基于**RSSI**差分校正的最小二乘**-**拟牛顿定位算法

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摘　要：

针对无线传感器网络（WSN）中存在定位精度不足的问题，提出了一种基于RSSI差分校正的最小二乘-拟牛顿定位算法。在RSSI测距方面，首先通过信标节点的自校正定位求得误差校正系数，将该误差校正系数运用到求未知节点到信标节点的距离当中。在定位计算方面，该算法运用最小二乘法估计简单和拟牛顿法收敛速度快的特点，将最小二乘法计算出来的初值，用拟牛顿法对未知节点坐标进行迭代求精。通过仿真实验表明，本文提出的定位算法定位精度高，与传统的最小二乘法相比提高了近36%的精度。

关键词：接收信号强度指示；差分校正；最小二乘；拟牛顿法

RSSI-based differential correction least-squares - Quasi-Newton positioning algorithm

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Abstract:

A least-squares differential correction based on RSSI - Newton location algorithm is presented in accordance with the low positioning accuracy lying in the Wireless Sensor Network (WSN) in this paper. In terms of RSSI ranging, correction coefficient had been firstly acquired by self-correcting of beacon nodes, and then had been applied to distance solving from unknown nodes to the beacon nodes; in terms of positioning calculations, utilizing character of simpleness of LS and the fast rate of convergence of Quasi-Newton algorithm, the initial value of worked out by Quasi-Newton algorithm had been applied for the iterative refinement of unknown node coordinate with LS method. The simulation experiment showed that the accuracy of positioning algorithm presented in this paper is 36% higher compared with the traditional LS method.

Keywords: Received signal strength indication; differential correction; least squares; quasi-Newton method

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