Reliable Energy-Aware Routing Protocol for Heterogeneous WSN Based on Beaconing

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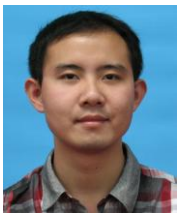
***Abstract*—Heterogeneous WSN(wireless sensor network) is widely used in environmental monitoring, infrastructure monitoring, animal monitoring and smart building. Since nodes in heterogeneous WSN have different power supply and operational capability, routing protocols could make the most of the nodes' heterogeneity to make the network reliable, robust, simple and energy-efficient, but by now, protocols designed can't achieve all these goals. CTP(collection tree protocol) made a good practice to provide a reliable protocol based on beaconing for data collection. But it doesn't consider about energy balance and it doesn't provide an efficient dissemination scheme. In this paper, we present a novel routing protocol for heterogeneous WSN based on beaconing. We introduce EARBB(a Energy-Aware Routing Based on Beaconing) which can provide a reliable and energy-efficient routing scheme for both information collection and dissemination with beaconing packets exchanged between nodes and their neighbour. At the same time, EARBB also support node-to-node routing scheme besides node-to-sink routing scheme. Simulation experiments show that EARBB establish a reliable network which can quickly recover from node failure. During downstream data transmission, 80% less packets need to be sent using EARBB than using flooding. Its average lifetime is at least 20% longer than that of CTP.**

***Keyword*—static heterogeneous WSN, energy-aware, routing, beaconing, reliability, CTP**



Li Ya is born in China. He is doing research in Electronic Engineering Department of Tsinghua University, China for his master's degree. His major fields is wireless sensor network routing protocols and energy efficiency technology.

He has been a post graduate student doing research in wireless sensor network technology for more than a year and is now interested in energy-efficient routing mechanism and protocol.