DESIGN OF AN EFFICIENT RANDOM WALK ROUTING PROTOCOL FOR WIRELESS SENSOR NETWORKS

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ABSTRACT

Wireless Sensor Networks (WSNs) consist of small nodes with sensing, computation, and wireless communications capabilities. Energy awareness, power management and data dissemination considerations have made routing in wireless sensor networks a challenging issue. Low latency data delivery is an important requirement for achieving effective monitoring through wireless sensor networks. When sensor nodes employing the duty cycle sending a message along the shortest path, however, does not necessarily result in a minimum delay. Our project studies the lowest latency path problem i.e the characteristics of path with minimum delay that connect source node to the sink under random duty cycling nodes, since low latency data delivery is an important requirement for achieving effective monitoring through wireless sensor networks. The paper propose a forwarding protocol based on biased random walks where nodes use only local information about neighbours and their next active period to make the forwarding decisions. This is referred as lukewarm forwarding. Analytical and simulation experiments make it possible to reduce the latency without increasing the number of transmissions needed to deliver the message to destination.

KEYWORDS — Wireless Sensor Networks, Latency, duty cycle, random walk routing protocol.