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OPTIMIZATION OF ENERGY SAVING FOR WIRELESS SENSOR NETWORKS

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Abstract

Wireless sensor network (WSN) has been widely used in national defense, military and security, environmental monitoring and many other fields. It's of great significance to design WSN which consumes little energy but supports service quality flexibly and effectively. To further improve the performance of WSN, this article, focusing on aspects of low energy consumption and long life cycle of the WSN and taking energy limits and coverage requirements in WSN into account, attributes the coverage control problem of WSN to a multi-objective nonlinear programing proble. A mathematical model for multi-objective nonlinear programming problem is established and a virtual force optimization algorithm based on energy-saving is presented in this article. Sensor nodes and target coverage areas of virtual force operations and nodes of virtual force operations are carried out at the same time for energy saving so as to realize the optimization of coverage control technology. In terms of network routing optimization, taking QoS requirements, topology structure of the network and energy consumption into consideration, this article puts forward the hierarchical ecological niche ACA to optimize routing technology to analyze energy and realize simultion. Finally, advantages of the new optimization strategy on the enhancement of the network lifetime are illustrated.

Key words: energy-saving optimization; improved ant colony algorithm; virtual force cover; wireless sensor network

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