**Patient Health Monetering system using Iot**

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 **Abstract:**

Nowadays Health-care Environment has developed science and knowledge based on Wireless-Sensing node Technolgy oriented. Patients are facing a problematic situation of unforeseen demise due to the specific reason of heart problems and attack which is because of nonexistence of good medical maintenance to patients at the needed time. This is for specially monitoring the old age patients and informing doctors and loved ones. So we are proposing a innovative project to dodge such sudden death rates by using Patient Health Monitoring that uses sensor technology and uses internet to communicate to the loved ones in case of problems. This system uses Temperature and heartbeat sensor for tracking patients health. Both the sensors are connected to the Arduino-uno. To track the patient health micro-controller is in turn interfaced to a LcD display and wi-fi connection to send the data to the web-server(wireless sensing node). In case of any abrupt changes in patient heart-rate or body temperature alert is sent about the patient using IoT. This system also shows patients temperature and heartbeat tracked live data with timestamps over the Internetwork. Thus Patient health monitoring system based on IoT uses internet to effectively monitor patient health and helps the user monitoring their loved ones drom work and saves lives.

### Introduction

Structural health monitoring systems provide valuable insight into the condition of a structure, enabling planners to make better decisions regarding maintenance, and help to ensure the safety of a structure’s inhabitants. Unfortunately, two factors have led to the lack of widespread adoption of structural health monitoring systems. First, systems are expensive to install with costs increasing faster than a linear rate as systems grow in size. Second, the benefits currently derived from a permanently installed structural monitoring system are difficult to quantify in terms of costs saved to structural owners. Clearly, if the installation cost of monitoring systems can be reduced, while system capabilities are expanded to include robust identification of structural damage, implementation of health monitoring systems would become more widespread.

A robust monitoring system capable of accurately detecting and localizing damage requires a dense network of sensors installed throughout the system. For such a system, the cost of installing wires to connect the sensors to a centralized monitoring station can run into thousands of dollars per sensing channel (celebi, 2002). Alternatively, replacing tethered sensors with low-cost wireless sensor nodes can substantially reduce system costs to a few hundred dollars or less per sensing channel; this is a significant saving, especially for systems requiring a large number of nodes. Wireless sensing nodes, with their on-board data processing abilities are also ideal for monitoring applications where data interrogation is performed automatically, thus eliminating the requirement for an engineer to examine a prohibitively enormous aggregation of data collected by the sensing network (Straser and Kiremidjian, 1998). Additionally, wireless sensing networks can be installed and uninstalled rapidly making temporary, emergency deployments of health monitoring systems possible at relatively short notice. With these motivations in mind, we explore in this chapter the unique challenges encountered in the practical implementation of wireless structural health monitoring systems, strategies for overcoming those challenges including hardware considerations and embedded data processing architectures, integration of wireless sensors into larger cyber-environments, and the extension of wireless sensors into applications requiring actuation such as active sensing and feedback structural control

IOT patient monitoring has 3 sensors. They are temperature sensor, Heartbeat sensor, Pressure sensor,Temparature sensor. This project is very useful since the doctor can monitor patient health parameters just by visiting website or URL. And nowadays many IOT apps are also being developed. So now the doctor or family members can monitor or track the patient health through the Android application. To operate IOT based health monitoring system project, you need a Wi-Fi connection.

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The microcontroller or the Node Mcu board connects to the Wi-Fi network using a Wi-Fi module. This project will not work without a working Wi-Fi network. You can create a Wi-Fi zone using a Wi-Fi module or you can even create a Wi-Fi zone using Hotspot on your smart phone. The Node mcu esp8266 board continuously reads input from these 3 senses. Then it sends this data to the cloud by sending this data to a particular URL/IP address. Then this action of sending data to IP is repeated after a particular interval of time.

**Modeling and Analysis**

 With tons of new healthcare technology start-ups, IoT is rapidly revolutionizing the healthcare industry. In this project, we have designed the **IoT Based Patient Health Monitoring System using ESP8266 & Arduino**. The IoT platform used in this project is ThingSpeak. ThingSpeak is an open-source Internet of Things (IoT) application and API to store and retrieve data from things using the HTTP protocol over the Internet or via a Local Area Network. This IoT device could read the pulse rate and measure the surrounding temperature. It continuously monitors the pulse rate and surrounding temperature and updates them to an IoT platform.

The Arduino Sketch running over the device implements the various functionalities of the project like reading sensor data, converting them into strings, passing them to the IoT platform, and displaying measured pulse rate and temperature on character LCD.

**Working**

The health monitoring system is employed as the method to measure the observation data. The experimental modal analysis is one of the effective health monitoring systems for the case where the modal parameters such as natural frequencies are adopted as the observations.

In this study, the experimental modal analysis was used to measure the natural frequencies as the observations. The experimental modal analysis system consists of the measurements of transfer functions obtained by vibration tests and the identification of modal parameters. Flow on a series of the experimental modal analysis is shown in Fig. 3. Sweep harmonic excitation method was used as the vibration tests in the health monitoring system. A ring gage is used to measure the excitation forces as input data

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