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## Quality-of-service routing protocol for wireless sensor networks

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In this paper, we develop novel algorithms to find the optimal, energy preserving, paths from Source Node (SN) to the Base Station (BS) in Wireless Sensor Networks (WSNs). Optimality is defined in a constrained sense, in which the minimal energy route is sought (to maximize the lifespan of WSNs) under reliability constraint, meaning that each packet must reach the BS with a given probability. Energy efficiency is going to be achieved by selecting nodes for multi-hop packet forwarding under information, which yields the most evenly distributed energy state over the network after the packet has reached the BS. There are many efficient protocols which increase the lifetime of sensor network such as LEACH, PEGASIS, and PEDAP. But they failed to provide energy balancing under reliability constraints. Solving this problem, we propose a new algorithm under name High Quality of service Routing Algorithm (HQRA), which is able to find near-optimal paths in WSNs by minimizing the energy but guaranteeing a given level of reliability, as well. New High Quality of Service Routing Algorithm for WSNs, which finds the minimum energy path from the SN to the BS and achieves a predefined level of reliability. The proposed method can run in polynomial complexity, with respect to the number of nodes, by recursively using the Bellman-Ford algorithm. Furthermore, HQRA gave good results with any BS positioning in wireless sensor network. The simulation results will demonstrate that our algorithm is more efficient than the other routing protocols proposed before.

### Biography

János Levendovszky received his MSc and PhD degree from the Budapest University of Technology and Economics. Presently, he is a Professor and head of the doctoral school at the Faculty of Electrical Engineering and Informatics of the same university. His present research includes adaptive signal processing, neural networks, communication protocols and financial computations. He has served as a Guest Professor at several European, US and South Korean Universities.

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