Smart Health Monitoring with Power-Aware IoT Using a Wireless Body Area Network

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Abstract: *Smart health monitoring systems have become increasingly popular in recent years due to the growth of the Internet of Things (IoT) technology and its applications in healthcare. This project proposes an IoT-based smart health monitoring system that utilises an ESP32 Microcontroller, MAX30100 Pulse Oximeter Heart Rate Sensor Module, MLX90614 ESF Non-Contact Human Body Infrared Temperature Measurement Module, LCD 16*2, 3.7v 2000mAh Lithium Battery, TP4056 1A Li-Ion Lithium Battery charging Module, and some buttons. The system is designed to monitor the user's heart rate, blood oxygen level, and body temperature in real-time and display the readings on an LCD screen as well as an IoT web page. The project aims to provide an affordable, portable, and user-friendly smart health monitoring solution that can be used at home, in hospitals, or other healthcare settings.*

The project methodology involved a combination of hardware and software components, including circuit design and programming using the Arduino IDE. The system was tested and evaluated for its performance, accuracy, and usability using a sample population. The results showed that the system was effective in monitoring the user's vital signs and displaying the readings in real-time. The system was found to be accurate and reliable, with a high level of user satisfaction and ease of use.

Overall, the IoT-based smart health monitoring system proposed in this project has significant implications for healthcare, particularly in terms of remote monitoring, telemedicine, and personalised healthcare. The system has the potential to improve patient outcomes, reduce healthcare costs, and increase access to healthcare services. The project also highlights the potential of IoT technology in healthcare and the need for further research and development in this area..

Keywords: Smart health monitoring systems