SMART BAND FOR WOMEN SAFETY

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ABSTRACT

In the current society the security of women is a major issue. Today's media news at least contains one woman rape/attack cases. The main problem is that the victim will be unable to call for help (if it is a rural place). We made an attempt to develop a smart device that can assist women when they feel unsecure. This device is a wearable smart band, which can be worn by women. The device could be used for children as a tracking device, thus parents can monitor their children's location remotely. It is interfaced with a push button, a GSM module for mobile communication, a Heartbeat sensor for monitoring the pulse and a microcontroller for controlling the whole process.

Keywords: Push Button, GSM Module, Heartbeat Sensor

I.   INTRODUCTION

The proposed system is intended to alert the authorities to take immediate action, whenever a woman is get attacked. This design will deal with most of the critical issues faced by women and will help them to be secure. This system helps to decrease the crime rate against women. The system can be divided into different modules; this device uses a heartbeat sensor for monitoring the heartbeat, a GSM modem for identifying the location of the person in trouble, a lily pad Arduino micro-controller for controlling the whole process, an OLED display for display, pushbutton and a rechargeable battery for power source.

The aim of this project is to develop a self-defense system especially for women to protect themselves from present day physical harassments. It has wide range of features and functionality like providing instant location of distress victim to the predefined number as soon as the emergency switch is pressed or if someone else tries to remove it forcefully. This would help to reduce the crime against women.

II.   METHODOLOGY

System Architecture

This work develops a women's safety system which provides the current location details of the women in danger using GPS and GSM modules. This module will track the current location of the victim and update in the webpage. In addition to location tracking it also provides some safety and security to women.

Workflow of the proposed System

The workflow of the women safety and security is explained in this section. The flow chart of the proposed system is illustrated

Step 1: Start.

Step 2: Switch ON the 12 Volt power supply.

Step 3: Emergency button is pressed.

Step 4: If GPS receives signal, GPS will start calculating the current latitude and longitude values of the victim and send it as SMS to the registered mobile number using GSM module.

Step 5: If pulse rate increases rapidly, get the last location from GPS and send to GSM module.

Step 6: If mems sensor observes any tilt then, get the last location from GPS and send to GSM module.

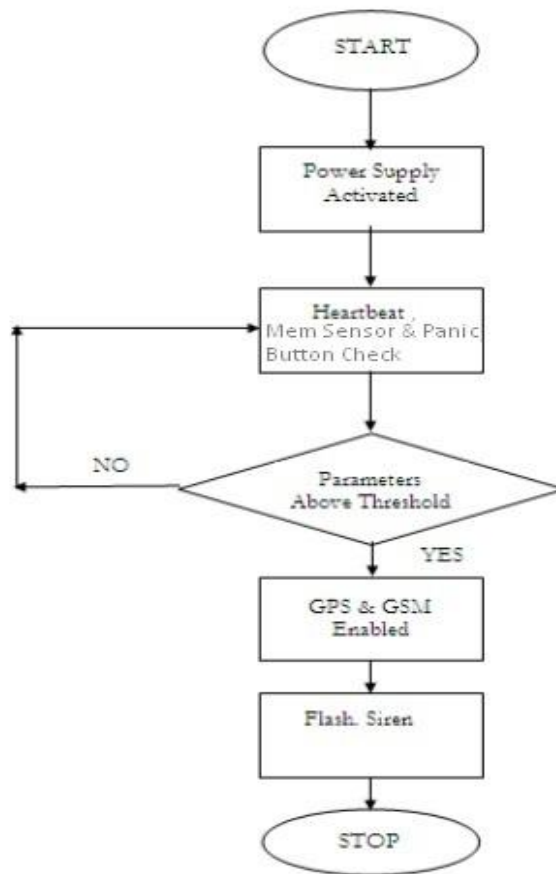**Step 7**: Buzzer is turned ON to alert the people in the surrounding.

Step 8: Stop.

Fig, 2.1 Flow Chart of Proposed System.

III.   MODELING AND ANALYSIS

The block diagram of our proposed system is as shown in Fig.3.1:
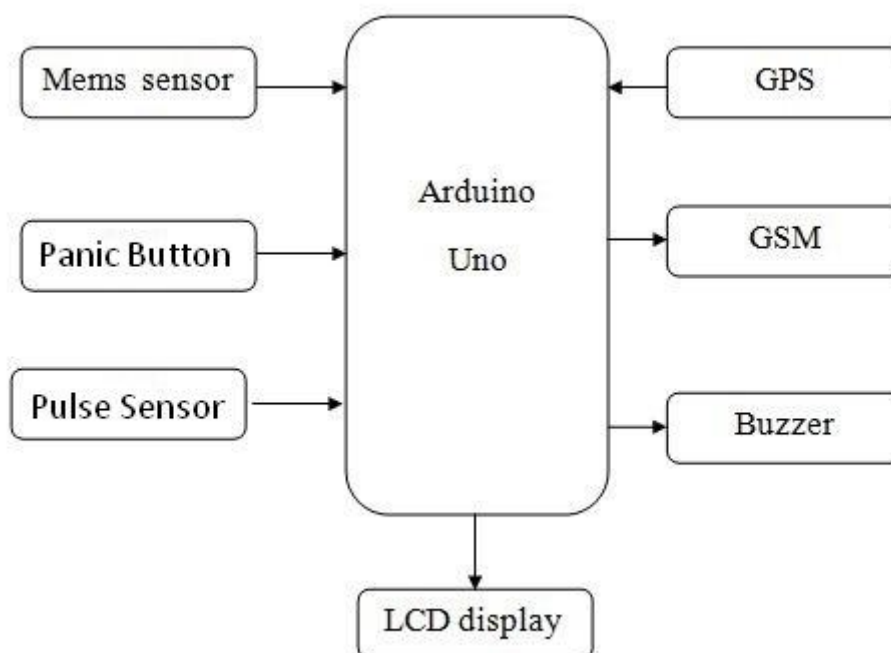

Figure 3.1: Block Diagram.

The block diagram consists of the following blocks.

Battery: 12v rechargeable battery is used to power the circuit.

GPS Module: The Global Positioning System is a location tracker .It, tracks the current location in the form of longitude and latitude. The GPS Coder Module will use this information to search an exact address of that location as the street name, nearby junction etc. which is directly connected to USART of the microcontroller provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth. . In case if GPS is disabled then the system will only send the longitude and latitude through SMS. So, Internet is mandatory.

GSM Module: GSM module is used to establish communication between a computer and a GSM-G\PRS system. Global System for Mobile Communication (GSM) SIM card is inserted within the mobile device to send and receive the messages victimization GPRS .The GSM SIM card number is registered with the system. With increasing usage of GSM, network services square measure expanded on the far side speech to include several alternative custom applications, machine automation and machine to machine communication. It operates at either the 900MHz-1800MHz frequency band.

LCD: Liquid Crystal Display screen is associated in nursing electronic display module. A 16x2 LCD display is basic module and it is commonly used in various devices and circuits. These modules area unit most popular over seven sections and different multi segment LEDs.LCDs area unit economical; simply programmable and don't have any limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. The command register will store the command instructions given to the LCD. A command is an instruction given to LCD will do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc.

Buzzer: A Buzzer or electronic device an audio signaling device, which can be mechanical, mechanical device or electricity. Usually piezo speakers (buzzers) are used "piezi buzzer" is basically a tiny speaker that you can connect directly to an Arduino. The piezo buzzer produce sound based on reverse of the piezoelectric effect. These buzzers can be used to alert a user of an event corresponding to a switching action, counter signal or sensor input.

Mems Sensor: The sensor works on power between 1.8V to 3.6VDC (3.3V optimal), and typically consumes just 350μA of current. However, an on-board 3.3V regulator makes it a perfect choice for interfacing with 5V microcontrollers such as the Arduino. The sensor works on power between 1.8V to 3.6VDC (3.3V optimal), and typically consumes just 350μA of current. However, an on-board 3.3V regulator makes it a perfect choice for interfacing with 5V microcontrollers such as the Arduino.

Heartbeat Sensor: Heart beat monitoring is done using heart beat sensors. Heart beat sensors are designed to give digital output heart beat when a finger is placed on it. When the heart beat detector starts working, the light emitting detector (LED) blinks simultaneously for every heartbeat.

Ardunio (Atmega328): ATmega328P is **a** high performance yet low power consumption 8-bit AVR microcontroller that's able to achieve the most single clock cycle execution of 131 powerful instructions thanks to its advanced RISC architecture.

IV.   RESULTS AND DISCUSSION

The main purpose of the work is to provide safety and security to the women in danger situation. The button is pressed by a woman when she feels insecure. Once the button is ON, the microcontroller gets the commands and the GPS will calculate the current latitude and longitude values of the victim.
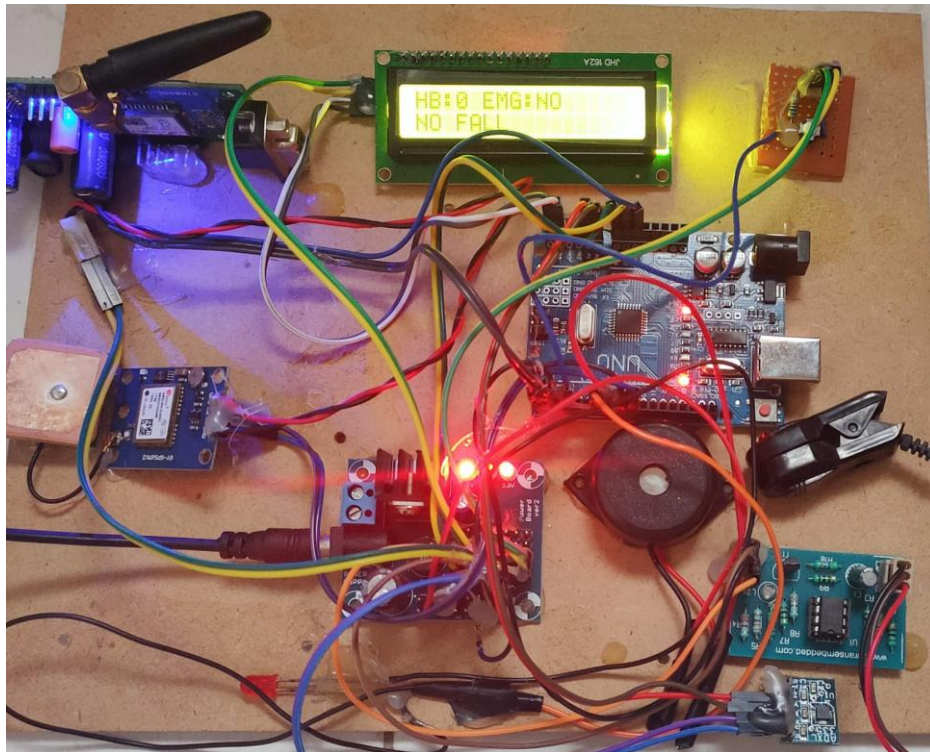
Fig.4.1 Complete Project

GSM module will send SMS which contains latitude and longitude values to the numbers already stored in the microcontroller and nearby police station. GSM will send SMS to the registered mobile numbers for every 1second.The SMS send to the registered mobile numbers
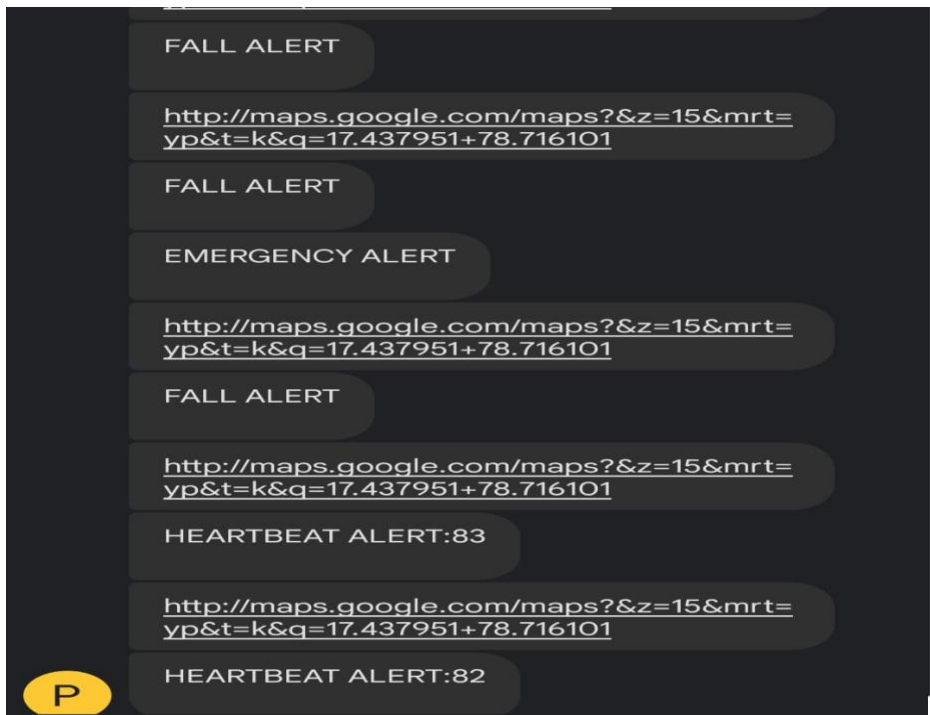

Fig.4.2 SMS send to the registered numbers

ADVANTAGES

- Can be used for the safety of children.
- Can be used for the safety of elderly aged people.

- Can be used for the safety of physically challenged people.
- Low cost with high performance.
- Fast response
- Environmental friendly system.

DISADVANTAGES

- When the power will turns OFF, and then the total system will turn OFF, so battery is always required.
- SIM card is needed for GSM module

V.   CONCLUSION

The proposed design will deal with critical issues faced by women and will help to solve them with technologically sound equipment and ideas. The merit of this work is it not only provides safety and it also provides security by means of self-defense mechanism. The crime against the women can be now brought to an end with the help of real system implementation of the proposed model.

ACKNOWLEDGEMENTS

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