Advanced Women Safety System using IBEACON Technology

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***Abstract*:- According to the reports of WHO, NCRB social government organization 35% of women's all over the world are facing an abnormal health sufferings in public places such as railway-bus stands, foot paths etc. This paper describes about effective safety system for women's. Here we introduce a prototype device which ensures the protection of women's. This helps to identify protect and call on resources to help the one out of abnormal situations. The system resembles a normal wearable device which when activated, tracks the place of the women's and sends emergency alert in webpage with location and distance between women's and missed place. The proposed system shows a flexible and interoperable combination of a device and application that will accessorize and empower the citizens and serve as a multifunctional device. For our proposed system, we use mems and pressure sensor to detect the abnormalities. When abnormality is been detected, the current location is been obtained using GPS Sensor and an alert message is sent to the nearby police station or parents. To avoid unnecessary panic situations, a switch is been integrated with the proposed system. If the women press the switch, the alert message won't be sent to the nearby police station or parents. Also the current location would be updated in the cloud server.**

Keywords: PIC Microcontroller, Body sensors, IBEACON Technology, GSM Module.

1. INTRODUCTION

India which sees itself as a promising super power and an economic hub can achieve its goal if and only if a large numbers of women participate in the development process. The existing system propose an automated reliable women security device which consist of the sensors embedded in a wearable dresses. It consists of sensors, GSM and PIC microcontroller which keep user under observation at all the time. The Paper proposed a portable device as a belt which is automatically activated base on the pressure difference crosses over the threshold in unsafe situation [1]. A IBEACON Transmitter track the location and sends the emergency messages to three emergency contacts every two minutes with updated location through GSM [2].

2. EXISTING SYSTEM

India which sees itself as a promising super power and an economic hub can achieve its goal if and only if a large numbers of old peoples participate in the development process. The existing system propose an automated reliable security device which consist of the sensors embedded in a wearable dresses [3]. They use low cost Bluetooth mobile Low Energy signaling to enable micro-location services and to trigger actions within apps. A woman with a mobile phone only needs to pass by the Bluetooth signal to be tracked by an application.

➢ ***DISADVANTAGES***

- Tracking was difficult
- Not able to find exact location

3. PROPOSED SYSTEM

It consist of sensors, GSM and PIC microcontroller with sensors tool which keep user under observation at all the time. This Paper proposed a portable device as a belt which is automatically activated base on the pressure difference crosses over the threshold in unsafe situation..For our proposed system, we use Heartbeat and sound sensor to detect the abnormalities. When abnormality is been detected, the current location is been obtained using Ibeacon and GSM sends an alert message is sent to the nearby police station or parents [7]. To avoid unnecessary panic situations, a switch is been integrated with the proposed system. If the women press the switch the alert message won't be sent to the nearby police station or parents.

➢ ***ADVANTAGES:***

- Provide high security
- Easy tracking method
- Avoid the risk of women's missing.

3.1 HEART BEAT SENSOR

The basic heartbeat sensor consists of a light emitting diode and a detector like a light detecting resistor or a photodiode. The heart beat pulses causes a variation in the flow of blood to different regions of the body.

When a tissue is illuminated with the light source, i.e. light emitted by the led, it either reflects (a finger tissue) or transmits the light (earlobe). Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector [4]. The amount of light absorbed depends on the blood volume in that tissue. The detector output is in form of electrical signal and is proportional to the heart beat rate [5].

➢ ***FEATURES***

- Low power consumption
- Wide power supply range: DC 3~5V
- Convenient to use
- High sensitivity

3.2 PIC MICRO CONTROLLER

A PIC microcontroller is a processor with built in memory and RAM and you can use it to control your papers (or build papers around it). So it saves you building a circuit that has separate external RAM, ROM and peripheral chips. It has many useful built in modules e.g. EEPROM, Timers, Analogue comparators, UART. Even with just these four modules

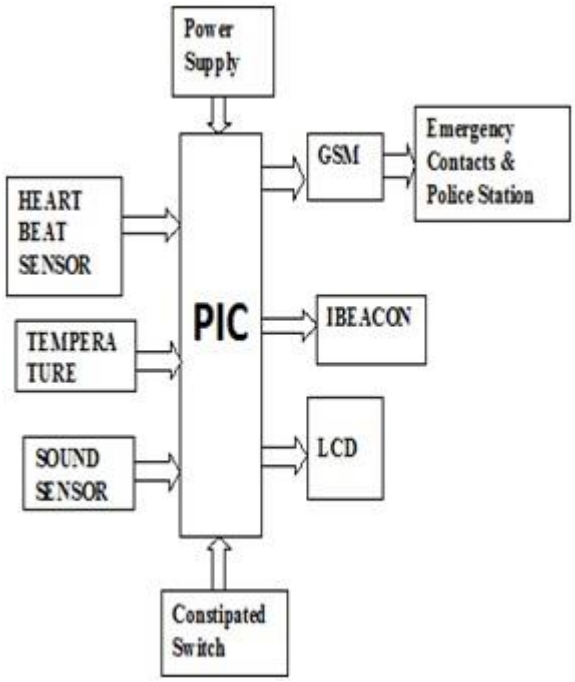

Fig.1 Flowchart of Proposed System

- **Frequency Counter:** Using the internal timers and reporting through UART (RS232) or output to LCD.
- **Capacitance Meter:** Analog comparator oscillator.
- **Event Timer:** Using internal timers.
- **Event Data Logger:** Capturing analogue data using an internal ADC and using the internal EEPROM for storing data (using an external I2C for high data storage capacity.
- **Servo Controller:** (Control through UART) - using the internal PWM module or using a software created PWM.

3.3 TEMPERATURE SENSOR

In addition to the temperature range sensed, the sensitivity and the accuracy of temperature sensors may also vary widely. Additionally, some temperature sensors work at high voltages while others only work at low voltages.

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in ºC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With LM35, temperature can be measured more accurately than with a thermistor. It also possess low self heating and does not cause more than 0.1 ºC temperature rise in still air.

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The operating temperature range is from - 55°C to 150°C. The output voltage varies by 10mV in response to every ºC rise/fall in ambient temperature, *i.e.*, its scale factor is 0.01V/ ºC. Temperature sensors are frequently provided in integrated circuits to detect when the operating temperature limits have been exceeded.

In such applications, a separate temperature sensor is connected to an alarm system to provide for a warning if the temperature increases beyond a particular limit. Storage areas where products are stored which must be kept from freezing are required to have the temperature monitored to ensure that it does not fall below a level at which the products may freeze.

3.4 SOUND SENSOR

The sound sensor is able to measure noise levels in decibels (dB) at frequencies around 3- 6 kHz where the human ear is most sensitive. It is a sensor whose mode of detection utilizes sound waves. It extracts a sound signal from a modulated signal, such as that of an FM transmission. The threshold- sensitivity can be adjusted on the sensor. It is highly sensitive and easy to use.

➢ ***FEATURES***

- Operating voltage: (3.3v-5v) DC
- Operating current: 15mA
- Output: analog (0-5v) DC
- Easy to use

3.5 GSM CONFIGURATION

This GSM Modem can accept any GSM network act as SIM card and just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. The SIM900A is a complete Dual-band GSM/GPRS solution in a SMT module featuring an industry-standard interface; the SIM800 delivers GSM/GPRS 900/1800MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM800 can fit almost all the space requirements in your applications, especially for slim and compact demand of design.

➢ ***FEATURES***

- High Quality Product
- Configurable baud rate
- SMA connector with GSM Antenna.
- SIM Card holder.
- Normal operation temperature: -20 °C to
- +55 °C
- Input Voltage: 4.5V-12V DC

3.6 IBEACON TRANSMISSION

An iBeacon is a radio transmitter on Bluetooth Low Energy. Bluetooth Low Energy is a wireless personal area network technology used for transmitting data over short distances. As the name implies, it's designed for low energy consumption and cost, while maintaining a communication

range similar to that of its predecessor, Classic Bluetooth.
An iBeacon broadcast has the ability to approximate when a user has entered, exited, or lingered in region. It can be used to monitor the location [9]. IBeacon can transmit packets of data in regular intervals of time, and this data can be picked up by devices like smart phones having a particular app.

- **FEATURES**
  - Operating Voltage: 3.3VDC
  - Output: UART (TTL)
  - Detection range: 0-20m
- **APPLICATIONS**
  - Tracking applications
  - Indoor application

4. CONCLUSION

In this paper we describe about an one touch alarm system for women's safety using IBEACON. In the light of recent outrage in Delhi which shook the nation and woke us to the safety issues for women, people are finding up in different ways to defend. Here we introduce a device which ensures the protection of women. This helps to identify protect and call on resources to help the one out of dangerous situations. Anytime you sense danger, all you had to do, is hold on the panic switch.
The system resembles a normal wearable device which when activated, tracks the place of the women using Bluetooth low energy and sends emergency messages using GSM (Global System for Mobile communication), to contacts and the police control room. The proposed work shows a flexible and interoperable combination of a device and application that will accessorize and empower the citizens and serve as a multifunctional device.

5. REFERENCE

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