

Query processing in sensor networks

**Erik Buchmann · Nesime Tatbul ·
Mario Nascimento**

Published online: 17 December 2010
© Springer Science+Business Media, LLC 2010

Wireless Sensor Networks (WSNs) provide a new technology that is being more and more applied in research, business and industry. Typical use cases are monitoring and surveillance of areas and processes. WSNs can effectively collect detailed data by coordinating fine-grained sensor readings from a large number of independent nodes. However, querying data collected and stored within a WSN is a challenging problem. In particular, sensor nodes have very limited resources, e.g., energy or wireless network bandwidth. Thus, it is not feasible to apply simple query processing strategies such as continuously streaming all sensor values directly to a powerful base-station for further processing. This special issue of the Distributed and Parallel Databases Journal has its focus on efficient query processing in sensor networks. Although this challenge has received considerable attention in the last years both from industry and research, there are still many problems that need to be solved before WSNs can be used off-the-shelf.

This special issue includes five articles that address query processing in WSNs from three different perspectives. One perspective is the efficient handling of specialized query operators. This is addressed by Andreou et al and Jin et al, which consider top-k queries and operators for tracking spatiotemporal objects. Another perspective

E. Buchmann (✉)
Karlsruhe Institute of Technology, Karlsruhe, Germany
e-mail: erik.buchmann@kit.edu

N. Tatbul
ETH Zurich, Zurich, Switzerland
e-mail: tatbul@inf.ethz.ch

M. Nascimento
University of Alberta, Alberta, Canada
e-mail: mn@cs.ualberta.ca

is the cost-based optimization, deployment and processing of complex queries. Towards that goal, query processors for relational queries and data streams are described by Galpin et al and Klan et al. Finally, this issue considers the perspective of movement in WSN. Andreou et al propose an approach for fault-tolerant and efficient data acquisition in a WSN consisting of numerous mobile nodes that swarm over a region of interest.

We would like to thank the Editors-In-Chief for the opportunity of putting this special issue together, as well as all authors who submitted their work and all reviewers who helped to ensure the high quality of the accepted papers. We hope you enjoy this issue, and we look forward to see more fine research done in this domain.