

Anti-Theft Application for Android Based Devices

¹Ankit Shetty, ²Ashish Trivedi

Post Graduate CS Student ¹, HOD: CS Department ²

^{1,2}Department of Computer Science,

^{1,2}Thakur College of Science and Commerce,

Thakur Village, Kandivali East, Mumbai, Maharashtra 400101

Abstract : This paper presents an anti-theft application for android based devices to find stolen or lost device through the use of sensors, camera, Email. Many users use smartphones ,tablets based on android operating system to store personal and private information and to communicate. Smartphones collect sensitive information so the privacy of a user should be protected. Attacks on smartphones are increasing day by day and so the vulnerability of the attacker. Many anti-theft application has already been developed but most of these application are not freely available and it's difficult to track the culprit. With the help of smartphone hardware we collect the data and alert a user. When the application is installed in device it will work in background and collect the data from the sensors , pattern or pin ,charging removal .This alert it will give by alarm and by sending email to user, which was provided during installation.This data will help user to find the stolen or lost device. This paper illustrate several security layer in which future investigation can be done.

Keywords: Mobile Device Security, Android, snapshots Email, Alarm, Sensors.

I. INTRODUCTION

Android based devices with new features and multitasking operating system termed as smartphones , it has become a daily need of human life. With the help of smartphone we can communicate all over the world we also store lot of private data in smartphone like contact number , personal pictures , password, documents ,bank details etc. Android users are increasing day by day and android device are getting compact day by day. Nowadays each one of us carries very costly or latest mobile devices which always creates fear in mind that it may be stolen. Recovery of stolen phone depends on security features enabled on your phone. This Anti-theft application for android based devices, once installed in smartphone. Will alert user. There are many application which help user after smartphone is stolen and the chance of getting back is not sure. Some of this application is not available for free.This Anti-theft application developed using services provided by android device like sensor and camera and motion sensor we can track the device movement by getting alert alarm .

1.1 USER PERMISSION IN ANDROID

To use the following hardware (Inputs device) of smartphone application seek permission from user. After permission is

granted by user during installation the application can use hardware like sensor , camera etc.

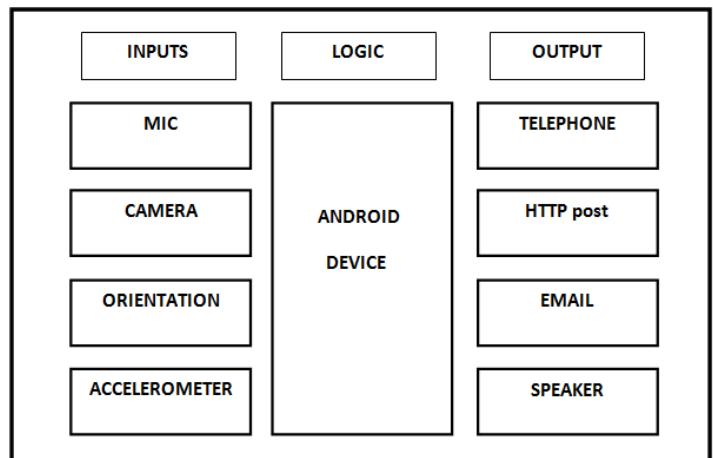


Fig. 1 Android Sensor System

```

<uses-permission
    android:name="android.permission.CAMERA" />
<uses-permission
    android:name="android.permission.VIBRATE" />
<uses-permission
    android:name="android.permission.INTERNET"/>
<uses-permission
    android:name="android.permission.REORDER_TASKS" />
<uses-permission
    android:name="android.permission.READ_PHONE_STAT
E"/>
<uses-permission
    android:name="android.permission.WRITE_EXTERNAL_
STORAGE" />
<uses-permission
    android:name="android.permission.ACCESS_NETWORK_
STATE"/>
  
```

1.2 OVERALL ARCHITECTURE

System architecture defines the behavior of a system. When the application is installed in smartphone and the anti-theft features is enabled which include motion sensor alert alarm, charger removal alert alarm and wrong pin/pattern alert. For any suspicious or irregular pattern the motion sensor will be activated and play alert alarm as shown in the Fig. 2. During unlocking of smartphone and failing in attempt then the anti-theft application front-facing camera will be activated and send image on registered email id of the user.

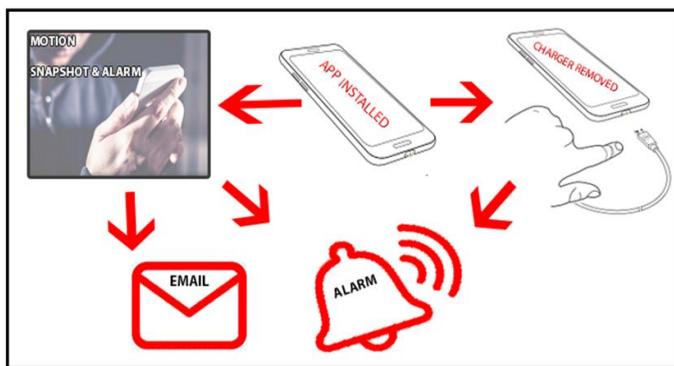
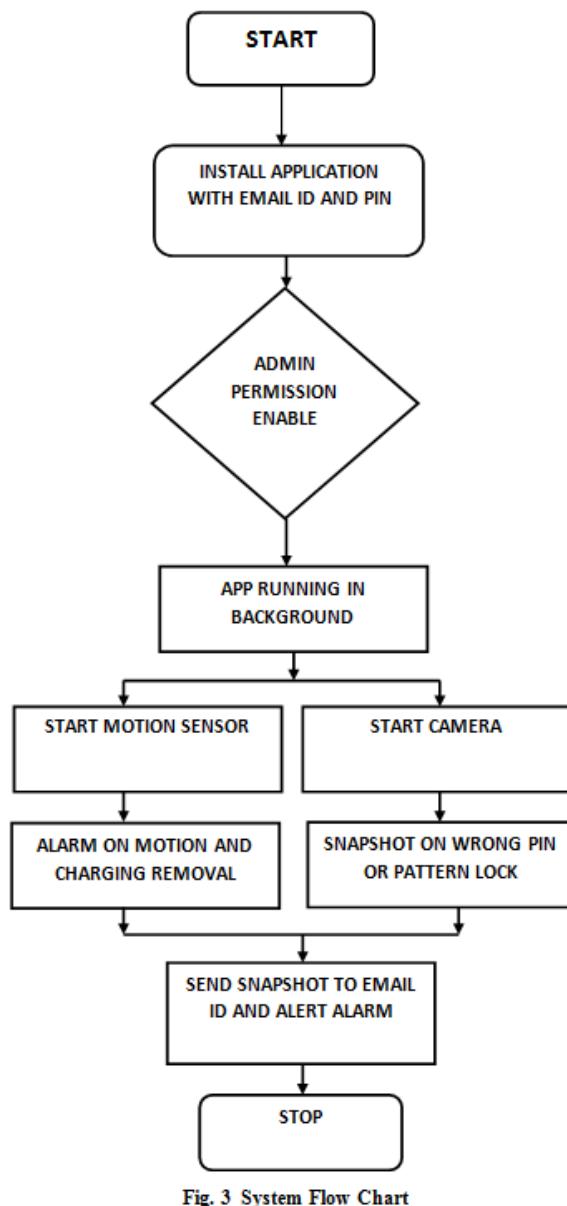


Fig. 2 Workflow of a ThiefTrap Using Anti-Theft Application

II. METHODOLOGY

2.1 SYSTEM ANALYSIS



When user install the application in the android based device it is required to fill the email id and pin. After user should give application admin permission to run in background. When the Application get the Admin permission it will be

enabled and it will run in background. The user get permission to turn on the motion sensor for device motion and also for charging removal. Alert. If the device is stolen or removed from charging point then motion sensor will detect and alert user with the help of alarm. If user can't hear alarm then If thief will put wrong pin or pattern then the snapshot of front camera will be mail to user given email id.

2.2 IMPLEMENTATION

Motion Detection Method

On Activate of service

mSwitchSet = 5;

```

if (event.sensor.getType() == 
Sensor.TYPE_ACCELEROMETER) {
    mGravity = event.values.clone();
    float x = mGravity[1];
    float y = mGravity[2];
    float z = mGravity[3];
    mAccelLast = mAccelCurrent;
    mAccelCurrent = (float) Math.sqrt(a * a + b * b + c * c);
    float delta = mAccelCurrent - mAccelLast;
    mAccel = mAccel * 0.9f + delta;
  }
  
```

```

if (mAccel > 0.5) {
    if (mSwitchSet == 5) {
        startActivity(new Intent(MainActivity.this,
        AlarmAlert.class));
        finish();
    }
}
  
```

Charger Removal Detection Method

```

public void onReceives(Context context, Intent intent) {
    int plugged = intent.getIntExtra
        (BatteryManager.EXTRA_PLUGGED, -1);

    if (plugged ==
        BatteryManager.BATTERY_PLUGGED_AC)
    {
        chargerFlag = 1;
    } else if (plugged == 0) {
        chargerFlag1 = 1;
        chargerFlag = 0;
        func();
    }
}

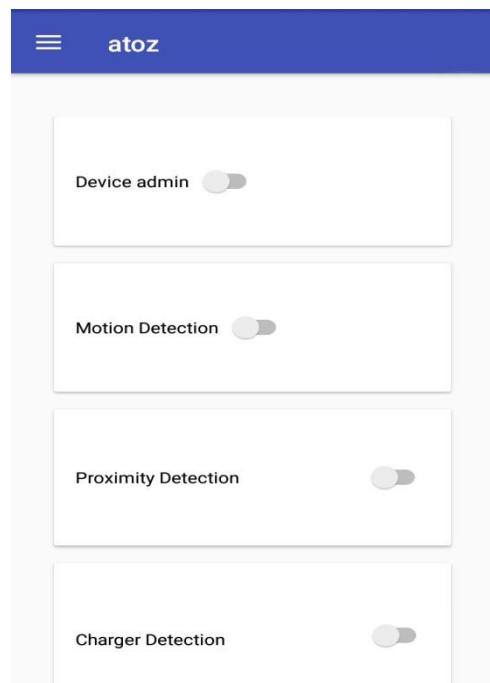
public void func() {
    if (chargerFlag == 0 && chargerFlag1 == 1 &&
        chargerFlag2 == 1) {
        startActivity(new Intent(MainActivity.this,
        AlarmAlert.class));
        chargerFlag2 = 0;
        finish();
    }
}
  
```

Snapshot Capture Method

```

public void surfaceCreated(SurfaceHolder holder) {
    try {
        Utils.LogUtil.LogD(Constants.LOG_TAG, "Camera
Opened");
        camera.setPreviewDisplay(sHolder);
    } catch (IOException exception) {
        camera.release();
        camera = null;
    }
}

```



VI. REFERENCES

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III. CONCLUSIONS

This paper presents a anti-theft application for android based devices. When this application is installed by user it will fulfill user long term requirements by providing alert by alarm and email using sensor and camera, which makes easy for the user to identify the thief and to catch the theft. It enhances the application by providing charging removal alert. Due to lot of update of technology this application will further be developed and improved. Currently this application is available for only android based device.

IV. FUTURE SCOPE

Nowadays android based device as many sensor like sensor axes, base sensors, and composite sensors. Implementing this sensor in anti-theft application based on android device will make android device more secure. Future will try to use more sensor ,video recording and location tracker .

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