عنوان مقاله:

Self-Adaptive Sampling Rate to Improve Network Lifetime using Watchdog Sensor and Context Recognition in Wireless Body Sensor Networks

محل انتشار:

مجله مهندسی برق مجلسی, دوره 14, شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 12

نویسندگان:

Hamid Mehdi - *Department of Computer Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran*

Houman Zarrabi - *ICT Research Center, Tehran, Iran*

Ahmad Khadem Zadeh - *Computer engineering department, Science and Research Branch, Islamic Azad University, Tehran, Iran*

AmirMasoud Rahmani - *Computer engineering department, Science and Research Branch, Islamic Azad University, Tehran, Iran*

خلاصه مقاله:

Todays, Wireless Body Sensor Networks (WBSNs) are used as a useful way in health monitoring. One of the most important problems regarding Wireless Body Sensor Network (WBSNs) is network lifetime. This factor mainly relies on the energy consumption of sensors. In fact, during capturing vital sign data and also communicating them to the coordinator, the biosensors consume energy. In this article, we are interested to propose an energy efficient Adaptive Sampling (AS) rate specification algorithm to set the amount of sensed data. According to the National Early Warning Score (NEWS), the sensors gather data and detect emergency data. Two scenarios have been used; the first is utilizing context recognition to indicate the active and sleep sensors in different time slices and the second is using watchdog sensors for checking patient situation in critical condition. Simulation results show that the proposed method can save energy and increase network lifetime by up to ۴ times more than the previous work. In addition, our methods allow on average ۷۵% improvement in overhead data reduction while maintaining more than ۹۰% data integrity.

کلمات کلیدی:

Wireless Body Sensor Network, News, Context, lifetime