

网络、通信与安全

一种能量均衡的无线传感器网络分簇算法

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摘要 在无线传感器网络分簇算法的多跳网络模型中, 越靠近基站的簇首其转发任务越频繁, 从而造成耗能更多, 传统分簇算法中对于此问题的考虑较少。在传统算法的周期性更换簇头的思想基础上, 进行了改进, 一方面动态地对簇范围进行控制, 使越接近基站的区域形成的簇规模越小, 减小收集簇内数据的任务, 平衡转发任务的能耗。同时引入在簇内选取多个候选簇首的机制来减少簇结构的更换, 降低频繁组簇的能耗问题。通过与传统分簇算法的仿真比较证明新算法有效地均衡了网络中节点的能耗, 延长了网络生命周期。

关键词 [无线传感器网络](#) [基站](#) [簇头](#) [候选簇头](#) [通信范围](#) [生存周期](#)

分类号

Clustering algorithm considering energy balance in wireless sensor networks

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Abstract

In model of multi-hop wireless sensor networks, if a cluster head is more close to the base station, it will have much more transmitting task, therefore the closer one will consume much more energy. Many classical clustering algorithms haven't focused on this problem. Based on the idea of periodically changing cluster head, this paper improves classical clustering. On the one hand, the cluster forming area has been dynamically controlled. Clusters closed to the base station have a small size, and then the little gathering staff balances the cost of transmitting. Meanwhile multi-candidate cluster heads keep the cluster structure to save the frequent cluster infrastructure energy costs. Through simulation, the new algorithm has better performance than classical method in balancing nodes' energy costs as well as extending the lifetime of the network.

Key words [Wireless Sensor Networks](#) [base station](#) [cluster head](#) [candidate cluster head](#) [communication range](#) [life time](#)

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