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Mulitipurpose Safety Device for Women and Child Using IOT

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ABSTRACT: In present scenario there is a dramatic increase in the number of crimes against humans. with the rise of internet of things standalone devices with web connectivity have become an important part of our lives. The proposed system can be used to indicate thelost humans movements outside from the home. Our proposed system contains various sensors which measures different parameters on a regular basis. In case of emergency a message will be sent to parents and/or police, by either pressing the panic button or pronouncing the keyword. The complete system is implemented using Raspberry Pi 3 Model B. Python programming is used interface all the sensors and other hardware.

KEYWORDS: Raspberry pi 3 B+ module, GPS, Internet of Things (IoT), buzzer, heart Beat Sensor.

I. INTRODUCTION

Now a days there is a drastic increase in the number of child and women kidnapping cases. The crime against the children in the age of 14 years to 17 years is more popular, so parents are always worried about their children's and women's safety. This project will give voice against the parents worry. As engineering students we have thought about a security system for women and children. This paper describe about an intelligent security system. In case of any harassment, the women uses the security kit that consists of four ways(voice board, button, two sensors) to protect them. This framework consolidate the two GPS and GSM. The GPS is utilized for distinguishing the areas. GPS receiver is a route framework. It work in light of satellite signs. It pinpoints the land area of itself. The GPS satellite pivots around the earth and transmits signs to the earth. These signs are gotten by the GPS beneficiary to compute client's correct area utilizing the techniques called "Triangulation".

II. EXISTING SYSTEM

This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the police station and relatives. This detection and messaging system is composed of a GPS receiver, Arduino board and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The arduino board processes this information and this processed information is sent to the user using GSM modem. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defence then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a sms will be sent to concern person with location using GSM and GPS.

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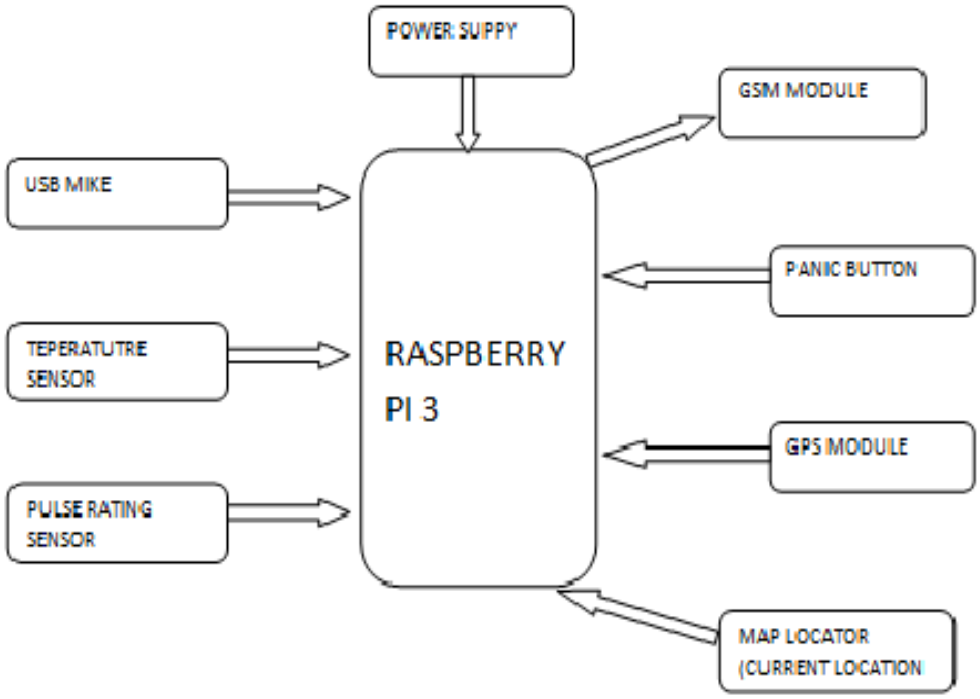
III. PROPOSED SYSTEM

The existing system produce only the latitude and longitude value only. But in our project the latitude and longitude value which is generated by the GPS will be get accessed by the GOOGLE map. The map locator will manipulate that data and locate the current location of the suspect.

IV. BLOCK DIAGRAM



The architecture of the proposed system is shown in the Figure 1. It consists of the Raspberry Pi 3, GSM SIM 300, GPRS, Temperature sensor, Heart beat sensor. As seen in block diagram consists of Smart phone connected to hardware through IOT (Internet of things). The device communicates with smart phone through specially designed software that acts an interface between the device and the phone. The data directed by the smart band such as the pulse rate, temperature of the body along with the motion of the body is continuously monitored by the software which is pre-installed in the system/laptop.

V. FLOW CHART

When the Raspberry Pi is powered on it first initializes the GSM SIM300 with AT commands. Once the GSM is initialized the controller checks for GPS and it then initializes all sensors. Heartbeat rate varies from one person to other but generally we take 60-80Bpm as the normal heartbeat rate. Heartbeat less than 50Bpm and above 100Bpm is considered as abnormal condition. The normal body temperature of a human varies between 35oC to 40oC. If the body temperature is less than 35oC then it's considered as hypothermia and if it's greater than 40oC then it's considered as hyperthermia.

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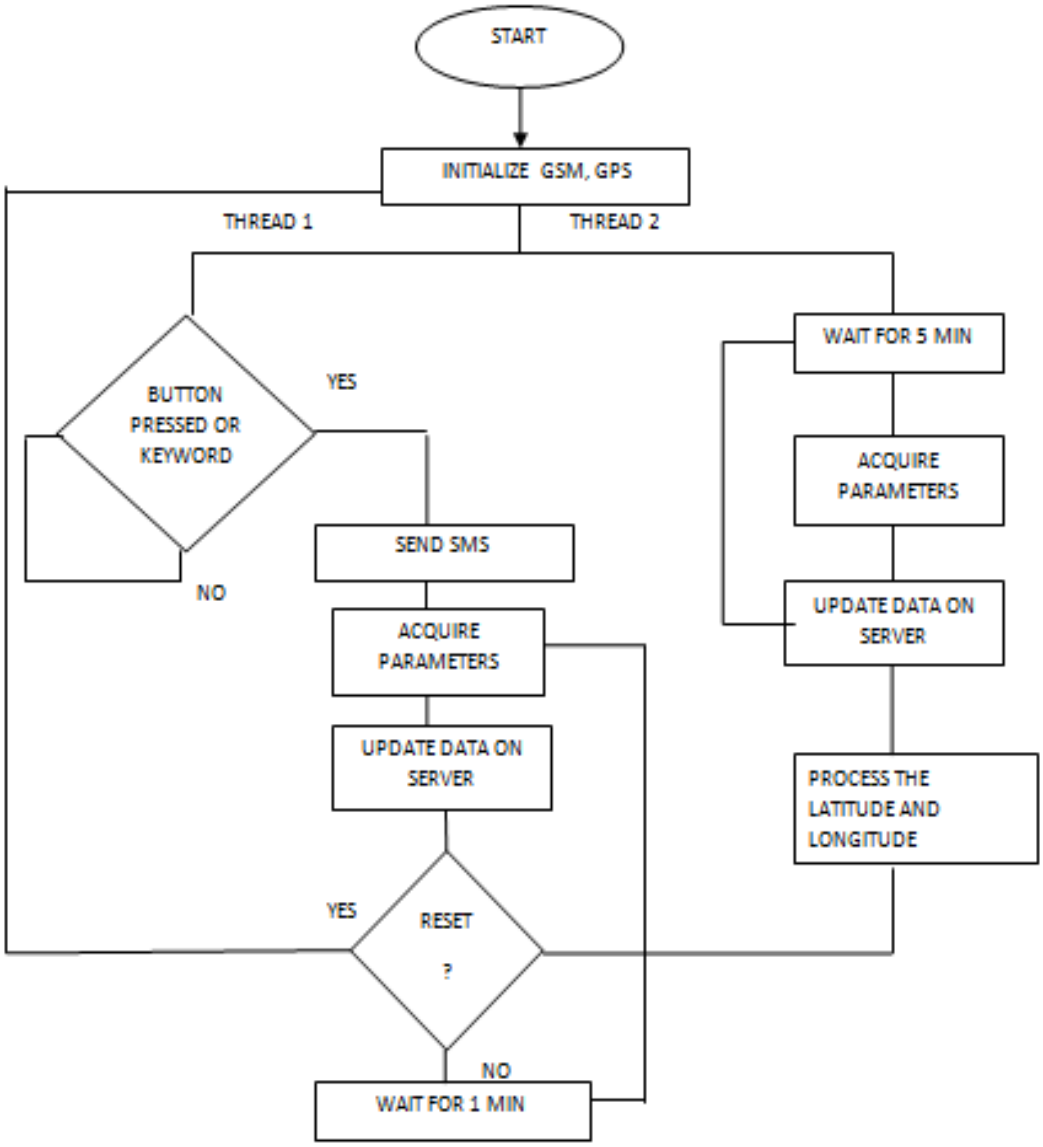

VI. COMPONENTS USED

6.1 Pulse rate sensor:

Heart beat sensor gives digital output of heart beat. When heart beat detector is working the led flashes for every heart beat. This digital output will be connected to microcontroller directly to calculate the beats per minute (BPM) rate. It works on the principle of light modulation of networked satellites and is tracked to uplinks data for synchronization. The system uses four frequencies in the Lband which ranges from 1.2 to 1.6 GHz.

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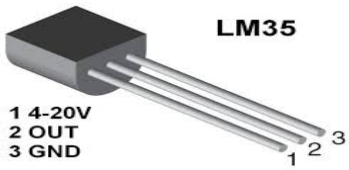
6.2 Temperature sensor:

Human body temperature is of vital importance to maintain the health and therefore it is necessary to monitor it regularly. We can measure the body temperature using various temperature sensors. For instance, LM35 series are precision integrated circuit sensors whose output voltage is linearly proportional to the Celsius temperature. It operates linearly +10.0mV/°C scale factor with 0.5°C accuracy. In emergency case body temperature varies drastically which can trigger module for rescue.



6.3 GPS module:

Global positioning system (GPS) is able to determine the latitude and longitude of a receiver on Earth by calculating the time difference for signals from various satellites to reach the receiver. In six different orbits approximately 12,500 miles above the earth, 24 MEO (Medium-Earth Orbit) satellites revolve around the earth 24 hours and transmit location every second as well as present time from atomic clocks and by monitoring blood flow through skin when is in contact with the wrist band at each pulse.

6.4 Node MCU:

ESP8266EX offers a complete and self-contained Wi-Fi networking solution; it can be used to host the application or to offload Wi-Fi networking functions from another application processor. When ESP8266EX hosts the application, it boots up directly from an external flash. In has integrated cache to improve the performance of the system in such applications.

6.5 Power supply:

The microcontroller and associated circuitry requires 3.3v supply In this project we have power supplies with +5V & -5V option normally +5V is enough for total circuit. Another (-5V) supply is used in case of OP amp circuit .Transformer primary side has 230/50HZ AC voltage whereas at the secondary winding the voltage is step downed to 12/50hz and this voltage is rectified using two full wave rectifiers .the rectified output is given to a filter circuit to fiter the unwanted ac in the signal After that the output is again applied to a regulator LM7805(to provide +5v) regulator. Whereas LM7905 is for providing –5V regulation. z(+12V circuit is used for stepper motors, Fan and Relay by using LM7812 regulator same process like above supplies).

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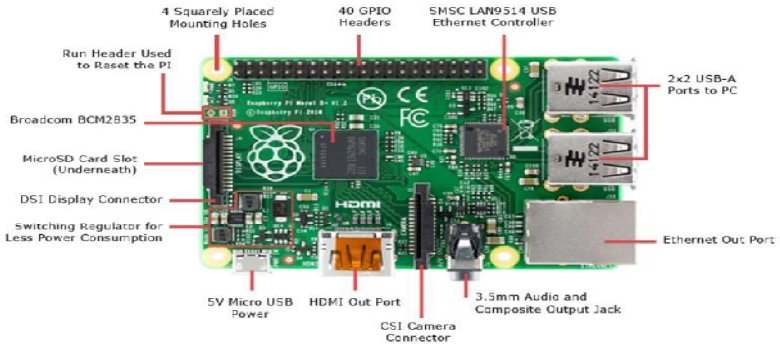
6.6 Button:

When the button is pressed then it will send signal to microcontroller, then microcontroller will send the GPS co-ordinates via GSM to the police station or to the family members. We propose to have a microcontroller device using IOT, which continuously communicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes temperature, heart beat and also victim motion. This generates a signal which is transmitted to the smart phone. The software or application has access to GPS and Messaging services which is pre programmed in such a way that whenever it receives emergency signal, it can send help request along with the location coordinates to the relatives and the parents. From this device we can take the immediate action on the situation.

6.7 Raspberry Pi:

Raspberry Pi 3 Model B is single board computer. Its CPU speed ranges between 700MHZ and 1.2 GHZ. It also has on board memory between 256MB and 1GB Ram. This is used at transmitter or user end. It is the heart of the system. OS installed on it is Debian.



6.8 GSM MMODULE:

GSM/GPRS Modem is built with Dual Band GSM/GPRS engine- SIM900A, works on frequencies 900/ 1800MHz[6].The Modem is coming with RS232 interface, which allows you to connect microcontroller with RS232 Chip (MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM/GPRS Modem is having internal TCP/IP stack to enable you to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer. The onboard Regulated Power supply allows you to connect wide range unregulated power supply. Using this modem, you can make audio calls, SMS, Read SMS; attend the incoming calls and internet etc[7].

The MODEM needs **AT commands**, for interacting with processor or controller, which are communicated through serial communication. These commands are sent by the controller/processor.

AT Commands are broadly differentiated in two categories as below:

1. Basic Commands
2. Extended Commands

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Basic Commands are those commands that do not start with '+'. For Example, ATD Note (For Dial), ATA Note (For Answer).Extended Commands are those commands that starts with '+'. For Example, AT+CMGS Note (For Send SMS). All GSM AT Commands are Extended Commands.

VII. CONCLUSION

Being safe and secure is the demand of the day. Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system. This system is also useful for doctors who are overwhelmed with patient load and also beneficial for rural patients who have less access to health care facilities.

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