A WOMAN SAFETY DEVICE AND APPLICATION-WOSAF

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Abstract : Today in the current global scenario women are facing a lot of challenges. This paper discusses the underlying idea behind the women safety device and the app. It discusses a portable device which provides options to contact the nearby police station and also to get assistance from hospitals. The mobile app provides various other features which would help women when she in distress situation and also helps to reduce the crime. This paper explains about the WOSAF device in detail and also summarizes other significant works in this field.

IndexTerms **- Mobile app, portable device**

I. INTRODUCTION

"There is one universal truth, applicable to all countries, cultures, and communities: violence against women is never acceptable, never excusable, and never tolerable" [1]. WOSAF is a security device specially designed for women in distress situation. Mobile phones are easily accessible, crowd sourcing and affordable scalability [2].This is the reason why mobile phones are used as a major medium for the purpose of women safety. The system is implemented in both hardware and software so that the safety can be guaranteed. It consists of a portable device that can be carried in a pocket or a purse and a mobile application. The mobile application can be accessed by anyone by installing it on their smart phones. The main intention is to provide the women with a fast and simplest way to contact their beloved ones help. The basic idea which is triggered here is to send the current location and a distress message to cops and saved numbers.

The device is provided with two buttons. One button will contact the cops and another button will help to get assistance from the hospital. In both cases, a message with the current location will be sent to the contacts which are saved in the app. The mobile app contains various features such as SOS alarm to draw the attention, snapshot option so that the picture of a taxi or the place can be sent to the nearest persons, accelerometer is implemented so that by shaking the phone, countdown will start from 10 seconds and after the time limit it will send the alert message to the contacts saved in the app.

The system can be used as a preventive measure during:-

- Attempted physical or sexual harassment.
- Feels unsafe while taking a taxi.
- Domestic violence.
- Unsafe neighbours.

II. RELATED WORKS

As part of surveys, it is found out that there is a number of applications and preventive measures are available in the market for women safety. Women's security is an app developed by AppSoftIndia. The key features of the app are: the user has to save some details. These details include the Email address and password of the user, Email address and mobile number of the recipient and a text message. Then, the app is loaded as a "widget", so that when the user touches the app, it alerts the recipient. Another key feature of the app is that it records the voice of surroundings for about 45 seconds and this recorded voice, text message containing location coordinates of the user is sent to the recipient mobile number. Similarly, [3][4][5] are the apps which are specially designed for the purpose of women. No apps are guarantying 100% safety. Each device has its own merits and demerits. It is found out that rather than mobile apps a portable device is rare in the market. The findings suggested a number of features that must be included and generates an idea of creating both a portable device and a mobile application.

III. SYSTEM ARCHITECTURE

3.1 Motivation

Most of the existing systems are either an Android app or a hardware device. The proposed system facilitates both software and hardware implementation. It also incorporates all the major features of existing systems along with some new unique features.

3.2 Methodology

3.2.1 Hardware Device

The hardware device consists of two buttons which can be used on any distress situation. The first button is for police assistance and the second is for the nearby hospital service. The device is directly connected to the Android application through a wireless Wi-Fi module and updates the status on the database on each button press. The figure shows the circuit diagram of the device.

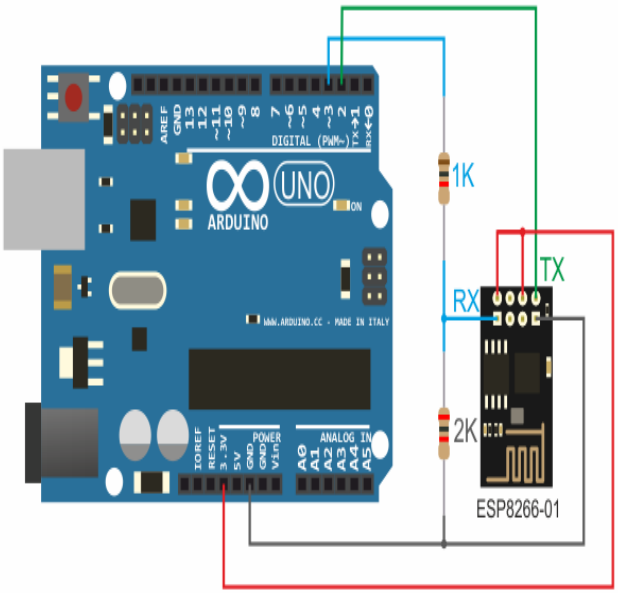

fig 1: circuit diagram of the hardware device

3.2.2 Android Application

Android application is similar to the working of the hardware device. In addition to that, the application has some more unique features. One time registration is required for the user. The application comprises of many icons including the direct call to the police and hospital service, sending an alert message to the closed contacts and nearby services with the current location details, SOS etc.

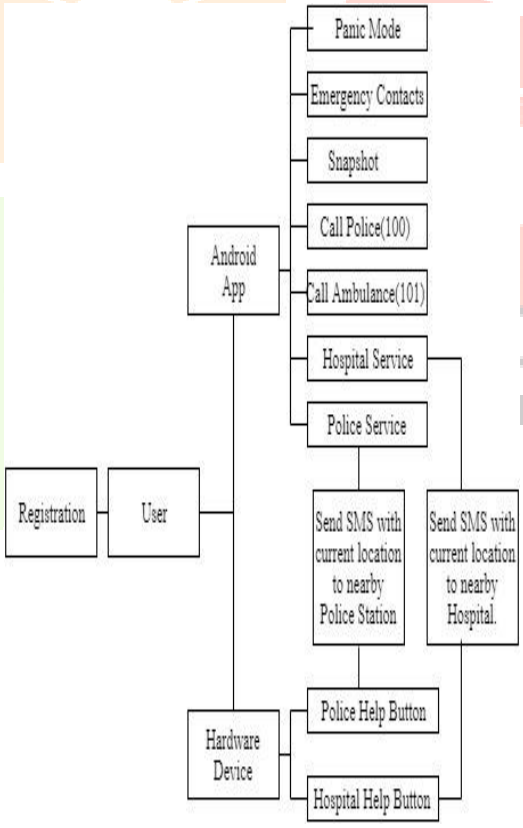

fig 2: general methodology of the proposed system

3.3 Internal Working

3.3.1 Registration

The user gets registered in the app by entering their email id, name, and phone number. The user automatically gets directed to the home page once registered.

3.3.2 Police Service

The two icons are provided for the police assistance. The first icon is to directly contact the police and the second icon is to find the nearest police station and will send an emergency message indicating that the user is in a trouble and send the exact current location. Along with that, saved contacts also get the same alert message.

3.3.3 Hospital Service

The module is similar to the police service. Providing two icon, where one is to directly call a hospital and other is to find the nearest hospital and send an alert message along with the location and closed contacts also get the same alert.

3.3.4 Panic Mode

Panic mode will produce an alarm to get the attention from surrounding people. Also, the user can turn on the panic mode by double tapping the power button.

3.3.5 Snapshot

The user can take the snapshot of the vehicle they are using and can upload to send it to the saved closed email in order to track the movement of the vehicle.

3.3.6 Accelerometer

The feature will be activated when you shake your phone at a particular angle where you need any help. By that movement of the phone, the countdown will start from 10 seconds and after the time limit, it will send the alert message to the contacts saved in the app. There is an option for aborting the countdown if the user moved phone by mistake.

3.3.7 Emergency Contacts

It is used to save the contacts of your closed ones for sending the alert messages.

3.3.8 Hardware Implementation

The first button in the device sends an emergency message to the nearby police station indicating the current location of the user and along with that, it also sends alert to closed contacts saved in the app. In case of any hospital assistance, the second button is provided and it determines the nearest hospital and sends alert to them. The module is a hardware form of the above android application.

IV. EVALUATION

The section describes working procedure, a testing strategy used, different test cases and results obtained during the evaluation of the system.

4.1 Experimental Setup

The requirements needed for this system are a mobile phone with the android version of 6 and above and a Wi-Fi module. The phone and Wi-Fi module must be connected to the same network.

4.2 Experiment Results

The result will display an emergency message of current location link details as shown in the figure.

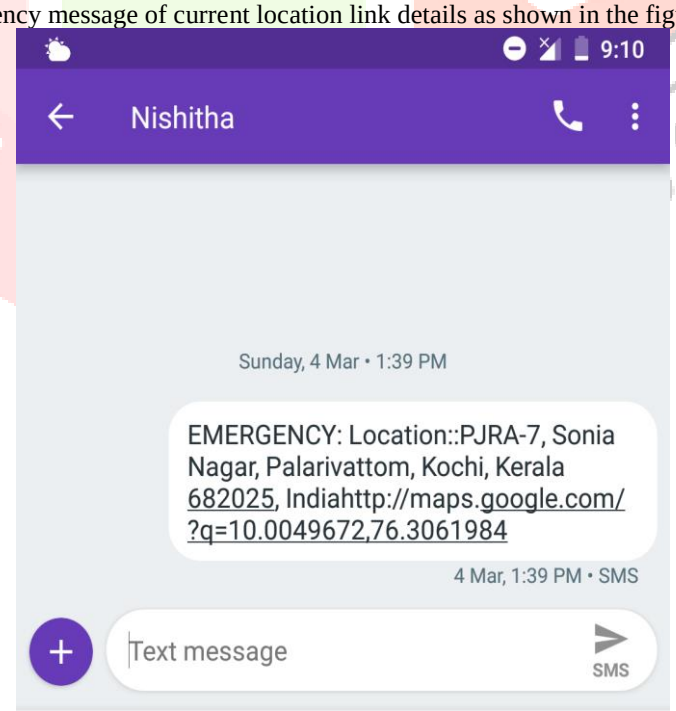

fig 3: message alert

4.3 Testing Strategy

The testing strategy used in the system includes Black box testing which is also known as behavioral testing. In this software testing method, the design or internal structure of the system which is tested is not known to the tester. As the name indicates the software program is like a black box to the tester because inside part cannot be viewed. This method attempts to find errors in

interface, performance, and termination. Testing can be functional or non-functional without reference to the internal structure of the system.

Levels applicable to the black box testing are Integration testing, System testing, and Acceptance testing. Integration testing is the systematic testing technique for constructing the software architecture in which system is tested after the integration of each unit. The system has a set of requirements to be achieved, thus validation testing is conducted to check.

4.4 Test Cases

The test case is an object for execution of the other modules in the architecture which would not represent the interaction with itself. Each test case is a set of sequential steps to execute a test operating on a set of predefined inputs to produce the expected outputs.

The table shows the test cases, corresponding results and the status of the test steps. A test case consists of the set of conditions in which tester determines whether the system satisfies the requirements and works correctly. Problems in the requirements and design of the application are evaluated during the process of developing test cases.

Step No:	**Test Steps**	**Expected Result**	**Actual Result**	**Status (pass/ fail)**
1	Signup	Enter to home page after registering.	After registering enter the home page	Pass
2	Police service	Call the police and send an emergency message	Call the police and emergency message was sent	Pass
3	Hospital service	Send an emergency message and call the ambulance	The emergency message was sent and call an ambulance	Pass
4	Panic mode	Produce Alarm	Alarm is produced	Pass
5	Snapshot	Upload snapshot of vehicle	Snapshot of the vehicle is uploaded	Pass
6	Accelerometer	The message can be sent by shaking the phone at a particular angle	By shaking the phone at a particular angle message was sent	Pass
7	Emergency contacts	Save the contacts	Contacts are saved	Pass

table 1:testing

V. CONCLUSION

When the safety and security are considered, women in Indian society are becoming the most vulnerable section. The accuracy of the statement can be easily understood by considering various articles in the newspaper.

Our intention is to assist a woman to live freely and safely and also to reduce the number of crimes that are being reported. The system is very much helpful because the device is very simple and easy to use for all type of women in the society. It also alert the guardians that the woman is in danger. Another useful feature is the implementation of accelerometer. Movement of the android device at a particular angle will help to the women to alert the closed ones. The app provides a number of useful features which are very helpful for women. On a simple touch, the user can safe their life from molesters.

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