

Comparative Analysis of Data Gathering Protocols with Multiple Mobile Elements for Wireless Sensor Network

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Abstract : Wireless Sensor Networks are used in many applications to collect sensed data from different sources. Sensed data has to be delivered through sensors wireless interface using multi-hop communication towards the sink. The data collection in wireless sensor networks consumes energy. Energy consumption is the major constraints in WSN. Reducing the energy consumption while increasing the amount of generated data is a great challenge. In this paper, we have implemented two data gathering protocols with multiple mobile sinks/elements to collect data from sensor nodes. First, is Energy-Efficient Data Gathering with Tour Length-Constrained Mobile Elements in Wireless Sensor Networks (EEDG), in which mobile sinks uses vehicle routing protocol to collect data. Second is An Intelligent Agent-based Routing Structure for Mobile Sinks in WSNs (IAR), in which mobile sinks uses prim's algorithm to collect data. Authors have implemented concepts which are common to both protocols like deployment of mobile sinks, generating visiting schedule, collecting data from the cluster member. Authors have compared the performance of both protocols by taking statistics based on performance parameters like Delay, Packet Drop, Packet Delivery Ratio, Energy Available, Control Overhead. Authors have concluded this paper by proving EEDG is more efficient than IAR protocol but with few limitations which include unaddressed issues likes Redundancy removal, Idle listening, Mobile Sink's pause/wait state at the node. In future work, we plan to concentrate more on these limitations to avail a new energy efficient protocol which will help in improving the life time of the WSN.

Keywords : aggregation, consumption, data gathering, efficiency

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