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## RSPEED: 无线传感器网络中基于不确定延迟的可靠实时路由

### RSPEED: the reliability and real-time routing based on uncertain delay in wireless sensor network

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中文关键词: [无线传感器网络](#) [实时路由](#) [转发可靠性](#) [不可靠链路](#)

英文关键词: [wireless sensor networks](#) [real-time routing](#) [forwarding reliability](#) [unreliable link](#)

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中文摘要:

基于不可靠的链路, 综合考虑了链路的质量与链路的延时, 提出了一种新的转发可靠性概念, 并在此基础上, 设计了一种新的实时路由协议(RSPEED)。利用转发可靠性表示节点在给定的延迟阈值下成功将数据分组转发到邻居节点的概率, 并以此保证路由的实时性和可靠性, 提供一定的QoS服务。另外, 当环境中链路质量比较差时, 还能在满足实时性的基础上通过权衡传输延时与传输可靠性, 从而获得更高的传输成功率。实验结果表明, 提出的方法能够显著地提高分组的传输成功率和减少超过给定延迟阈值分组的数量, 特别是当信道非常差时, 提出的方法在满足实时性上比SPEED高出20%左右。

英文摘要:

The forwarding reliability was proposed by considering the unreliability and the delay of a link, and with which, a novel real-time routing protocol(RSPEED) was designed. The forwarding reliability denoted the probability to deliver the data successfully to the neighbor node under a given deadline, and it was used to achieve probabilistic QoS guarantee in timeliness and reliability. The protocol can also make trade-off between the transmission delay and the reliability of transmission to improve the probability of successful transmission when the environment and link quality is very poor. The experimental results show that the proposed approach can significantly improve the reliability of transmission and reduces the number of the missed deadline, and even when the channel is very poor, it can achieve 20% higher performance than SPEED.

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