

学术研究

无线传感器网络中滑动窗口轮廓查询算法

信俊昌+, 王国仁, 张小艺

东北大学 信息科学与工程学院, 沈阳 110004

收稿日期 修回日期 网络版发布日期 2009-1-12 接受日期

摘要 提出了一种基于过滤的算法 (filter based algorithm, FBA) 来连续地维护传感器网络中的滑动窗口轮廓查询。首先, 研究了利用元组过滤器和格过滤器来减少网络中数据传输量的两种方法。由于它们各有利弊, 提出了根据数据分布来选择合适的过滤器的自适应过滤法; 另外, 提出了一系列的优化方法来进一步提高算法的能量有效性。仿真和真实数据的实验结果表明, FBA及其优化方法能有效地减少连续维护传感器网络中滑动窗口轮廓时的通信代价, 进而节约传感器网络的能量。

关键词 [无线传感器网络](#) [轮廓查询](#) [能量有效性](#) [过滤](#) [优化](#)

分类号

A sliding window skyline query algorithm in wireless sensor networks

XIN Junchang+, WANG Guoren, ZHANG Xiaoyi

College of Information Science & Engineering, Northeastern University, Shenyang 110004, China

Abstract

A filter based algorithm (FBA) which continuously maintains sliding window skylines over a wireless sensor network is proposed. Specifically, two approaches using tuple and grid respectively to reduce the amount of data transferred among sensor nodes are first investigated. Since both of them have their own pros and cons, adaptive filtering which chooses the "right" filter according to data distribution is proposed. In addition to FBA, a series of optimization techniques are also discussed to improve the energy efficiency of FBA. Both the synthetic simulation and real data experimental results show that FBA together with the optimization techniques can effectively reduce the communication cost and save the energy on continuously maintaining the sliding window skylines over wireless sensor networks.

Key words [wireless sensor network](#) [skyline query](#) [energy efficiency](#) [filtering](#) [optimization](#)

DOI: 10.3778/j.issn.1673-9418.2009.01.004

通讯作者 信俊昌 xinjunchang@ise.neu.edu.cn

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(2274KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“无线传感器网络”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [信俊昌](#)
- [王国仁](#)
- [张小艺](#)