Modern Query Optimization Technique (Nature Inspired) for Improving Energy Efficient Data Gathering and Processing in Wireless Sensor Networks

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Abstract

One of the main obstacles in wireless sensor networks is limited energy and memory constraints. In wireless sensor network, communication among the nodes is the most energy consuming activity and needs to be minimized in terms of data size and number of communications. To overcome these obstacles the earlier research works introduced several techniques and methods for query optimization. Data aggregation, efficient routing, secured data transmission, secured communication, storage maintenance and various heuristics are some of the approaches introduced earlier. The main objective of this work is to accomplish better efficiency in terms of energy and data storage maintenance. To achieve this goal, a Modern Query Optimization [MQO] technique is proposed in this paper. MQO works at three levels namely (i) Monitoring the query and the path (ii) Tracking the data along with the node information and (iii) Choosing optimum nodes in a best path for data gathering based on query’s lifetime. Artificial Immune System [6] algorithm along with the proposed three modifications is used to optimize the queries. The authors have simulated this modified algorithm in MatLab and the results show enhancement in efficiency.
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References

Index Terms

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Keywords