An Improved Hybrid Energy Efficient Clustering Technique to Enhance the Lifespan of Wireless Sensor Networks

Abstract

Clustering is a significant mechanism used in Wireless Sensor Networks in order to have an efficient energy balance which is inevitable to prolong the lifetime. The concept of unequal clustering has proved to be an effective method for load balancing and thereby reducing hotspot issues in the energy constrained wireless sensor networks. This paper proposes an energy efficient clustering mechanism which can enhance the lifetime of Wireless Sensor Networks. The proposed protocol is an enhancement of the Hybrid Energy-Efficient Distributed clustering protocol where the clustering is performed using energy efficient varying sized clustering algorithm. An overview of the Hybrid Energy-Efficient Distributed clustering protocol, highlighting its advantages and drawbacks is also given in this paper. The performance of the proposed algorithm is evaluated through simulation using MATLAB based on the parameters delay in packet delivery, residual energy of the network and the number of live nodes during precise time periods. Extensive simulation results show that the proposed enhanced Hybrid Energy-Efficient Distributed clustering algorithm gives better performance compared to the energy efficient clustering protocols like Hybrid Energy-Efficient Distributed clustering protocol.
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and Unequal Hybrid Energy-Efficient Distributed clustering protocol based on the above mentioned parameters.

References

Index Terms

Computer Science  Wireless

Keywords

Energy Efficiency, HEED, Unequal Clustering