

基于RSSI的无线传感器网络通信覆盖研究

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摘要:

提出了一种利用邻居节点采集的RSSI路径损耗来估计传感器节点通信覆盖范围的新方法(NRRC)。首先将邻居节点按照空间关系映射到不同扇区集合, 对各扇区内的RSSI采样值进行最小二乘拟合得出相应扇区内的对数距离路径损耗模型, 然后根据损耗模型及给定信号衰减阈值求得各扇区对应的最大通讯半径; 最后将各扇区的覆盖范围进行叠加来估计节点通讯覆盖范围。实验结果表明该方法实现简单, 有效提高了节点通信覆盖的预测精度。

关键词: 无线传感器网络; 通信覆盖; RSSI; 路径损耗模型

Researches on Communication Coverage for Wireless Sensor Network Based on RSSI

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Abstract:

A novel algorithm for sensor node communication coverage prediction based on RSSI path lost collected by the neighbor nodes was presented. According to the spatial relationship, neighbor nodes were mapping to several non overlap sectors. By use of the least squares fitting method, a log distance path loss model was computed based on the RSSI path lost values for each sector. Then, the max radius of each sector was computed according to the path loss model and the given max signal attenuation threshold. Finally, all the sectors were overlapped to estimate the node communication coverage. Experimental results show that the method is simple and effectively improve the prediction accuracy of the node communication coverage.

Keywords: Wireless Sensor Network; Communication coverage; RSSI; Path loss model

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