Min-Max节点定位算法的分析与改进

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摘　要：

无线传感器网络中RSSI测距是一项低成本的估算节点间相对距离的技术，而Min-Max算法是适合该技术并能满足网络低功耗要求的节点定位应用。论文首先在建立RSSI测距模型的基础上分析了Min-Max算法的性能，并针对该算法在室内环境中对靠近边缘区域未知节点的定位误差较大的问题，提出了一种有矩形边缘越界检测法，改进方法能通过检测重合矩形区域是否越界并做出相应的算法修正，仿真结果表明能有效提高定位边缘区域未知节点的定位精度。该改进算法在大规模多个节点的网络环境下，依然可以有效降低网络节点的平均定位误差。

关键词：无线传感器网络；测距；节点定位；Min-Max定位算法；边缘区域

Analysis and Improvement for Min-Max Node Localization Algorithm

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Abstract:

Distance measurement and error estimation based on RSSI are cost-effective solutions widely applied in WSN localization techniques.The paper focused on the Min-Max positioning algorithm based on RSSI ranging model and proposed an improved solution to resolve the problem that the blind nodes around the edge of localization region had larger position error in indoor environment. The simulation result showed that the improved algorithm could significantly optimize the position accuracy of blind nodes around the localization edge and even effectively reduce the average positioning error in randomly deployed large scale WSN.

Keywords: wireless sensor network；distance measurement；node localization；Min-Max localization algorithm；localization edge

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