ABSTRACT

A fundamental challenge in the design of Wireless Sensor Networks (WSNs) is to maximizetheir lifetimes especially when they have a limited and non-replaceable energy supply.Data aggregation is a useful and essential research area in wireless sensor network.Various data aggregation protocols are devised for use in wireless sensor network.In this dissertation different aggregation protocols arestudiedand their performancesare compared. After observingall existing literatures some advantage and disadvantages are pointed out. In this dissertation a novel data aggregation protocol is proposed.Our data aggregation protocol isbased on ant colony optimization technique. Initially a tree of the network is formed that allow maximum aggregation using greedy method.

The existing workson this topic are able to manage optimize some performance but suffers fromseveral other performance measures. A globaloptimal solution is proposed that reduces energy consumption bythe sensor network.Here every source node periodically sends packetto the base station and dynamically create optimal route with maximum aggregate node. There is a fixed probability to every source nodes which define how many no of packets a source node can send in a certain number of iteration. We have developed a JAVA Applet simulator.

In simulation our proposed algorithm is compared with other existing protocoland various measures such as energy consumption, number of iteration necessary to create a stable network are evaluated. From thesimulation result it is observed that our proposed algorithm consumes less energy than existing algorithm, eliminates loop formation in the route and prolonging the network life time.