

一种基于正六边形网格的 LEACH 协议改进

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摘 要: 针对 LEACH 协议中存在的节点簇头选举不合理、能量消耗不均衡以及监测得到的数据冗余现象较为严重的问题, 结合虚拟单元格的思想, 提出一种基于正六边形网格的新型路由协议 LEACH-HG. 该协议采用虚拟单元格来划分整个监测区域, 并在各个网格中选取活跃工作节点作为候选簇头节点, 同时考虑节点能量和单元格存活节点的数量, 使得簇头选举更为合理. 仿真实验结果表明, 改进后的 LEACH-HG 协议较之于 LEACH 协议, 能够有效均衡整个网络节点能耗, 提高网络生存周期.

关键词: 无线传感器网络; LEACH 算法; 正六边形; 簇头选择

An Improved LEACH Protocol Based on Hexagonal Grid

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Abstract: Combined with the virtual cell ideology, a new energy efficient routing protocol of LEACH is proposed in the paper, which is based on the question of numerous redundancies with data collecting in nodes, unreasonable of the cluster head election and imbalance of energy consumption in LEACH protocol. The protocol adopts the virtual cell to divide the whole monitoring area, and select active work node as the candidate cluster head nodes in each grid. It gives full consideration of surplus energy and survival number of nodes in the cell to elect the cluster. Simulation results show that this improved routing protocol better than LEACH protocol on the cluster-head nodes selection, and it can extend the survival time of the network, and makes the energy consumption more balanced.

Key words: wireless sensor networks; LEACH protocol; hexagonal; cluster heads selected

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