PROTECTION FOR WOMEN USING IoT SMART DEVICE WITH LOCATION AND PARAMETERS

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Abstract- This project introducing a new creative idea for protection of women from the tragedy situation. In this creative idea we using the sensors like Pulse rate sensor, Flex sensor, Sound sensor, Temperature sensors, Accelerometer sensor, Microcontroller (ATMEGA8), GSM, WIFI shield enabled with GPS, LCD and the buzzer. When the victim press the switch the data like the heart beat rate, temperature sound, flexibility of women and movement of the victim from the different sensors are given to the Microcontroller (atmega8). The Microcontroller check the sensed data to the threshold values which are predefined in the controller. If it reaches the threshold value the buzzer will alarmed. And the microcontroller send the alert message and the measured parameters of the victim to all nearby IoT devices through the WiFi shield enabled with GPS. And the GSM is used to track the location of the victim using the latitude and longitude values. The WIFI shield enabled with GPS which gives the internet connection to all the nearby IoT connected devices and mobile phones. All the process done in this project will be shown in the LCD display. This application helps women to overcome their fear in going out and do things what they like to do. And it is also used to unhealthy people and the adults who is in abnormal or unhealthy situation.

Index Terms – Accelerometer sensor, Buzzer, Flex sensor, GSM, LCD, Microcontroller, Pulse rate sensor, Sound sensor, Temperature sensor, WIFI shield.

I. INTRODUCTION

In fast going world women harassment is an important issue. For that emergency communication system (ECS) system (typically computer-based) organized for the primary purpose supporting of one-way and two-way communication of emergency information between any victims/individuals to group of members. Contrary to emergency notification systems, which generally deliver emergency information in one direction, emergency communication systems are typically capable of both initiating and receiving information between multiple parties. These systems are often made up of sensors, Microcontroller, IoT device (WIFI shield), GSM.

Therefore, the origination of information can occur from a variety of sources and locations, from which the system will disseminate that information to one or more target audiences.

Physical devices through which all electronic devices connected to the internet is called the Internet of Things. The privacy is very high in the Internet of Things. It is very helpful to people to develop a smart-based security. The sensors are developed in such a way that there is a automatic response without any triggering buttons. This can help people can overcome difficulties like women security, constructing smart city.

II. EXISTING SYSTEM

2.1 Problem statement:

In Women and children based security system [1] victim has to press the emergency button, but in emergency conditions pressing the button is may not be possible. Using Smart Phone", the child cannot send its location by itself. The parent of that child has to send the message to the child's system to know their location. In "Mobile Tracking Application for Locating Friends", a tracking application software must be installed in the mobile phone and the friends must be previously registered in the friends group of application [2]. To track their friends mobile phones are needed in both sides. In an Intelligent System based on RFID and GPS Technologies for Women Safety[3] has some limitations in terms of cost, signal interferences and also the information access to invalid and unauthenticated users. The main drawback of these applications and services is that the initial action has to be triggered by the victim [4] which often in situation like these doesn't happen. So the emphasis is to build a solution that works autonomously in situations encountered. This paper presents new method to provide protection for women or children by ringing the buzzer and send the messages to the mobile numbers they stored, with the location where the victim is present.

2.2 Disadvantages of Existing System:

The main drawback of the system is the when we use this system the messages which carries the location of the victim will send to only predefined mobile numbers.

To avoid this problem we added the WIFI shield enabled with GPS module are used. In this this the alert messages send to the number of devices which previously connected to the IoT devices and also the body parameters are given to the connected devices.

III. PROPOSED SYSTEM

In this proposed system the women security is achieved based on the IoT device which is connected to the number of mobile phones or systems. In the previous systems we use the GSM and GPS modules to send the location and the alert messages to only predefined mobile numbers. In this system we send the message and the location to all connected IoT devices. The proposed system consists of power supply, Pulse rate sensor, Temperature, Flex sensor, Sound sensor and Accelerometer sensor, Microcontroller, WIFI shield enabled with GPS, GSM, LCD, and Buzzer. The information of the victim who is in tragedy is updated from the sensors. The heart beat rate is given from the pulse rate sensor, body temperature is given from the temperature sensor, sound from the victim is sensed from sound sensor, the body flexibility is from flex sensor and the movement of body is captured by the accelerometer sensor. Then this values are checked with the threshold value which is predefined in the controller when it reaches that value. Then the microcontroller will send the information to the GSM and IoT device using WIFI shield which having the internet connection to the device and to the connected device or mobile phones and proper translation of location information by click the *Track On Map* option in the IoT device screen. So we can easily identify the location and the victim present status when she is normal or abnormal from the body parameters. It is also very useful for adults and unhealthy people

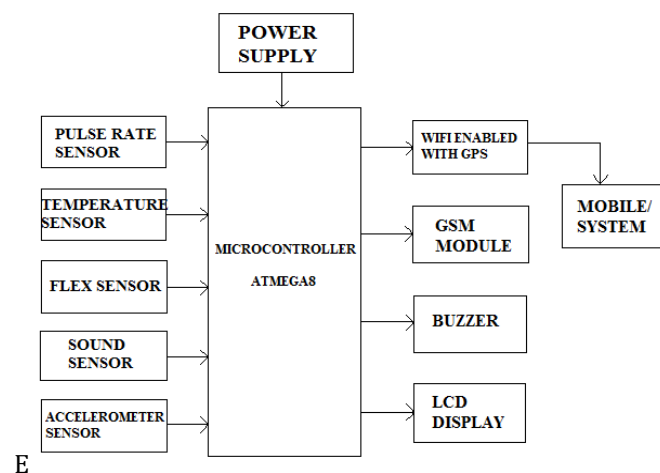### METHODOLOGY

A. Block diagram and working principle

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Fig 1: Block diagram of proposed system

The principle behind this is to detect body parameter signals from the corresponding sensors which are in contact with the women who are in menace condition and hence after detecting signals, the sensor transmits the output electrical signals to the controller. The controller receives the signal from the sensor as an analog input signal and hence it generates the output parameters of each sensor and displays it on the LCD display. The sensors used in the proposed system are temperature sensor, accelerometer sensor. Each sensor is used to detect signals [7] of human (women) who is in abnormal situations. If values of any sensor signal crosses the threshold limit indicating that the women is in threat and according to victim condition, crosses the threshold limit the buzzer is activated. Hence the GPS transmits the location to the controller and then the microcontroller transmits the signal to the GSM. Finally the alert message "I am in danger" along with the latitudinal and longitudinal location is send to the connected IoT devices. Thus stimulation of sensor and buzzer traces the location of victim using WIFI shield enabled with GPS and with the help of GSM 900A used sends the message of location to the corresponding mobile phone or system which is connected to the IoT devices with a 10secs delay.

IV. HARDWARE DESCRIPTION

A.POWER SUPPLY

The power supply section is the important one. It should deliver constant output regulated power supply for successful working of the project. A 0-12V/1 mA transformer is used for this purpose. The primary of this transformer is connected in to main supply through on/off switch& fuse for protecting from overload and short circuit protection. The secondary is connected to the diodes to convert 12V AC to 12V DC voltage. And filtered by the capacitors, which is further regulated to +5v, by using IC 7805. The power supply for the hardware used in the system are given below,

Microcontroller – 5v Dc
Sensors – 5v Dc
IoT Modem – 12v Dc
LCD – 5v Dc
Buzzer – 1.5 to 12v

B.PULSE RATE SENSOR:

The Pulse rate or Heart Beat sensor is used to measure the heart beat rate or the pulse, based on optical power variation as light is scattered or absorbed during its path through the blood as the heart beat changes.
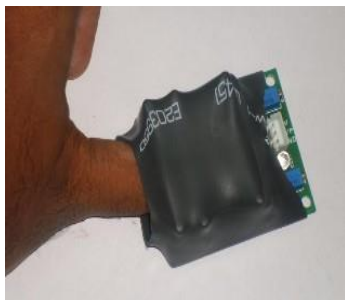
Fig 2: Heart beat sensor

C.TEMPERATURE SENSOR:

We can measure the body temperature using various temperature sensors. For instance, LM35 which has series of 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 cases body temperature [10] varies drastically which can trigger module for rescue.
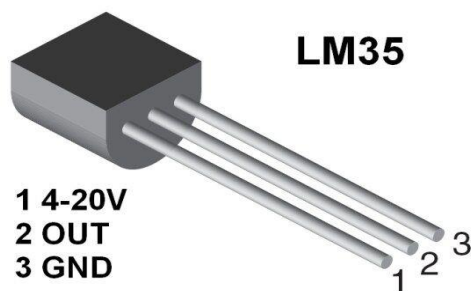

Fig 3: LM35 TEMPERATURE SENSOR PIN DIAGRAM

D.FLEX SENSOR:

This flex sensor is a variable resistor like no other. The resistance of the flex sensor increases as the body of the component bends. Sensors like these were used in the Nintendo Power Glove. They can also be used as door sensors, robot whisker sensors, or a primary component in creating sentient stuffed animals.

Fig 4: Flex sensor

E.SOUND SENSOR:

The sound sensor module provides an easy way to detect sound and is generally used for detecting sound intensity. This module can be used for security, switch, and monitoring applications. Its accuracy can be easily adjusted for the convenience of usage. It uses a microphone which supplies the input to an amplifier, peak detector and buffer. When the sensor detects a sound, it processes an output signal voltage which is sent to a microcontroller then performs necessary processing.

Fig 5: SOUND DETECTION SENSOR

F.ACCELEROMETER SENSOR

An accelerometer is an electromechanical device that will measure acceleration forces. These forces may be static, like the constant force of gravity pulling at your feet, or they could be dynamic-caused by moving or vibrating the accelerometer.
In this system we use the triple axis accelerometer sensor which is used to measure the acceleration produced from the victim who is in tragedy.
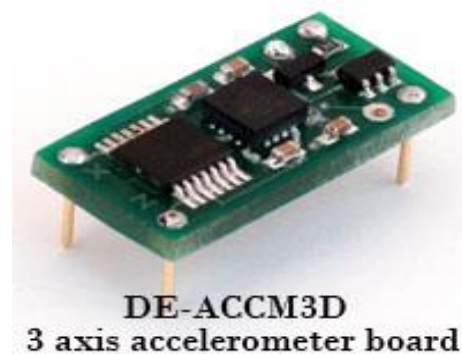

Fig 6: ACCELEROMETER SENSOR

G. MICROCONTROLLER ATMEGA8

The microcontroller unit is used to control all the activities. Here microcontroller ATMEGA8 will be used. The ATmega8 provides 8 Kbytes of In-System

Programmable Flash with Read-While-Write capabilities, 512 bytes of EEPROM, 1 Kbyte of SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible Timer/Counters with compare modes, internal and external interrupts, a serial programmable USART, a byte oriented two wire serial interface, a 6-channel ADC (eight channels in TQFP and QFN/MLF packages) with 10-bit accuracy, a programmable Watchdog Timer with Internal Oscillator, an SPI serial port, and five software selectable power saving modes.

Fig 7: ATMEGA8 MICROCONTROLLER

H. WIFI SHIELD (ESP8266)

In this system WIFI shield provides the internet connection to the device. It also having the GPS itself. ESP8266 is a low cost Wi-Fi microcontroller chip that has the ability to empower IoT and helps the exchange of information among various connected objects. ESP8266 consists of networkable microcontroller modules, and with this low cost chip, IoT is booming. The ESP8266 Wi-Fi Module is a self-contained SOC (silicon on chip) with integrated TCP/IP protocol stack that can give any microcontroller access to a Wi-Fi network. Each ESP8266 module comes pre-programmed with an AT command set firmware, which can be hooked up to the Arduino to get as much Wi-Fi-ability as a Wi-Fi Shield offers. The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.
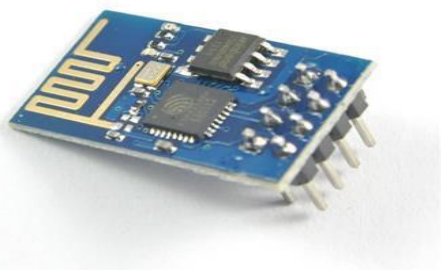

Fig 8: ESP8266 Serial Esp-01 WIFI Wireless

I.GSM module

Global System for Mobile communications (GSM: originally from Group Special Mobile) is the most popular standard for mobile phones in the world. In this project GSM used to send the alert messages to the IoT connected mobile phone and the devices. GSM/GPRS Modem-RS232 is built with Dual Band GSM/GPRS engine- SIM900A, works on frequencies 900/ 1800MHz. The Modem is coming with RS232 interface, which allows you connect PC as well as 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 application in M2M interface.

J. LCD AND BUZZER

The LCD shows the location and the messages on the display. Buzzer will alarmed when the situation is become abnormal.

V. WORKING OF PROPOSED SYSTEM

This is the system setup of this module. It consists of Power supply, microcontroller, pulse rate sensor, temperature sensor, flex sensor, accelerometer sensor, sound sensor and the WiFi shield enabled with GPS, LCD and Buzzer. In this system power supply is turned on then the sensors will be sensed the information like heart beat rate, temperature, flexibility, gesture and sound from the victim. These values are checked to the threshold values which is predefined in the microcontroller. The values are not exceeding the threshold value then the output status will show as Normal. If any one of the value is to be exceed then the status will turned into Abnormal. Then the buzzer will be alarmed and the process will be shown in the LCD display. For that abnormal alert the microcontroller will be send the information to the WiFi shield which is enabled with GPS. Then the WiFi shield send the information to the IoT devices. On the IoT screen Track Google Map option will show, if we click it the location will be traced. So in this system we can identify the location with the body parameters. It also used for adults and unhealthy people.
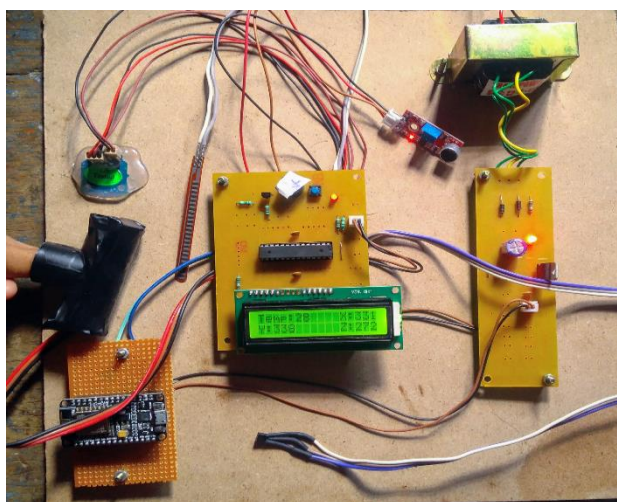
Fig 9: Proposed system setup

OUTPUTS ON IoT DEVICES
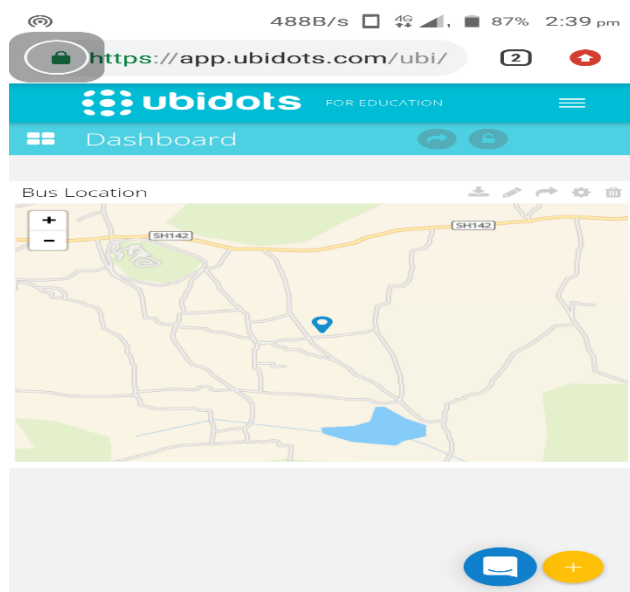

Fig 10: IoT device output

Fig 11: Location on map

VI. SOFTWARE DESCRIPTION

CodeVisionAVR is the only Integrated Development Environment on the market that features an Automatic Program Generator (Code Wizard AVR) for the AVR8, AVR8X and XMEGA chips. CodeVisionAVR V3, besides its own IDE, can now also be used as an Extension fully integrated in Atmel Studio 7. CodeVisionAVR is a C cross compiler, Integrated Development Environment and automatic program generator designed for the ATMEL AVR family of microcontrollers. The cross C compiler implements nearly all the elements of the ANSI C language, as allowed by the AVR architecture with some features added to take advantage of specificity of the AVR architecture and the system needs.
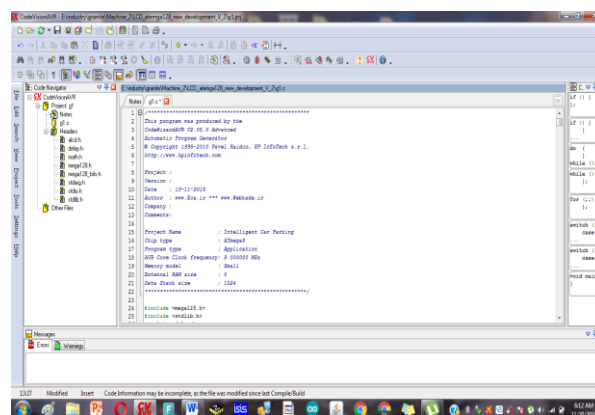
VII. CONCLUSION

This paper is all about the existing applications for women security and comes out with an innovative idea for security and protection for women and more research is possible with introducing smart technology where people and objects form a network. This will help to solve them technologically with compact equipment and ideas. Using screaming alarms and also alerting the emergency contacts which is connected to the IoT device, by sending the messages with the location is helpful for women's security. In this system victim's body parameter like heart beat rate, temperature, flexibility, gesture and the sound are given to the IoT devices. If any abnormal situation occur this values are shown in the IoT device and the status of the victim shown. From that we can easily identified the location using Track on Google map option on the IoT output. This system can overcome the fear that frights every woman in the country about her safety and security. We can identify the health condition of the adults like temperature, heart beat rate and if they faint due to any health issue we can easily identify from our place and ensure that they are in normal or in abnormal situation using this project. And we can easily track them and inform to emergency services.

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