Commentary

Significance of Wireless Body Area Network for Healthcare Applications

Asutosh Gowda*

Department of Information Technology, Andhra University, Visakhapatnam, India

ABOUT THE STUDY

The emergence of Wireless Body Area Network (WBAN) technology has introduced in optimism and a new era in the fight against population ageing, chronic illnesses, and a lack of medical facilities. Many research initiatives are sparked by the growing demand for real-time applications in such networks. Due to the dynamic nature of the network architecture, severe power supply limits, and limited processing capacity, designing such a critical event scheme while maintaining energy efficiency is a difficult issue. Routing protocol design has become an important aspect of WBANs, since it plays a major role in communication stacks and has a substantial influence on network performance.

This article briefly discuss WBAN in this study and then focus on the analysis of the routing protocol, classifying and comparing the benefits and drawbacks of various routing methods. Finally, study provides some issues and recommendations, as well as some ideas for future routing designs. Wireless Body Area Networks (WBAN) are a subset of Wireless Sensor Networks (WSN) that have gotten a lot of interest due to their enormous potential benefit. The introduction of WBAN has the potential to relieve or even eliminate several societal issues, such as chronic illness epidemics, an ageing population, stressed medical personnel and facilities, and so on. As a result, an increasing number of individuals demand WBAN technology to be implemented as quickly as feasible.

Although WBAN has progressed due to the rapid growth of sensor and communication technology, the technology is still in its infancy, and there are numerous obstacles and hurdles in its study and use. This study researches and evaluates the current body of research, as well as introducing the WBAN's core architecture, application domains, and features. The energy limits are well-known as one of the challenges in the design of WBAN. This article might explore the two approaches of open source and throttling to tackle this problem. The open source technique consists of a number of wireless energy collection technologies, whereas the throttling method consists of a number of energy efficiency design options.

Because reasonable routing design is one of the energy efficiency approaches, the aim of this analysis is to investigate various routing options. Routing is in charge of building the network's path, uniting the scattered nodes into a whole, and ensuring that data is transmitted in a timely and reliable manner. Stability and energy efficiency are the design principles of routing, with the aim of optimizing the energy efficiency of a single node as much as feasible. As a result, it is critical to research WBAN routing. The routing protocols of WBAN may be characterized as posture-based routing, temperature-based routing, cross-layer routing, cluster-based routing, and Qos-based routing based on the study and summary of the extensive literature.

On this structure, the benefits and drawbacks of each type of routing protocol are examined, providing direction and ideas for future study. In addition, in the prospect part, the article covers current and future difficulties in route design, providing readers with references and new ideas, which is the most significant distinction from previous studies. Various existing routing methods suggested in WBANs were classified and fully studied in this investigation. It was discovered that the routing protocol is crucial in the development of energy-efficient, dependable, and low-cost WBANs.

WBAN routing protocols were classified as postural-based, temperature-based, cross-layer, cluster-based, and Qos-based depending on the technique and design aim. Furthermore, a comparison of several protocols has been conducted in order to identify the most suited protocol for the intended application. This survey will aid academics in their research towards energy-efficient routing strategies for WBANs in healthcare systems.