多力驱动的无线传感器网络QoS路由协议

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摘　要：

本文提出一种基于多势场力的QoS感知的无线传感器网络路由MFQR。为了更有效的适应网络环境的变化，MFQR中节点自适应的选取满足时延和投递率要求的转发节点。在网络状况良好时，协议通过深度-能量混合势场力选取转发节点集合，以均衡节点能耗；当网络负载加重时，协议通过深度-队列长度混合势场力选取转发节点集合，以避开拥塞区域。仿真结果表明，MFQR可以有效地适应实时性、可靠性要求的变化，同时提高了网络吞吐量，均衡了节点能耗，延长了网络生命周期。

关键词：无线传感器网络；路由协议；势场力；QoS；流量感知

Multi-Force QoS Routing for Wireless Sensor Networks

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Abstract:

This paper proposes a multi-potential force based QoS routing protocol for wireless sensor networks, that is, the Multi-Force Multipath Routing (MFQR). In order to effectively adapt to changes in network environment, MFQR enables sensors to employ adaptive capacity to select forwarding nodes that meet delay and delivery requirements. If the network is in good condition, the depth-energy hybrid potential force is considered to choose forwarding nodes sets to balance energy consumption; when the network load is heavy, the depth-queue length hybrid potential force is considered to choose forwarding nodes sets to avoid congestion. Our simulation results demonstrate that MFQR may adapt to the dynamical real-time and reliability requirements effectively, as a result, the network performance is significantly improved, in terms of network throughput, balancing energy consumption and network lifetime.

Keywords: Wireless sensor networks；Routing protocol; Potential Force; QoS; Traffic Aware

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