

Survey on Multilevel Multi-Hop Technique for Wireless Body Sensor Networks

NITU CHOUDHARY, Deepak Kumar²

¹M Tech Scholor SSCET Badhani,

²Assistant Professor SSCET Badhani,

¹neetuc604@gmail.com, ²deepak_642@yahoo.co.in

Abstract

Body area sensors can enable novel applications in and are mostly used in healthcare to monitor the body of patient, many protocols are implemented but to implement it, a reliable, energy efficient and high throughput routing protocol for wireless body area network is still a research for the development. This paper defines such many techniques for improving the stability period of the network with minimum path loss and high throughput.

Keywords: Wireless Body Sensor Network, Multi-hop, SIMPLE.

1. Introduction

A wireless body area network (WBAN) or a body sensor network (BSN), is a wireless network of wearable computing devices called sensors. These sensors may be embedded inside the body, implants, may be surface-mounted on the body in a fixed position Wearable technology or may be accompanied devices which humans can carry in different positions, in clothes pockets, by hand or in various bags. Whilst there is a trend towards the miniaturization of devices, in particular, networks consisting of several miniaturized body sensor units (BSUs) together with a single body central unit (BCU). The development of WBAN technology started in 1995 of the idea of using such wireless personal area network (WPAN) technologies is to implement communications on, near, and around the human body.

A typical BAN or BSN requires vital sign monitoring sensors, motion detectors (through accelerometers) to help identify the location of the monitored individual and some form of communication, to transmit vital sign and motion readings to medical practitioners or care givers. A typical body area network kit will consist of sensors, a Processor, a transceiver and a battery. Physiological sensors, such as ECG and SpO2 sensors, have been developed. Other sensors such as a blood pressure sensor, EEG sensor and a PDA for BSN interface are under development. This paper will give the brief study of sensors planted on the human body to detect the body of patient and is focused to improve the stability of the network.

2. Literature Survey

1. Jocelyne Elias et al. had proposed Energy-Aware Topology Design for Wireless Body Area Network. The author addressed the topology design problem for WBANs, proposing a novel and effective model based on mathematical programming that determines the optimal number and placement of relay nodes; the optimal assignment of sensors to relays and the optimal traffic routing, taking accurate account of both the total network cost and energy consumption.

2. Gill R. Tsouri et al. had worked on Increasing Network Lifetime in Body Area Networks Using Global Routing with Energy Consumption Balancing. The author proposed global routing approach which allows WBANs to operate efficiently for longer period of time before recharging of batteries is required. NL is increased as well, decreasing the maintenance requirements even further.

3. Arash Maskooki et al. have proposed Opportunistic Routing for Body Area Network. Author attempt to increase the battery life of the node in WBAN which can lead to more comfort of the user or even a necessity in some cases e.g. implantable sensors where changing the energy resource is invasive. In this work we exploited the motion of the body parts to increase the lifetime of the network. To evaluate the performance of the proposed scheme, the energy consumption of the network per bit for the single hop, multi-hop using relay node and the opportunistic scheme are compared. The results shows that the proposed scheme can increase the life time of the network by decreasing the energy consumption in both the sensor and relay nodes while maintaining the same BER as the other two schemes. By appropriately placing the relay and sink nodes we showed that the energy consumption in the relay node can be significantly decreased by using the proposed opportunistic routing scheme. Decreasing the energy usage of the relay node decreases the overhead energy consumption in the network as the relay node is the major overhead energy consumer in the network.

4. Q. Nadeem et et al. had proposed a stable increased-throughput Multi-hop Protocol used Wireless Body Area Networks. In this paper author propose a cost function based on residual energy of node and its distance from sink. Nodes with less value of cost function choose as parent, and other nodes become child nodes. Two critical nodes placed near to sink, so that their energy not deplete early.

3. Problem Definition

This paper by Q. Nadeem et et al. designs a protocol called SIMPLE: Stable increased throughput- multihop protocol to increase the efficiency of the wireless body area network and used 8 different sensor planted on the body of a patient, 2 on the upper part and 6 on lower part of the body and focused on the multi-hop technique but does not focus on the multilevel multi-hop technique with more than one forwarder node which acts on cost effectiveness. By implement the concept of multilevel multihop we can further increase the stability period of the network with minimum path loss and high throughput.

The main objective of the survey is to overcome such deficiency which will increase the stability of the network.

3. Conclusion

This paper defines survey study on wireless body sensor network and different protocols like SIMPLE protocol which is designed to improve the stability period of the network with minimum path loss and high throughput.

Acknowledgments

The about contents and research method we used is true to my knowledge and the result at every step we concluded is according to my research work.

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