

SMART HEALTH MONITORING FRAMEWORK FOR SENIOR CITIZENS USING MOBILE PHONE

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ABSTRACT:

Remote health monitoring is viewed as a hot theme in the field of research. In spite of the fact that the quantity of matured individuals are increasing, it is evident that the need of a scatter therapeutic consideration framework providing remote checking intended to diminish the raising human services consumption is pressing. Also, World Organization detailed in Bangladesh, about 17% of passing brought about via cardio vascular ailments. Consistent health monitoring and quick location can set aside to 60% of lives. Hence, a remote, wearable, minimal effort and programmed health monitoring framework is an appropriate arrangement. In the proposed work, temperature sensor and ECG sensor which are interfaced with arduino Uno micro controller are used to obtain temperature and ECG signals of patient. The monitored data can be communicated to specialist or family member via mobile phone by means of message or phone call.

KEYWORDS; Remote health monitoring, Arduino Uno, Temperature sensor, ECG sensor, mobile phone

INTRODUCTION:

Remaining in emergency clinics is expensive, monotonous and sometimes it is seen that patients need to remain in the medical clinic only for routine checking of physical state. In these perceptions, medical personnel mostly routinely screen the indispensable signs which are body temperature, blood pressure and respiration rate [1]-[4]. Patients feel relief staying at home as well as within the medicinal perceptions. For another situation, ICU entrances are strictly prohibited, which builds a barrier to communication between patient and worries family members. Other than these, consistently coronary illness and stroke are the reasons behind the passing of very nearly 33% of all deaths all around [5], [6]. One of the main source of the immense number of deaths is delayed detection and shortage of qualified guide. Crucial signs are significantly identified with the health monitoring and routinely checking of these are vital for basic patients [7], [8]. The introduction of health monitoring innovation can seize these troubles. This innovation utilizes modern approaches to surveil a patient. It increases access to care, lessens costs due to staying in the clinics, time wastage and helps the medicinal services suppliers to defeat deficiencies [9], [10]. Through this framework the body state of a patient is checked by restorative faculty or family members of patient from an inaccessible place by utilizing remote advances. These days remote health monitoring framework is hastily rising in the medicinal sector. In developed nations, this innovation is much familiar, but in developing nations like Bangladesh, the facility is discontinuous.

LITERATURE SURVEY:

The framework is proposed dependent the survey of past works in the remote sensor areas and the utilization of mobile phone in health monitoring. Numerous applications are now a days accessible where utilization of mobile phones in health monitoring is experimented. Such framework comprised of a wearable device including temperature and pulse sensors. The device will send its information to the server through the android application. This information will be accessible to the specialist utilizing his android application [11].

In some application systems, the authors proposed an monitoring plan dependent on android phones. emergency alarms, alerts and reminders help the specialist to take timely decisions in emergency circumstances. Specialists can check the status of patient all the time even by remaining at remote areas by having synchronization web application and web server [12].

A few papers concentrated on taking care of multiple patients at a time. The system utilizes an android application [13].

In few other papers, the authors built up a framework which persistently monitors the patient parameters and also the patient's history can be stored in web server [14].

In other works body temperature measurement is done using LM-35 is used as a temperature sensor and Ethernet was utilized for continuous information assortment [15].

In other works, phone network is assisted by GSM/GPRS modem was utilized to send pulse and body temperature readings [16].

A framework was created for pulse observing based on Bluetooth technology [17].

Heart beat and temperature were checked and LCD was used to show the readings by one gathering[18].

METHODOLOGY:

The proposed system can be built utilizing the accompanying equipment segments:

- 1.GSM module.
- 2.Bluetooth Module.
- 3.DHT11 temperature sensor.
- 4.Micro controller(Arduino Uno).

GSM module:

GSM(Global system for Mobile communication) is a computerized portable system that is broadly utilized by mobile users.GSM uses an assortment of Time Division Multiple entrance (TDMA) and the most comprehensively utilized of the three computerized remote communication advances:TDMA,GSM and code division multiple access(CDMA).GSM digitizes and packs information,at that point send it down a channel with two unique floods of client information,each in its time slot.It works at either 900MHz or 1800 MHz recurrence band.In the current work ,the data related to the condition of the patient can be communicated to specialist or family member by means of message or phone call through the sim which was inserted in GSM module.

Bluetooth:

Bluetooth is short-extended remote communication technology that permits devices such as mobiles,PC’s and peripherals to transmit data or voice remotely over a short separation.Bluetooth utilizes less force and reasonable to execute than Wi-Fi.The purpose behind Bluetooth is to replace the labels that ordinarily interface devices,while still maintaining the security between the communications.In the proposed system,we have used HC-05 Bluetooth module.It is an easy Bluetooth serial port protocol (SPP) module,which is mainly designed for transparent remote serial connection setup.The information which is checked from the patient is sent to the pro or relative who is remotely arranged. **DHT_11 Temperature sensor:**The DHT-11 is ease temperature and moistness sensor.It utilizes a capacitive stickiness sensor and a thermistor to quantify the temperature of the patient and gives the yield in advanced structure.

ECG SENSOR:ECG records the electrical action created by heart muscle depolarization,which engender in throbbing electrical waves towards the skin.ECG signals can be collected by placing ECG

electrodes in different parts of the body like hand,chest and leg.The acquired ECG waves can be observed in PC or versatile.

MICROCONTROLLER(i.e Arduino):

The Arduino Uno is an open-source micro controller board dependent on the microchip AT-mega micro controller and created by Arduino.The board is outfitted with sets of digital and analog input/output(I/O) sticks that might be interfaced to different extension shields and other circuits.The board has 14 computerized I/O pins,6 simple I/O sticks and is programmable with arduino IDE(Integrated Development Environment),by methods for a sort USB interface.

PROPOSED SYSTEM:

The structure proposed here is executed exactly.The two determining units which are body temperature and ECG signals are determined by temperature and ECG sensor.The three ECG electrodes of ECG sensor are placed in chest,hand and leg of the patient.Whenever there is rise and fall in heart rate,immediately the system alert the specialist or family member who is remotely locatedby methods for call with the assistance of GSM and Bluetooth.In comparative way,when there is ascend in internal heat level of the patient it cautions the master or relatives with message.

BLOCK DIAGRAM:

The fig.1 shows the block diagram of the proposed system.It comprises the components needed for building up the system. They are temperature sensor, ECG sensor, Micro controller, blue tooth module. GSM, power supply, mobile

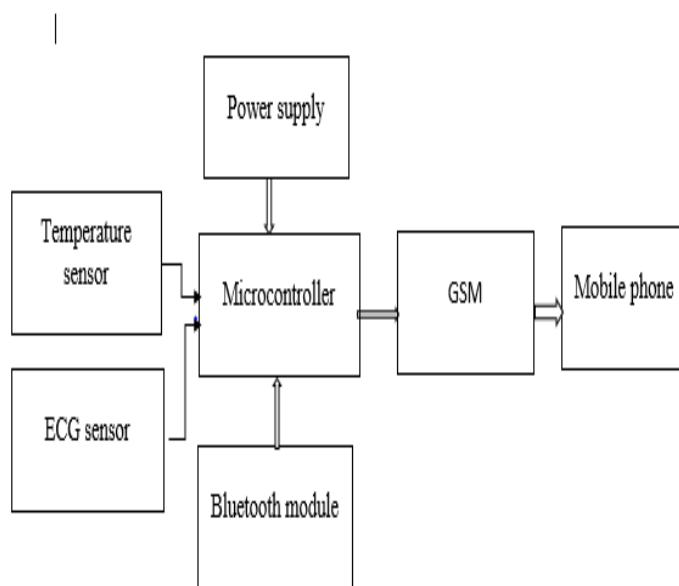


Fig.1 Block diagram

FLOW CHART:

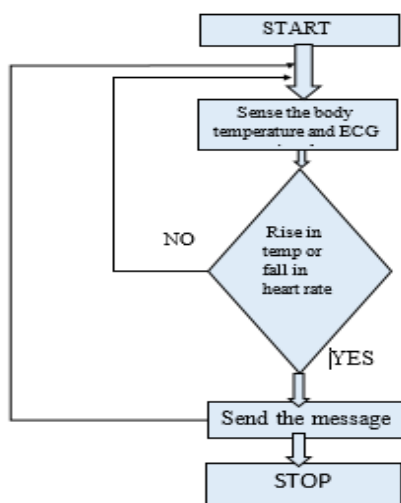


Fig.2 Flow chart

Result:

Fig.3 shows the output of the current framework.It shows the temperature and the ECG waveform.

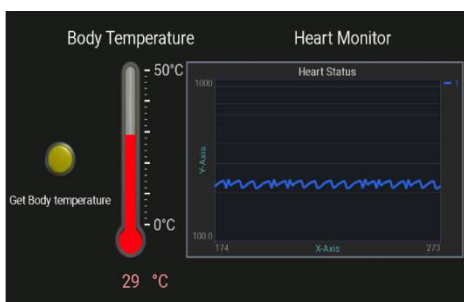


Fig.3 Output of the framework

CONCLUSION:

An advanced mobile phone based health monitoring framework has been introduced in this paper.The proposed system mainly consists of an android application, Arduino uno micro-controller,DH_11 temperature sensor as well as heart sensor.The link is established between the patients Bluetooth enabled mobile device an sensors via Bluetooth modem,this helps in continuous monitoring.Wirelessly data from hardware is transmitted to the server using Bluetooth and GSM technology.

FUTURE SCOPE:

In future works we can add additional sensors to gauge fundamental signs like spo2,diabetics and so on.There are a few difficulties in materials,packaging and handling which can be tended to in future.

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