Biosensor based Women Security System using GSM and GPS

Mrs. A. Martina Jenitha[1] E. Divya[2] V. Kalaiselvi[3] K. Parameshwari[4] R. Snegha[5]
[1]Assistant Professor [2,3,4,5]Student
[1,2,3,4,5]Department of Biomedical Engineering
[1,2,3,4,5]Adhiyamaan College of Engineering - Hosur (635109), India

Abstract— This project describes about women safety using GSM & GPS. A GSM technology is most probably used for location base service monitoring and calling facilities. Here we introduced a device which ensures the protection of women. This helps to identify to protect and called resources to help the one out of dangerous situation. Anytime you sense danger all you had to do is hold on the button of the device. These consist of an ATmega328 microcontroller, GSM module, GPS module, and biosensors. The biosensor used here is Heart rate sensor, BP sensor and pulse rate sensor. The system works as a normal device tracker which senses the location though GPS system and sends the location of the particular person to family and police.

Key words: GSM, GPS, Biosensor based Women Security System

I. INTRODUCTION

In our country, female are more in number and the women were suffering a lot for their freedom .still now women society depending on the basic needs . Every day women are facing a lot of problems. From the younger to the yielder women people were getting feared to walk independently. Nowadays smart technologies and many other ideas are designed &developed to protect the women society. The technology plays a major role in the present world to protect & safeguard the women. The smart phones GPS are also playing a major role in their life. A smart phone has many application which is useful to people in which our Biosensor for protecting women will become one of those.

This safety technique designed &developed keep women society safer. Here we used technique is mainly based on biosensor &its application to protect women from the younger to elder while they get distracted and get frightened by the unknown people. When the women undergone danger or unsustainable environment &conditions the biosensor attached to them in wearable watch will alert the women's relatives, neighbours &to the police to find the place where they are in danger.

In our project the main goal is to protect women society from the dangerous &unfavourable condition by using biosensor &its application.

A. Block Diagram

The proposed system has the Heart rate sensors, Temperature sensor and Blood pressure sensor. When the power supply of 12V is provided, the device is activated. If suppose there is any abrupt change in the parameters causes some injury at the time of harassment via the switches S1, S2 and S3. The switch S1, S2 and S3 according to the existing injury is activated by the victim.S1 is for head, S2 is for body and S3 is for leg injury. Then this information is sent to the arduino (ATmega328).

This is being processed and sent via UART and is being transmitted. Hence the UART act as both the transmitter and receiver. Messages are sent to the concerned person through the GSM. GSM is the mobile communication device. And GPS located the victim. GPS is the tracking device.

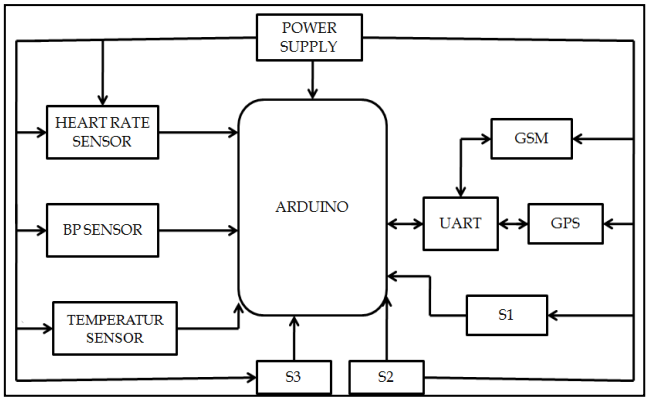

Fig. 1: Block diagram

B. Heart Rate Sensor

We can measure the electrical pulse of heart. Sensor measures the frequency at which the blood pump. Heart rate sensor works on the basic principle of opto electronics, which consists of pair of LED, LDR and Microcontroller. Heart rate sensor consists of LED and Optical detector which measures the reflectance of red light from your skin.

C. Blood Pressure Sensor

Blood pressure sensor is non-invasive sensor to measure the human BP. It measure systolic, diastolic and mean arterial pressure utilizing oscillometric technique, pulse rate also reported. Pressure ranges -30 to 300mmHg. Oscillatory device produce a digital read out when blood flowing through an artery between systolic and diastolic pressure which causes vibration in arterial valve which can be detected and transuded in to electrical signal.

D. Temperature Sensor

Temperature sensor is a device which is specifically to measure the hotness or coolness of an object. Temperature sensor used in this model is LM35. It is a precision temperature sensor. LM35 are more accurate than thermistor, produced more output voltage than thermocouple. It draw only 60 microampere from it supply. Operating temperature range is -55º C -155ºC, it possess low self-heating capacity.

E. ATMega328

Arduino is a microcontroller based prototyping board which can be programmed to do anything by simply programming the microcontroller on board using a set of instruction. Important features of arduino board is the standard connectors. Using these connectors we can connect the arduino board to other device like LED. In order to program the arduino board we need to use IDE provided by arduino.

F. GPS Module

GPS is a space based radio navigation system that provides geo location and time information to GPS receiver anywhere on the earth. The recorded location data can be stored within the tracking unit, or it may be transmitted to a central location data base. Data tracking software is available for smart phone with GPS capability.

G. GSM Modem

GSM is a digital mobile telephone system. It is digitise and compression data then send it down a channel with two others streams of use a data. It operate at either the 900MHz-1800MHz.

H. Circuit Diagram

The first pin of all three sensors are used in this project. That is heartbeat, temperature and blood pressure sensors are connected to the battery of 12V.

The second pin of temperature sensor is connected to (RA0) second pin of the micro controller. The third pin RA1 of arduino has been connected to the heart beat sensor. The blood pressure sensor is connected to the fourth RA2 pin of microcontroller. Third pins of all the sensors are grounded.

The switches receive a supply of 5V in one end of the microcontroller pins. Hence it is sufficient to provide 0V on the other end of the switch.

MAX232 is a serial port that connects GSM and GPS module. The UART which act as both receiver and transmitter has been connected to the arduino. The UART is powered by a separate battery of 12V. The transmitter at GPS and receive in GSM is connected to Rout and Tin of UART.

I. Simulation Circuit

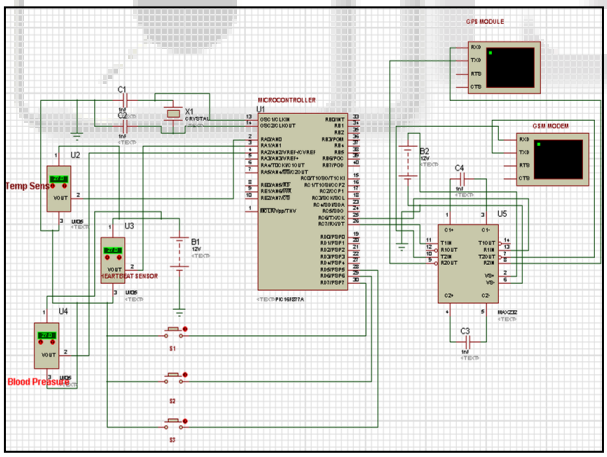

Fig. 2: Simulation Circuit

J. Output

In this case any abnormalities occur in the parameters, GSM sends the message to the concern person and GPS is used to track the location.

II. CONCLUSION

A low cost and a high security system for the women's using the GPS, GSM and bio sensors have been designed. The biosensors are mainly used for sensing the vital sign parameters such as heart rate, temperature and blood pressure sensors. The message can be sent over long distance via GSM in case of emergency or injury. The GPS tracks the location of the person. Hence a wearable technology with high security for women is implemented and designed.

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