Abstract – Despite an increase in the freedom granted to girls today, a major issue of concern remains for their parents for sending them alone – Security. With the number of cases of Women harassment in India and other countries increasing, the use of modern technology to ensure the safety of women is imperative. The proposed system for the safety of women consists of a set of wearable devices - a bracelet and a necklace - which operates automatically on voice recognition. The voice is recognized by AI-based software and serves as constant security for women. On trigger, a message is sent to the contacts selected by the person including the location and other details, a fake call is generated, and voice recording is initiated to serve as proof of the incident. This is monitored through an application on the phone.

1. INTRODUCTION

Women in India, although being regarded as Goddess Lakshmi, are frequently harassed. Women safety remains an important issue in India, and despite the formation of various rules and regulations, such cases continue to keep on increasing day by day. Such cases have also reduced the morale and confidence of women in India. A step towards curbing this heinous crime is the development of a device that can sense impending danger and help in rescuing the victims from such an act.

Research shows that such devices exist commercially but requires manual pressing of a button to trigger the alarm. Since the mental state of women as well is children is affected during such act consequently manual pressing of the button is not ideal. Hence an AI-based device is the need of the hour.

Thus we have built a mobile application along with compatible devices – Bracelet and Necklace. A microphone in the device picks up the voice of the user and sends it to the mobile application via Bluetooth, where it is analyzed and if the words match the preset requirement, the safety program is triggered which sends messages to selected contacts, generates a fake call, and engages voice recording. Also, this message is sent across on the app, thus providing a social platform for help.

2. LITERATURE SURVEY

Projects like VithUapp, Nirbhaya, Spot N Save Feel Secure app was introduced lately. But most of them had many disadvantages over the advantages.

Firstly the concept was done by the app VithU mobile app. In case of an emergency, Alert messages are sent to the listed contacts, which can be saved before itself. But the disadvantage of this app is that we have to click the power button 2 times consecutively, which is not possible in every situation.

Nirbhaya can send a distress message to a specified contact group in an emergency confronting a woman. The major drawback of this app also is that it is physically dependent, that is not possible in all situations.

Spot N Save Feel Secure app is a special portable smart band that works along with an app. It works by clicking on the button on the band twice to send out a signal to the guardian network. It is not applicable in all situations since for an unnoticed situation or unpredictable time, users can’t make alerts previously by clicking it twice.

In our paper, this device can be carried while traveling. Alert message notification and calling option is available in this mobile app. This mobile app also provides an extra facility of cancel option. Since it uses an AI, it eliminates the requirement of physical contact.

3. METHODOLOGY

3.1. HARDWARE

- Arduino UNO
- Microphone
- Bluetooth Module
- GPS

3.1.1. ARDUINO UNO

The Arduino UNO is considered as a basic development board to create digital devices and interactive objects that send and control physical devices. The board is embedded with sets of digital and analog input/output (I/O) pins that may be interfaced with various shields and other circuits. The board consists of 14 Digital pins and 6 Analog pins. It is programmable with the Arduino IDE, which is an open-source software via a type B USB cable. It is powered using a USB cable or by an external 55-volt battery. The ATmega328 on the Arduino Uno comes pre-programmed with a boot-loader that allows uploading new code to it without the use of an external hardware programmer.

3.1.2. MICROPHONE

A microphone is a device – a transducer – that converts sound into an electrical signal. Microphones are used in many applications such as telephones, hearing aids, public address systems for concert halls and public events, motion picture production, life and recorded audio engineering, two-way adios, mic, radio a, and television broadcasting, and in computers for recording voice, speech recognition, VoIP, and for non-acoustic purposes such as ultrasonic sensors or knock sensors.

3.1.3. BLUETOOTH MODULE

The Bluetooth transceiver module is used as a UART RS232 serial converter module. It can easily transfer the UART data through the wireless Bluetooth, without complex piece layout or deep knowledge in the Bluetooth software stack, can also connect this Bluetooth module with devices such as MCU, ARM or DSP systems, GPS or GSM, Sensor modules, SOC systems.

3.1.4. GPS MODULE

GPS stands for Global Positioning System by which anyone can always obtain the position information anywhere in the world. Firstly, the signal of time is sent from a GPS satellite at a given point. Subsequently, the time difference between GPS time and the point of the time clock in which GPS receiver receives the time signal will be calculated to generate the distance from the receiver to the satellite. The same process will be done with three other available satellites. It is possible to calculate the position of the GPS receiver from distance from the GPS receiver to three satellites.

3.2. SOFTWARE

In this system, when the user says the predefined word a given number of times, the system initiates the emergency protocol. It communicates with the Mobile App built on Android Studio.

As the crimes against women are increasing day by day, this system is very helpful since it is very portable. When the mic picks up the code words, it connects with the mobile app to enact the set protocols. The emergency contacts are already saved in the app and messages are sent to them. A fake call, which had been previously recorded is played on the mobile phone. A voice roister starts recording to serve as proof in case the matter is taken to court. There is a cancel option

available on the app for the 15 seconds after the activation.

4. CONCLUSION

In our system, we developed one smart band which contains a microphone and GPS and is continuously communicating with the smartphone. This system does not require any user interaction at a time of the critical situation. It sends an emergency message automatically to the relatives and nearby people. Our system is more efficient than all existing systems.

5. FUTURE WORK

In the future, we plan to add multiple new features, most of them to make our device independent of the smartphone interface, so that it can be used even when one does not have her phone.

For this purpose, we plan to include an LTE-SIM module which helps our device to connect the internet directly without the use of a phone. Due to the presence of a SIM card, each user can be recognized distinctively and appropriate action can thus be taken.

The benefits of the above-mentioned system are numerous. In case of loss of phone or when one does not take their phone with them, the device would still be functional. As power has become a major problem these days, the device would be functional even when the phone battery dies.

Other future endeavours would include the cooperation of the police to provide aid to potential victims as soon as possible. This would yield benefits for the police as well, as it would become easier to catch the perpetrators.

We also plan to add a High-Frequency Buzzer as a safety measure for women which can be used to drive the person away.

A Micro Camera can also be included in this device to further the proof for a court case. It can also be used as a measure to prevent the misuse of the device.

A feature to send a message to the people nearby in the area can also prove effective in case of an emergency, and hence will be considered for an upgrade in the future.

We are working to develop a safe GPS Route feature in our application which would work mostly like Google Maps but would work by focusing more on secure routes than short routes. We will provide a section on the maps where we show the user hotspots and safe spots and would be highly useful.

The application will be embedded with a high alert mode that can be activated by going on the app or by automatic it that will take data from GPS and according to it if the user is in hot spots or places like clubs, it will be automatically activated and the location sharing to trusted contacts will immediately begin.