基于簇首位置控制的异构 WSN 分簇路由算法

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摘要： 分析无线传感器网络中的多跳分簇路由算法，针对基站附近的簇首节点因转发任务频重而产生的“能量空洞”问题，提出一种基于簇首位置控制的异构 WSN 分簇路由算法（CRA-PCCH 算法）.该算法首先采用分区成簇的思想，通过异构节点的部署以及在簇首选举公式中引入节点剩余能量和距离等因素来控制簇首位置，保证选举出的簇首位置分布合理；其次，通过增加中继节点的方式来分担簇首的簇间数据转发任务；最后，采用能量异构的方式来辅助能耗过快的中继节点和簇首节点.在 MATLAB 平台上仿真表明，与 SEP 算法和 EEUC 算法相比，此算法能够有效延长网络的生存时间.

关键词： WSN; 分簇; 区域划分; 能量异构; 中继节点；位置控制

A Clustering Routing Algorithm Based on Position Control of the Cluster Head in Heterogeneous Wireless Sensor Network

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Abstract： The multi-hop clustering routing algorithm in wireless sensor networks is analyzed in this paper. A clustering routing algorithm based on position control of the cluster head in heterogeneous wireless sensor network is proposed to solve the problem of multi-hop forwarding in the multi-hop forwarding. First of all, the idea of forming clusters according to the divided regions is used, and the head position is controlled by the deployment of heterogeneous nodes and the introduction of node residual energy and distance in the cluster election formula to ensure that the election of the cluster head position is reasonable. Secondly, the cluster head of the inter-cluster data forwarding task is borne by the relay node. Finally, using energy heterogeneous nodes to assist the relay nodes and cluster head nodes. The MATLAB simulation results show that the algorithm in this paper is superior to SEP algorithm and EEUC algorithm in balancing network energy consumption and extending network life cycle.

Key words： wireless sensor networks; clustering; region-divided; heterogeneous energy; relay nodes; regional control

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