

一种新的DV-hop定位算法

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摘要:

提出了一种新的基于非测距的DV-hop高精度无线传感网节点定位算法。通过引入权重,改进计算未知节点平均跳距的方法,使计算出的平均跳距更加合理,用此平均跳距计算出的距离能更接近实际距离;通过引入共线性阈值NCD和跳数阈值THD,选择拓扑关系好的且距离未知节点较近的锚节点组进行位置估计得出一系列位置;最后通过质心算法得出最终的位置坐标。仿真结果表明新算法能在不需要任何额外硬件的支持下,在降低算法复杂度的同时,能提供比DV-hop算法更精确的位置估计。

关键词: 无线传感网; DV-hop定位算法; 平均跳距; 共线性; 定位精度

A Novel DV-hop Localization Algorithm

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Abstract:

A novel DV-hop algorithm which is a rang-free location algorithm in WSNs and has more high accuracy is proposed. A weight is introduced into the algorithm to improve the average hop-distance, and then the calculated distance through using the average hop-distance will be closer to real distance; And then the anchor node teams which have better topology and are closer to the unknown node are selected through collinearity threshold NCD and hop threshold THD to estimate location and get a series of locations; Finally, the final coordinates can be got through using Centroid algorithm. Simulation results show that the novel DV-hop algorithm can provide more accurate location estimation and without needing any additional hardware and the complexity of the algorithm is reduced.

Keywords: wireless sensor networks; DV-hop localization algorithm; average hop-distance ; collinearity; localization accuracy

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