

基于RSSI的功率匹配定位算法的研究与实现

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摘要:

本文针对无线传感器网络中直接使用接收信号强度指引 (Received Signal strength indicator, RSSI)定位会出现因接收信号强度随机性变化而导致的测距粗糙、定位不稳定的普遍现象, 结合实际项目定位精度要求, 在实验的基础上提出一种提高RSSI定位精度的功率匹配算法 (Power Match Algorithm, PMA)。实验首先通过测定RSSI与距离的关系, 建立测距模型, 然后在此基础上建立四边定位静态数据库, 最后进行现场测试和误差分析。实验结果表明, 该算法能适应RSSI测距信号强度变化不稳定性特点, 定位平均误差约为0.07m。

关键词: 无线传感器网络;RSSI定位;功率匹配算法;测距模型;静态数据库

Study and Implementation of Power Match Algorithm Based on RSSI

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Abstract:

For the common phenomenon of rough distance estimating and unsteady location caused by high random of received signal strength when using the direct RSSI location method in wireless sensor networks, here proposes an algorithm improving the accuracy of location based on experiment, meanwhile considering the requirement of actual project. First we determine the relationship between RSSI and distance by experiment, building a module for estimating distance, and then make a static database for location. Finally a test and an error analysis are made. The result shows that this algorithm is able to adapt the instability of strength of received signal, with its approximate mean error 0.07 m.

Keywords: wireless sensor networks; RSSI location; power match algorithm; distance estimate module; static database

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