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Women Safety Device and Alert System

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***Abstract*: Women endure a lot of sexual harassment these days which is becoming alarming day by day. The situation is extremely serious in developing countries as well as underdeveloped ones. In this project, we are advancing an IoT device along with an android app that can make women's movement safer. Women can get supreme safety support by tapping the device. The device consists of ESP12E – Microcontroller, Flex Sensor, GSM, GPS, Wireless 802.11, etc. The aggregate of all elements collectively offers this device to be affordable and easy to navigate.**

***Keywords*: IoT device, android application, wireless 802.11, supreme safety.**

1. Introduction

We are probably living in the worst time our modern society has ever seen in terms of women security. We aim to make women feel as strong as ever and strong enough to fight the parasites of our society, strong enough to fight the odds, strong enough to protect themselves against any assaults. We aim at giving power to those without whom we cease to exist. Our idea is to design a system which shall make every place and every hour safer for women again. A system which shall re-establish how very gregarious mankind is. It will unite and enable the citizens and the police to work towards a common problem. This tool will act as eyes and ears for the police and help them in preventing crimes against women. This tool has been designed in a manner that it covers the various situations a woman can be stuck in like when she is alone or when she is in a crowded place or when she is in a public transport etc.

2. Literature Review

The reference [1] represents, the user can get location of the nearest safe zone by this device as well. In addition, this device functions in both online and offline mode. The device consists of Arduino nano, GPS, GSM, Bluetooth, etc. The aggregate of all these elements collectively offers this device to be affordable and easy to navigate. The reference [2] represents, a smart device for women's safety which automates the emergency alert system by using pressure sensor, pulse-rate sensor and temperature sensor to detect a possible atrocity automatically using outlier detection is proposed. It sends an emergency message automatically to the relatives and nearby police station. The reference [3] represents, a smart band which is programmed for all the information required for carrying the bread for the journey, and among men, and his character as well as those of the sense of, like anger, fear, and anxiety. The reference [4] represents, a wearable device which needs online daily for data storing worldwide. For the project development the IoT plays an important role to get the geometric coordinates on the database as well as body temperature as per the researchers did the research.

3. Block Diagram and Description

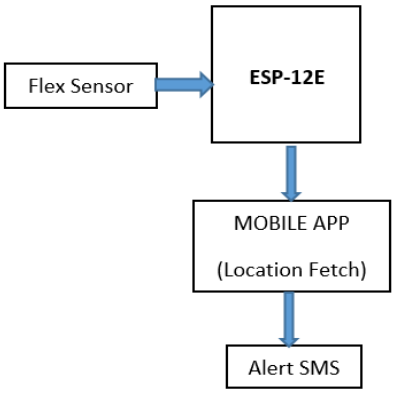

Fig. 1. Block diagram

It is an IoT based device. This device consists of lesser amount of Hardware components and an Application in the Software side. The hardware consists of ESP12E-Microcontroller, Flex sensor and a Battery. The software consists of an application which is developed for the project. The software is created by MIT- App Inventor. The application mainly receives the location by the GPS in the mobile device and sends the location by GSM. When it comes to an emergency while tapping the Flex Sensor the ESP12E-Microcontroller sends the signal to the mobile application. The mobile application receives the location by the GPS already installed in the device. The application is then sends the location in a SMS format by GSM. Thus, the location of a person will be sent to the Nearby Police Station or a person in their contact list. In future, the data and alert can also be stored and triggered through IoT which will be helpful in analysing the crime rate and crime zones over a time. Auto send messages with location can be processed and sent to nearby emergency stations with help of Internet of Things and prefetching of the contact

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regardless of emergency situations in forest and non-internet connectivity area can also be performed.

A. *Hardware*

Here some of the Hardware's used,

1) *ESP-12E - Wi-Fi Module*

ESP-12E is a miniature Wi-Fi module present in the market and is used for establishing a wireless network connection for microcontroller or processor. The core of ESP-12E is ESP8266EX, which is a high integration wireless SoC (System on Chip). It features ability to embed Wi-Fi capabilities to systems or to function as a standalone application. It is a low cost solution for developing IoT application.

Fig. 2. ESP-12E - Wi-Fi module

2) *Flex sensor*

A flex sensor is a kind of sensor which is used to measure the amount of defection otherwise bending. The designing of this sensor can be done by using materials like plastic and carbon. The carbon surface is arranged on a plastic strip as this strip is turned aside then the sensor's resistance will be changed. Thus, it is also named a bend sensor. As its varying resistance can be directly proportional to the quantity of turn thus it can also be employed like a goniometer.

Fig. 3. Flex sensor

3) *Lithium Polymer Battery*

Lithium polymer batteries are rechargeable battery of lithium-ion technology in a pouch format. Unlike cylindrical and prismatic cells, LiPos come in a soft package or pouch, which makes them lighter but also less rigid. These batteries provide higher specific energy than other lithium battery types and are used in applications where weight is a critical feature, such as mobile devices, radio-controlled aircraft and some electric vehicles.

B. *Software*

Here some of the Software's used,

1) *Arduino IDE*

The Arduino Integrated Development Environment or Arduino Software (IDE) contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

2) *MIT App Inventor*

MIT App Inventor uses a graphical user interface (GUI) very similar to the programming languages Scratch (programming language) which allows users to drag and drop visual objects to create an application that can run on android devices, while a App-Inventor Companion that works on iOS running devices are still under development. In creating App Inventor, Google drew upon significant prior research in educational computing, and work done within Google on online development environments.

4. Output

A. *Hardware Output*

This is the final hardware output. The hardware consists of ESP12E-Microcontroller, Flex sensor and a Battery. The microcontroller is connected with the battery and the Flex sensor. This makes the hardware even compact in size and the weight is low.

Fig. 4. Hardware Output

1) *Software output*

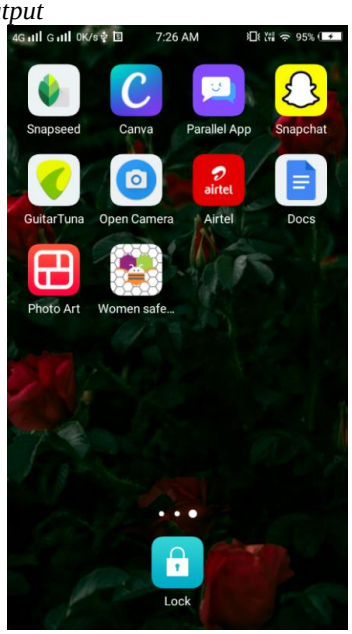

Fig. 5. Women safety application

This is the final software output. Figure 5 represents the women safety application installed in our mobile phone. Figure 6 represents the home screen of the application. Figure 7 represents the Location i.e., Latitude and Longitude of the mobile device is noted. Figure 8 represents the Output SMS send to the other mobile device.

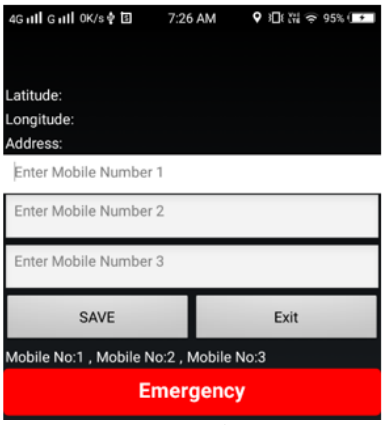

Fig. 6. Home screen of the application

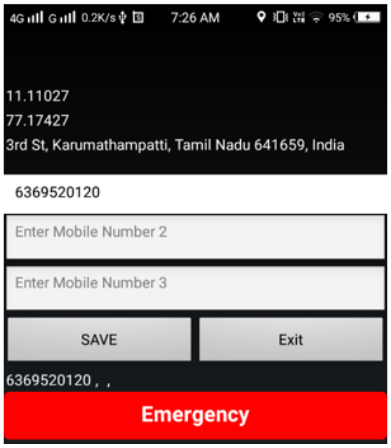

Fig. 7. Location

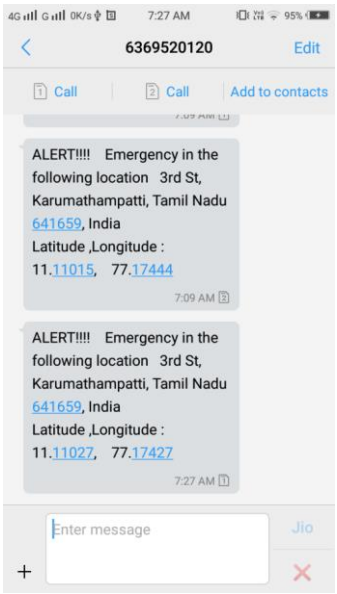

Fig. 8. Output SMS

5. Conclusion

This paper presented the implementation of women safety device and alert system.

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