

Analysis and Monitoring of Coma Patient Using Wearable and Monitoring Sensor System

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ABSTRACT

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In India regular numerous people are impacted with trance state on the grounds that the patient are not observed opportune and appropriately and furthermore for constant customary boundaries are not proficiently work on various circumstances, continuous examination for patient condition likewise unrealistic. To defeat these sorts of circumstances, our framework is valuable. Our framework is intended to be utilized in Home or clinic for estimating and checking different boundary like Body temperature and heartbeat. By utilizing Internet of Things (IOT) innovation makes all articles interconnected and it has been perceived as the following specialized insurgency. The outcomes can be recorded utilizing Arduino showed on interacted show. Likewise the outcomes can be shipped off server utilizing IOT and Relatives or Doctors can login to a site and view those outcomes.

Keywords : Arduino, Heartbeat Sensor, Temperature Sensor, Health Parameters, IOT

I. INTRODUCTION

An implanted framework is a specific reason PC framework intended to perform one or a couple of devoted capabilities. An embedded system is a combination of hardware and software. This task presents a constant checking and recording of patient information without human mediation. In the event that there is any abrupt changes happen in the typical scope of body parameters such as heartbeat, over temperature recognition, then, at that point, Buzzer will ring and message will shipped off comparing portable number.

II. EXISTING SYSTEM

In existing framework, doctors need to monitor the patients in a screen implies both ought to be in clinic as it were. A few parts are associated with the patient to know the patient conditions by connecting temperature sensor, heartbeat sensor. If any emergency then buzzer will on and the doctors should alert. And every time their conditions are shown on LCD screen.

Drawbacks :

- It leads more time
- Sometimes it is difficult to adjust in hospitals for more time.

III. PROPOSED SYSTEM

A health observing system comprises of various sensors connected to the patient and they convey that information by means of the handling unit to the server. The patient and doctor cell phone or PCs are utilized as monitoring device. In this proposed system we are utilizing Arduino, Eye blink Sensor, temperature and Heartbeat Sensor. Temperature Sensor is utilized to screen the temperature of the patient. Heartbeat Sensor is utilized to screen the pulse of the trance state patient. Eye blink sensor is utilized to screen the flickering of eyes of trance like state patient. MEMS sensor is utilized to recognize the body developments of the patient. If any of the sensors exceeds the limit the message will sent to the corresponding mobile number and the values are uploaded to the thingspeak server.

Block diagram:

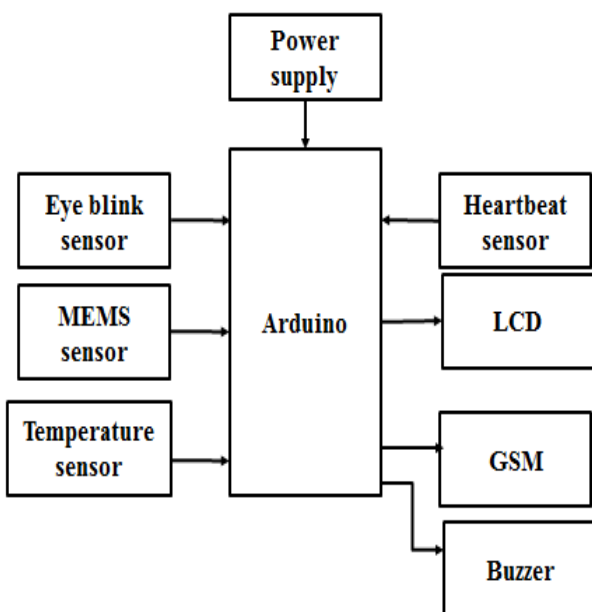


Fig 1: Block diagram of proposed Method

HARDWARE REQUIREMENTS

Arduino:

Arduino UNO is a much precious add-on to the electronics, which contains USB interface, six analog pins and fourteen digital Input/Output pins along with a Atmega328-powered microcontroller. Furthermore, the Arduino UNO also aids serial interaction with the help of Rx and Tx pins.

These Arduino is available in several variants, which exist in the market such as Arduino Due, Arduino UNO, Arduino Mega, and Arduino Leonardo. But, among the four variants, Arduino Mega and Arduino Uno are readily available than the other two. Those who you are aiming to execute a project in line with the digital electronics could choose Arduino UNO as it imparts more convenient and also be cost effective when dealing with IoT, robotics, embedded system, etc.



Fig2: Arduino

These Arduino UNO are generally open-sourced (i.e.) the related software and boards are much easily accessible that any person could alter and improvise those boards for obtaining desirable functionalities in diverse applications.

MEMS Sensor:

MEMS are low-cost, and high accuracy inertial sensors and these are used to serve an extensive range of industrial applications. This sensor uses a chip-based technology namely micro-electro-mechanical-system. These sensors are used to detect as well as measure the external stimulus like pressure, after that

it responds to the pressure which is measured pressure with the help of some mechanical actions.

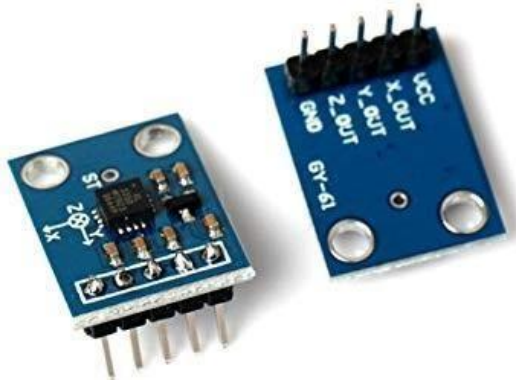


Fig 3: MEMS Sensor

Heartbeat Sensor:

Heartbeat Sensor is an electronic device that is utilized to scale the pulse for example speed of the heartbeat. Observing internal heat level, pulse and blood pressure are the fundamental things that we really do to keep us solid.

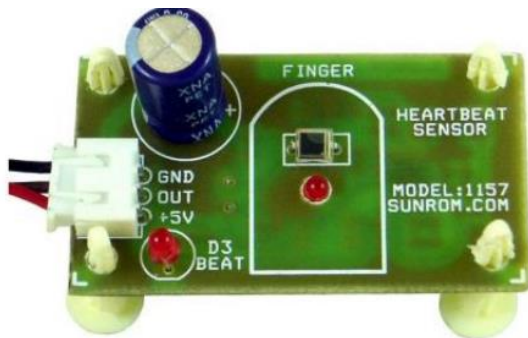


Fig 4: Heartbeat Sensor

Power Supply:

Transformer:

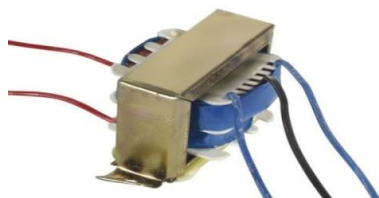


Fig 5: Transformer

Transformer is a device which reduces A.C current into required D.C current.

Bridge Rectifier:



Fig 6: Bridge rectifier

A diode bridge is a technique of four diodes in a bridge circuit arrangement that provides equal polarity of output for mutually polarity of input. While used in its maximum shared application, for transformation of an alternating-current input into a direct-current output, it is called as a bridge rectifier.

Capacitor:



Fig 7: Capacitor

A capacitor could be a passive two terminal electrical component that stores current in a electric field. The result of this can be termed as capacitance.

Regulator:

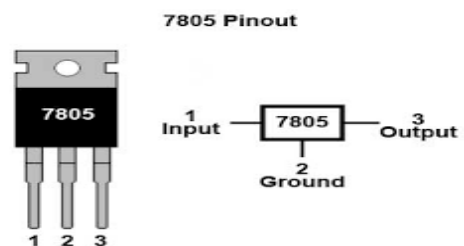


Fig 8: Regulator

A voltage regulator IC keeps the output voltage at a continuous value. 7805 IC is one of the IC of 78xx family. It maintains fixed linear regulators which is used to maintain fluctuations.

GSM Module:

GSM speaks to Global System for Mobile Communications. It is a standard set made by the

European Telecommunications Standards Institute (ETSI) to depict traditions for second time (2G) automated cell frameworks used by PDAs.

A Modem is a gadget which modulates and demodulates signals as per communication requirements. It converts an analogue carrier signal to digital signal and also converts such a carrier signal to required information.



Fig 9: GSM

LCD:

LCD (Liquid Crystal Display) is the innovation utilized in scratch pad shows and other littler PCs. Like innovation for light-producing diode (LED) and gas-plasma, LCDs permit presentations to be a lot slenderer than innovation for cathode beam tube (CRT). LCDs expend considerably less power than LED shows and gas shows since they work as opposed to emanating it on the guideline of blocking light.



Fig 10: LCD

TEMPERATURE SENSOR

The DS18B20 is one kind of temperature sensor and it supplies 9-bit to 12-bit readings of temperature. These values show the temperature of a specific device. The correspondence of this sensor should be possible through a one-wire bus protocol which utilizes one data line to communicate with an inner

microprocessor. Moreover, this sensor gets the power supply directly from the data line so the requirement for an external power supply can be eliminated. The applications of the DS18B20 temperature sensor include industrial systems, consumer products, systems which are sensitive thermally, thermostatic controls and thermometers.



Fig 11: Dallas Temperature Sensor

EYE BLINK SENSOR

The Eye Blink Sensor is based on IR. It consists of an IR Transmitter and IR Receiver. The Eye Blink Sensor enlightens the eye with infrared light and monitors the changes in the reflected light. The infrared light reflected from the eye is utilized to determine the results. The sensor output is active high for eye close and can be given directly to microcontroller for interfacing application.

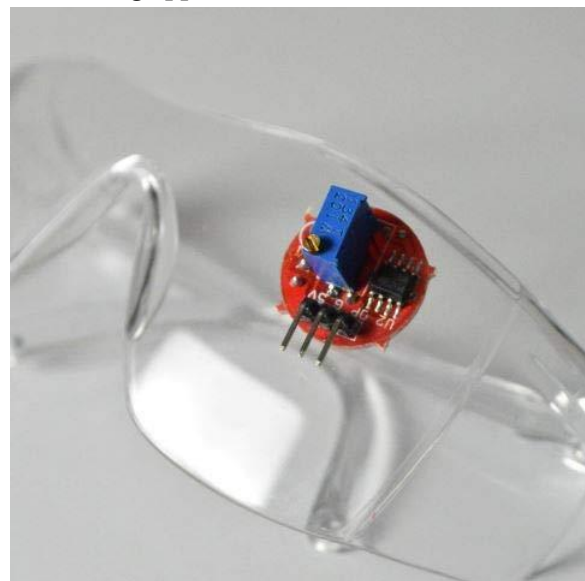


Fig 12: Eye Blink Sensor

BUZZER

A buzzer or beeper is a sound signaling gadget, which might be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, clocks and affirmation of client information, for example, a mouse snap or keystroke. Ringer is a coordinated design of electronic transducers, DC power supply, broadly utilized in PCs, printers, copiers, cautions, electronic toys, car electronic gear, phones, clocks and other electronic items for sound gadgets.



Fig 13 : Buzzer

SOFTWARE REQUIREMENTS

Arduino IDE:

The Arduino IDE software is open-source software, where we can have the example codes for the beginners. In the Present world there are lot of versions in the Arduino IDE in which present usage is Version1.0.5. It is very easy to connect the PC with Arduino Board.

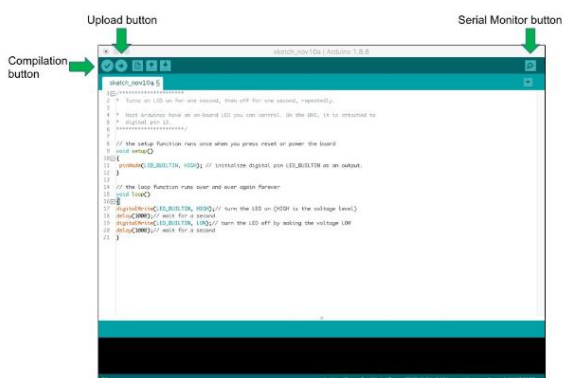


Fig14: Arduino IDE Window

ADVANTAGES

- Easy to interface with server
- Monitoring the patient continuously

- Easy to build

APPLICATIONS

- Used in hospitals
- Used in remote areas

IV. CONCLUSION

The proposed system uses sensor innovation as an arising component for medical care administrations. PC and mobile monitoring system is presented which is able to continuously monitor the patient's heartbeat, temperature, eye blink sensor, MEMS sensor. The system is able to carry out a long term monitoring of patients condition and furnished with a crisis component. A real time monitoring system is developed to provide clearer and more point to point perspective of the underground mine. This system is displaying the parameters on the monitoring unit. To Alarm triggers when sensor values passes the boundary level.

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