

Improvising Network life time WSN using Mobile Data Aggregator

¹Penigelapati Mamatha; ²P.sumalatha* & ³R.Suresh

1 II M.Tech CSE Student ,C R Engineering College ,Tirupati, Chittoor dist, A.P,India

2 Professor of CSE Department, C R Engineering College, Tirupati, Chittoor dist, A.P

3 HOD of CSE Department, C R Engineering College, Tirupati, Chittoor , A.P,India

mamathachowdary14@gmail.com sumalatha.ss@gmail.com

ABSTRACT —

Multi-hop, ad hoc, wireless sensor networks (WSNs) are considered a promising technology to change our physical environment and hence our life in this environment. WSNs are typically deployed using battery-powered stationary sensor nodes equipped with sensing, computing and wireless communicating modules. Sensors can be embedded into buildings or scattered into spaces to collect, process, store and send out relevant information for various civilian or military purposes.

When a data sink (e.g. a base station) is out of reach of a data source sensor node, they can rely on intermediate sensor nodes to relay data packets. Here battery-powered Wireless network is its extremely constrained source of energy supplied by batteries coming with sensor nodes, because sensor nodes are typically small and thus use tiny batteries

Keywords: Wireless sensor networks (WSN); sensor; data sink; handover; polling point.

Introduction

In the past decade, wireless sensor networks (WSNs) have been deployed in a wide range of applications such as habitat monitoring [1], environment monitoring [2], [3], and surveillance systems [4]. Many of these applications need to gather and transmit a large amount of data to a sink for analysis. Moreover, these networks must remain operational for a long period of time on limited power supplies (such as batteries).

The Pros and Cons:

This method can be applied to the design of several types of sensor network protocols that require energy efficiency, scalability, prolonged network lifetime, and load balancing. Only provided a protocol for building a single cluster layer. In this paper, author first present how to place SNs by use of a minimal number to maximize the coverage area when the communication radius of the SN is not less than the sensing radius, which results in the application of regular topology to WSNs deployment.

Pros and cons:

WSN topology lifetime can extend by more than eight times on average by the mobile node rotation which is significantly better than existing alternatives. It considers WSNs that are mostly static with a small number of mobile relays not practically declared for Dynamic WSNs. This paper deals with mobile data gathering in the sensor network which employs one or more mobile collectors that are robots or vehicles equipped with powerful transceivers and batteries.

Pros and cons:

The performance metrics observed are the data success rate (the fraction of generated data that matches the access points) latency.[4] In this paper author presented the design and analysis of novel protocols that can dynamically configure a network to achieve guaranteed degrees of coverage and connectivity. Proposed work

differs from existing connectivity or coverage maintenance protocols in several key ways.

Pros and cons:

Guaranteed connectivity and coverage configurations through both geometric analysis and extensive simulations can be provided which is the capability of our protocols. It is not extending solution to handle more sophisticated coverage models and connectivity configuration and develop adaptive coverage reconfiguration for energy-efficient distributed detection and tracking techniques. [5] In this paper author have developed an embedded networked sensor architecture that merges sensing and articulation with adaptive algorithms that are responsive to both variability in environmental phenomena discovered by the mobile sensors and to discrete events discovered by static sensors

Pros and cons:

They also showed relationship among sampling methods, event arrival rate, and sampling performance are presented. Sensing diversity does not introduced which is used to enhance Fidelity Driven Sampling

3. ALGORITHM

Step 1: Initial setup is to design the network as less hop count

Transmission.

Step 2: Design a pp from the sensor devices (here we are setting PP which can receive the data from number of nodes).

Step3: if sensor having the data, then sensor finding the PP, Which is near to that sensor.

Step 4: if sensor found any PP point node is available then

Transfers data to PP

Step 5: if PP has more data then it informs to control station.

Step 6: control station receives the number of control Information from different PP's.

Step 7: after collecting the control message, CS makes the

4.Existing system:

In Existing duty cycling approaches nodes alternate turning their power on and off and save their energy when they are turned off.

In data reduction approaches nodes reduce the amount of data that they generate and/or transmit and consequently reduce the energy consumed by the radio component.

In topology control approaches, the main idea is to reduce the energy consumption by reducing the initial topology of the network

4.1Proposed system:

In our proposed approach we use node rotation model for maximizing the lifetime of mobile WSNs. It achieves the mobility of nodes to mitigate differential power consumption by having nodes take turns in high power consumption positions without modifying the existing topology.

Node rotation approach is very different than other schemes such as data mules in that all nodes expend relatively little energy on movement and move only a few times during the network lifetime.

So mobile node rotation does not require powerful nodes capable of performing complex motion planning calculations or developing mobility aware routing topologies since all movements are to known positions and the topology does not change except during the **transient periods of node rotation.**

5. MODULES

There are five modules in this section. Those are

- I. Analyzing the data sink details
- II. Setting less hop count transmission
 - Problem in static forward node
 - Dynamic forward node
- III. Select sensor as pp

Static P

Dynamic PP

IV. Find and collect data from pp's

V. Handover the data o BS.

5.1 Analyzing the data sink details

Handover the data to data sink when data sink within the transmission coverage area of sensors. The sensors which are located in the range of data sink it transforms all the information to the data sink with minimum hops.

5.2 Setting Less Hop Count Transmission

Multi-hop routing, packets have to experience multiple relays

before reaching the data sink. Minimizing energy consumption on the forwarding path does not necessarily prolong network lifetime as some popular sensors on the path. So to avoid the problem in multi-hop routing we are setting the less hop count transmission.

.2.1 Static forward node:

When the node forwarding the data continuously, then that node will loss more energy. It may causes node failure.

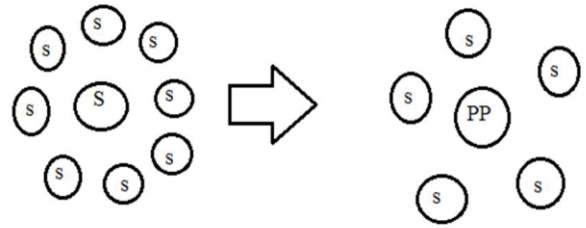
5.2.2 Dynamic forward node:

We now compare our algorithms based on how much node movement each one requires. Table 2 summarizes the average number of rounds required, the average number of nodes relocating per round, and the total number of relocating nodes for all of our algorithms. As we observed earlier, BL does not perform well because it makes too many unnecessary moves. In each round, it moves almost every node. As a result, it has the shortest lifetime improvement ratio which leads to the smallest number of rounds compared with all of our other algorithms.

5.3 Select Sensor as PP

The selected polling points are the subset of sensors, each aggregating the local data from its affiliated sensors within a certain number of relay hops. These PPs will temporarily store the data and upload them to the mobile collector when it arrives.

Figure



shortest route to collect the data Figure 1: a) Group of sensors b) Group of sensors with polling

The PPs which are selected can simply be a subset of sensors in the network or some other special devices, such as storage nodes with larger memory and more battery power. From a group of sensors one sensor will be elected as a polling point, which receives and send the information to the sensors.

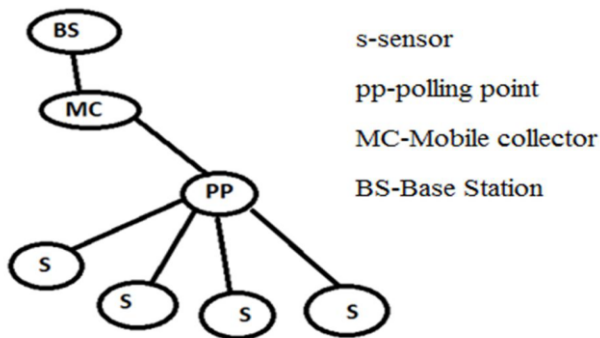
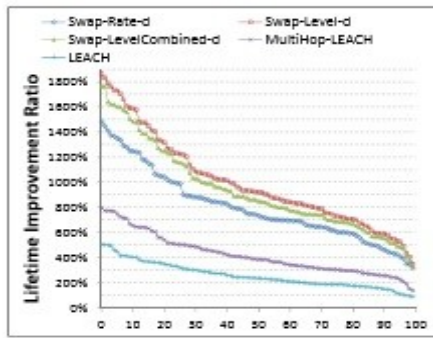
5.4 Find and Collect Data from Pp's

Because of the freedom of mobile collector to move to any location in the sensing field, it provides an opportunity to plan an optimal tour for it. Our main idea is first to find a set of special nodes referred to

as PPs in the network and then determine the tour of the mobile collector by visiting each PP in a specific sequence. When the mobile collector arrives it polls each PP to request data uploading and then it upload the data to MC. The Polling points collect the information from all the sensors and that aggregated information is collected by the Mobile collector.

5.5 Handover the Data to BS

A Polling Point uploads the data packets to the mobile collector in a single hop. Mobile collector begins its tour from the static data sink, which is located either inside or outside the sensing field, and collects data packets at the PPs and then returns the data to the data sink. Finally MC Handover the data to data sink, such as BS. The Mobile collectors move through all the polling points and collect the information and send it to Base Station point.



6. RESULTS

We did our research analysis in WSN by using NS2. In NS2 we can show two types of output, one is Nam window and in this paper, we showed our model testing output. From this model result, we can conclude our proposed method is better than the previous one.

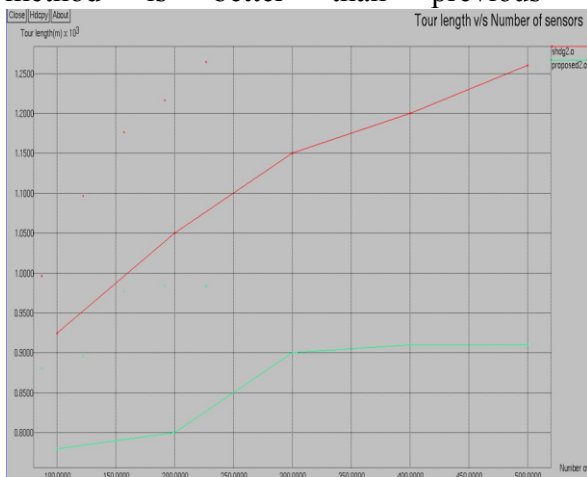


Figure 3: Tour length of proposed system and existing

From above graph, we got the result as we can avoid

unnecessary travelling time.

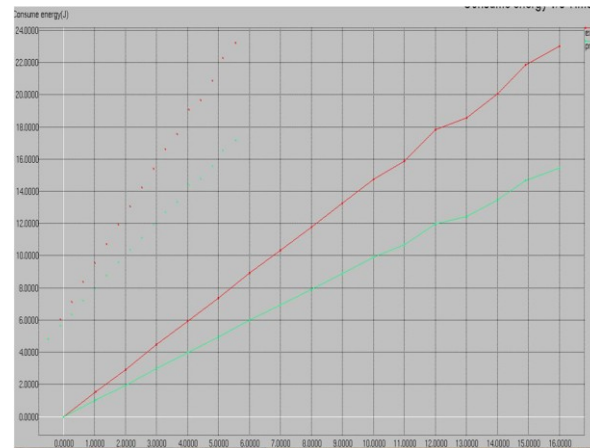


Figure 4: Energy comparison b/w proposed and existing

From this model result, we improved energy level and we reduced the energy consumption. From the Nam window result, we can see the process of our proposed model (data transmission, mobile collector movement).

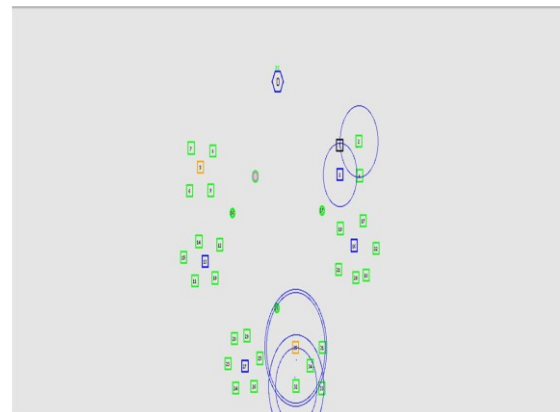


Figure 5: Nam window result mobile collector travelling

7. CONCLUSION

In this paper, we present a new node rotation paradigm for maximizing the lifetime of mobile WSNs. Our approach exploits the mobility of nodes to mitigate differential power consumption by having nodes take turns in high power consumption positions without modifying the existing topology. Our node rotation approach is very different than other schemes such as data mules in that all nodes expend relatively little energy on movement and move

only a few times during the network lifetime. Our simulations show that our node rotation approach can improve average lifetime by more than a factor of eight and that our algorithms outperform existing non-mobility approaches for mitigating differential power consumption to prolong network lifetime.

8.Authors: P.Mamatha received her B.Tech Degree in Computer Science Engineering in Vaishnavi Engineering College Tirupathi A.P, India in the year 2012 Currently Pursuing her M.tech in Chadalawada Ramanamma Engineering College Tirupathi, A.p, India. Her area Research Includes in Cloud Computing of maximizing network lifetime using wireless networks



P.Sumalatha currently working as professor & coordinator in Chadalwada Ramanamma Engineering college in the Department of Computer science, she has 8 years of work experience and also 1year Experience of coordinator of Cse Department. Her's Extensive Education Includes B.tech computer science Engineering and Post Graduation in M.Tech computer science.



9. REFERENCES

- [1] Y. Gu, D. Bozdag, and E. Ekici, "Mobile element based differentiated message delivery in wireless sensor networks," in WoWMoM, 2006, pp. 83–92.
- [2] A. Kansal, D. D. Jea, D. Estrin, and M. B. Srivastava, "Controllably mobile infrastructure for low energy embedded networks," IEEE Transactions on Mobile Computing, vol. 5, no. 8, pp. 958–973, 2006.
- [3] G. Xing, T. Wang, Z. Xie, and W. Jia, "Rendezvous planning in mobility-assisted wireless sensor networks," in RTSS '07: Proceedings of the 28th IEEE International Real-Time Systems Symposium, 2007, pp. 311–320.
- [4] Call and Response: Experiments in Sampling the Environment-Maxim A. Batalin, Mohammad Rahimi1, Yan Yu – 2004.
- [5] Data Storage Placement in Sensor Networks-Bo Sheng, Qun Li, Weizhen Mao – 2010.