Real-Time Secured Patient Health Monitoring and Alarming System Using WSN

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ABSTRACT: *The primary goal of this project is to build and implement a real-time monitoring and alarming system for patient health, particularly for patients who are dealing with chronic illnesses. The suggested system contains a wireless communication module (Zigbee) coupled to a set of medical sensors (related to the patient situation) and an embedded microcontroller. A central node situated at the medical Centre is connected to each patient through a zigbee network, and each patient is viewed as a node in a wireless sensor network. The embedded microprocessor analyses the scanned medical signals to determine if the patient's health status is good or bad. The embedded device uses the alarm to assign a medical team if the analysis results are abnormal. These signals are sent straight to the hospital.*
KEYWORDS- *Wireless sensor network, Remote monitoring, Healthcare system*

I.   INTRODUCTION

Electronic healthcare now has a tremendous chance to build monitoring and warning devices that can be combined with mobile phones thanks to advancements in computer and communication technology. Wireless sensor networks have recently been used in healthcare applications for real-time monitoring and alarms. In order to offer patients, doctors, and medical centres with real-time health information and so save time, money, and lives, it is useful to combine medical sensors, embedded systems, and smart phones. The best technique to handle emergency circumstances, particularly those involving human life, when patient health records including previous prescription histories, identification, and other information are required, is wireless communication technology. Due to the widespread integration of wireless networks into personal computers and mobile devices.

table healthcare monitoring system. It

has a set of medical sensors connected to an embedded microcontroller with wireless communication module. By scanning the medicalsensors, the embedded microcontroller checks if the patient health condition is normal or not. In the case of abnormal condition, the embedded unit transmits the measured signals directly to a medical centre through the internet. According to the patient health condition, a doctor will send medical advice to the patient to address the abnormality of the patient.

PANTEOPOULOS AND BOURBAKIS give information about the current existing research and development of wireless biosensors system for effective health-care monitoring.

MILENKOVI ET AL. spoke about the closely monitoring of health-care system, in providing feedback and alert medical person to maintain optimal health-care monitoring.

NITHIN ET AL. spoke about the sensors that will record not only the current day's data but also the previous days. Data provided by the sensors are longitudinally rich and helpful to the doctor to give precautions.

Y. DING ET AL publishes in 2014: Wireless sensor networks for healthcare monitoring this paper provides a comprehensive survey .

S. SHUKLA ET AL. Published in2016: This paper reviews the use of WSN various healthcare applications, including patient monitoring, telemedicine and disease management. The authors describe the advantages and limitations of WSNs and implementing healthcare systems using this technology.

T. ZHUL AND L NOEL Published in 2011: This paper describes a system that uses WSNs and mobile devices to monitor patients with chronic disease. The authors demonstrate the feasibility of the system in real-world setting and show that it can provide reliable and accurate measurement vital signs.

A. YUCE ET AL Published in design 2010: This study reports on the design and implementation of a WSN-based patient monitoring system. The authors demonstrate he feasibility of the system and show that it can detect abnormal changes in a patient's heart, body temperature, and saturation.

II.   PROPOSED SYSTEM

The patient monitoring system must be user-friendly while being designed to provide continuous medical care for patients remotely. The system should be powered using long-lasting batteries, and wireless connectivity should be stable and consistent with low power consumption. WSN technology on the side of the medical

institution should enable reliable communication while remote access to data and historical records should be accessible to the healthcare personnel.. The paper also explores the challenges and opportunities .

BLOCK DIAGRAM
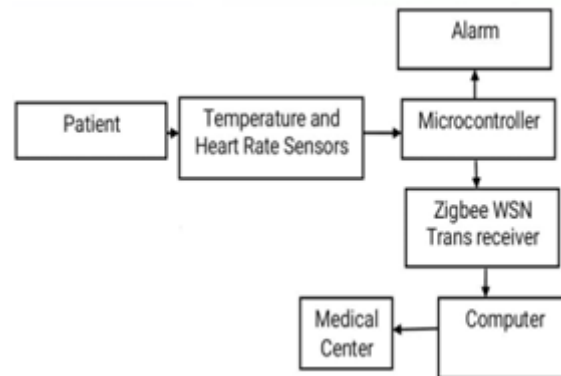
Microcontroller:
A microcontroller is required to control the functions of the system. The microcontroller controls the sensors, receives signals, and triggers alarms.

Heart Rate and Temperature Sensors: Sensors for heart rate monitoring and temperature detection are essential for a patient monitoring system. They monitor these vital signs and send the data to the microcontroller.

Alarm System: An alarm system is necessary for a patient monitoring system to alert healthcare professionals to critical changes in the patient's health. The alarm system can be visual or auditory, and it should activate when vital signs exceed or fall below pre-defined limits.

Wireless Sensor Network (WSN):
 The WSN connects the patient monitoring system to a remote medical center. This connection enables monitoring and data collection in real-time while reducing the costs of regular physical checkups.

Computer:
A computer is required to process data from the WSN and to present the data to healthcare professionals in an easily understandable format.

Medical Center:
The medical center receives data sent by the patient monitoring system and processes them. In case of emergencies or critical changes in patient health, notifications are sent to healthcare professionals.

III.   CONCLUSION

It has been tested to ensure that each component of the deployed monitoring and alarming system functions properly. The system's hardware and software were first constructed, and after that, the body's selected sensors were connected. If the remote server at the medical centre is connected to the internet, a wireless communication channel can be established between the patient's side and the facility. The server database contains comprehensive patient data, including records of physiological data like heart rate, ECG signal, blood pressure, collection of test results, and evaluation of a patient's health state. The following configuration settings were taken into account during system testing and calibration: - Two sensors are employed to monitor the patient temperature, heartbeats per minute (60-100).

REFFERANCE
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