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SMART SAFETY BELT

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Abstract *molestation harassing and rape are the most common and frequently happening crime against women in India. Among metro cities, has more number of rape cases and compare to developed countries like Latin America developing countries like India has less number of such incidences, where very good security facilities are provided by government and ratio of education is higher. So it proves that illiteracy or security is not major reason behind such assaults but the unawareness about self-protection and inefficient self-protection weapons currently available like Ninja key chain , pepper spray, handgun etc. It is also revealed that in 98% rape cases, culprit is someone close to victim like neighbor or relative, where bureaucrats can't do much to control as it is not possible to keep watch on each house every time.*

This project summarizes current safety weapons available for women self-protection in situations like rape, assaults and adds new perspective of using GPS system and android smartphones for women safety. It sends an emergency message automatically to the relatives and nearby police station.

Key Words: ***GPS system***, ***Internet of Things (IoT)***, ***GSM***, ***Smart Device***, ***Women Safety***.

1. INTRODUCTION

This project has been developed to protect women using new technology. The system resembles a unit which will be kept in bag or it's a wearable belt, when its activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication) to emergency contacts. The system also incorporates a panic switch to intimate the women got some emergency situation, a laser to give shock to who is trying to harass her, and audio processing unit, to call out for help and camera for capturing the victim.

1.1 Description

Many embedded systems have significantly distinct designs according to their functions and utilities. In this project design, structured modular design Concept is adopted and the system is mainly composed of a single microcontroller, LCD, GSM, GPS, Panic switch, MP3audio player, Speaker, and Camera. The entire unit will be placed in a bag.

1.2 Problem Identification

In the recent years, women have been involved in many activities alongside men. However, sadly, the free movement of women are being hampered by sexual abuse.

Independent and Dependent Working women and female students particularly faced many unfortunate incident.

The challenging situations facing by each women now-a-days gave motivation to come up with a security device to help the women to do the work they liked to do. The application helps women to overcome their fear and can roam freely and complete their works

1.3 Related Work

The research paper [1] discusses about the device for women safety using raspberry pi and a raspberry camera module. The focus here is on helping the victim by sending the victim's real-time location and attacker's information to the police or to specific individuals. [2] This project emphasizing on two things. One is self-defense, and the other is to send the location of the victim to the precise access numbers. [3] "Reach360" is an android application designed by the author for women safety this system would be more beneficial, if it was fully automated. [4] Built a mobile application that works using the voice command. This system sends an alert message to a pre-choice number. [5] A security gadget consisting of GPS, GSM, Raspberry Pi and various types of sensors. Victim's guardian and police can get location information and physical condition of the victim by

the smart band. [6] The proposed system includes a child module and two receiver modules for getting the information about the missed child on periodical basis.

2. METHADOLOGY

A security device in a button form. The button which can be attached to the clothing or kit and when pressed it performs the action of alerting contacts including the selected family member or friend as well as the police. The device enabled with the GPS system will be able to send the location to the contacts. The device will be enabled with camera which will capture images based on the users trigger and these images will also be sent to the contacts. Here the trigger will be button press which will activate the GSM module to send the location which is tracked by GPS to the selected phone numbers

Here the block diagram figure represents the block diagram of location tracking module

2.1 Modelling and Analysis

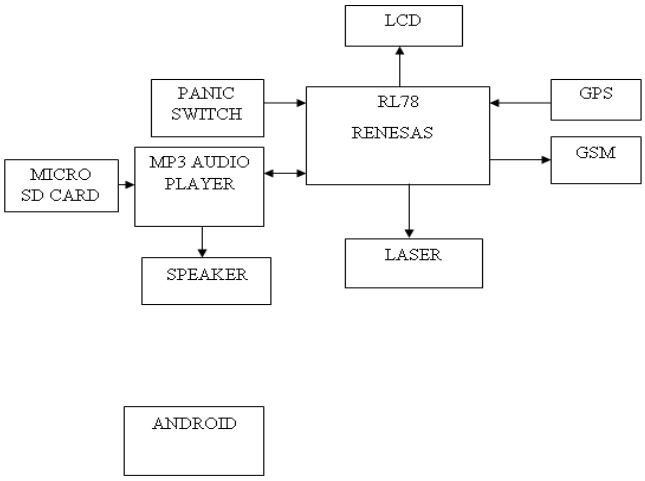

Fig -1: **Block Diagram**

The attack by the victim is indicated through the panic switch pressed, When the switch is pressed the unit will get activated, as an instant protection the mp3 is played via mp3 audio player to which one SD card will be attached, tracks the exact location of the victim, using GPS and sends emergency messages to two predefined contacts using GSM, the mp3 audio player unit is used to call out for instant support, laser is used to give electric shock to the person who is harassing her, one SMS is sent to android device, as it receive SMS the app is activated and captures the victims face and sent to email for further use like police and doctor procedures and to send the details as an e-mail.

In the block diagram LCD is utilized to demonstrate the working of the entire unit.

Laser: this device is used to give the attacker a mild current shock so that the user can escape from the attacker.

MP3 player: this device is used to play alarming sounds and seek for local help.

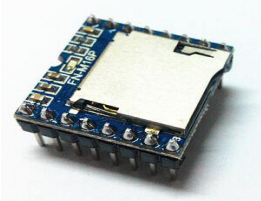

Fig-2: MP3 Player

LCD: is used to display the current status of the user. And also used to receive and display the SMS.

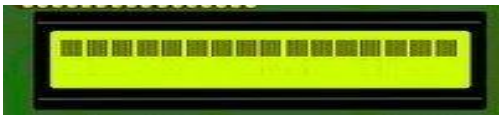

Fig-3: LCD

GPS: used to get the location co-ordinates of the user to track the user.

GSM: GSM sends the emergency message to the saved family members numbers and as well as the nearest police station with the co-ordinates details received by the GPS.

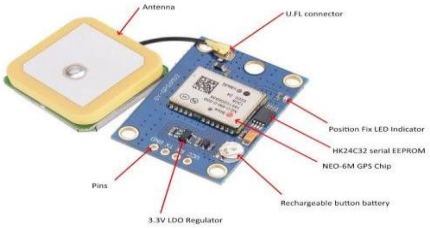

Fig-4: GSM

PANIC SWITCH: this switch acts as the main component of the proposed system, once this switch is pressed the GPS sensor will send the location co-ordinates to the saved family member's numbers and nearby police station using the GSM.

Fig-5: Push Button

Microcontroller: For communicating different sensors, switches, modules, the Renesas RL78 Microcontroller is used. It works as a decision-making controller by obtaining various signals from the different sensors and triggering output sensors appropriately.

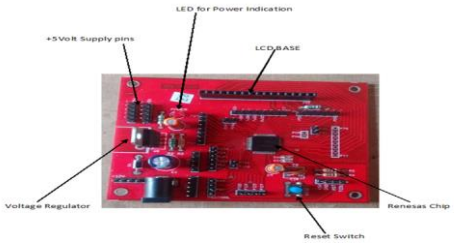

Fig-6: Renesas Microcontroller

2.2 Advantages

This application will be accessible automatically as well as manually. Very cheap system compares to currently available safety devices in market. Easy to carry, no need of extra efforts as can be attached with waist belt only for woman safety. Very effective as useful all over the globe where range is available at any time with high accuracy and efficiency. Totally secure and reliable, using which we help to catch culprit at the place of crime only. Also can be used as safety device for vault, automobiles, home, office etc. This weapon will help in controlling assaults from close persons of victim which contributes about 98% in such incidences.

2.3 Disadvantages

Internet connection is necessary to use GPS or sending alert messages. Sometimes to send messages SIM balance may be required. Physical motion can sometimes break the connections in circuit. Network or range is mandatory to complete action.

2.4 Application:

The proposed design will deal with critical issues faced by women in the near past and will help to solve them with technologically sound equipment's and ideas. This system can overcome the fear that scares every woman in the country about her safety and security.

3. CONCLUSION AND FUTURE ENHANCEMENT

The proposed design will deal with critical issues faced by women in the near past and will help to solve them with technologically sound equipment's and ideas. Easy to carry, no need of extra efforts as can be attached with waist belt only for woman safety. This weapon will help in controlling assaults from close persons of victim which contributes about 98% in such incidences .This system can overcome the fear that scares every woman in the country about her safety and security. This technique is effective only with the availability of smart phone to the victim and the contact personnel. Hence, there is a scope for further improvements by using GSM and GPS aspects in the approach.

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