IMPLEMENTATION OF WOMEN SAFETY SYSTEM BASED ON EMBEDDED SYSTEM WITH FINAL RESULT

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ABSTRACT

This project describes about a smart intelligent security system for women. Women all over the world are facing much unethical physical harassment. This acquires a fast pace due to lack of a suitable surveillance system. Our project is a venture to resolve this problem. We are using two objects wrist band and spectacles that are used in day to day life which when 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 resembles a band on the wrist incorporated with pressure switch as an input which when activates shows the result Screaming alarm and tear gas mechanism are imposed for self-defensing purpose and send location and messages to the emergency contacts and also figure out the attacker using live streaming video. Tear gas mechanism and live streaming video using webcam is incorporated in the spectacles that act as a weapon of the smart technology. We really believe that this endeavor will make a difference in the women life.

KEYWORDS

The present work is under taken with the following objectives

1) 1) Sophisticated security.
2) 2) Monitors all hazards and threats.
3) 3) It can be used to prevent incidents.
4) 4) Mobile number can be changed at any time.
5) 5) Alert message to mobile phone for remote information.

1 INTRODUCTION

This project describes about a smart intelligent security system for women. Women all over the world are facing much unethical physical harassment. This acquires a fast pace due to lack of a suitable surveillance system. Our project is a venture to resolve this problem. We are using two objects wrist band and spectacles that are used in day to day life which when 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 resembles a band on the wrist incorporated with pressure switch as an input which when activates shows the result Screaming alarm and tear gas mechanism are imposed for self-defensing purpose and send location and messages to the emergency contacts and also figure out the attacker using live streaming video. Tear gas mechanism and live streaming video using webcam is incorporated in the spectacles that act as a weapon of the smart technology. We really believe that this endeavor will make a difference in the women life.

In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical/sexual abuse and a fear of violence. Even in the 21st century where the technology is rapidly growing and new gadgets were developed but still women's and girls are facing problems. The status of women in India has gone through many great changes over the past few millennia. In modern India, women continue to face social challenges and are often victims of abuse and violent crimes and, according to a global poll conducted by Thomson Reuters, India is the "fourth most dangerous country" in the world for women,

and the worst country for women among the G20 countries. This project focuses on a security system that is designed solely to serve the purpose of providing security and safety to women so that they never feel helpless while facing such social challenges. The Delhi "Nirbhaya" case that triggered the whole nation was the greatest motivation for this project. It was high time we women needed a change.

2 Literature Review

Prof. Basavaraj Chougula et.al. [1], suggests a new perspective to use technology to protect women. The system resembles a normal belt which when activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to three emergency contacts and the police control room. The system also incorporates a screaming alarm that uses real-time clock, to call out for help and also generates an electric shock to injure the attacker for self-defense. The main advantage of this system is that the user does not require a Smartphone unlike other applications that have been developed earlier. The use of sophisticated components ensures accuracy and makes it reliable. The belt provides with all the features which will leave no stone unturned to help the victim in any kind of emergency situations.

Shaik Jhani Bhasha et.al. [2], the implementation of women security system (wss) via RFID and GSM is to protect women and girls from sexual harassments and other forms of violence. In case of any harassment ,the women wearing a watch or band is embed with active RFID tag with on/off switch[1] where by switching on, the information is passed to RFID reader which communicates with 8051 microcontroller and through GSM the "help" message is sent to 4 predefined contacts(parents, friends, media, women cell).

Shaik Mazhar Hussain[3], This article surveys about the security system for women which allows immediate response in case of any harassment and mainly focuses on two different parts, one is surveying the recently developed mobile applications for women safety and protection and secondly, the proposed work .The users can press a button that is located on watch with RFID technology that is, RFID tag is embedded in the watch or locket that contains information about unique ID and name. The RFID reader is embedded in mobile phone that receives radio waves and once the RFID tag is activated and emits radio waves, the RFID reader takes the information and triggers the mobile phone where the processor will perform the task and sends the messages to 4 or 5 predefined contacts in which one is for police women cell where they can get the information about location of the victim through GPS and message alert "HELP".

Geetha Pratyusha Miriyala et.al. [4], describes about a smart intelligent security system for women. Women all over the world are facing much unethical physical harassment. This acquires a fast pace due to lack of a suitable surveillance system. Our project is a venture to resolve this problem. We are using two objects wrist band and spectacles that are used in day to day life. The system resembles a band on the wrist incorporated with pressure switch as an input which when activates shows the result Screaming alarm and tear gas mechanism are imposed for self-defensing purpose and send location and messages to the emergency contacts and also figure out the attacker using live streaming video. Tear gas mechanism and live streaming video using webcam is incorporated in the spectacles that act as a weapon of the smart technology. We really believe that this endeavor will make a difference in the women life.

Ashlesha Wankhede et.al. [5], Best suitable system for those women will be a portable system which the women will be able to carry will her and easy to use. Portable system will generate a shock which will make to attacking person to get back. After generation of shock the message will be sent with the help of Global System for Mobile Communication (GSM) on the particular number stored and the location of those women is traced with the help of Global Positioning System (GPS). If the message is not checked by the particular number mentioned, the system will continuously give the call until the message is checked by the particular number mentioned.

Poonam Bhilare et.al. [6], describes a "GPS and GSM based vehicle tracking and women employee security system" that provides the combination of GPS device and specialized software to track the vehicle's location as well as provide alerts and messages with an emergency button trigger. Now a days due to recently happened cases such as rape by drivers or colleagues, burglary etc., employee security, especially women employee security has become the foremost priority of the companies. System uses the Global Positioning System technology to find out the location of vehicle. The information of vehicle position provided by the device can be viewed on Google maps using Internet or specialized software.

3   Methods

A) ATMega2560- The high-performance, low-power Atmel 8-bit AVR RISC-based microcontroller combines

256KB ISP flash memory, 8KB SRAM, 4KB EEPROM, 86 general purpose I/O lines, 32 general purpose working registers, real time counter, six flexible timer/counters with compare modes, PWM, 4 USARTs, byte oriented 2-wire serial interface, 16-channel 10-bit A/D converter, and a JTAG interface for on-chip debugging. The device achieves a throughput of 16 MIPS at 16 MHz and operates between 4.5-5.5 volts.

B) GSM modem (Global System for mobile communication): GSM is a digital mobile telephony system. It operates at either the 900MHz or 1800MHz frequency band.

C) GPS-SIM18C- A GPS navigation device or GPS receiver, commonly referred to simply as a GPS, is a device that is capable of receiving information from GPS satellites and then to accurately calculate its geographical location. The Global Positioning System (GPS) is a global navigation satellite system (GNSS) made up of a network of a minimum of 24, but currently 30, satellites placed into orbit by the U.S. Department of Defense. GPS module continuously transmits serial data in the form of sentences according to NMEA standards. The latitude and the longitude values of the location are send. Table for NMEA output sentence is as shown below-

Option	Description
GGA	Time, Position and fix type data
GSA	GPS receiver operating mode, active satellites used in the position solution and DOP values
GSV	The number of GPS satellites in the view satellite ID numbers, evevation, azimuth and SNR values.
RMC	Time, date, position, course and speed data. Recommended minimum navigation information.
VTG	Course and speed information relative to the ground

Table no.1.1 NMEA output sentence

D) Shock Generator Circuit-

Electric shock generator is an electronic device that produces voltage around 1200mv & current of 3 micro ampere. Electronic shock generator is fixed into the sandal. Whenever the push button is triggered the shock is generated on to the tip of the sandal. In shock generator circuit the concept of mosquito bat is used. It consists of AC to DC converter, oscillator and a net or grid.

1.2 Existing System-

Keeping the same concern in mind many developers have come up with innovative applications. Few of such applications are as follows-

A) VithU app: This is an emergency app initiated by a popular Indian crime television series "Gumrah" aired on Channel. In this app when the power button of the Smartphone is pressed twice consecutively, it will begin sending out alert messages with a link to the location of the user every two minutes to the contacts fed into the app.

B) SHE (Society Harnessing Equipment): It is a garment designed by three engineers from Chennai. This garment has an electric circuit that can generate 3800kv of current which can help the victim to escape. In case of multiple attack it can send upto 82 electric shocks. Since the fabric is bilayer, the user is not affected. It can also send emergency messages.

C) ILA security: The co-founders of this system, Mc Givern, James Phillips, and Neil Munn, have designed three personal alarms that can shock and disorient potential attackers and draw attention to dangerous situations.

D) FIGHTBACK: Fight back, the women safety application, sends SOS alerts from your phone. Fight back uses GPS, SMS, location maps, GPRS, email and your Face book account to inform your loved ones in case you are in danger.

E) GUARDLY: This application places phone calls to the predefined contacts along with the name, real time location, type of emergencies and enables to identify different locations.

F) ON WATCH: This application is developed especially for college students. It allows the user to easily alert

friends and emergency responders and police when needed with the GPS location.

1.3 Proposed System-

The proposed system is to design a portable device which resembles a normal belt. It consists of Arduino Mega Board, GSM/GPS modules, screaming alarm and pressure sensors. When the threshold of the pressure sensor crosses, the device will get activated automatically. Immediately the location of the victim will be tracked with the help of GPS and emergency messages will be sent to three contacts and one to police control room every two minutes with updated location. The screaming alarm unit will be activated and will send out sirens to call out for help. The system is also capable to generate an electric shock to harm the attacker which may help the victim to escape and message "HELP" is stored in memory is sent to the destination through GSM.

2   Results and Discussions

Result- These section dicusses the results of the three modes of operation of the device and the possible inclusions to the device to improve its capabilities.

A) Default mode

As the device received a message, a call was initiated to the sender of the message. This occure with delay of 3 seconds between the time at which the message was originally sent at the moment at which the call was initiated.

B)   Location Send Mode

As the mode is activated by the push button, it takes 7 seconds to obtain the coordinates and messages are sent to the trusted contacts within intervals of 4 seconds. The message contains a hyperlink which directs the recipient directly to google maps where the location of origination of the distress message will be displayed.

C) Calling Mode

When this mode is activated by pressing the push button, a call to one trusted contact is activated whitin 4 second of activation.

Dialing mode   Device sends coordinates to recipient

Conclusion- In this project, the implementation of women safety system based on embedded system, Project play a crucial role in ensuring Women's Safety in the fastest way possible automatically. The proposed design will deal with critical issues faced by women in the recent past and will help to solve them through technologically sound gadgets. With future research and innovation/ this project can be implemented in different areas of security and surveillance. The system can perform real-time monitoring of the desired area and detect the violence with good accuracy. This system can overcome the fear that scares every woman in the country about her safety and security.

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3   Future Work

Our project idea gives an extension 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. This system shall geotag and send SOS alert to the nearest police station, close contacts and also alert people in and

around the venue of the crime, every thing just at a click of a button. The idea is make to up for the time it take police to arrive at the location. We can add a camera and microphone to the Arduino ATMEGA. By using this we can capture the images and record the audio of the person, who are in trouble and these information will transmitted by using the GSM & GPS modules. The GPS module find out the position or location in terms of latitude and longitude, then it will send the information to some predefined numbers by using a GPS module.

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