

无线传感器网络中基于数据融合的时变速率路由算法

薛亮¹, 王燕龙¹, 李志华¹, 赵继军¹, 关新平²

(1 河北工程大学 信息与电气工程学院, 河北 邯郸 056038;

2 上海交通大学 系统控制与信息处理教育部重点实验室, 上海 200240)

摘要: 考虑了一个双层架构的无线传感器网络, 针对上层簇首节点进行研究, 分析簇首节点数据产生速率时变情况下的路由问题, 提出了基于数据融合方法的时变速率路由算法 (Time-varying Bit Rate Routing Algorithm Based on Data Fusion, TBRRDF). 在簇首节点时变速率均值已知的情况下, 通过时变速率路由算法得到的路由方式使网络的寿命最长, 还证明了通过该算法得到的路由方式是最优的, 仿真结果分析和验证了算法的有效性.

关键词: 无线传感器网络; 网络寿命; 数据融合; 时变速率

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Time-varying Bit Rate Routing Algorithm Based on Data Fusion in Wireless Sensor Networks

XUE Liang¹, WANG Yan-long¹, LI Zhi-hua¹, ZHAO Ji-jun¹, GUAN Xin-ping²

(1 School of Information and Electrical Engineering, Hebei University of Engineering, Handan 056038, China;

2 System Control and Information Processing Key Laboratory of Ministry of Education,

Shanghai Jiao Tong University, Shanghai 200240, China)

Abstract: In the paper we formulate the WSNs with a two-tier architecture, where the cluster head nodes partitioned into the upper tier are studied, and the routing problem is analyzed with the time-varying data rate, then a time-varying bit rate routing algorithm based on data fusion (TBRRDF) is proposed. If the mean value of varying data rate at a specific cluster head is known a priori, then the routing solution obtained by the proposed algorithm achieves maximal network lifetime. Further, we prove that the routing solution is optimal by applying the bit rate routing algorithm, and the simulation results validate the effectiveness.

Key words: wireless sensor networks; network lifetime; data fusion; time-varying bit rate

作者简介:

薛亮 男, (1982-), 博士, 副教授. 研究方向为无线传感器网络、无线认知技术.

王燕龙 (通信作者) 男, (1991-), 硕士研究生. 研究方向为

无线传感器网络、网络优化. Email: 764437873@qq.com.

李志华 女, (1978-), 博士, 副教授. 研究方向为物联网、无线传感器网络.

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