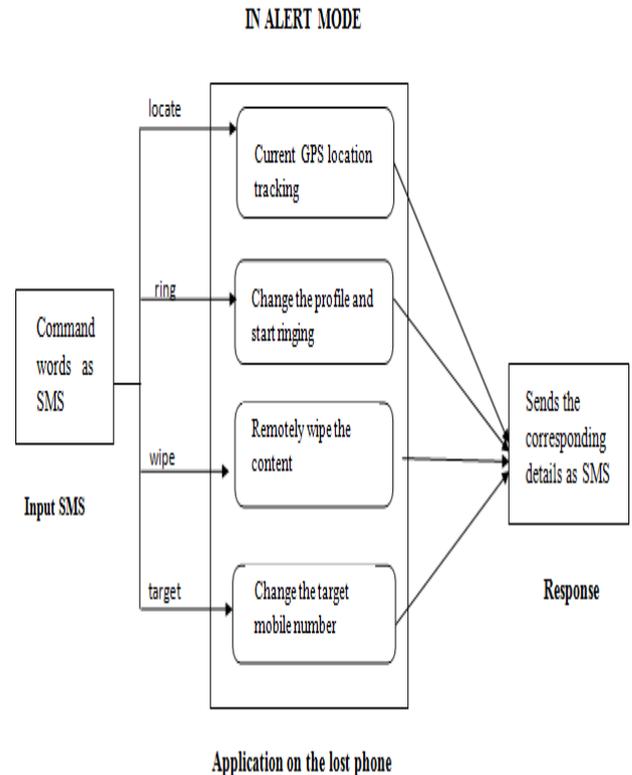


Fig. 1 working in alert mode

The user has to provide the application password before changing the modes (alert to safe and safe to alert).

### C. Technologies

The application is developed in Java programming language using the Android software development kit.

The development tool chosen for this application was the Eclipse SDK.

## III. EVALUATION AND RESULTS

The role of the user in this application is to set the mode as safe when he changes the SIM card and to send SMS to the Android Smart phone having this application installed in it, when it is stolen or lost. The syntax of SMSs that can be sent by the user and its functionalities are as follows.

1. If the SIM is flipped, the hardcoded numbers receives the SMS details of new SIM inserted.
2. If SMS is of the format ring, the application changes the lost phone from silent to general mode.
3. If SMS is of the format locate, then the operator receives the GPS value of the lost cell in the form of SMS. This value is sent only once.
4. If SMS is of the format wipe, then the application delete the content of the memory card in the lost phone.

5. If SMS contains the keyword delete, then all the sent SMS will be deleted.

6. If the application receives message of the form target password:newphonenumber, then the target device to send the notification will be changed to the new phone number after checking the password.

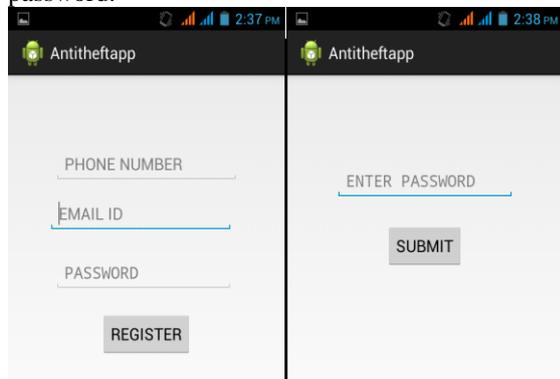


Fig 2: Snapshot of the installation showing the password providing security.

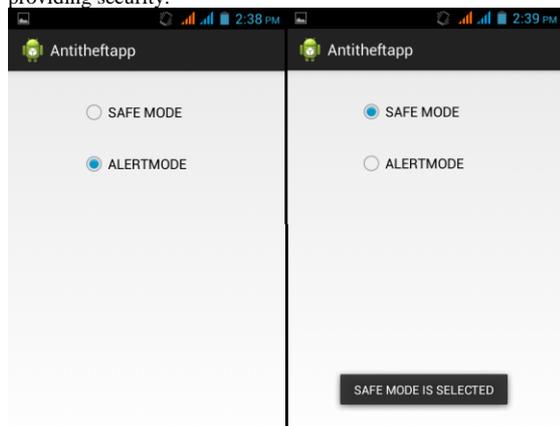


Fig 3: Snapshot of the user interface providing the safe and alert modes.

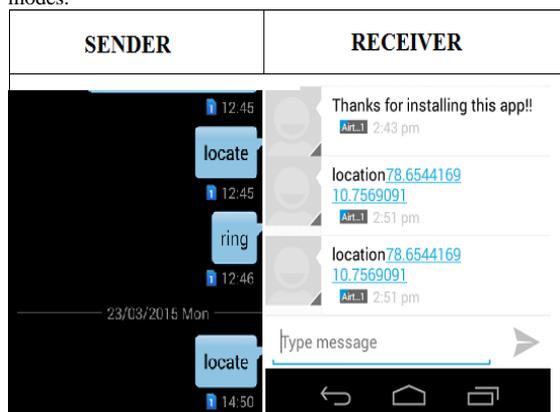


Fig 4: Sender-message sent to obtain the GPS value from the lost Smart phone. Receiver- GPS value sent by the lost Android Smart phone

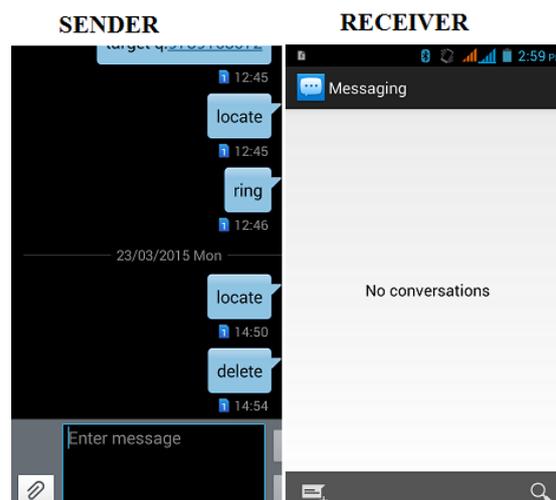


Fig 5: Sender-message sent to delete the project related messages. Receiver- messages get deleted.

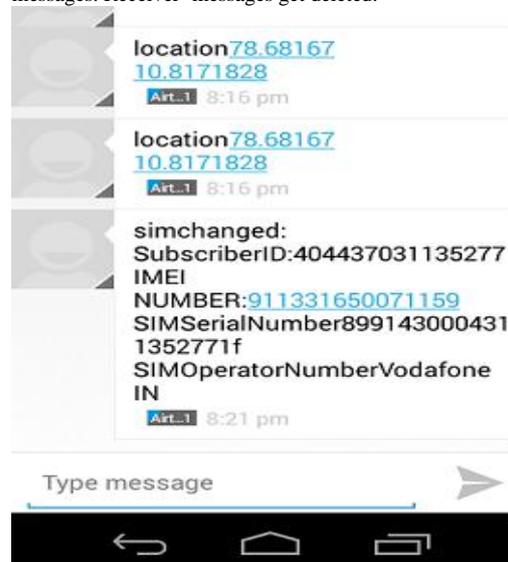


Fig 6: Snapshot of the message received after the SIM change observed in the lost android Smart phone.

#### IV CONCLUSION

The proposed intelligent anti-theft android application is designed to be highly dependable for the user and it is embedded with the features that helps the user to provide better protection to their android phones and thus proves to be different from the existing mobile tracker applications.

This application doesn't work if the phone is switched off. For future work, it is proposed to implement some algorithm where the phone itself identifies that it is being lost. Whenever, the phone is off for more than 48 hours it should make it switch on automatically.

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