Energy Efficient Hierarchical Clustering Mechanism for Wireless Sensor Network Fields

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Authors:
Hamid Ali Abed Alasadi

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Abstract

In wireless sensor networks it becomes infeasible to recharge or substitute the dead batteries of the sensor nodes. As soon as, some of the sensor nodes in a Wireless Sensor Network (WSN) run out of energy, they stop functioning initiating progressive deconstruction of the network. Hence, each and every protocol should be so designed in such a way that minimum energy should be expended during sensing, processing and communication. This work suggests the development of an enhanced hierarchical clustering method, the Energy Efficient Hierarchical Clustering Mechanism (EEHCM) for wireless sensor network fields. This is a well-distributed clustering mechanism and the cluster head selection is based on the residual energy, communication cost and the distance to the base station. The main distinguishing feature of the proposed algorithm is that the cluster head selection is accomplished in mere few steps and its hierarchical nature. Simulation results clearly display that the proposed EEHCM scheme depicts an excellent reduction in communication energy and backbone energy consumption. Also, the energy efficiency in EEHCM is enhanced to a great extent. It is noted that the first node death and the last node death are delayed, and hence the overall network lifetime is prolonged.
References


Index Terms

Computer Science  Wireless

Keywords
Base station, routing efficiency, clustering efficiency, network lifetime, distributed clustering.