一种分布式无线传感器网络节点定位算法

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摘　要：

基于接收信号强度（RSSI）的无线传感器网络节点定位算法由于无需额外测距硬件的支持而受到广泛的应用。但无线信号传输受到环境的影响，使得基于RSSI的定位算法存在较大的定位误差。本文针对上述不足提出了一种基于概率的无线传感器网络节点定位方法。首先根据信标节点发送信号强度与未知节点接收信号强度差来计算未知节点到其一跳范围内所有信标节点的估计距离，然后根据这些估计距离，通过计算未知节点在某个位置概率密度函数的最大值来确定未知节点自身的位置坐标。通过仿真表明，该方法在较低的信标节点密度和节点通信半径条件下，具有较高的节点定位精度和定位覆盖率。

关键词：无线传感器网络；接收信号强度；概率定位；定位精度；覆盖率

A distributed node location algorithm of wireless sensor network

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Abstract:

The node location algorithm of wireless sensor network based on the receiver signal strength (RSSI) get a wide applications, which no additional hardware supporting. However, the environment impact the wireless signal transmission which making the positioning algorithm has large errors. In order to reduce the error impact of environment, this paper presents a probability positioning methods. First, According to the sending signal strength of beacon and receive signal strength to calculate one jump estimated distance of unknown nodes; then, find out the location of unknown nodes using the maximum probability density function. The simulation shows that this method can get high positioning accuracy and coverage at low density of the beacon and communication radius.

Keywords: Wireless sensor networks; Received Signal Strength Indicator; Probability positioning; positioning accuracy; Coverage

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