

一种基于边松弛的大规模WSN分簇定位算法

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摘要:

针对大规模WSN定位问题中, 基于半定规划的分簇定位算法在分簇不均匀及节点密度较大时, 部分簇会出现定位计算复杂度过高的问题, 提出了一种新的基于边松弛的分簇定位算法—EES-Cluster。该算法通过对每一个网络簇子图进行边的松弛预处理, 减少了边的数目; 在网络分簇数目较少时, 能有效降低定位过程的计算复杂度, 同时较好地保持较高的定位精度, 减小簇头节点信息融合的功耗。仿真实验及分析表明, EES-Cluster算法能有效降低分簇定位算法的计算复杂度, 提高大规模WSN的定位效率。

关键词: 边松弛; 分簇; 大规模传感器网络; 定位

A Clustered Location Algorithm Based on Edge Sparsification for Large-scaled Localization in WSN

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Abstract:

Aiming at the large scaled WSN localization problem that the computational complexity of the cluster based SDP distributed localization algorithm in some clusters is high due to the non-uniformly clustering, a new distributed localization algorithm named EES-Cluster(Equivalent Edge Sparsification Cluster) is proposed. Based on the sparsification processing to the edges in the cluster diagram, the number of edges is reduced. When the number of cluster is limited, this algorithm can effectively reduce the computation complexity in localization process, at the same time keep the location accuracy, decrease the power consumption in cluster header nodes. Simulation results and analysis show that EES-Cluster can effectively decrease the computation complexity, improve the location efficiency of large-scaled WSN.

Keywords: Edge Sparsification; Cluster; Large-Scaled WSN; Location

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