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

15. Han, L. LEACH-HPR: An energy efficient routing algorithm for heterogeneous WSN. Intelligent Computing and Intelligent Systems (ICIS), 2010 IEEE International Conference (October, 2010), 2, pp. 507-511, IEEE.


**Index Terms**

Computer Science Wireless

**Keywords**

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