Abstract

Data aggregation plays a vital role as the wireless sensor network (WSN) is highly susceptible to attacks. In WSN, data aggregation correlates the sensing data and aggregates at the intermediate nodes by reducing the time taken for message transfer. Works conducted on Concealed Data Aggregation Scheme for Multiple Applications (CDAMA) in WSN provides mechanisms from unauthorized aggregations. But, CDAMA data aggregation is not reliable for higher computation capability. Moreover, Data Aggregation Ant Colony Algorithms (DAACA) computes better energy and the quantity in choosing the next hop, however fails to forward packets with the sensed nodes causing inefficiency in data aggregation. Hence, in order to attain reliable data aggregation with better computation capability, Ant Colony Optimization with State Transition Ant Rule (ACO-STAR) is developed in this paper which works as per the foraging movement of ants analyzing state transition rules. ACO-STAR algorithm provides a significant way of identifying the search space for obtaining optimal data aggregation in WSN. The solution of ACO-STAR steadily attains the global optimal solution through effective forwarding of packets in terms of adjusting the clustering effect based on quantities of foraging movement of ants. ACO-STAR provides clear analysis on the experimental factors such as system data aggregation efficiency, data forwarding rate, and delay measurement in STAR data aggregated sensor network.
Reliable Data Aggregation using Ant Colony Optimization with State Transition Ant Rule in Sensor Network

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Index Terms

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