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**Distributed Clustering-Task Scheduling for Wireless Sensor Networks Using Dynamic Hyper Round Policy**

**Abstract:**

Prolonging the network life cycle is an essential requirement for many types of Wireless Sensor Network (WSN) applications. Dynamic clustering of sensors into groups is a popular strategy to maximize the network lifetime and increase scalability. In this strategy, to achieve the sensor nodes’ load balancing, with the aim of prolonging lifetime, network operations are split into rounds, i.e. fixed time intervals. Clusters are configured for the current round and reconfigured for the next round so that the costly role of the cluster head is rotated among the network nodes, i.e. Round-Based Policy (RBP). This load balancing approach potentially extends the network lifetime. However, the imposed overhead, due to the clustering in every round, wastes network energy resources. This paper proposes a distributed energy-efficient scheme to cluster a WSN, i.e. Dynamic Hyper Round Policy (DHRP), which schedules clustering-task to extend the network lifetime and reduce energy consumption. Although DHRP is applicable to any data gathering protocols that value energy efficiency, a Simple Energyefficient Data Collecting (SEDC) protocol is also presented to evaluate the usefulness of DHRP and calculate the end-to-end energy consumption. Experimental results demonstrate that SEDC with DHRP is more effective than two well-known clustering protocols, HEED and M-LEACH, for prolonging the network lifetime and achieving energy conservation.

**Existing System:**

Compared with non-clustering protocols, clustering, in general, mitigates energy dissipation due to collisions, idle listening, and overhearing. When clusters are created, within every cluster, an exclusive time slot is assigned to each node and thus collisions are avoided. Besides, a node does not need to be awake during every Time- Division Multiple Access (TDMA) frame, but only at its specific time slot because it knows when to transmit. This option prevents the energy depletion caused by idle listening and overhearing [4]. Therefore, clustering is an energy-efficient solution for extending the network life cycle. In clustering approaches, the large difference in the amount of energy consumption by cluster heads and that of other nodes is a great motivation for balancing the nodes’ workload and thus avoiding the premature death of the sensor nodes. To attain load balancing for the purpose of prolonging network lifetime, the Round-Based Policy (RBP) schedules the clustering-task statically by splitting the time into fixed length rounds, at the beginning of which clustering is performed. By rotating the cluster head responsibility among the sensor nodes and reconstructing the cluster formation, periodic reclustering balances the load of the network nodes.

**Proposed System:**

To achieve load balancing, DHRP schedules triggering of the clustering-task only at the required times, i.e. this policy eliminates the unnecessary reclusterings of the RBP. Therefore, by tuning the reclustering time dynamically, DHRP effectively controls the clustering overhead throughout the network lifetime.

 To enhance the performance, the clustering-task is scheduled by an online algorithm as opposed to the offline algorithm (RBP) which does not consider the dynamism of the sensing region and network conditions.

 As RBP predetermines the reclustering times, it is often appropriate for a continuous data delivery model, in which nodes are continuously monitoring the sensing environment and, as a result, consuming energy. In contrast, DHRP considers the cluster heads’ residual energy for scheduling clustering-task. Thus, this policy is adaptable to any data delivery model used for energy-efficient data collection to one or several sink nodes, such as continuous and event-driven.