

# Wireless Sensor Network Based Patient Health Monitoring and Tracking System

Enhancing Mobility with Smart Energy Transfer

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## **ABSTRACT**

Nowadays, automation and Internet of Things are changing the world. The day-by-day development of the Internet of Things causes a revolution in modern technology, which makes our life easier and automated. Internet of Things has provided a much easier solution for remote real-time health monitoring of patients from the hospital as well as home. Sensors acquire the data of various parameters regarding patients' health, and the Internet of Things stores that data and displays through the website, which provides access for remote monitoring. Use of Sensor reduces the human error, and the size of the system reduces the occupied space of the room. The unique part of this proposed solution is generation to provide the prescribed medicine to the patient in time. The other beneficial area of the system is the scheme of sending the notification through server alert if any of the health parameters crosses the threshold value.

**1.INTRODUCTION:** IOT is the combination of embedded systems, sensors, software and this can be also referred to as internet of everything. A combination of embedded system, software and sensors is referred as Internet of Things. Since everyone is prone to health issues, a continuous health monitoring system in name of IOT can be used. The Home automation mainly focuses on comfort, security and to reduce man power. It includes centralized control of appliances, ventilation, lighting, heating and air conditioning, resource management systems such as energy and security systems.

Since everyone is prone to health issues, a continuous health monitoring system in name of IOT can be used. As health is one of the most important issues nowadays, IOT

could be utilized in the health industry as a continuous health monitoring system. At the same time, the internet is now easily available for mobile which makes remote observance in everything more popular. In this proposed system, patient's heart rate, blood pressure, respiration rate, body temperature, body movement and saline levels are measured. We have tried to develop a health monitoring system to acquire the data and share the information with the health units and relatives by remotely monitoring through the internet. For the security and safety issues, a role-based user authentication system is also available in the system to access the information. Also, the ESP 32 will be automatically controls the appliances according to the health condition of the patient

## **EXISTING SYSTEM**

In present computer there could even be no proper unique crew headquartered entirely sufferer wellbeing reputation monitoring procedure. In elegant any wellness care core wellbeing care safe discloses the affected persona stipulations animated utilizing just a few physique sensors involving affected character. In any emergency / night time events one scientific wellness care reliable want to furnish in most likely without doubt certainly one in every of a sort areas at a time shouldn't be conceivable, at least medical professional can disclose the sufferer stipulations animated in order that he can help to nurse to reward some alleviation or some part, this may more and more priceless to affected persona. The quick technological convergence of internet of disorders (IoT), wi-fi physique discipline networks (WBANs) precipitated healthcare (digital-healthcare) to increase to be a Promising files-gigantic industrial utility discipline that has titanic knowledge to toughen the exceptional of sanatorium

remedy. For that reason, the kind to accumulate scientific know-how assortment, transmission, processing and presentation has enhance to be a principal challenge in e healthcare functions, the location determination of wi-fi sensor nodes and terminal contraptions play predominant roles in nearby competencies aggregation and communications. Moreover, the evolution of m-well being their wellness reputation without situation, at any times when and in every single predicament the usage of clever mobile phone objects. Nevertheless, these medical capabilities embody man or woman individual documents which have acquired to now not be inclined to eavesdropping or malicious tampering all through transmission.

## PROPOSED SYSTEM

The proposed system avoid the ones crucial issues using IOT (net of things), in order that affected person conditions (like frame temperature, heart beat sensor ,and so forth a couple of situations) can display screen active using more than one body sensor thru web server. In emergency condition one physician can help to provide proper treatment to more than one sufferers at a time or a couple of clinical doctors can display affected individual conditions an react all of us in emergency situations. In hospitals, files in conjunction with sensitive affected person facts, this is saved digitally and safety of such documents is very important. Privacy of such touchy information can simplest be assured, if it's miles encrypted through the statistics proprietor before it is being saved in data facilities. In this work, the excessive give up protection is provided for the affected person's touchy information thereby making sure most privacy for the patients. The users of this device are docs and researchers. For registration, medical health practitioner wishes to provide his username and password. Thereafter physician can both view or desires to go into the patient's info inclusive of call, age and health kind and so on. The customers ought to be capable of carry out the subsequent features the usage of this machine.

## 2.LITERATURE SURVEY:

1. Ovidiu Apostu, Bogdan Hagi, Sever Paşca,[1] Wireless ECG Monitoring and Alarm System Using ZigBee, in this project, author developed ECG monitoring and alarm using Zigbee. Patient whose health is not critical can monitor their ECG at home in real time via

internet. This is to provide health monitoring for ECG and can detect abnormalities so that needed action can be taken immediately.

2. Warsuzarina Mat Jubadi, Siti Faridatul Aisyah Mohd Sahak,[2]"Heartbeat Monitoring Alert via SMS", in this project, author developed heart beat monitoring and alert through SMS. Patient those suffered from mild level heart attack needs to be monitored, this system monitors their heart beat continuously and alert if any abnormal behavior is found while monitoring. and alert is sent to doctor or family member through SMS.PPG technique is used to monitor heart beat.

3. Goutam Motika, Abinash Prusty,[3]" Wireless Fetal Heartbeat Monitoring System Using ZigBee & IEEE 802.15.4 Standard", in this project author developed fetal heart beat monitoring system with Zigbee and IEEE 802.15.4 standard. Fetal mortality is important measure in health care. This is for fetus heart beat monitoring. The developed system is mainly for pregnant woman who can't visit hospital for frequent checkup and want health care at home. The project is intended to decrease fetal mortality rate.

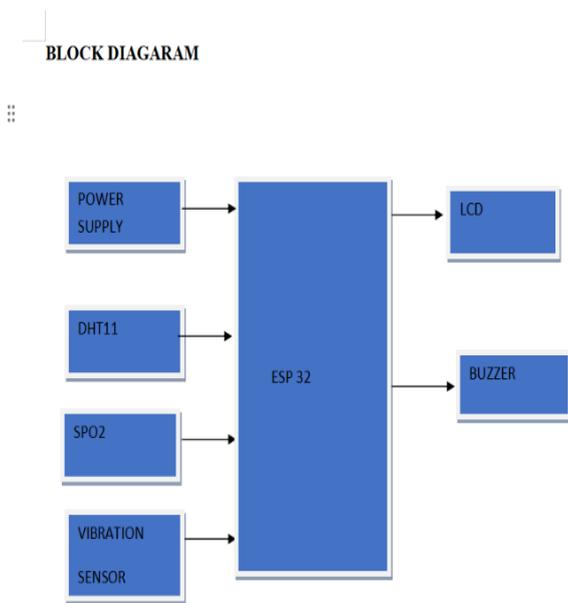
4. S. M. Mahalle, P. V. Ingole,[4]"Design and Implementation of Wireless Body Area Sensor Network Based Health Monitoring System", the project here is health monitoring system using ATmega8.In this author developed health monitoring system based on wireless body area sensor network, where patient health data extracted using sensors sent to physicians server and suggestions are sent to patient by physician using GSM technology.LCD display is done for results of health monitoring.

"Healthcare Monitoring System Using Wireless Sensor Network"[5], D. Mahesh Kumar, in this project author developed the smart gateway which provides health monitor and faster response time about health state of patient. It is low power and low cost embedded system.

**3. PROPOSED METHODOLOGY:** The proposed system avoid the ones crucial issues using IOT (net of things), in order that affected person conditions (like frame temperature, heart beat sensor ,and so forth a couple of situations) can display screen active using more than one body sensor thru web server. In emergency condition one physician can help to provide proper treatment to more than one sufferers at a time or a couple

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**BLOCK DIAGRAM**



**1. Power Supply**  
 Provides regulated voltage (e.g., 5V or 3.3V) to all electronic components.  
 Can be from battery, adapter, or USB power source.

**2. DHT11 (Temperature & Humidity Sensor)**  
 Measures room temperature (C/°F) and humidity (%).  
 Sends data to ESP32 for real-time monitoring.

**3. SPO2 Sensor (Pulse Oximeter)**  
 Measures oxygen saturation (SpO2) levels in the blood.  
 Helps detect hypoxia (low oxygen levels), crucial for respiratory conditions.

**4.ESP32 (Microcontroller with Wi-Fi & Bluetooth)**  
 Acts as the brain of the system.  
 Collects data from sensors (DHT11, SPO2, Vibration Sensor).  
 Processes the data and sends it wirelessly to a cloud server or mobile app.

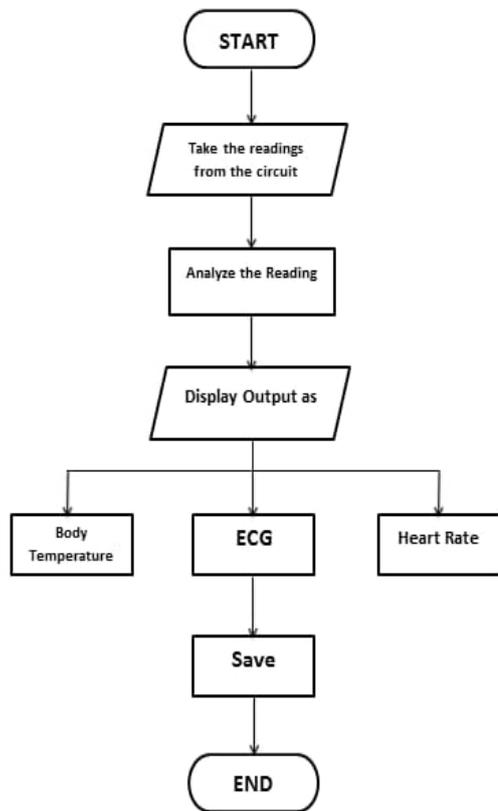
**6. LCD (Liquid Crystal Display)**  
 Displays real-time sensor readings, including:  
 Temperature & humidity  
 Oxygen levels  
 Heart rate  
 Allows patients and doctors to check health status instantly.

**7. Buzzer (Alert System)**  
 Generates an alarm sound when abnormal health parameters are detected.  
 Used in emergency alerts for caregivers and hospital staff.  
 Can be triggered by low oxygen, high temperature, or abnormal movements

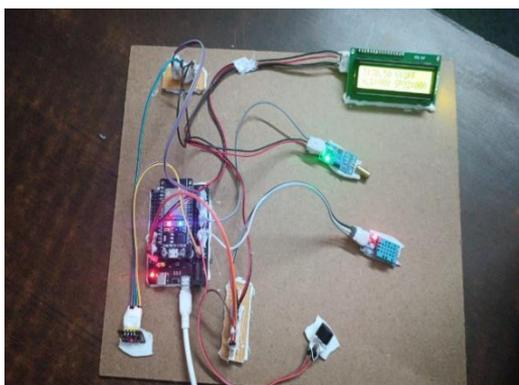
**8. Monitoring Interface (Output Layer)**  
 Displays live data through a  
 web page, mobile app, or dashboard  
 Supports data logging and historical tracking.

**9. Generates alarms/notifications when**  
 abnormal health conditions are detected.

### ARCHITECTURE OF THE SYSTEM



**4.RESULT:** Circuit connections are made using copper PCB. The body parameter displayed on LCD screen of the system when sensors are connected to the body. Then the system is connected to hypertensive patient. Hardware design of the proposed system is given in the figure



**5.CONCLUSION :** By the use of the machine the healthcare specialists can monitor, diagnose, and recommendation their sufferers all the time. The health parameters records are saved and posted online. Hence, the healthcare expert can display their patients from far flung vicinity at any time. Our tool is straightforward. Integrating functions of all of the hardware additives used had been evolved in it.

**6.FUTURESCOPE:** The Future work of the challenge is very vital if you need to make the layout device more advanced. In the designed machine the enhancement will be connecting more sensors to net which measures various exceptional health parameters and is probably beneficial for affected person tracking. Connecting all the gadgets to internet for short and smooth access. Establishing a Wi-Fi mesh type community to increase in the verbal exchange range. Integrating extra sensors for more precise information acquisition and assessment.

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