基于**LEACH**和**PEGASIS**的簇头成链可靠路由协议研究

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摘　要：

减少能耗、延长网络寿命是无线传感网络的关键技术。基于LEACH和PEGASIS算法，提出一种改进的有效路由算法。改进的算法规定LEACH中簇头数目为5个，利用PEGASIS算法使簇头成链，并选择剩余能量最多的簇头传送信息给基站。在选择簇头时，考虑节点的剩余能量，给节点设置一个能量阈值，小于该值则不能当选为簇头，因此提高了网络的健壮性。理论分析和仿真结果表明，改进后的算法比LEACH算法生命周期提高117%～351%，且能耗更加均匀，同时与PEGASIS相比，时延提高290%。

关键词：无线传感网络; 路由协议; LEACH; PEGASIS

Routing Protocol Based on Cluster-Head-Chaining Incorporating LEACH and PEGASIS

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Abstract:

Reducing the energy consumption and extending network lifetime are key techniques for wireless sensor networks (WSNs). A novel reliable routing algorithm is proposed taking advantages of both LEACH and PEGASIS algorithms. The new algorithm randomly select five cluster heads linked into chains and the one with maximum residual energy is chosen to transfer information to the sink. Nodes with less than the energy threshold can not be selected as the cluster head thus to enhance the overall network robustness. Theoretical analysis and simulation results demonstrate that, compared with LEACH, the proposed algorithm can prolong the network lifetime by 117% ~351% and balance the energy consumption of network nodes as well. At the same time, compared with the PEGASIS, the algorithm improves by 290% in terms of the network latency.

Keywords: Wireless sensor networks; routing protocol; low-energy adaptive clustering hierarchy; power-efficient gathering in sensor information systems

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