Abstract

Wireless Sensor Networks (WSNs) are deployed to capture the sensed data from tiny sensors spread around the physical environment. In general, WSNs are used to monitor physical phenomena like temperature, pressure, humidity etc. In most of the cases they are deployed in remote geographic locations and operate unmanned. Usually, these sensors are battery operated. Due to these deployment circumstances, battery recharge or replacement becomes almost impossible. Hence, the foremost requirement of any WSN is to utilize the battery power in an efficient way. A sensor node expends most of its energy in data transmission. It is observed that a query submitted to WSN may request same data or subset of data as that of another request. In this paper, a novel query processing scheme is proposed that exploits the cached results at the BS and the commonality among the queries which require data from the
network. This can significantly minimize the transmission and processing costs w.r.t., energy in
the network. The experimental results proved the same.

References

- Akylidiz, I.F., Su, W., Sankarasubramaniam, Y., Cayirici, E.: The survey on sensor
  encrypted data in wireless sensor networks. In Mobile and Ubiquitous Systems: Networking and
  109-117). IEEE.
  in-network aggregation operator for query processing in wireless sensor networks. Journal of
- Yang, Chi, and Rachel Cardell-Oliver. An efficient approach using domain knowledge for
  evaluating aggregate queries in WSN, Intelligent Sensors, Sensor Networks and Information
- Benzing, Andreas, Boris Koldehofe, Marco Volz, and Kurt Rothermel, Multilevel
  predictions for the aggregation of data in global sensor networks, In Distributed Simulation and
- Behzadan, Afshin, and Alagan Anpalagan, Optimization of multiple overlapping queries
  for energy efficient sensor communication, In Communications (QBSC), 2010 25th Biennial
- Chen, Tao, Nong Xiao, and Fang Liu, Multi-aggregate-query scheduling over data
  streams, In Parallel and Distributed Computing, Applications and Technologies (PDCAT), 2010
- Müller, René, and Gustavo Alonso. "Shared Queries in Sensor Networks for Multi-User
  Support", ETH, Department of Computer Science, 2006.
- Huei-You Yang, Wen-Chih Peng and Chia-Hao Lo, Optimizing Multiple In-Network
  Aggregate Queries in Wireless Sensor Networks, Advances in Databases: Concepts, Systems

Index Terms

Computer Science  Wireless
Keywords

Wireless Sensor Networks  Query Processing