



Patient Monitoring And Women Safety System Using Iot

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ABSTRACT

The design of proposed system is based on embedded real time system to monitor the patients suffering from blood pressure, chronic diseases and for aged people who resides in their home. In this system is mainly to eliminate the need of a Personal Computer and to develop the system probably to reduce the cost. The smart phones create many opportunities to improve health monitoring and many technologies are developed every year with large scale adoption. The system was developed to monitor the non-invasive signs such as temperature, blood pressure, heart rate, and to detect smoke in atmosphere. The gas sensors used and if the patient fallen down to detect fall detection accelerometer. The proposed system consists of an Arduino controller, acid sensor, GSM 900A, android application. The acid sensor is a switch type that will detect the presence of water or battery acid if any portion of the rope becomes wet. The monitored values are always sent through the smart phones and it detects the normal and abnormal state. The buzzer indicates it when it is abnormal state and can be passed to particular member through mobile android application by using Global Positioning System/Global System for Mobile Communication module. The patient can be monitored through mobile phones by doctor and need not to visit to home place for the monthly check-up. The doctor monitors the patient health condition through the android application.

Keywords-Arduino Uno, Global Positioning System, Global System for Mobile Communication.

1. INTRODUCTION

The global population is growing and aging in every year. In this demographic change chronic age related diseases increase correspondingly, such as dementia, diabetes, cancer, heart failure, and chronic obstructive pulmonary diseases. Injured related and chronic condition type of disabilities affect lot of peoples. Healthcare costs are increasing, quality of life and productivity are reclining, family members serve as primary are assistants, and in many cases. So many ways problem come from any direction such as women walking on the road after the work, going to outing or many other reasons for which they go alone. The most violent crimes against women is acid attack and sexual harassment. Main advantage of this project is two different types of problem is rectified. To overcome this problem we can use patient monitoring and womens safety system using IOT. This simple gadget designed to serve the purpose of providing security for ill patient and womens.



2. EXISTING SYSTEM

In previous system wearable health monitoring systems (WHMS) and women safety systems are separate project to solve the own problem. Such as biosensors it detect the vital signs and patient physiological parameters and the emergency situation the patient can be treated with medical equipments with real time monitoring. Optical pulse oximetry sensor is design a software algorithm. The photoplethysmographic signals were extracted for the saturation of oxygen and pulse oximetry sensing the pulse transits time users fingertip and palm. ECG wave form are generated for doctor reference. Experimentally to detect the normal condition values to target the success rate attained 94.3%. And also intelligent safety system to prevent acid attacks method is used to detect the acid, alarm is turned on during the attack time, the message is send to control room, attacker image is captured and send to control room, and to measure heart beat and temperature measure the person and send to the guardian mobile number with location of the person which contain a secret password. Also contains a shock mechanism to produce non-lethal electric shock in emergency situations to the attacker.

3. PROPOSED SYSTEM

From the above section, the existing system technologies manage the health monitoring in so many ways. But in this system we combine two different area problems. It is mainly used for security purpose for people. Patient may easily understand their own health condition without doctor. Also doctor observes the patient health condition through sensor. In women safety acid level is detected before the attack.

The proposed system Fig-1 consists of arduino microcontroller is a heart of the basic building block, MEMS 3- axis accelerometer, acid detection sensor, heart beat sensor, temperature sensor, vibration sensor, buzzer, gps/gsm module, lcd.

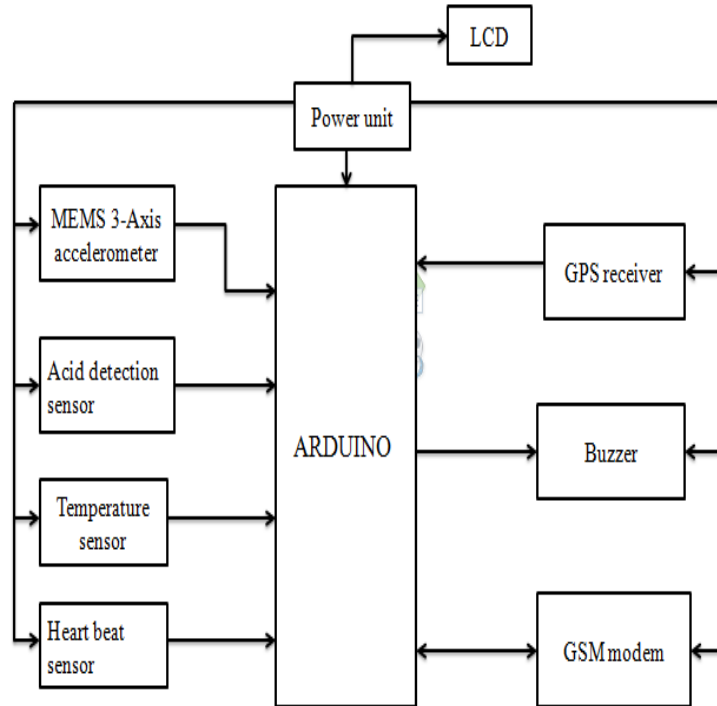


Fig-1: Block Diagram

3.1 WORKING PROCESS

This system it detects the fall detection accelerometer, temperature, acid gas detection and heart beat in both normal and abnormal conditions of the patients. In mobile screen both normal and abnormal values are displayed. Aurdino microcontroller compares the maximum and minimum values and if the patient is in abnormal condition then abnormal values are detected and the buzzer indicate a beep sound and the data are sent through the gsm/gps module always the mobile receives the data. The doctor / relatives receive the data and if the patient is in critical condition by their turn can send an ambulance to the patient location.

4. HARDWARE COMPONENTS

It is consists of arduino, varies sensors of heart beat sensor, acid detection sensor, fall detection sensor and temperature sensor with GSM/GPS module.

4.1 ARDUINO

Basic building block of propose system is arduino. It is AT mega 32 bit microcontroller also a 8 bit AVR RISC based microcontroller. Operating voltage is 1.8 volts to 5.5 volts. Input from all sensor to the arduino and compare maximum and minimum value sent through the GSM/GPS.



4.2 HEART BEAT SENSOR

In this sensor TCRT1000 is used to continuously monitor patient heartbeat every sec. it is non-invasive method is using a light source and detector to measuring variation in blood volume in tissues. The pulse rate is a heart rate and measurement of number of times the heart beats per minute. The normal pulse rate for adults is 60 to 100 beats per minute. Pulse rate is increase when accident ,sudden shock also running. When cardiovascular condition heart rate is 40 beats per minute in running.

4.3 FALL DETECTION SENSOR (ADXL345)

ADXL 345 is a complete 3-axis acceleration measurement system. It is User selectable resolution. It is used to detect patient fall or not with each second. It is used to gaming, handset, medical instrumentation. This device is allowed to detect the patient fall in 3 axis position and ouput of the sensor interfere into arduino.

4.4 LM35

LM35 is used to measure the body temperature. Temperature varied due to food, atmosphere and stage of menstrual cycle. Minimum temperature range is 97.8 degrees Fahrenheit and maximum range is 99 degrees Fahrenheit. Temperature sensor measure the value and when the temperature reach above threshold value to give alarm.

4.5 BUZZER

It is indicate audio signal when patient is abnormal state. The other types of buzzers has alarm devices with timers. 5 Volts buzzer is used.

4.6 GSM/GPS

Global system for mobile communication (GSM) and Global positioning system (GPS) is a modem built with dual band GSM/GPS engine SIM300A. 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.

5.WORKING FLOW

The Flow chart is as shown in Fig-2. The main purpose of the monitoring system is used to detect the abnormal condition of the patient by continuous monitoring of the vital signs. First the system is initialized and by using the sensor unit the vital parameters such as temperature, BP, pulse rate, gas, fall detection of the patient is recorded and sent through ADC channel to the Arduino controller.

FLOW CHART

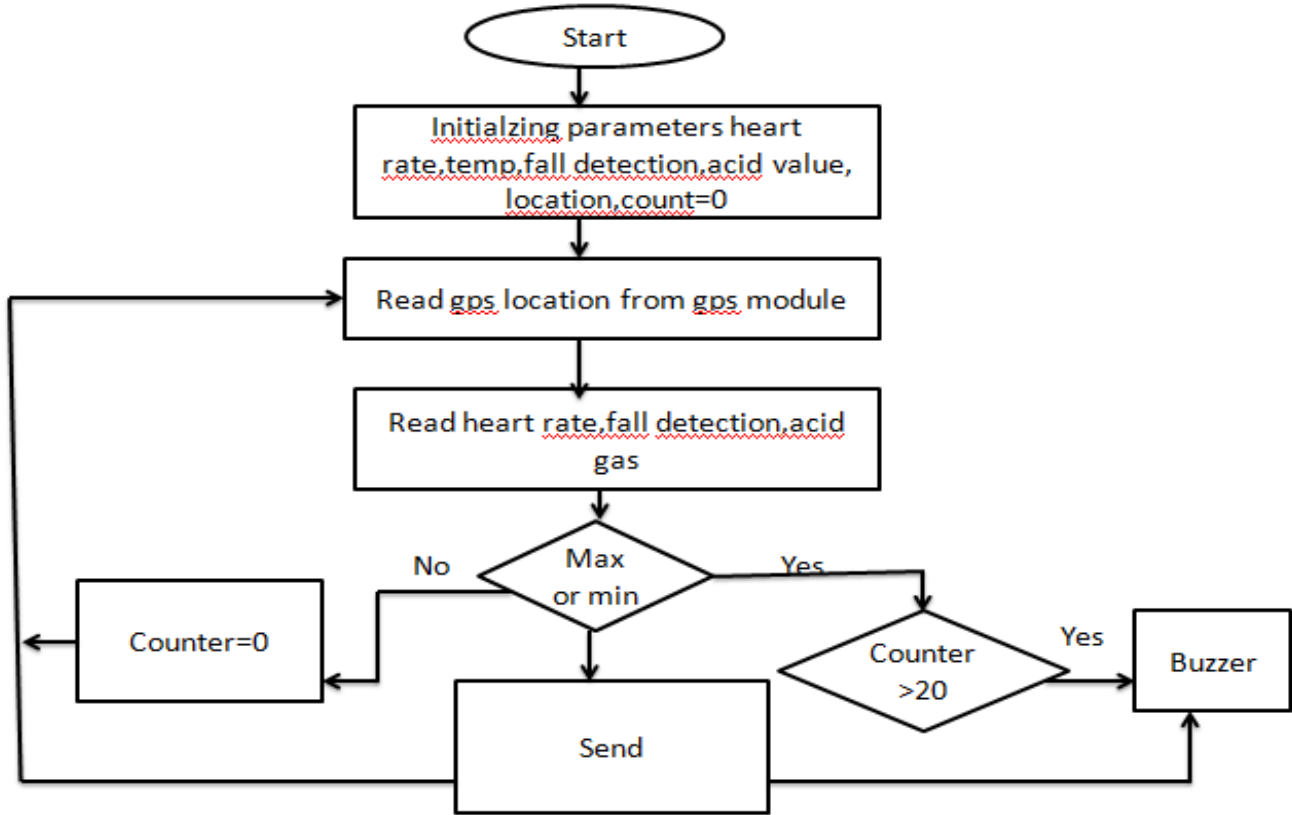


Fig-2 Working Flow

6. SOFTWARE

Arduino 1.7:

It is a open source software system and combine the hardware and software. It is easy to understand also when error detect is not affect whole product and immediately change the error.

Software output:

```
Virtual Terminal
AT
AT+GMR
AT+CWJAP="user*Name", "password"
AT+CIPMUX=1
AT+CIPSERVER=1,80
AT+CIPSEND=0,160
TEMP:24 RH:40 M_S:1 W_T:1
AT+CIPCLOSE=0
```

Fig-3 Output

7. HARDWARE MODULE

The hardware module Fig-4 detect the abnormal and normal value of the patient using arduino, gsm/gps and sensors.

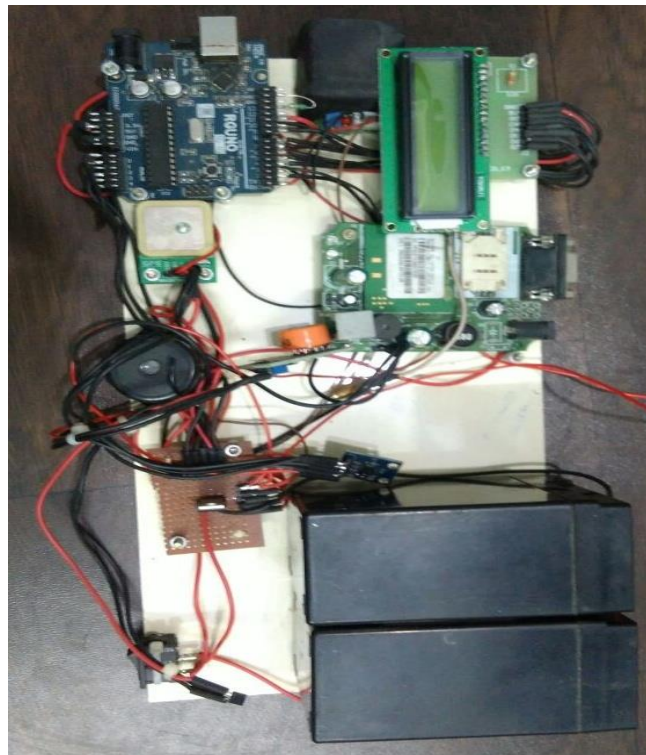


Fig-4 Hardware Module

8. CONCLUSION

The indoor health monitoring system which is effectively used in real time medical applications is developed. This system monitors the vital signs of the patient in the home and there is no need to



visit the hospital often. It uses the ARDUNIO UNO controller to receive input and transmit to external devices. It uses the GSM 900A modem which transmits the messages and it automatically monitors the respective parameters to transfer.

This system is designed to reduce the work and it can be implemented with the low cost and for the daily usage to save life in emergency condition. The simulation for the whole model is designed and tested.

9. FUTURE WORK

The health monitoring system can be extended for monitoring some more vital signs such as cholesterol, sugar, etc. This can also be extended by introducing immediate vaccination for the patients that are identified as in critical position.

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