



DID-Damsel in Distress Safety App

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Abstract-This research relates to an android application where the main purpose is to create a safe environment for the women who are in need of help. The uniqueness of this system is, when the user is in a harmful situation the user can take a SOS call and the current GPS location of the user to the guardian and also if the user is in a harm or has faced a trouble the system will provide direction to the nearest police station or to the nearest hospital. And there is a function which is, where the user can select an option to start counting the footstep and if the footstep starts to increase and the application will detect the frequency of the increment of the foot step and ask if the user is facing a harmful full situation if the user click on yes a SOS call and the current location will be sent to the guardian. And another major problem is to be unsafe is unknowingness of the people and about the area, this system has another feature where to mark the most popular crime areas related to harassment and notify the user when they enter the area. Damsel in Distress will provide a safe environment to the user.

Keywords: Safe environment, SOS, GPS location, Direction, Harassment, Alert

1. INTRODUCTION

Safety is a major question to the women in our society now a days. Women are being abused and harassed in many ways now a days. And there are harassed in many ways by verbal like derogatory comments, request for sexual favors and offensive jokes and by non-verbal like staring, throwing kisses and winking. And by Visual, it means by drawing offensive pictures photos. And the most common and most done around the world is the physical sexual abuse or harassment.

Women are being abused almost anywhere and there is no age limit in that. In schools and when you use the public transportation or it can be in a workplace or in the university it can happen. The normal procedure is to call the police and some women are shy to tell about it or they are scared to take an action

According to the police division island-wide from 2012 to 15th January 2020 that 11,998 incidents of rape, 4,806 of serious sexual abuse and 5,891 of child abuse were reported. And for the first 15 days of 2020 there has been 78 incidents of rape, 21 of serious sexual abuse and 34 child abuse cases.

A study was contacted by the United Nation Population Fund (UNFPA) in 2017 confirm that 90% of women in Sri Lanka have experienced sexual harassment in public transportation. And a study which included 2,500 individuals between ages of 15 and 35, stated that woman report experiencing abuse and harassment widely in transportation services, verbal and unwelcome abuse, but more likely physical abuse. It is estimated that 35% women worldwide have experienced physical and/or sexual violence by their partners or by a stranger at least once in their lifetime.

As a solution to the above-mentioned reasons, designing and implementing an android application will help the user to be safe and be aware in the surrounding area which is not safe. And also it will help the user to inform their guardian if any trouble occurs by from just a click. And to navigate themselves to the nearest hospital or to the nearest police station. Through this application the user will always be prepared and will be aware of the surrounding which is very important in order to be safe.

2 RELATED WORK AND USER INTSERFACE

2.1 SOS

2.1.1 RELATED WORK

I SAFE APP

According to Dr.Sridhar Mandapati and Sravya Pamidi and Sriharitha Ambati a lot of unfortunate situation have taken place when it comes to the safety of women. And problems can come in any direction. Such as when walking on the road after work, when going to the super market or many other reasons for which they go alone. According to the research paper in 2013 there happened an incident which is a gag rape in New Delhi a 23 year old woman was raped in a moving bus. Another incident was taken place in Mumbai in this case of woman who was leaving her native place after Christmas holidays has been kidnapped and killed. According to the researchers in order to overcome such problems faced by women the I Safety (women security app) mobile based application is not only necessary to use but also plays a pivotal role with android software. In the system the user will be able to add the number of the guardian and send the current location though a SMS and inform the guardian. The system has an option to make a fake call when the user is in an unnecessary conversation and to get off from it. [1]

2.1.2 USER INTERFACE

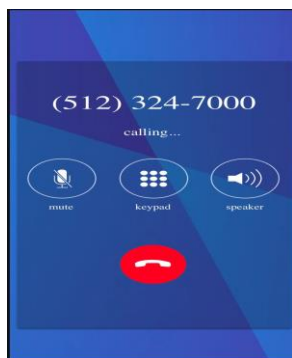


Figure 1 SOS Call

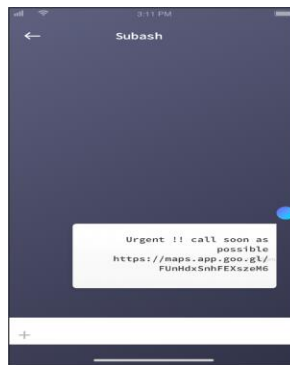


Figure 2 SOS Call

In the above figure 1 and figure 2 it shows the functionalities when the user clicks on the SOS button where an immediate call and a message will be sent to the guardian from the users phone which includes the GPS location of the user.

2.2 Navigation

2.2.1 RELATED WORK

ABHAYA

According to Ravi Sekhar Yarrabothu and Bramarambika Thota in today's world people using smart phones have increased rapidly and hence, a Smart phone can be used effectively for personal security or various other security purposes. According to the researchers the uniqueness of the system is to send the current location to a registered number and inform them of user's location. [2]

2.2.2 USER INTERFACE



Figure 3 Navigation

Figure 3 will be displayed when the user clicks on the "Navigation" button. When the user needs direction to the nearest hospital or to the nearest police station.

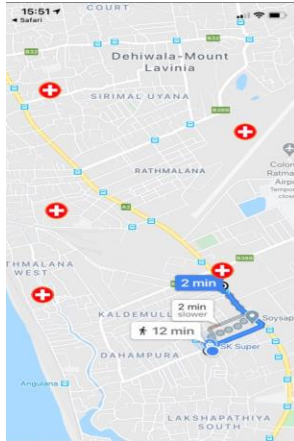


Figure 4 nearby Hospitals

In the above figure 4 shows when the user clicks on the hospital option and how it will be showing and giving direction to the user for the nearest hospital.

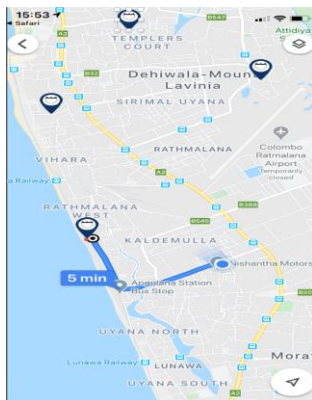


Figure 5 nearby Police station

In the above figure 5 shows when the user clicks on the police station option and how it will be showing and giving direction to the user for the nearest police station.

2.3 Foot Step Count

2.3.1 RELATED WORK

STEP COUNTING USING SMARTPHONE-BASED ACCELEROMETER

According to Ms. Najme Zehra Naqvi this paper presents the performance of a new step detection algorithm that utilizes the accelerometer of a waist-mounted smartphone. Nowadays this kind of technology has become more successful rather than we think. Because people always think about their health to move into the real world. Literally in this paper shows that it's easy to combine with the

technological world using these exercise measurements. And also this is only a navigation system. Basically in this paper it considers the step counter, that accessing through smart phone .step counting with a smartphone are still challenging due to many different walking behaviors and mobile phone positions .step counting means automatically detecting and counting steps taken by a human . In addition to this paper if the user shakes the phone while the user uses the phone when running or walking it automatically calculates the steps. It is easy to use and maintain and also more user friendly. When counting the steps have to reflect on the starting point and also recognition of each point that the user follows. An algorithm can also be used for estimating the distance. And also sometimes these step counters can be different from one phone to another because of the sensors .The advantage of this paper is to move with new technologies while using this step counter and live healthy. [3]

2.3.2 USER INTERFACE



Figure 6 Footstep count

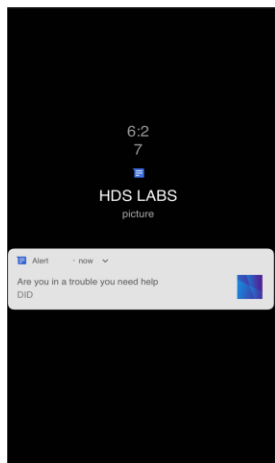


Figure 7 Notification

In the above figure 6 shows the interface of the when the user clicks on the “Foot Count Detection” option where it asks permission from the user to “Allow” or “Deny” the functionality. When the user allows the option, it will start counting the users step count and if the user is in trouble and running away from the incident a notification will be popping up to ask if the user in a trouble and need help. When the user taps on the notification a call and a message will be sent to the guardian

2.4 Pin Point Monitoring.

2.4.1 RELATED WORK

WALKSAFE: COLLEGE CAMPUS SAFETYAPP

According to Saloni. J.D.Vaghela this paper introduces a location based emergency notification system with the records of past incidents along with the type of emergency with respect to the user’s location. This paper considerably says that most of the school children and colleagues are facing such kind of incidents in the United States, and also Seung - Hui Cho shot and killed thirty two students and wounded seventeen others on the campus of Virginia polytechnic institute and state university in Blacksburg on April 16, 2007. After 10 months Steven Kozmierczak killed five and wounded eighteen from a mass shooting that occurred at Northern Illinois University. In 2014 it counted the crimes such as Burglary constituted 42% of crime , motor vehicle theft 9% , arson 2% and sexual of sensors 32%. This paper presents that mass shootings

and violence have increased day by day to recognize illegal acts. And also in the campus related crimes. Because of that lots of campus studies are becoming of these incidents majorly. This can affect males and females on these campuses. Some researchers show that some groups, especially elders and women, are more hesitant about crime. Use of mobile technology to notify the campus crimes has increased in the passing years. So that safe lines have been developed. Even the social media apps also used to inform these emergencies that they are facing. Walk safe means that the user of that while using it, it will track the GPS location and show the crimes that are reported on the campus and provide a geographical view of the situation and saying that it is a dangerous area. And also it shows the time and the date of the incident that happened before. The app already keeps details about previous incidents that happen on campus. The advantage of this paper is that people can maintain their safety with this app and can also inform it to another person manually using the app. [4]

2.4.2 USER INTERFACE

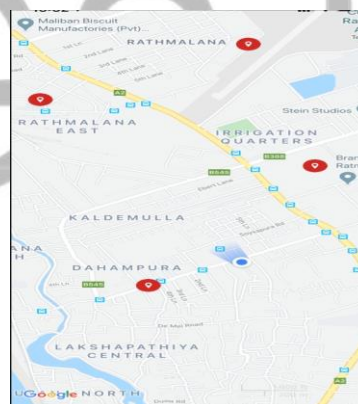


Figure 8 Pin Point Monitoring

In above figure 8 interface it shows when the user clicks on the “Pinpoint Monitoring” It will be providing the user pinpoints of abusive and areas to be alert to be careful which is to the user’s current location.

- **Motivation video Interface**



Figure 9 Motivation

In the above figure 9 interface will be displayed when the user clicks on the “Motivation” where the user will be provided with tips and technique to defend themselves in an abusive situation.

- **Home Page**



Figure 10 Home page

Figure 10 will be the “Home” interface where all the functionalities of the Damsel in Distress application. Which will be displaying after the user logs in.

3 METHODOLOGY

Prototype methodology was selected to implement the system and to achieve the project aims. Analyzing, designing and implementation phases were administered coincidentally and process until the project had succeed the goals. The first prototype was built with minimal features with major operational. In the second prototype, all the important functions with other functions were included to better the version of the working system. This session briefly discusses

each and every software development phases of the “Damsel in Distress- Safety Application”. When executing this methodology, the project team had followed the succeeding stages: planning, analysis, design, implementation and testing.

3.1.3 Data Gathering.

- Questionnaires

The data was gathered through a questionnaire. The questionnaire was selected to gather information from a large sample of women in the society. Since the population is not in a very large scale, non-probability sampling methods were used. To select the respondents to the questionnaire’s quota sampling is used respectively where quotas of the population is selected to respond to the questionnaires. The questions that was asked in the questionnaire from the women who answers was

1. What kind of a mobile phone they were using.
2. Which age limit do they belong to?
3. Have they ever been harassed/abused?
4. Have they ever been harassed/abused in a public place?
5. Have they ever been harassed/abused while using a transportation service?
6. When they face an abusing situation have they ever seek for help
7. Do they know how to defend themselves in a harassed/abusing situation?

3.2 DESIGN AND ALGORITHMS

3.2.1 OVERVIEW OF THE SYSTEM.

In the above diagram, the overview of the project is described. The Damsel in Distress is a safety application which provide a service to the user to handle the unexpected abusive incident which happens to the user. The Damsel In Distress will store the details which the user inputs and when the user is in a trouble and press the SOS button immediately a distress call, message and the GPS location will be sent to the guardian. And also, if the user has faced an unexpected incident and need to find direction the Damsel in Distress- safety

Application will full fill the needs of the user in the navigation component in the safety application. The Damsel in Distress will monitor the location of the user and will provide the pinpoints of the abusive places which the user should be alert off.

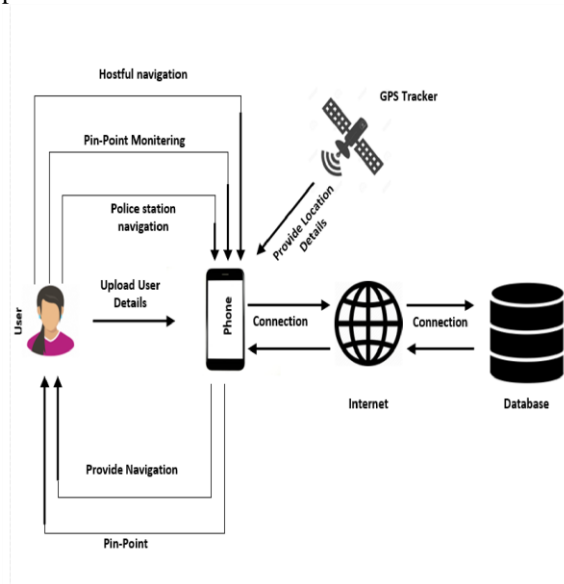


Figure 11 System Architecture Diagram

• SOS

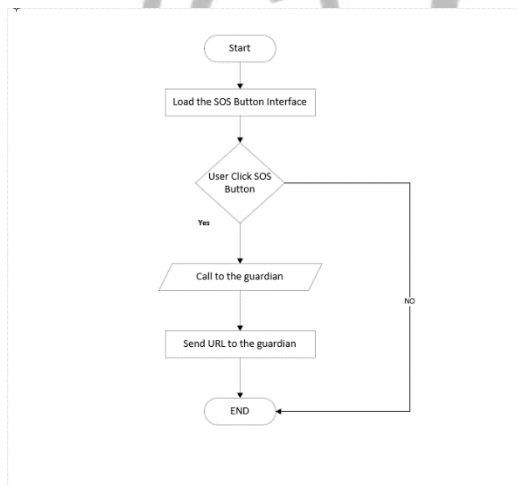


Figure 12 Algorithm design for SOS Button

When user is traveling alone or coming home after work in the night and when the user face a troublesome situation and need to contact the guardian the user is able to do so from one click in the Damsel in Distress by clicking on the SOS button. At the very beginning when the user downloads the safety application from the play store the user needs to enter a guardian's phone number when clicking on the SOS button a call will be taken

and SMS with the current location will be sent as a URL to the guardian

• Foot Step Count

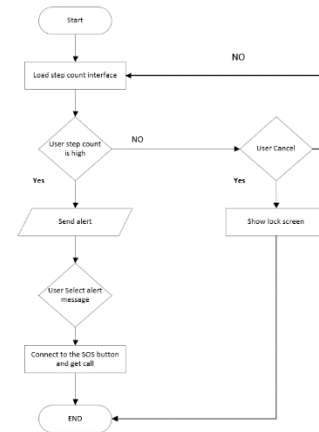


Figure 13 Algorithm design for footstep count

In the Footstep Count function is when the user is followed by some stranger and the user starts running away from it an alter message will pop asking if the user is in a trouble and if the user clicks “yes” a call and SMS will be sent to the guardian

4. RESULTS

“Damsel in Distress” was developed for android mobile phones only and it will provide safety to the user when they are in a troublesome situation. The functionalities are the SOS button, Pin Point monitoring, Navigation and Footstep count.

Different Person-Different Speed (6 Step count per second)

Table 1 User output

User	Step Per second	Actual Number of steps	Expected	Actual Result
1	3	5	Not Running	Not Running
2	7	8	Running	Running
3	6	6	Running	Running

Same Person-Different Speed (6 Step count per second)

Table 2 User output

User	Step Per second	Actual Number of steps	Expected	Actual Result
1	3	5	Not Running	Not Running
2	7	8	Running	Running
3	6	6	Running	Running

5. CONCLUSION AND LIMITATIONS

When you're in are traveling alone anywhere in the society now a days many face different type of problems. The main goal is to provide to the user and kept them informed about their surroundings.

A treat can come to anyone at any unexpected time and we might not be able to inform our love ones on time and inform them our current location. When such incident occurs by clicking on the SOS button an immediate call and a SMS will be sent to the love ones the current location with the URL. More often women are being followed by Sangers in many occasions and when the user starts to run by measuring the footstep and it's frequency an alter message will be popped asking if "Are you in a Trouble Do you need help" if the user selects "yes" then an immediate call will be taken and the location will be sent as a message. Another important is to know the direction when you have faced a troublesome situation by selecting the navigation the user will be directed to the nearest police station and to the nearest hospital. In the Pin point monitoring option the user will be notified by when they enter to a dangerous area by sending an alert message. It is very important to know how to defend yourself in the motivation feature the users will thought how to do by demonstration of self-defense techniques.

5.2 LIMITATIONS

There are few limitations in the Damsel in Distress mobile based safety application.

- When the user is facing a life threatening situation without accessing the phone the user will not be able do any functionalities.

- When the user is not connected to the internet or have mobile data the user will not be able to access the functionalities.
- When the user is in a trouble and try to reach the guardian and if the guardian does not pick up the phone the user will be facing a huge problem.

6. RECOMONDATIONS

The user is recommended to follow the following recommendations when using the Damsel in Distress- Safety Application

- Check if the Mobile phone is always connected to the internet connection
- Check if the mobile phone balance is sufficient enough to make a phone call
- To enter a working guardians phone number when registering themselves.

7.FUTURE WORKS

This application can be further modified with other new extra features addressing few limitations. Research team has identified few areas which might attract potential researches in near future.

- To develop a Voice command system to make calls and to give commands.
- To make a button to call 119 or to an ambulance
- To build an option to contact to a call center when the guardian does not answer the mobile phone

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[H~2ARBIv0rJmMLLuPx5xsc1PIBjeC-ffN0L~96-3eXJd27yg3xwaR7BXDpODoHipUCSIEwig_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA.](https://www.iiif.org/iiif/choice-reviews-online/47/11/47-6268-47-6268/2010/10.5860/choice.47-6268/)

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