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SMART BAND FOR WOMEN SAFETY USING IOT

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ABSTRACT—*The status of women in India has been liable to numerous extraordinary changes in the course of the last couple of centuries.In a few sections women still keep on facing separation and risk.Here we present a smart security wearable band for women based on Internet of Things is proposed.It is implemented in the form of smart band and comprises of Rasberrypi,Rasberry pi camera,buzzer,Ultrasonic sensors and buttons to activate the services just by the click of button that will fetch her current location and also capture the image of the attacker via Rasberry pi camera.The location and the link of the image captured will be stored in IOT cloud server and sent to the predefined emergency contact numbers or police via smart phone through the LBS application and image captured will be sent via mail of the victim, thus preventing the use of additional hardware devices/modules and making the device compact,the expanded size and weight.*

Keywords— IOT cloud server, LBS application, Raspberry pi camera, Buzzer, Ultrasonic sensor.

I.INTRODUCTION

In current India, Women are dealt with on parallel grounds with men. They have turned out to be Independent and are keeping pace with the evolving patterns. Be that as it may, in a few sections ladies still keep on facing separation and other social difficulties and are regularly casualties of mishandle and vicious violations. Because of these reasons it has scircumstance proficiently when they are distant from everyone else. Ample opportunity has already past that we furnish ourselves to manage such overwhelming circumstances. Neither woman nor their families need to stress over the time or places when they go out. All they require is a gadget that can be conveyed effortlessly and worn at whatever point the woman feels risky.

In this paper, a wearable band which ordinarily fills in as a common watch. It additionally fuses a IOT unit that will help the casualty to speak with their family or police at the main indication of inconvenience. It additionally actuates an alert from the telephone which is

associated by means of IOT. This empowers to pick up consideration of others to the situation.

This requests the need of extra equipment which brings about expanded size and weight. Every one of these imperfections can be amended by utilizing the IOT innovation so the capacities like following, informing and ready caution can be performed with the assistance of an advanced cell on accepting the charge. The caution will get enacted and ready message with area will be sent to a predefined number.

II.METHODOLOGY

The proposed system demonstrates how IOT can effectively helpovercome these challenges. The proposed system incorporates Raspberry-Pi, Raspberry-Pi camera, a buzzer andinbuilt GPS tracking system and GSM modules embedded within smart phones and is easily concealed in a band (smart watch) whichis much more handier and accessible than cell phones. The implementation of the system is divided into two parts:

2.1 Hardware:

First, based on an Electronic kit that uses Raspberry-Pi module consisting of Raspberry Pi for interfacing, Raspberry Picamera, GSM module (which is pre-installed in the smart phones) for sending HELP message, current location(obtained via GPS location tracking) and captured image via Raspberry Pi camera to predefined contact numbers . Thisdevice is extremely portable and can be used by any individual

2.2 Mobile application:

Second, an android application is developed so that the user can login , select the emergency contacts from the phonebook and eventually send the alert message for help via SMS.

III. SYSTEM ANALYSIS

3.1 Existing system:

In the existing system suggets a smart shoe that not only helps women take care of themselves but also help them be fearless. This project makes use of GPS, GSM modules, a shock circuit and camera, that are interfaced with Raspberry Pi board and Ardiuno.

This smart device will be clipped to the footwear of the userand can be triggered discreetly. On tapping one foot behind the other four times, an alert is sent via Bluetooth LowEnergy communication to an application on the victim'sphone, programmed to generate a message seeking help withthe location of the device attached. The results obtained wereanalysed using Naïve Bayes classifier. In such situations, theaid of a safety device that will inform the victim's family members or the authorities (in severe situations) may help women feel safer, confident and reduce the chances of harassment

The main disadvantage of this system is that all components are connected inside the shoe,so it can't be handled properly and if the shoe missed means can't tract the exact location.

IV.PROPOSED MODEL

4.1 Block diagram of proposed system

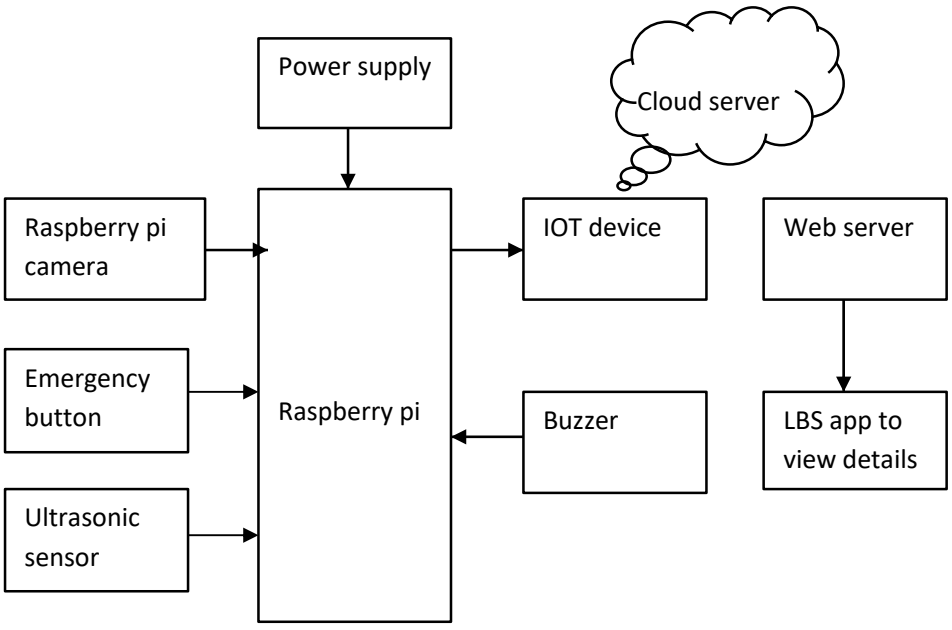

Figure 4.1 Block diagram of proposed system

The proposed system is to design a portable device which resembles a band on hand .It consists of emergency button,Raspberry pi,buzzer alarm,ultrasonic sensor and raspberry pi camera module.

When the button is pressed, the device will get activated automatically with in a fraction of milliseconds. And camera will be activated and start to capture the image with the delay two seconds .Captured data is uploaded to Raspberry Pi memory then it is uploaded to cloud server using IOT .The captured data can be accessed by the emergency contacts by using android app called Dropbox

When the button is pressed again Immediately the location of the victim will be tracked and alert messages will be sent to the emergency contacts and police station. And also the screaming alarm unit will be activated with the help of ultrasonic sensor and will produce siren sound to call out for help in that situation which may help the victim to escape.

With the help of the images taken the situation of the victim using a preferred IP address is analysed and helps to detects the face of the attacker along with the surrounding environment.

4.1 Raspberry pi:

The Raspberry pi is a single computer board with credit card size that can be used for many tasks that your computer does, like games, word processing, spreadsheets and also to play HD video. It was established by the Raspberry pi foundation from the UK. It has been ready for public consumption since 2012 with the idea of making a low-cost educational microcomputer for students and children. The main purpose of designing the raspberry pi board is, to encourage learning, experimentation and innovation for school level students. The raspberry pi board is a portable and low cost

4.2 Raspberry pi camera:

The Raspberry Pi Camera Board plugs directly into the CSI connector on the Raspberry Pi. It's able to deliver a crystal clear 5MP resolution image, or 1080p HD video recording at 30fps! Latest Version 1.3! Custom designed and manufactured by the Raspberry Pi Foundation in the UK, the Raspberry Pi Camera Board features a 5MP (2592?1944 pixels) Omnivision 5647 sensor in a fixed focus module. The module attaches to Raspberry Pi, by way of a 15 Pin Ribbon Cable, to the dedicated 15-pin MIPI Camera Serial Interface (CSI), which was designed especially for interfacing to cameras. The CSI bus is capable of extremely high data rates, and it exclusively carries pixel data to the BCM2835 processor. The board itself is tiny, at around 25mm x 20mm x 9mm, and weighs just over 3g, making it perfect for mobile or other applications where size and weight are important.

4.3 Emergency button:

The emergency push button is held to one of the buttons of the watch. The main purpose of this device is to intimate the parents and police about the current location of the women. A GSM modem is used to send the message to the pre-defined numbers.

4.4 Ultrasonic sensor:

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal.

Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters the sound after it has travelled to and from the target).

4.5 Buzzer:

A buzzer or beeper is an audio signalling device,which may be mechanical, electromechanical, or piezoelectric (piezo for short).

Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

4.6 Power supply:

A power supply is a hardware component that supplies power to an electrical device. It receives power from an electrical outlet and converts the current from AC (alternating current) to DC (direct current), which is what the computer requires. It also regulates the voltage to an adequate amount, which allows the computer to run smoothly without overheating. The power supply an integral part of any computer and must function correctly for the rest of the components to work.

4.7 Location based service (LBS) app:

Location-based services (LBS) provide targeted information to individuals based on their geo- graphic location in real or near-real time, typi- cally through wireless communication networks and clients such as portable computers, personal digital assistants, mobile phones, and in-vehicle navigation systems.

4.8 Components of LBS:

GPS

GPS is a satellite based navigation system. It uses a digital signal at about 1.5 GHz from each satellite to send data to the receiver. The receiver can then deduce its exact range from the satellite, as well as the geographic position (GP) of the satellite.

GIS

A Geographic Information System (GIS) is a computer system that analyzes and displays geographically referenced information. It uses data that is attached to a unique location.

Location collection service

To get a latitude and longitude for a specific user, the Location Collection Service is use. The Location Collection Service component is accessible via the LBS Middleware (such as mobile network triangulation via a service provider) or directly (e.g., via GPS receiver in the Smartphone) depending on the technology.

4.9 Uses of LBS:

- User generated content
- Citizen media
- Control plane locating
- GSM localization
- Geo fencing

4.10 cloud server:

IOT clouds offer an efficient, flexible, and scalable model for delivering the infrastructure and services needed to power IOT devices and applications for businesses with limited resources. IOT clouds offer on-demand, cost-efficient hyperscale so organizations can leverage the significant potential of IOT without having to build the underlying infrastructure and services from scratch.

4.11 Software:

- Raspbian OS
- Python IDE

V. RESULTS AND DISCUSSION:

In this section we have presented the results of the experiments conducted with the proposed hardware design and the android application.

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Figure 5.1 hardware setup

STEP 1:When a person comes near women, the ultrasonic sensor sense the distance between two person the buzzer gets activated and produces a high frequency alarm and the camera starts capturing image of the opponent and it is stored in the iot cloud server as shown in figure 5.2

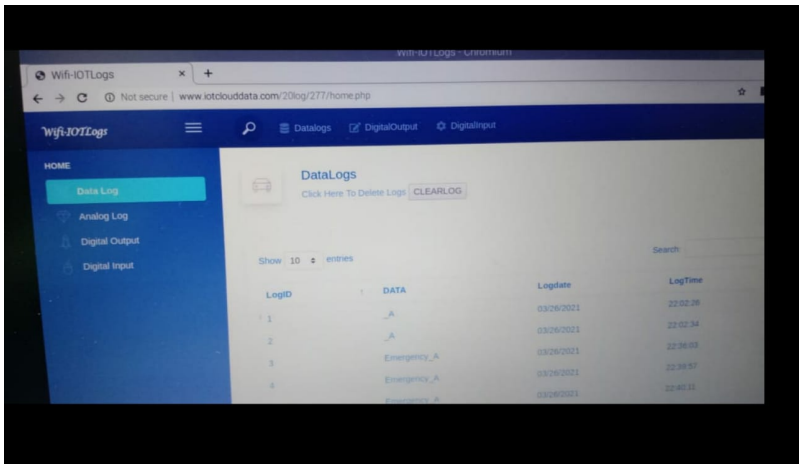

Figure 5.2 iot cloud server

STEP 2: Once the emergency button is pressed,the captured image of opponent is shared via email of the emergency contact listed and the location of that victim is shared via lbs application as shown in figure 5.3

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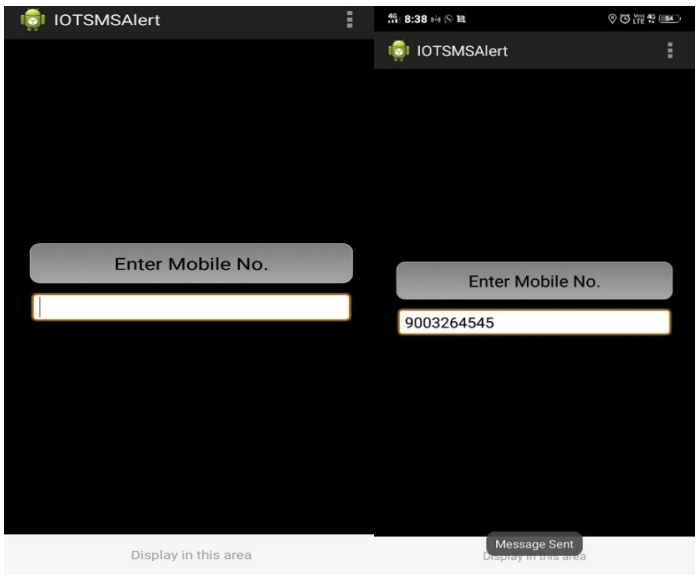

Figure 5.3 message sent to emergency contact

STEP 3: When the buzzer starts to beep the gps location from the mobile is shared via lbs application. This sends message with latitude and longitude position to emergency contacts as shown in the figure 5.4

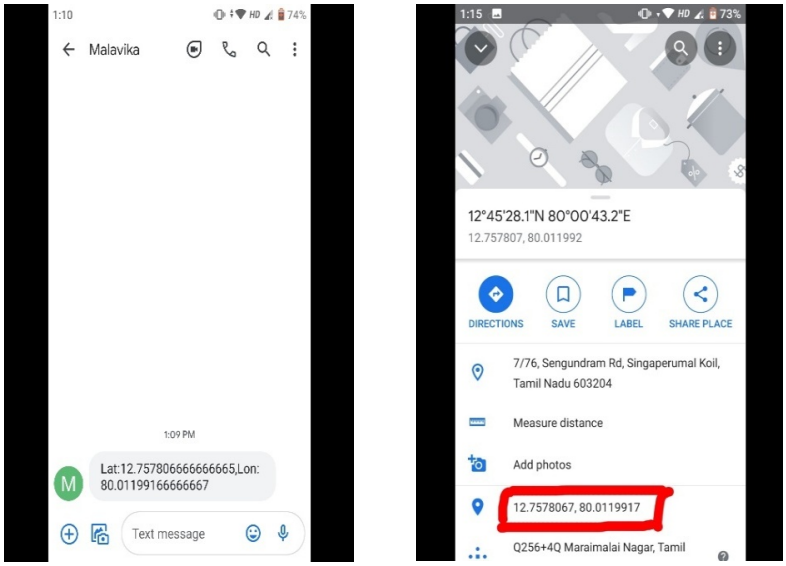

Figure 5.4 GPS location received by emergency contact via lbs app

STEP 4:The captured image which is stored in iot cloud server sends image link via predefined email address as shown in figure 5.5 and figure 5.6

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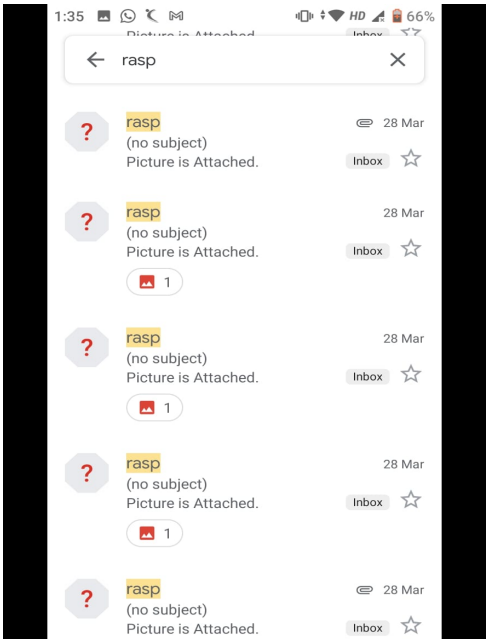

Figure 5.5 image received through mail

Figure 5.6 image captured by raspberry pi camera

The existing system are not powerful enough to prevent crime against women.Main purpose of our proposed system is fast process, good quality and accurate tracking

VI. CONCLUSION AND FUTURE SCOPE

Women security is a basic social issue in this day and age. Through this paper we expect to advance an effective and convenient security gadget for woman. The proposed configuration can deal with some basic issues looked by woman and will

illuminate them with mechanically stable and straight forward hardware. It can be reasoned that this framework enhances the sexual orientation balance by giving safe condition to woman in the general public, and enables them towork till late evenings. The band gets fundamental help in any pain and encourage a methods for self-protection. This work is of direct cost, exceptionally compelling, and profitable. With the help of the proposed system we can overcome the disadvantages of the existing system.

In future,that as it may have dependably opportunity to get better. A few changes can be made so it hopes to upgrade the execution without modifying the current plan. So bymaking it perfect with any OS can enhance the framework. It can be changed as an area and cautioning help for kids,maturity people and so forth.. The framework can be additionally created by adding couple of sensorsto detect the dread and nervousness and consequently programmed reaction can be acquired. Expansion of a voice acknowledgment framework for the entrance will enhance the execution.

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