International Journal of Future Generation Communication and Networking
Vol. 12, No. 3, (2019), pp. 34-43

"SHAKTI: Enticing Safety to the ZENITH"

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Abstract

In the present era, the use of smart phones has risen expeditiously, thus, they can be used aptly for personal security and for numerous other protection purposes. The atrocious incidents that have happened in the recent past, outraged the whole country and have alarmed us to look for effective safety solutions. As a result, a pool of new technical solutions have been devised, for the purpose of ensuring safety of women via their phones. This paper presents SHAKTI, an Android Application for Women's Security that can be instigated by merely pressing the volume and power button together, whenever need arises. Also through a single click on this app an alert message and an emergency call, along with the victim's GPS location will be resent automatically to the intended recipients(family & friends) and to the Police Control Room at an interval of every five minutes. A very unique approach to the entire process is that the alert message can also be sent via WhatsApp, which is one of the most commonly used messenger now-a-days. This helps in rescuing the person in danger much more efficaciously and faster.

1. Introduction

Women have been contributing magnanimously to diverse fields. They work at distinguished sectors of the society ranging from corporates, politics, hospitals and movies to working at houses as maids, small scale industries and various other domains; across all kinds of environments and with people of different sorts. In such a scenario, safety of women at the workplace, at home and outdoors are of utmost importance. Thus, we need to develop and utilize measures and tools which can ensure that they be secure anywhere and everywhere.

Woman in her substantially integral form is –"SHAKTI". In today's big world of hustle and bustle, woman is still alone in solitude everywhere, amidst the crowd of people. The most optimal means to reduce the possibility of being victimized by a crime, such as kidnapping, rapes, molestation, etc. is to reach out to our near and dear ones who can rescue us from danger.

This App in the fingertips of today's woman symbolizes the trident in the hands of Goddess Durga. As Durga used her trident to destroy the demons, likewise the woman of today can utilize this app as her weapon to protect herself and defeat the evils of the present era .Whether you are travelling outside or find someone stalking you and do not know how to get home, having this app on your smart phone can reduce the vulnerability factor and can prove to be a helping hand whenever required.

II. PROBLEM IDENTIFICATION

2.1 Problem Identification

2.1.1 PROBLEM IDENTIFIED: Women's Safety in India

Safety of women is extremely crucial whether at home, outside the home or at working place. Recently reported crimes against women especially the rape cases have been very dread and fearful. Because of such crimes, women's safety in India has become a serious topic of concern.

Molestation and harassment of women happens not only in the night or evening but also in the day time at their home, working places, or other places like streets, clubs, etc. There are numerous cases of rapism, acid attacks, eve-teasing and kidnapping of women in both rural and urban areas.

The case of Nirbhaya gang-rape in Delhi shook the entire nation, questioning the security and safety of women in the national capital of India. In villages also, the case is no different. recently, there was a heinous incident of the abduction, rape and murder of an 8-year old girl, Asifa Bano, in Rasana village, in the Indian state of Jammu and Kashmir in January 2018.

2.1.2 EXTENT OF THE PROBLEM:

- A Nationwide Issue that needs ATTENTION Critically!

Women cover almost half population of the country, so they are half participants in the growth and development of India. It is a big social stigma which must be resolved urgently through the contribution and efforts of each one of us.

It is hindering the nation's development and most significantly mutilating the half population of the country in all aspects (physically, mentally, and socially).

As per India's Population–

Table 2.1.2 India's Population 2018 And, No democracy is truly democratic when half its population lives in terror.

Year	Total Population	% of Males	% of Females
2018	1,354,051,854	51.81%	48.19%

3.1.3 EXISTING SYSTEMS

As a part of literature survey, I investigated some applications that offer the same or similar services for android and other platforms.

The motive was to observe the features offered by these applications and to identify the factors on which they could be improved to produce a much more enhanced and better solution to the problem.

Now-a-days, the instances of crimes on women are rising rapidly. In such a scenario with the advent of new technologies, smart phones can prove to be a remarkable weapon for the purpose of women's safety.

Some of the already available android apps concerned with the security of women are as follows:

1. FIGHTBACK: -

This app was developed by Mahindra faction. In earlier days, this app was not freely available and the users had to pay for this app. But after the Nirbhaya case in Delhi, this app has been availed free of cost. This app sends a message to your friend or contacts that "user is in trouble" through E-mail and SMS[1]. It works on the smart phones that support Android Java Programming.

2. GUARDLY: -
It is developed basically for women safety intention, to put a phone call by your name, instantaneous location, and emergency hit to your selected friends. This app requires you to provide your personal details and credentials such as birth date, height, weight, blood group, etc. [4]. It can also be used in I-Phone, I-Pad, BlackBerry, Windows Phone etc.
3. VANITHA ALERT: -
This app has been developed by ABC Mobile Learning. A text message is sent to the registered mobile number on pressing the " HELP" button and also provides location of the user [2].
4. RAKSHA – WOMEN SAFETY ALERT: -
This app was launched by Bhartiya Janta Party. It sends the user's location to the registered contacts and the user can also get the details of the location of the contacts, by clicking on this app,. A loud buzzer noise is sent to the registered contacts[3]. Moreover, multiple contacts can also be added.

III. PROPOSED SYSTEM

In today's world, people using smart phones have increased drastically. Therefore, a smart phone can be used efficiently for personal security and several other protection purposes. The atrocious incident that outraged the whole nation has instigated us to go for the safety issues and so a pool of new apps have been devised to provide security systems [5-7] to women through their smart phones.
This paper presents SHAKTI, an Android Application [8-9] for the Safety of Women and it can be activated just by pressing the volume and power button simultaneously, whenever need arises.
This app identifies the current location of victim through GPS and sends an emergency alert message comprising this location URL to the registered contacts (Family members & Friends). It also calls on the Primary Contact Number and to the Police Contact Number

3.1 UNIQUENESS OF DESIGNED SYSTEM

In the existing systems, I have mentioned some Android applications having similar feature to my application. In all those applications, victim's location is sent to the registered contacts through SMS or Email. But in practical situations, the smart phone users today are not prone to checking text messages or e mails so frequently, any more.
The unique feature of this application which distinguishes it remarkably from other existing solutions is that it sends the Alert message to the registered contacts and to the nearest police station through WhatsApp also.
So, the application allows the user to notify his/her acquaintances or relatives through Whatsapp, which is the most convenient and fastest mode to draw the recipient's attention towards the alert message sent to him/her.
Another exclusive and extremely crucial feature of this application is that it resends the Emergency message to the intended recipients within an interval of every five minutes, thus, updating the victim's exact current location, so that the person in danger can be traced and rescued much more effectively and faster.
Furthermore, the application facilitates to send an alert message along with the victim's location to the contact number of the police station preset by the user. This would call for

an immediate action to be taken even if the relatives or friends cannot come to rescue the victim due to any reason.

3.1.1 Unique Features

The App sends the following information of the person in danger to Primary contact no., secondary contact no., and police control room –

- Sending of emergency text message.
- Sending Alert message via WhatsApp.
- Sends Emergency Call.
- Sends the current geographic location of the victim through GPS Technology.
- The alert message along with the GPS location will be resent automatically to the intended recipients at an interval of every five minutes, So that the victim's geographic location is updated in a timely manner.
- This will aid in rescuing the victim much more effectively and faster.
- Instigation of the entire process through simultaneous pressing of the volume and power buttons.

IV. FLOW CHART

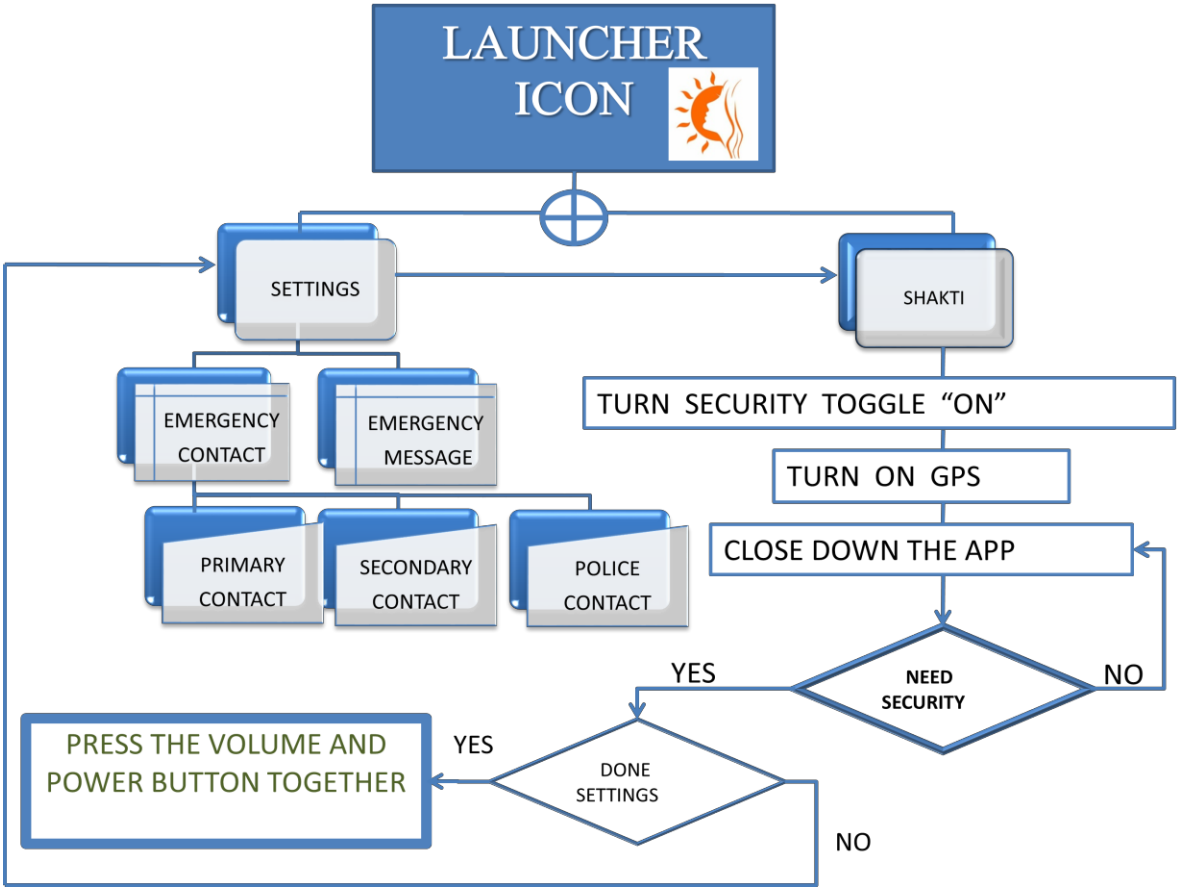

Fig. 4.1 Flow Chart

V. WORKING PRINCIPLE

5.1 FUNCTIONALITY OF THE APP

- Launch the app by clicking on its launcher icon.
- Go to the Settings menu in the Navigation Drawer Menu.
- Enter the Primary Contact number, Secondary Contact number (optional), the Police Contact Number (by default the police control room number is pre-fed) and the emergency message (pre-fed as " I'm in emergency ").
- Whenever going to travel or feeling like you require safety – Set the security toggle button to 'ON' mode, turn on the GPS and close down the app.
- When in a hazardous situation PRESS the VOLUME button and POWER button together.
- This will automatically send the alert message along with your current GPS location and an emergency call to the Primary Contact number, Secondary Contact number and the Police Contact number.
- You can also send the emergency message via WhatsApp Messenger by clicking on "Send WhatsApp Message" button.
- The alert message along with the GPS location will be resent automatically to the intended recipients at an interval of every five minutes, So that the victim's geographic location is updated in a timely manner.
- This will aid in rescuing the victim much more effectively and faster.

VI. METHODOLOGY

6.1 SOFTWARE DEVELOPMENT MODEL USED

Agile Model

Agile model devises that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile Methodology, the tasks are divided into time boxes (small time frames) to deliver specific features for a release.

Iterative approach is taken and after each iteration, the working software build is delivered. Each build is incremental in terms of features; the final build comprises of all the features stated in the requirements.

The diagrammatic representation of the Agile Model is as shown below –

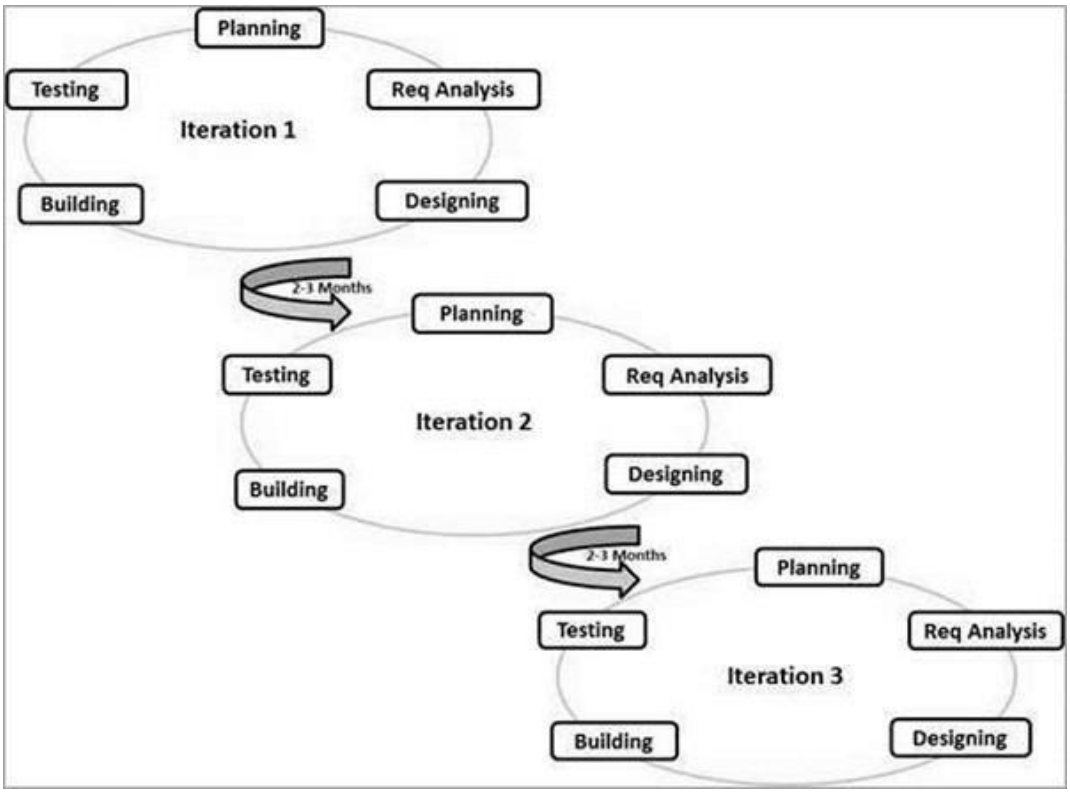

Fig. 6.1 Agile Development Mechanism

Agile is based on the principle of **adaptive software development methods.**
The Agile Manifesto principles are as follows −

- **Individuals and interactions** − In Agile development, self-organization and motivation are vital, as are interactions like co-location and pair programming.
- **Working software** − Demo working software is considered to be the best way of communicating with the customers in order to understand their requirements, instead of just depending on documentation.
- **Customer collaboration** − As it is not always possible to gather all the requirements completely in the beginning of the project due to various factors, continuous customer interaction is very crucial to get proper product requirements.
- **Responding to change** − Agile Development is based on swift responses to change and continuous development.

6.2 TECHNOLOGY USED

- Android Application Development –
  This project has been developed in ANDROID Platform. Android is a mobile operating system. It was developed by Google. It is based on the Linux kernel and devised essentially for touch screen mobile devices such as smart phones, tablets, Smart-TVs, etc.
- GPS Technology –
  The Global Positioning System (GPS) is a technical marvel made possible by a group of satellites in Earth's orbit. It transmits precise signals, allowing GPS

receivers to calculate and display accurate location link (latitudinal and longitudinal value), speed, and time information to the user.

6.3 PHASES INVOLVED

STAGE 1: Pre-planning and research
STAGE 2: Mental Prototyping
STAGE 3: Assessment of Technical feasibility
STAGE 4: Building a prototype
STAGE 5: Designing and development of App
STAGE 6: Building the App using Agile methodologies
STAGE 7: Testing the mobile App
STAGE 8: Launching and Deployment of the App

VII. RESULT & ANALYSIS

7.1 OVERVIEW OF OUTCOME

Evaluation demonstrates the overall working and outcome of the application. The comprehensive assessment of the Android Application can be done in four key phases which have been illustrated below:

The first key phase, after installation of the app in the smart phone comprises of feeding the required details in the Settings Activity. These include credentials such as Emergency Message, Primary Contact Number, Secondary Contact Number and Police Contact Number into the respective fields. The Application saves the provided information.

The second key step is to send the GPS Link of the user's current location to the specified contacts (GPS information is in the format of latitude-longitude co-ordinates or the URL which points to the location of the person on Google Maps or any other third party Mapping application) at hazardous situations or when the user requires security. The location of the person in danger is sent only when the GPS is switched ON in the device. Otherwise, only the Emergency Message is notified at intervals of every five minutes.

The third major landmark consists of work done in sending the message containing location URL to the registered contacts through Whatsapp by clicking of "Send Whatsapp Message" button in the Main Activity. This feature is devised as most of the smart phone users today can be quickly instigated via whatsapp rather than simple text messaging. Therefore, the exact location of the person can be tracked by the application and retrieved by the recipient immediately which is the primary aim of the proposed system and the person can be rescued.

The fourth and the most crucial checkpoint is to ensure that the entire process of sending the Emergency Text Message and Emergency call along with the victim's GPS location being sent to the Police, Family and Friends at a timely interval of every five minutes; is instigated/automated by simultaneously pressing the Volume and Power Buttons together.

7.2 SCREENSHOTS

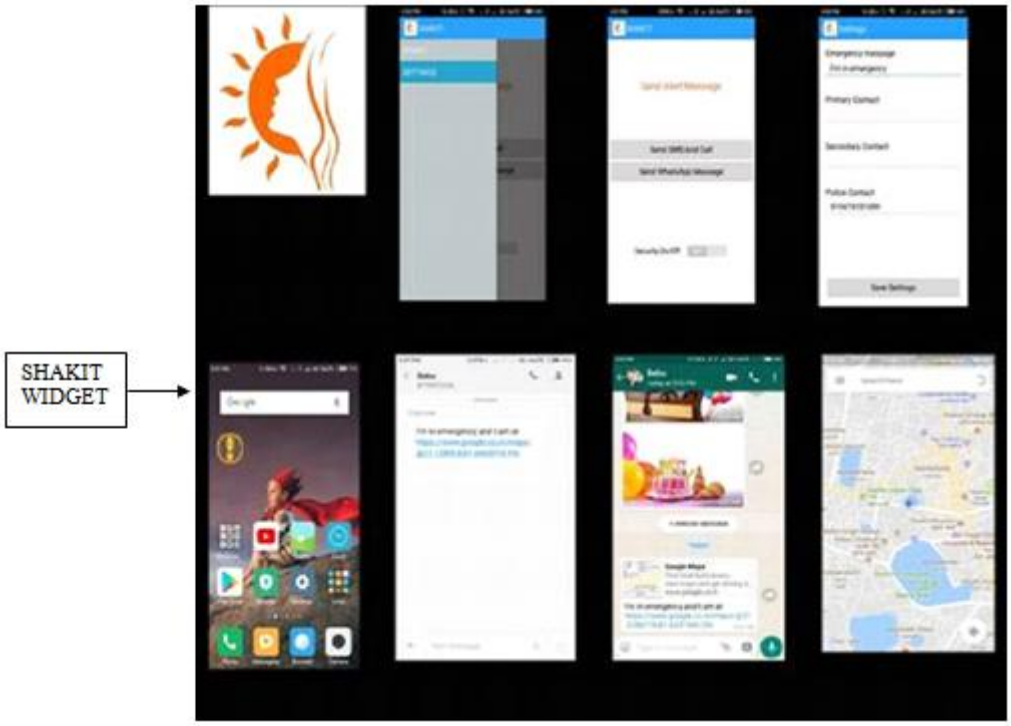

Fig. 7.2 Snapshots from the App's Insight

Fig. 7.3 Instigation of the App through Volume and Power Button

VIII. CONCLUSION AND FUTURE SCOPE

8.1 CONCLUSION

In this report, I have described SHAKTI, an Android Application for the safety of women.

This application helps in tracking of the location of the victim through GPS along with one of the registered contacts and the nearest police station receiving an alert message from the root device.

The merit of this application is that there is a highly convenient and remarkable feature of sending the alert message through whatsapp messenger which is very prominently used by smart phone users now-a-days.

This helps to reach out to the recipient very easily and immediately for spontaneous action to be taken in order to rescue the victim in need.

This project would ultimately aid to serve the entire human race– ensuring self-protection and dignity – making our nation a veritable heaven to live in.

Thus, this application can help rescue anyone in danger, especially the women, in a big way from unsafe conditions.

8.2 FUTURE SCOPE

This application can be integrated with the law enforcement database, which includes all the phone numbers of regional cops.

Some cases such as rescuing victim when the mobile network is not available, after initial alert or switch off condition can also be addressed.

It can also be made to function in synchronization and control with a wearable or a handheld device in order to utilize its functions, in case the victim's mobile phone has been take away by the offender.

Furthermore, this application can be designed to work in IOS and Windows mobile platforms.

IX. REFERENCES

[1] Android App developed by Canvas M Technologies, 26 June, 2013, "FIGHTBACK", http://play.google.com/store/apps/details?id=com.canvasm.wsa.view

[2] ABC Mobile Learning Communication, 23 January 2014,"VANITHAALERT", https://play.google.com/store/apps/details?id=org.sravan.ntv.save.vanitha&hl=en

[3] BharathSewa.com, 14 March, 2014,"RAKSHA – WOMEN SAFETY ALERT", https://play.google.com/store/apps/details?id=app.raksha&hl=en

[4] Android App Developed by Guardly Corp., 28 January, 2014, "GUARDLY", https://play.google.com/store/apps/etails?id=com.uardly.android.guardly

[5] Security system IEEE Research paper, 2017 https://ieeexplore.ieee.org/document/7892665/

[6] Abhaya women safety IEEE Research paper, 2015 https://www.researchgate.net/publication/287201587_Abhaya_An_Android_App_For_The_Safety_Of_Women

[7] S. Mukherjee, P. J. Prakash, and D. Kumar, "Android Application Development & Its Security," vol. 4, no. 3, pp. 714–719, 2015.

[8] https://dveloper.android.com/training/sharing/send

[9] https://mobikul.com/sending- message-application-whatsapp-number/

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