

# IOT Based Disease Prediction and Diagnosis System for Healthcare Using Data Mining Techniques

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**Abstract:-** These Technology based on Home Automation System, Medical Health monitoring Systems, Communication Systems and Media etc., most of the patients those who are undergoing medical treatment in the hospital are non-ambulatory and it would be terrified for them if there is predictive monitoring system. IOT is the latest trends used for Healthcare Monitoring Systems. IOT device to share information using cloud computing. And to collect the patients details and analyzes data details with more accurately. This system to propose a cloud based approach for an automated Healthcare Monitoring System which uses sensors to measure various data of the patient like pressure, heartbeat, and temperature using wireless communications. Here, in this project ARDUINO acts as a bridge which communicates to the sensors placed in the patient's body and also it gets the data of the sensors from that data which can be predicts what type of disease affected to the patient and sends the data through to the doctor, which will be help to taking decision for proceeding medical treatment quickly where they monitor health care parameters and access at anytime and anywhere they need. The patient's details will be stored on the cloud using IOT.

**Keywords:-** Iot, Wearable sensor, Arduino, GSM.

## I. INTRODUCTION

Data mining techniques are used to detect the different level in healthcare problem, so we decided to implement system which will helpful to identify and predict the multiple diseases. The objective of these systems is to provide early warning of abnormal data. So can be preventative clinical action may be taken to improve patient outcomes. In hospitals, where patient's status needs to be regularly monitored, is usually done by a doctor or other paramedical staff by constantly observing some important sensor, such as body temperature, heartbeat, and blood pressure thus, this task becomes tedious after sometime. Hence it can cause problems. However, there are many researchers have attempted before to solve it in many different ways, but the earlier methods in several cases either SMS will be sent using GSM or RF module will be used to send patient's data from sender device to receiver device. Moreover, in the earlier cases the history of the patient cannot be displayed, only current data is displayed. So the purpose of this project is to maintain record of patient's

data and to give emergency alert if required, using different technology which is Internet of Things (IOT); where it allows us to store patient's data on the cloud. Thus the history data of the patient will be available for doctors to access at any time from everywhere. By implementing this project we can monitor patients remotely and we can secure their lives by giving emergency alert in real-time.

## II. COMPONENTS OF HEALTHCARE DIAGNOSIS

### ➤ Power supply

Power supply is an electrical device. It's should be convert to AC voltage to DC voltage. These components are transformer, rectifier, and filter, regulator. The Input voltage of power supply is 240V AC and output regulates voltage is 5V.

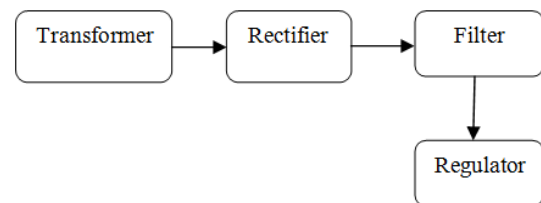


Fig 1:- Power supply

### ➤ ARDUINO

ARDUINO is an open source microcontroller family, serial number is Atmega328, and the operating voltage is 5V. it have 14 digital input and output pins, 6 analog input pins, ARDUINO is to control the all device, and brain of these all components. Input data collect from sensors.



Fig 2:- ARDUINO

➤ LCD

LCD represented by Liquid Crystal Displays (LCDs). Used for display unit. To control the pixel of different way in LCD screen. To display 16 character in 2 lines. Operating voltage 5V. It has 16 pin packages. Data pin is 8; main purpose of LCD in these projects is to display the body temperature value and pressure value.

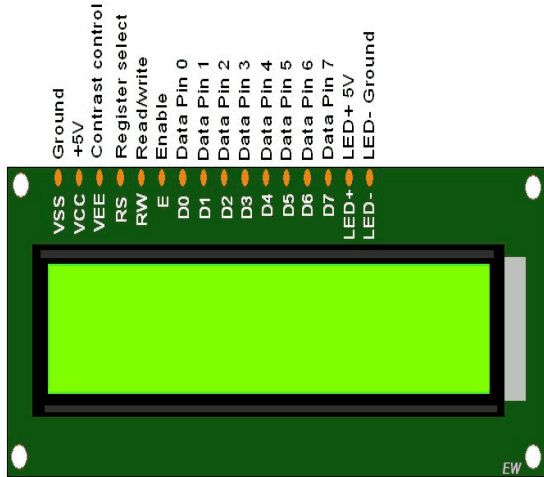


Fig 3:- LCD

➤ Temperature Sensor

A temperature sensor is a device, to detect the resistance of temperature level. Its act as thermometer or thermocouples, used to determine the human body temperature. LM35 sensor have 3 pins, ground pin, output voltage pin, supply voltage pin. LM35 is a high output voltage, these voltage directly proportional to temperature of Celsius.

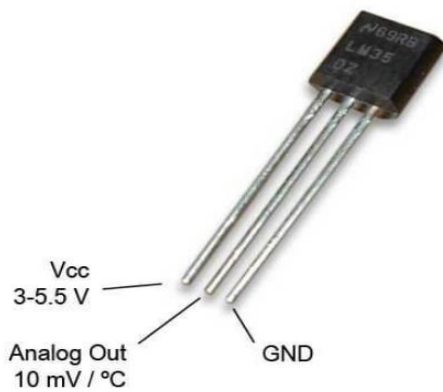


Fig 4:- LM35

➤ Heart Beat Sensor

The heartbeat sensor consists of a light emitting diode and light detecting resistor or a photodiode. These principles are to detect the heart beat from blood. Some time to change the blood concentration. And this sensor operating voltage range 5V.



Fig 5:- Heart Beat Sensor

➤ Pressure sensor

A Pressure sensor is a device for health monitoring. These values convert to analog electric signal. This sensor used for to sense the human body pressure. These pressure values send to controller unit.

➤ GSM

GSM is a Global system for mobile communication; it is used for mobile communication system in the world. It is cellular technology used for transmitting mobile data and voice, have operates frequency at the max 1900MHZ. It have time division multiple access technique. To reduce the data, and then send it down through a channel, there are different sizes of cell in a GSM System such as macro, micro, Pico each cell have varies of implementation domain. TDMA techniques have different time slots to each user on the same frequency. The data transmission and voice communication and carry on data rate 64Kbps to 120Mbps. main used GSM in these paper, temperature value and pressure value send to website server, and emergency time send alert SMS to authorized mobile number.

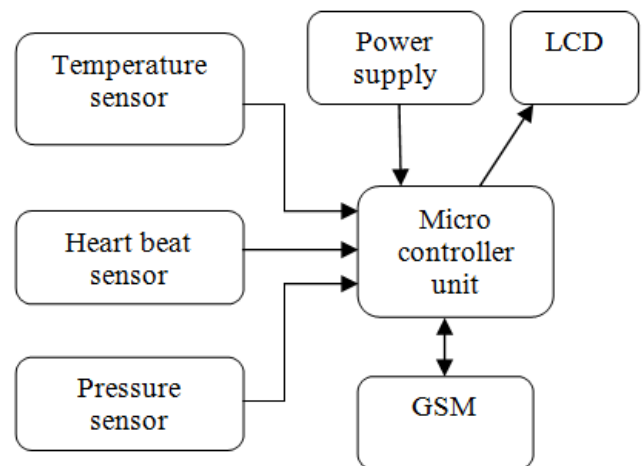


Fig 6:- Block Diagram

### III. BLOCK DIAGRAM EXPLANATION

In this work, the wearable sensor for to detect the health disease prediction and diagnosis system for healthcare. To see the block diagram of fig 6. To measure various sensor value of the patient like pressure, heartbeat, and temperature using wireless communications. Here, in this project ARDUINO acts as a bridge which communicates to the sensors placed in the patient's body These Three wearable sensor nodes are worn by the subject. Sensor1 to sense the heart beat rate. And while Sensor2 is to sense the body temperature measurement and sensor3 is to sense the pressure level of the human body. This corresponding measurement rates to display on LCD. The abnormal rates of data collected from various sensor nodes, that process time alert message transmitted to a smart phone. This will be monitored by the sensor data or a healthcare professional. The person data will be recorded and stored on the cloud. A data mining smart phone application is designed to display the sensor data and send emergency notifications

### IV. ADVANTAGES

- Fast response rate
- Low Maintenance Costs
- Flexible method
- Low power consumption
- Easy to operate
- Better accuracy

### V. APPLICATION

This project can be used in home for patients or ill person  
Hospital Best to be used rural area

### VI. RESULT AND DISCUSSION

Proteus simulation result for IOT Based Disease Prediction and Diagnosis System for Healthcare Using Data Mining Techniques.

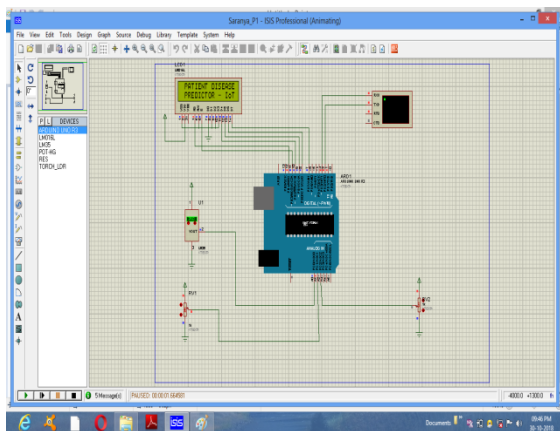


Fig 7:- Proteus simulation result

Hardware result for IOT Based Disease Prediction and Diagnosis System for Healthcare Using Data Mining Techniques.

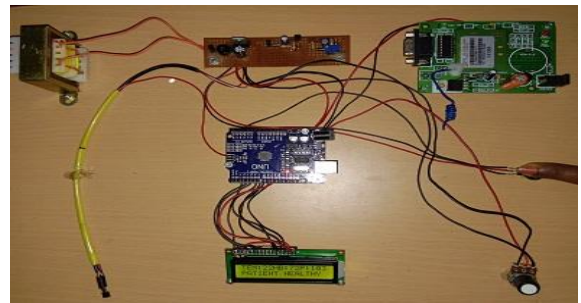


Fig 8:- Hardware output for Diagnosis System for Healthcare

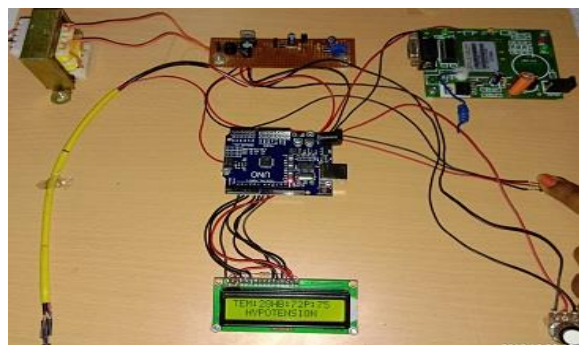


Fig 9:- Hardware HYPOTENSION output for Diagnosis System for Healthcare

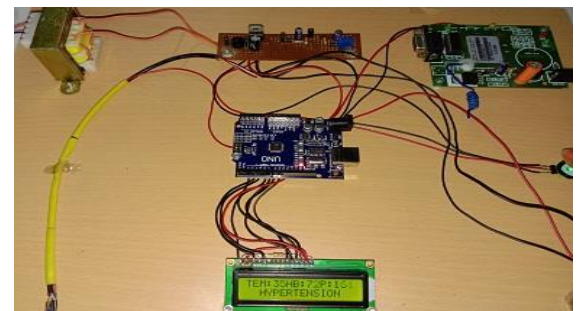


Fig 10:- Hardware HYPERTENSION output for Diagnosis System for Healthcare



Fig 11:- Hardware CEPHALGIA output for Diagnosis System for Healthcare

## VII. CONCLUSION

This paper concludes by IOT Based Disease Prediction and Diagnosis System for Healthcare Using Data Mining Techniques. These various sensors can be placed on different positions of the body. To measure physical data values like the body temperature and heartbeat, blood pressure. A data mining smart phone application is designed to display the sensor data values and send emergency notifications. In the future, the various sensor nodes can accommodate more values detections to cover many areas of cloud applications. It can be see that values in anywhere. This Design cost very low, and can be using educated and uneducated people. Flexible and efficiency process.

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