Abstract

In numerous applications, self-organizing property of Wireless Sensor Networks (WSN) is an important characteristic. It calls for decompositions of the network into clusters of desirable bound. Cluster based WSN can enhance the whole networks lifetime. In every cluster, the cluster head (CH) plays an important role in aggregating and forwarding data sensed by other non-leader nodes. A major issue in the cluster based approach in WSN is the selection of proper cluster head and attainment of desirable cluster size by maximum number of clusters formed, keeping into consideration the inherent constraints such as limited battery energy, failure of nodes, selfish behavior of nodes, limited bandwidth etc, which inhibits superior message efficiency. This research paper presents a clustering approach termed as Sequential Multi-Clustering Protocol (SMCP) incorporating node deployment, which enhances the lifetime
of the network. This Protocol is applied on some popular clustering algorithms like 'Expanding Ring', 'Rapid', and 'Persistent' along with our own clustering algorithm 'Message Based Memory Efficient Clustering Algorithm' (MMEC) to cluster an entire topology of the network. Simulation results mainly in MATLAB interpreter shows the effectiveness of clustering using SMCP protocol.

References


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