

Abstract: A Novel Transmission Power Control Approach for Wireless Sensor Networks

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Abstract

Transmission power control is one of the most effective approaches to improve network connectivity, energy efficiency, capacity and real time etc. for wireless sensor networks (WSN). In this paper, we propose a local adaptive transmission power control approach which is named Local Adaptive Transmit Power Assignment (LA-TPA). Both the path loss exponent and the energy control coefficient are considered to characterize the minimum cover district of each node more accurately and precisely according to the network environment and the application scenario of the network. Moreover, it can provide self-healing function which makes the network maintain the best performance for a long time when a few nodes exhaust their energy or a fresh batch of nodes are deployed. Simulation results show that our proposed approach is very effective in establishing a good logical network structure after node deployment and prolonging the network lifetime.

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