

无线传感器网络中一种基于高斯马尔可夫移动模型的自适应定位方法

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摘要

针对无线传感器网络, 本文提出了一种基于高斯马尔可夫移动模型的自适应定位方法. 该方法由速度调整策略、中垂线策略和虚拟斥力策略组成. 速度调整策略可以使移动锚节点根据环境的改变自动的调整它的速度. 中垂线策略对移动锚节点的轨迹进行局部调整, 保证所有未知节点获得足够的非线性锚坐标. 而虚拟斥力策略不仅可以促使移动锚节点快速的离开已定位节点, 还能使它从边界外面快速的返回监测区域. 理论分析和仿真结果表明, 提出的方法可以达到较好的性能.

关键词 [无线传感器网络](#) [中垂线策略](#) [虚拟斥力策略](#) [速度调整策略](#) [高斯马尔可夫移动模型](#)

分类号

An Adaptive Localization Approach for Wireless Sensor Networks Based on Gauss-Markov Mobility Model

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Abstract

This paper proposes an adaptive localization approach for wireless sensor networks based on Gauss-Markov mobility model. In the approach, the perpendicular bisector strategy, the virtual repulsive strategy, and the velocity adjustment strategy are properly combined to enhance localization efficiency. The velocity adjustment strategy causes that the mobile anchor node automatically tunes its velocity. The perpendicular bisector strategy locally adjusts trajectory for the mobile anchor node, which ensures that unknown nodes obtain enough non-collinear anchor coordinates as soon as possible. The virtual repulsive strategy impels that the mobile anchor node rapidly leaves the communication range of location-aware nodes or returns to the surveillance region after the mobile anchor node was out of the boundary. Both theoretical analysis and simulation studies show that this approach can increase localization accuracy, consume less energy, and cover more surveillance region during the same period than virtual beacons-energy ratios localization scheme using the Gauss-Markov mobility model.

Key words [Wireless sensor network](#) [perpendicular bisector strategy](#) [virtual repulsive force strategy](#) [velocity adjustment strategy](#) [Gauss-Markov mobility model](#)

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