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网络、通信与安全

无线传感器网络服务质量的随机控制策略

刘 浩[1]，赵尔敦[2]

1.广西工学院 计算机工程系，广西 柳州 545006
2.华中师范大学 计算机科学系，武汉 430079

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摘要 为使网络具有给定的感知范围或覆盖率，必须保证WSN传感器具有一定空间密度，因此网络中活动的传感器数量可作为QoS的一种度量[1]。在这种定义下，提出两种QoS控制方法，基于贪心算法的集中式控制方法和基于寿命的分布式随机控制方法。如果传感器能够存储运行状态信息或每隔一段时间能够交换节点寿命信息，前者可以获得最优的网络寿命;后者则通过交换初始传感器节点寿命，利用平均寿命信息随机调度活动的节点，从而延缓存活节点数的降低。仿真结果证实了这两种方法的有效性。

关键词 无线传感器网络 覆盖率 分布式服务质量控制 贪心算法

分类号

Stochastic policies for QoS control of wireless sensor network

LIU Hao[1]，ZHAO Er-dun[2]

1.Department of Computer Engineering，Guangxi University of Technology，Liuzhou，Guangxi 545006，China
2.Department of Computer Science，Central China Normal University，Wuhan 430079，China

Abstract

One of the performance measures of QoS is WSNs spatial resolution，i.e.the number of the active nodes in the WSNs for the application requirements such as coverage and connectivity in WSNs.With this definition，we present two stochastic QoS control algorithms，one is based on greedy algorithm and the other is based on the expected WSNs lifetime.The first algorithm can gain the optimal network lifetime when each sensor can store all its running information or the sensors can exchange their expected lifetime periodically.With the help of the expected mean lifetime，the second algorithm gives a stochastic scheduling scheme which tries to keep sensors alive as more as possible while requiring few control information exchanges.Simulation results show that，our algorithms can gain longer lifetime of WSNs than the existed algorithms while keep the QoS performance.

Key words Wireless Sensor Networks（WSNs） coverage distributed QoS control greedy algorithm

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