Abstract

The sensor nodes used in Wireless Sensor Networks (WSN) perform close-range sensing in any environment and are compact, battery-powered, light-weight devices. The overall network performance depends on the routing protocols in the network layer and the flow control protocols at the data link layer. This study proposes a novel routing protocol by adapting the Minimum Spanning Tree (MST), Low-Energy Adaptive Clustering Hierarchy (LEACH), and Clustering with One-Time Setup (COTS) to save energy and maximize the network life time and reduce the network delay. The inter-cluster communication among Cluster Heads (CH) has been proposed based on the Distance Energy-based MST (DE-MST) technique and a novel pipelining technique was introduced for effective channel utilization. Simulations showed an improvement over LEACH, MST-based clustering, and COTS techniques by this method.

References

An Efficient Distance-Energy-based Minimum Spanning Tree (DE-MST) for Wireless Sensor Networks


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Index Terms

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Keywords

Wireless Sensor Network (WSN), Low-Energy Adaptive Clustering Hierarchy (LEACH), Minimum Spanning Tree (MST), Clustering with One-Time Setup (COTS)