基于RSSI技术与模糊评价的DV-Hop改进算法

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摘 要：DV-Hop算法由于未考虑网络节点的分布情况而直接使用跳数信息和平均跳距估算节点间距离引入较大误差，针对这一问题，提出了一种基于RSSI技术和模糊评价的DV-Hop改进算法.改进算法引入RSSI技术，根据信标节点的信号强度基值对跳数进行重计算，并以平均每跳距离对通信半径R的隶属度作为修正权值，对未知节点所接收到的每跳距离进行加权修正，同时，设置数据包生存周期跳数限定网络数据包的传输距离，提高定位算法的定位精度.通过仿真验证改进算法的定位性能，改进的定位算法能够降低节点间的跳数和距离估算误差，提高算法的定位精度.

关键词：无线传感器网络；DV-HOP算法；信号强度基值；隶属度；定位精度

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An Improved DV-HOP Algorithm Based on RSSI and Fuzzy Evaluation

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Abstract: Aiming at the high localization error of DV-HOP caused by the Hop size and Hop count in wireless sensor network of random distribution, a new localization algorithm based on RSSI technology and Degree of Membership to reduce the localization error is proposed. The RSSI technology was introduced to this localization algorithm, according to the signal strength value of the beacon nodes to recalculate the hop count, and the average hop distance pair to communication radius' degree of membership is acted as correction weights to modify the each hop distance of unknown nodes, at the same time, set life cycle of the hop count to limit the transmission distance of network data packets. The simulation result shows that the proposed algorithm can reduce the estimation error of hop count and hop distance between nodes and improve the localization precision.

Key words: wireless sensor networks; DV-HOP algorithm; signal strength value; membership degree; localization accuracy

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