

无线传感器网络相关感知路由算法

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摘要:

本文通过建立能量有效的数据融合树, 对无线传感器网络中多跳传输的数据进行动态融合, 以减少整个网络的能量消耗。利用竞争游戏算法理论框架阐述数据之间的相关性; 综合考虑传感器节点的剩余能量、干扰以及网络间的数据融合, 构造算法的成本函数; 借助相关感知路由算法求解竞争游戏的可能最优解。仿真结果表明相关感知路由算法能够有效地延长整个网络的生命周期。

关键词: 无线传感器网络; 数据融合; 相关感知; 路由; 节能

Correlation-Aware Routing Algorithm for

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Institution:

Abstract:

This paper develops energy-efficient data aggregation trees to reduce the energy consumption of wireless sensor networks by using a multi-hop data aggregation approach. First, a game theory framework is proposed to reveal the data correlation between nodes. Subsequently, a cost function is constructed by fully considering the residual energy of sensor nodes, exogenous disturbance and in-network data aggregation. Then, the Correlation-Aware Routing Algorithm (CARA) is employed to obtain the optimal solution, which minimize the total energy of the network. Finally, simulations results show that the CARA can significantly prolong the lifetime of the network.

Keywords: wireless sensor networks; data aggregation; correlation-aware; routing; energy-saving

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