

Performance Optimization of a Clustering Adaptive Gravitational Search Scheme for Wireless Sensor Networks

Elham PourabdollahReza Mohammadi Asl and Theodore Tsiligiridis

In this research we propose a new clustering scheme based on a combination of a well-known stochastic, population-based Gravitational Search Algorithm (GSA) and the k-means algorithm to select optimal reference nodes in a Wireless Sensor Networks (WSN). In the proposed scheme the process of grouping sensors into clusters reference nodes is based on a K-means clustering algorithm to divide the initial population and select the best position in the neighbourhood to exchange information between clusters. In cases when sensor nodes receive multiple synchronization messages from more than one reference node a weighted average method is used. In this paper we limit our research on a number of benchmark functions which are used to compare the performance of the proposed algorithm with other important meta-heuristic algorithms to show its superiority.