Improved leach algorithm for energy efficient clustering of wireless sensor network (wsn)

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Abstrak

The demand for a Wireless Sensor Network (WSN) has increased enormously because of its great ability to supervise the outside world as well as due to its vast range of applications. Since these sensor nodes depend greatly on battery power and being deployed in adverse environments, substituting the battery is a tiresome job. Cluster-based routing techniques are prominent methods to extend the lifetime of wireless sensor networks. In this research, the work on energy efficient clustering approach is considered in two phases. During the cluster head selection phase, cluster heads are chosen which can stabilize the power consumption in sensor networks, by considering both the residual energy and distance of node with respect to sink. Later, during the cluster formation phase, a non-cluster head node will choose a cluster head that lies in close proximity with the center point between the sensor nodes and sink. Also, these non-cluster head nodes should be within the transmission range of the cluster head, as selected by the above method. Initially, the Low Energy Adaptive Clustering Hierarchy (LEACH) which is an eminent protocol for sensor networks is investigated. Furthermore, the same LEACH protocol is enhanced by proposing an effective cluster head election scheme as well as a new cluster formation scheme as mentioned above. Simulation results reveal that the proposed algorithm outperforms the traditional LEACH protocol in prolonging network lifetime.