基于神经网络的无线传感器网络数据融合算法_cg10000147修改稿

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摘　要：

为减少无线传感器网络的通信量，降低能量消耗，设计了一种基于神经网络的数据融合算法(BPNDA)，该算法将BP神经网络和传感器网络分簇路由协议有机结合，将每个簇设计成一个神经网络模型，通过神经网络提取原始数据中的少量特征数据，然后将特征数据发送给汇聚节点，从而提高数据收集效率，延长网络生存时间。仿真实验证明，与LEACH算法相比，该算法可有效减少网络通信量，降低节点能耗。

关键词：无线传感器网络；数据融合；神经网络；分簇

Data Aggregation of Wireless Sensor Networks Using Artificial Neural Networks

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Abstract:

To reduce communication traffic and save energy for wireless sensor networks (WSNs), BPNDA, a data aggregation algorithm based on back-propagation networks, was proposed, which integrates a three-layer BP neural network with clustering routing protocol. The input layer neuron is located in cluster members, while the hidden layer neuron and the output layer neuron are located in cluster head. Only the processed data represented the features of the raw collected data will be transmitted to the sink, so the efficiency of data gathering is improved and the lifetime of the network is prolonged. Simulation results show that compared with LEACH, the BPNDA algorithm effectively reduced the data traffic and decreased the energy dissipated of nodes.

Keywords: wireless sensor networks; data aggregation; artificial neural networks; cluster

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