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无线传感器网络中一种延长寿命的覆盖算法

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摘　要：

寻找有效的节能方案以提高网络寿命是无线传感器网络中的核心问题。传统的最大化网络寿命致力于对节点进行休眠或激活的调度，本文在DLM算法的基础上提出一种ASR-DLM算法，其基本思想是对传感器节点的感知半径进行调整，提高能量的利用率，同时ASR-DLM算法改进了DLM算法中一旦探测到覆盖空洞即终止的缺陷，即在探测到覆盖空洞时，对覆盖空洞进行填补，ASR-DLM算法不仅能够保证完全覆盖，还可以在异构网络中进行，大大延长了网络寿命，同时不需要地理位置信息，扩展性很好。

关键词：无线传感器网络；节点调度；填补覆盖空洞；网络寿命

A Lifetime-Prolong Algorithm Ensuring Coverage in Wireless Sensor Networks

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Abstract:

It is a core problem to prolong network lifetime using a mechanism that can efficiently utilize energy. Most existing works concentrate on designing a schedule, that is, a sequence of sensor covers to activate in every time slot, so as to maximize the lifetime of the network. In this paper, we proposed Adjustable Sensing Range-Distributed Lifetime Maximization(ASR-DLM) Algorithm based on Distributed Lifetime Maximization(DLM) Algorithm. The basic ideas of ASR-DLM Algorithm is by means of adjusting sensing range, we can improve energy efficiency and prolong network lifetime. In the meantime, we improved the defect of DLM Algorithm that it is terminated once detected a coverage hole. While a coverage hole is detected, ASR-DLM Algorithm invoke self-healing work to eliminate the coverage hole in WSN and prolong the lifetime. ASR-DLM Algorithm not only guarantee completely coverage, but also adapt itself to heterogeneous networks, without location information. System scalability performed well.

Keywords: wireless sensor network; node schedule; self-healing; network lifetime

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