

Energy Efficient Clustering with Adaptive Particle Swarm Optimization

Authors : KumarShashvat, ArshpreetKaur, RajeshKumar, Raman Chadha

Abstract : Wireless sensor networks have principal characteristic of having restricted energy and with limitation that energy of the nodes cannot be replenished. To increase the lifetime in this scenario WSN route for data transmission is opted such that utilization of energy along the selected route is negligible. For this energy efficient network, dandy infrastructure is needed because it impinges the network lifespan. Clustering is a technique in which nodes are grouped into disjoints and non-overlapping sets. In this technique data is collected at the cluster head. In this paper, Adaptive-PSO algorithm is proposed which forms energy aware clusters by minimizing the cost of locating the cluster head. The main concern is of the suitability of the swarms by adjusting the learning parameters of PSO. Particle Swarm Optimization converges quickly at the beginning stage of the search but during the course of time, it becomes stable and may be trapped in local optima. In suggested network model swarms are given the intelligence of the spiders which makes them capable enough to avoid earlier convergence and also help them to escape from the local optima. Comparison analysis with traditional PSO shows that new algorithm considerably enhances the performance where multi-dimensional functions are taken into consideration.

Keywords : Particle Swarm Optimization, adaptive - PSO, comparison between PSO and A-PSO, energy efficient clustering

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