Artificial Neural Network based Cluster Head Selection in Wireless Sensor Network

Abstract

The dispersed nature and vibrant topology of wireless sensor network have some basic requirements that include reduced energy utilization and extended network's lifetime. In this paper, we have focused on hierarchical protocols. In such protocol the nodes are arranged in clusters. To synchronize action and route data, cluster head are selected one per cluster. We have introduced a new approach in wireless sensor network for selecting the cluster-head by making use of artificial neural network in order to increase network's lifetime. We have used residual energy as a factor to make cluster-head. Radial basis function network model is used for cluster-head selection problem. The simulation results provide network's performance on the basis of some factors including number of dead nodes, total energy consumption, cluster head formation, number of nodes dying and the number of packets transferred to base station and cluster head. The performance of the proposed algorithm is compared with LEACH and LEACH-C based on energy efficiency and improved network lifetime.
References

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Index Terms

Computer Science

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Keywords

Artificial Neural Networks  Cluster Head Selection  Radial Basis Network Function
Residual Energy

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