一种基于网格和移动代理的无线传感器网络数据融合算法

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摘　要：

（ 西北工业大学　陕西　西安　710072）摘　要：能源有效性是无线传感器网络（WSN）路由算法设计要考虑的首要问题，数据融合可以通过合并冗余数据而有效地节约能耗。提出一种将网格和移动代理相结合的WSN数据融合算法，基于移动代理对Sink节点发出兴趣代理报文和目标节点发出数据代理报文进行转发。将移动代理路由归结为一个优化问题，通过把WSN均匀分割为多个大小适当的二维网格，形成自适应遗传算法（AGA）的初始群体，采用AGA求出移动代理的最优路由节点序列。仿真结果表明，随着网络规模增大，和局部最近邻优先算法（LCF）相比，该算法有更小的网络能耗和延时。

关键词：无线传感器网络；数据融合；网格划分；移动代理；自适应遗传算法

A Data Aggregation Algorithm based on Gird and Mobile Agent in WSN

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Abstract:

Energy efficiency is an important concern in the routing algorithm design for Wireless Sensor Networks (WSN). Data aggregation can efficiently decrease energy consumption by aggregating the redundant information. This paper presents a data aggregation algorithm that integrates grid generation and mobile agent (MA) in WSN, which is based on MA retransmitting interest agent packets sent by sink node and data agent packets sent by target nodes. In this algorithm, MA routing can be treated as an optimization problem. WSN is evenly divided into many two-dimensional grids, forming the initial population of adaptive genetic algorithm (AGA). AGA is applied to find out the optimal nodes' sequence of MA routing. Simulation result shows that compared with Local Closest First algorithm (LCF), with the increasing of the network scale, the proposed algorithm can produce less energy consumption and network delay.

Keywords: Wireless Sensor Networks；Data aggregation；Grid Generation；Mobile Agent；Adaptive Genetic Algorithm

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