A Node Scheduling Game based on Water Cycle Algorithm for Energy Efficient Wireless Sensor Networks

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Abstract

Sensor Networks are expected to sustain for a long period of time with limited battery power. Among the many approaches used, Node Scheduling is effective in increasing the Network Lifetime. Existing node scheduling approaches perceives the happenings in the Sense region as a random phenomenon. But the proposed approach studies the behaviour of targets in its region and uses the acquired knowledge to predict future presence of the target in a locality. Simulation results prove the effectiveness of prediction. Once the locality is known in advance, the sensor motes participate in a game to achieve an energy efficient schedule for the nodes. A Pareto-optimal Node Schedule for the game is determined by a metaheuristic approach called the Water Cycle algorithm. Again the energy efficiency of the solution is proved by the simulation results.

References


Index Terms

Computer Science

Algorithms

Keywords

Wireless Sensor Network, Network Lifetime, Bayesian Probability, Game Theory, Pareto
Optimality, Water Cycle Algorithm.