Multiple Sensor based Smart Women Safety System

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Abstract: The proposed system provides the multiple sensor based Women Safety system. The proposed system utilizes Arduino UNO microcontroller, pulse rate sensor, temperature (LM35) sensor, Flex sensor, sound sensor and accelerometer sensor. The system also comprises of GSM modules, GPS module, Buzzer, 16X2 LCD display and Android phone. The proposed system ensures the safety to the women in case of emergency and one can take necessary actions to safeguard the lives of Women's across world.
Keywords: Arduino UNO, GSM, GPS, LCD display.

I. INTRODUCTION

Fig.1 Image women safety

The status of Women's from last few decades has advent change in every field. The women's work at different places such as call centres, BPO's, IT firms, constructional field, marketing field and industrial field to provide day to day needs to their family in the rapid growing social environment. The women's beside also faces lot of social challenges as the cases of rapes, thefts and so many other challenges also increased. According to Thomson report "India is the 4[th]worst country in the world and the dangerous country for women among the rest world". The proposed system has been built with the objective to provide tracking location of the women with the help of GPS module. The proposed system utilizes flex sensor and accelerometer sensor to detect any miserable movement, the pulse sensor for monitoring the heartbeat, sound sensor to detect the sound and temperature sensor to monitor temperature of the women. The proposed system's all sensor value is set previously and if any of the sensor exceeds threshold value then acknowledging message to the registered mobile number has been sent with the help of GSM and GPS module. The Buzzer alarm is also incorporated in this system to ensure high level of safety for the Women's.

II. LITERATURE SURVEY

In [1] "Arduino Based security system for women is presented that provides solution for reducing the problems which are faced by women's., the proposed system consist of Arduino UNO R3 which is the heart of the system. The proposed system in the paper utilizes multiple electronic components such as 16X2 LED display, two alarms, GSM and GPS modules. The whole system establishes power supply with the help of 9V external battery.

In [2] the paper present LPC2148 microcontroller based Women's security system. The proposed systems main aim is to detect the undesirable activities occurring with women's accurately and utilizes accelerometer sensor that when pressed forcefully will send an alert message of "Women in problem" to the registered mobile number. The sending message operation from the system can be done with the help of Global System for Mobile communication module to the registered mobile number. The unusual activities can be detected and the appropriate actions can be taken in order to safe one's life accurately and effectively.

In [3] the presented paper Enhanced system for women safety based on Raspberry Pi3 model B processor utilizes multiple sensors for detection of unusual events and the alert message in case of emergency can be sent to both the registered police station number & family members.

III.   PROPOSED DESIGN METHODOLOGY
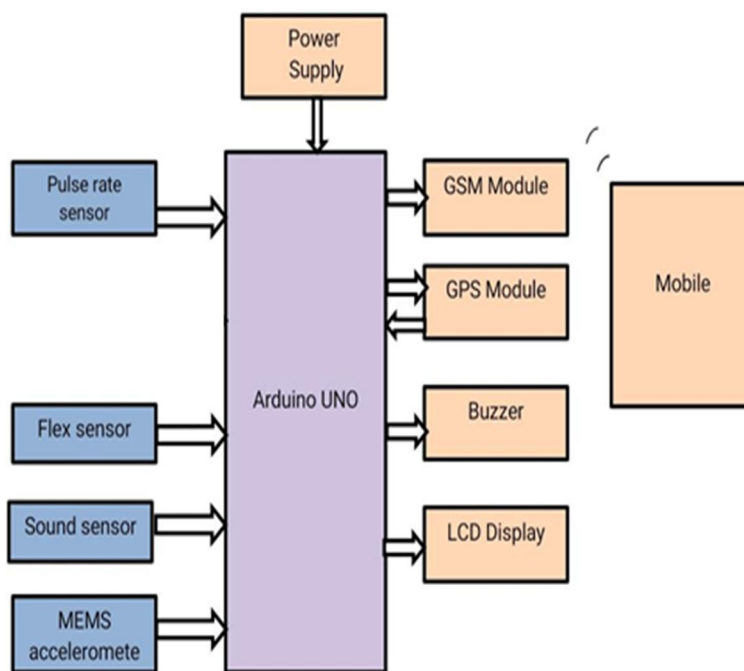
A.   Block Diagram

Fig. 2 Block diagram of proposed system

IV.   HARDWARE IMPLEMENTATION

The Proposed system comprises of following hardware and software

1) *Power Supply:* The overall power supply of 5V 2A and GPS/GSM module are provided with 9V supply of power with the help of external battery.
2) *GSM:* Global system for mobile communication to send message to registered mobile number
3) *GPS:* The Global Positioning System for providing current location of women.
4) *Buzzer:* The audible sound is generated by buzzer that converts electrical energy to sound energy.
5) *Temperature Sensor:* LM35 is the electronic sensor for measuring temperature.
6) *Accelerometer:* The MEMS accelerometer sensor provides the output in X, Y& Z direction.
7) *Flex Sensor:* The flex sensor is used for measuring bending or the amount of deflection.
8) *Pulse Sensor:* The electronic sensor used for monitoring heart beat of human beings is called as pulse sensor.
9) *16X2 LCD Display:* The electronic device to display all processing information of system.
10) *Arduino UNO:* The Arduino UNO is the microcontroller board that process the various signals.

V. EXPERIMENTAL SETUP AND RESULT

The proposed system ensures the safety of the Women's electronic sensors and advanced electronic components. The proposed system has been built with the objective to provide tracking location of the women with the help of GPS module. The proposed system utilizes flex sensor and accelerometer sensor to detect any miserable movement, the pulse sensor for monitoring the heartbeat, sound sensor to detect the sound and temperature sensor to monitor temperature of the women. The proposed system's all sensor value is set previously and if any of the sensor exceeds threshold value then acknowledging message to the registered mobile number has been sent with the help of GSM and GPS module. The Buzzer alarm is also incorporated in this system to ensure high level of safety for the Women's.
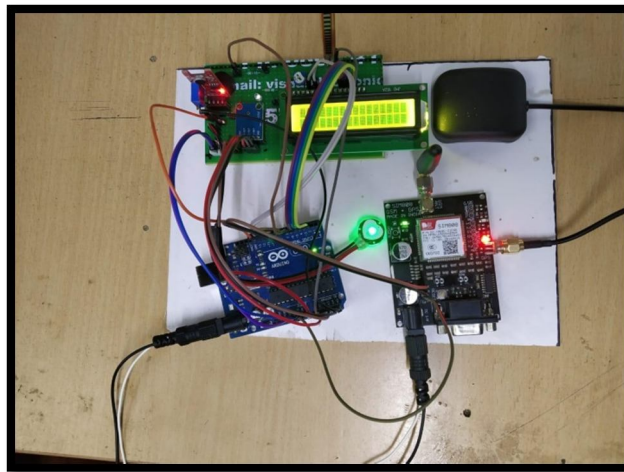

Fig. 3 Experimental setup of Automated Blood Bank

The following figures represent the LCD displaying values of all sensors of the proposed system.

Fig. 4 LCD display sensor values image1

Fig. 5 LCD display sensor values image2

Fig. 6 SMS sent through GSM

VI. CONCLUSION

The main objective of the project is to reduce the various problems faced by Women's in present world. The proposed system successfully detects the various events when problems faced by women's by utilizing advanced sensor and alert the family members in order to take necessary actions. The hardware and software parts of the proposed system are designed and the results are executed in real time accurately that provides effective step towards safety of women's.

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