

无线传感网络覆盖中概率Voronoi模型及算法研究

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摘要:

覆盖是无线传感网络中最重要的问题之一, 随机覆盖是目前研究的主流。基于Voronoi图的随机覆盖算法是无线传感网络领域的研究热点。目前研究中采用的Voronoi图, 主要采用基于距离的Voronoi边赋权值模型, 存在两个主要问题, 即模型粗糙和监测节点不全。本文以实测的分段概率传感模型为基础, 从多传感协同监测的角度构造一种概率Voronoi模型, 试图解决以上问题。并且用基于概率Voronoi模型的最大突破路径算法验证了模型有效性。就掌握的文献来看, 该模型是首次提出, 具有较好的实用推广价值。

关键词: 无线传感网络; 覆盖; Voronoi图; 传感模型; 概率Voronoi模型

Research on Probabilistic Voronoi Model and Algorithm for Coverage in WSN

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Abstract:

Coverage is one of the most important issues for Wireless Sensor Network (WSN), and the stochastic coverage is the mainstream. Stochastic coverage based on Voronoi Diagram is now focused in WSN researches. The Voronoi Diagram currently used is mainly on distance-based-weighted model for Voronoi edges. Two main defects in existence are the rough model and the incomplete monitoring. We construct a Probabilistic Voronoi Model, which is based on multi-sensor monitoring using a Probabilistic Sensing Model, to rescue the above defects. Maximal Breach Path algorithm based on the Probabilistic Voronoi Model is presented to validate the model. To our knowledge, this is the first study on Probabilistic Voronoi Model.

Keywords: WSN; Coverage; Voronoi Diagram; Sensing Model; Probabilistic Voronoi Model

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