

无线传感器网络中LEACH路由算法的研究与改进

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摘要：

如何有效地降低节点的能耗，延长网络的生命周期，一直是无线传感器网络路由协议的研究重点。该文分析了传统的LEACH协议并总结了当前一些典型基于LEACH思想的路由改进算法，针对产生簇头个数的随机性，通过考虑节点的剩余能量、离基站的距离及曾经当选过簇头的次数等因素，提出了一种基于时间的改进算法。最后通过NS2对改进后的算法进行仿真，仿真实验结果表明，改进后的算法能较好地均衡网络中节点的能耗，有效地延长了整个网络的生命周期。

关键词：无线传感器网络；LEACH；NS2仿真；分簇算法；网络生命周期

Research and Improvement of LEACH Routing Algorithm for Wireless Sensor Networks

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Abstract:

How to reduce the power consumption of nodes effectively and prolong the lifetime of wireless sensor networks are the central topic for research on wireless sensor networks routing protocols. The traditional LEACH(low-energy adaptive clustering hierarchy)protocol was analyzed and some recent representative improved routing algorithms based on the idea of LEACH were summarized in this paper, aiming at the randomization of the number of cluster-head nodes, by considering nodes' residual energy, the distance to the base station and the times of been a cluster-head, an improved algorithm based on time was proposed. Finally, the improved algorithm was simulated on NS2, the results of simulation show that the improved algorithm can balance energy consumption of nodes better and prolong the lifetime of the whole networks.

Keywords: wireless sensor networks; LEACH; NS2 simulation; clustering algorithm; network lifetime

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