Aggregate Data Class and Materialized Views based Approach for Energy Conservation in Sensor Network

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Abstract

Many current researches are interested in wireless sensor networks (WSN) wire and their various problems. One of them is the management of data present in the WSN. A sensor network is dense and generally manages redundant data. Redundancy is due to the fact that several sensors observe the same portion of the deployment area. Therefore, when an event occurs on the latter, a large number of sensors will deliver the same data to the base stations, thus creating unnecessary intermediate processing messages, and collisions. This leads to energy waste. An efficient use of this energy is essential in order to use networks for long duration hence it is needed to reduce data traffic inside sensor networks. Reduce amount of data exchanged between nodes and then lifetime increase are the main goals of aggregation algorithms. In this paper, we introduce a new approach to data aggregation. consists to segment the field of possible data to capture in classes that will be stored in a buffer of each sensor, and maintain materialized views that store data detected or received, so our algorithm sends only new data that does not belong to the same class of the given previously detected an improvement for this approach is proposed in the case of sensors that detect and heterogeneous data is to enjoy a send a data to improve the accuracy data of different types. The performance evaluation shows that the proposed approach provides a significant energy reduction and increase lifetime.

Keywords
Wireless sensor networks, data management, materialized views, data segmentation.

Biographies

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Tari A/Kamel is Head of LIMED (Laboratory of Medical Computing) since February 2013 and team leader of data mining. He held different positions at the university of Béjaia (Head of Computing department, Operational Rechearch department, head of doctoral school) and at the National School of Computing ESI (ex.INI), Algiers during 1986-1994. After his Diploma in Mathematics at USTHB (Algiers), he held his Master by Research in Lancaster University (England). He defended his PhD Thesis in Computer Sciences in 2008 at the university of Béjaia and his Accréditation to supervise (HDR) at ESI (ex-INI) in 2010.