

## Patient Health Monitoring Using GSM and Cloud

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### Abstract

*In India, nearly about 20% of the total population losses their lives due to lack of hospital facilities, technology and availability of doctors. As technology grown, it necessary to give importance for health. Advance in computer and communication give healthcare a great opportunity to design health care monitoring system using smart technologies. An understanding of health is the basis of all the health care importance parameters like temperature, heart beat and pressure. In this paper we are monitoring the patient health parameters like temperature, heart beats per minute and pressure. When parameters readings cross the specific limit then it will be notified to the doctors and for the further use this data will be stored in the cloud.*

**Keyword:** Patient health, GSM, cloud, Communication

### INTRODUCTION

In modern society the people are busy with their day-to-day activities so there are not concentrated with their health at this point they faces problems in their health for this issue we came with this wireless health monitoring system which helps in the monitoring their health without visiting hospitals regularly in this way they save time and they can concentrated with their health. This system can be used in emergency conditions [1].

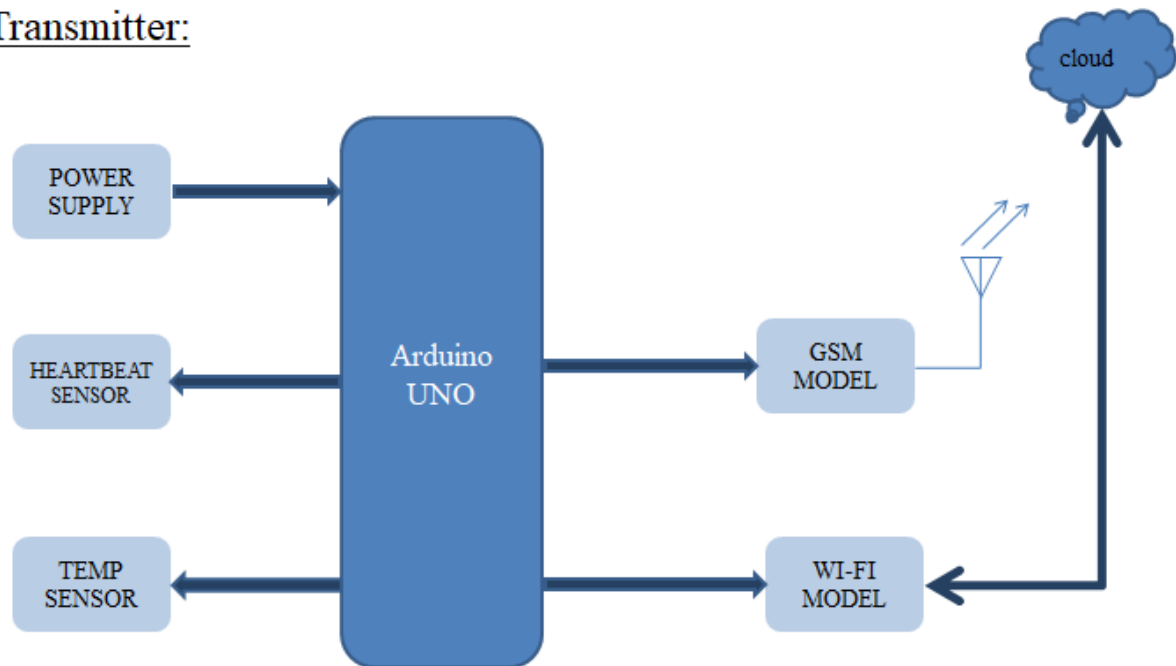
In this paper we mainly discuss about wireless health sensors and data storage model. Wireless sensor are used to detect the health issues like pulse rate, temperature and pressure. By using all these data of patient we storing that in cloud that helps doctor to monitor the patients according to this data he/she takes the percussions [2].

### METHODOLOGY

The project is a wireless communication system that continuously keep track of patient's body parameter's like temperature ,pressure and heart beat and the output will displays to the doctor by using RF communication. The patients parameters information will be stored in the cloud by using Wi-Fi model and GSM is used to sends SMS alertness in emergence cases to the specified doctor so that instantly the doctor can suggest precautionary methods to the patients. The two way communication is happening between the doctor and the patient. The system is used to read remote patients parameter's using different sensors and sends it to the aurdino [3].

## BLOCK DIAGRAM

### Transmitter:



*Figure 1: Transmitter*

### Receiver:



SMS NOTIFICATION

DATA STORED IN CLOUD

*Figure 2: Receiver*

#### **Hardware specifications:**

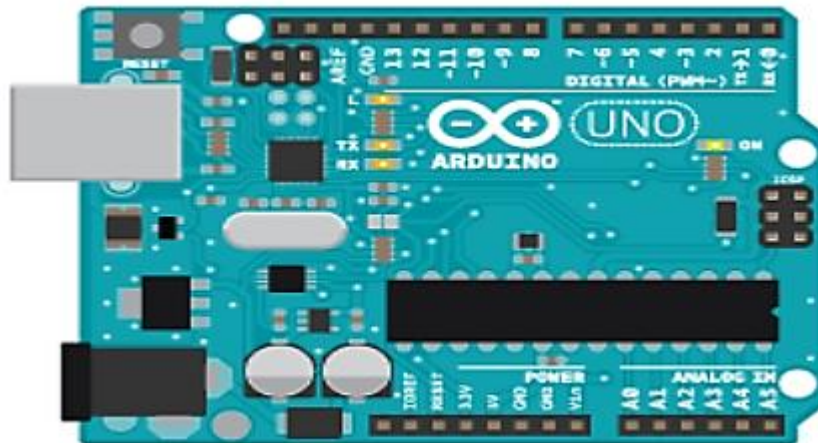
- Arduino UNO
- Temperature and pressure sensor[BMP 180]
- Heart beat sensor
- RF communication

- Wi-Fi model

#### **Software specifications:**

- Arduino compiler
- MC Programming Language: Embedded

## ARDUINO UNO

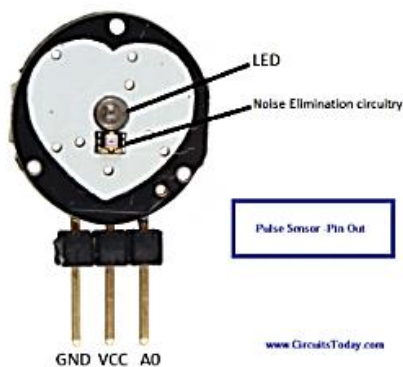


*Figure 3: Arduino UNO*

The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The Arduino Uno has a number of facilities for communicating with a computer, another Arduino board. The board is equipped with sets of digital analog input/output pins

that may be interfaced to various expansion boards and other circuits. The board has 14 digital pins, 6 Analog pins, and programmable with the Arduino IDE. The board can be powered by a USB cable or an external 9 volt battery [4]. Arduino board design uses a variety of microprocessor and controllers.

## PULSE SENSOR



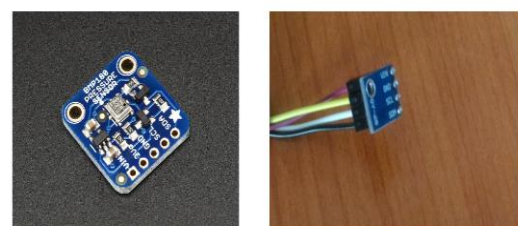
*Figure 4: Pulse Sensor*

The Pulse sensor is heart rate sensor for Arduino. It is used to measure heartbeat, Place your finger on top of the sensor and it will sense the heartbeat by measuring the change in light from the expansion of capillary blood vessels [5].

### Features:

- Working voltage :5V
- Working current :4Ma

## TEMPERATURE AND PRESSURE SENSOR [BMP180]



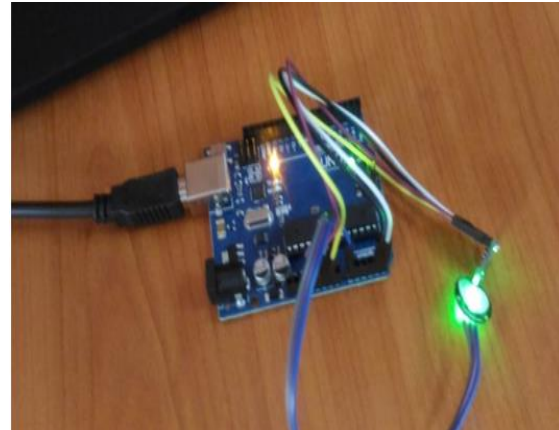
*Figure 5: BMP180*

The BMP180 is a barometric pressure sensor with an I2C interface. It means that it communicates with the Arduino using just 2 pins. This sensor is used to measure the pressure and temperature. It can be used on both 5V and 3.3V systems. The main advantage of I2C is that it only uses two pins to communicate with a lot of different devices. One pin carries a clock signal, and the other carries the data [6].

## PARTIAL OUTPUT

In this project we used pulse sensor, temperature and pressure sensor. And the output of all the sensors is analyzed [7].

## OUTPUT OF THE HARDWARE



*Figure 6: Hardware setup*

**Output:**



## CONCLUSION

In this paper we discussed about the different sensors and their application with that we can detect the pulse rate, temperature and pressure and this data is stored in the cloud that helps the doctor to monitor the patients in emergency conditions.

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