# Intelligent Medical Information Retrieval System using IOT

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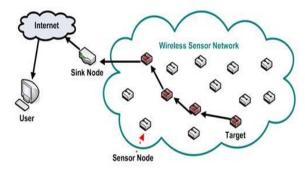
Abstract - Wireless communication is among technologies biggest contribution to mankind. It is enhanced to convey the information quickly to the consumers. In the modern health care environment, the usage of internet of things (IoT) with global system for mobile communication (GSM) bring convenience of physicians and patients. The body sensor networks are one of the core technologies of IoT developments in health care system. IoT and GSM based monitoring system is proposed for continuous monitoring of patient's health condition using sensors. This focus on the measurement and monitoring of various biological parameters using web server and android application. Fingerprint can monitor the patient condition on his/past data

# 1.INTRODUCTION

A wireless sensor network (WSN) is a computer network consisting of spatially distributed autonomous devices using sensors to cooperatively monitor physical or environmental conditions, such as temperature, sound, vibration, pressure, motion or pollutants, at different locations. The development of wireless sensor networks was originally motivated by military applications such as battlefield surveillance. However, wireless sensor networks are now used in many civilian application areas, including environment and habitat monitoring, healthcare applications, home automation, and traffic control.

In addition to one or more sensors, each node in a sensor network is typically equipped with a radio transceiver or other wireless communications device, a small microcontroller, and an energy source, usually a battery. The size a single sensor node can vary from shoebox-sized nodes down to devices the size of grain of dust. The cost of sensor nodes is similarly variable, ranging from hundreds of dollars to a few cents, depending on the size of the sensor network and the

complexity required of individual sensor nodes. Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed, and bandwidth. In computer science, wireless sensor networks are an active research area with numerous workshops and conferences arranged each year.



#### 2.MATERIALS AND METHODS

#### 1. METHODOLOGY

A heart rate monitor is a personal monitoring device that allows one to measure his or her heart rate in real time or record the heart rate for later study. It is largely used by performers of various types of physical exercise.

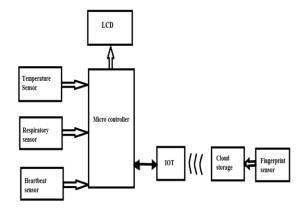
Heartbeat sensor is designed to give digital output of heat beat when a finger is placed on it. When the heartbeat detector is working, the beat LED flashes in unison with each heartbeat. This digital output can be connected to microcontroller directly to measure the BeatsperMinute (BPM)rate.

(Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These

modules are preferred over seven segments and other multi segment LEDs. The reasons being:

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup.

#### 2. HARDWARE COMPONENTS



## 2.1 TEMPERATURE SENSOR LM35

LM35 is a precession Integrated circuit Temperature sensor, whose output voltage varies, based on the temperature around it. It is a small and cheap IC which can be used to measure temperature anywhere between -55°C to 150°C. There will be rise of 0.01V (10mV) for every degree Celsius rise in temperature. LM35 is a temperature measuring device having an analog output voltage proportional to the temperature. It provides output voltage in Centigrade (Celsius). It does not require any external calibration circuitry.

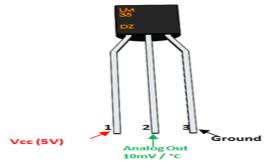


Fig 5.1 LM 35 Pinout

# 2.2 POWER SUPPLY

The power supply is provided DC motor and microcontroller. The DC power supply with both positive and negative output voltages, a center-tapped transformer is used and Arduino operates at low power. A relay is an electrically operated switch.

Where many relays are used to an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a low-power signal where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers they repeated the signal coming from one circuit and retransmitted it on another circuit

# 2.3 HEARTBEAT SENSOR:

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#### 2.4 ARDUINO (ATMEGA328)

ATMEGA382 in 28-pin narrow dual in-line package (DIP28N). It is commonly found on older Arduino boards.

AVR is a family of microcontrollers developed Since 1996 by ATMEL, acquired by Microchip Technology in 2016. These are modified Harvard architecture 8-bit RISC single-chip microcontroller

AVR was one of the first microcontroller families to use on-chip flash memory for program storage, as opposed to one-time programmable ROM, EPROM or EEPROM used by other microcontrollers at the time.

#### 2.5 LCD

Liquid Crystal Display screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task

like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD.

# 2.6 FINGERPRINT SENSON.

The fingerprint sensor is one kind of sensor which is used in a fingerprint detection device. These devices are mainly inbuilt in the fingerprint detection module and it is used for computer safety. The main features of this device mainly include accuracy, better performance, robustness Based on exclusive fingerprint biometric technology

#### 3. IMPLEMENTATION

The interfacing of devices to the Arduino microcontroller. In this the system collects patient's information with the help of sensors. In this design we are monitoring Blood pressure, heart beat and DHT 11 module electrically connected to the system and physically to be worn by the uses On the press of button, the sensor senses the pressure in systolic and diastolic along with the heart beat and sends it to the Arduino. The Temperature sensor senses the temperature of its ambience, so when this sensor is in close proximity of the user it reports the users' body temperature. An LCD is used to display these parameters. If system detects any abrupt changes in patient heartbeat or blood pressure, the system automatically alerts the user and the doctor about the patient's status over IoT and also shows details of heartbeat, temperature, humidity and blood pressure of patient live over the internet. The doctor can get access to these vital parameters pertaining to the patients' health over the Things peak web interface from anywhere over the world.

Thus, IOT based patient health tracking system effectively uses internet to monitor patient health status and save lives on time. In this way IOT based Patient Monitoring System is an enhanced system that helps in monitoring patients without any manual intervention. The inputs to the Arduino are values from the sensor readings. The Raspberry Pi and the Arduino are serially

### 4.CONCLUSION

We found that even though most of the popular BSN based research projects acknowledge the issue of the

security, but they fail to embed strong security services that could be preserve patient privacy. Finally, we proposed a secure IoT based healthcare system using BSN, called BSN-Care, which can efficiently accomplish various security requirements of the BSN based healthcare system. All the sensor which is connected in the body is used to collect the abnormal symptoms of the human body and then it is collected back to the doctors through the IOT technology.

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