

Clustering Using Cooperative Multihop Mini-Groups in Wireless Sensor Network: A Novel Approach

Authors : Virender Ranga, Mayank Dave, Anil Kumar Verma

Abstract : Recently wireless sensor networks (WSNs) are used in many real life applications like environmental monitoring, habitat monitoring, health monitoring etc. Due to power constraint cheaper devices used in these applications, the energy consumption of each device should be kept as low as possible such that network operates for longer period of time. One of the techniques to prolong the network lifetime is an intelligent grouping of sensor nodes such that they can perform their operation in cooperative and energy efficient manner. With this motivation, we propose a novel approach by organize the sensor nodes in cooperative multihop mini-groups so that the total global energy consumption of the network can be reduced and network lifetime can be improved. Our proposed approach also reduces the number of transmitted messages inside the WSNs, which further minimizes the energy consumption of the whole network. The experimental simulations show that our proposed approach outperforms over the state-of-the-art approach in terms of stability period and aggregated data.

Keywords : clustering, cluster-head, mini-group, stability period

Conference Title : ICSTCC 2014 : International Conference on Systems Theory, Control and Computing

Conference Location : Sydney, Australia

Conference Dates : December 15-16, 2014