An Enhanced Data Distribution Technique For Dynamic Wireless Sensor Network.

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***Abstract*— now a day's energy saving of a node is playing very important role for wireless sensor network. Dynamic wireless sensor network is one of the tremendous technologies in the area of the wireless sensor network. Different researcher uses different – different method to save the energy of the sensor nodes so that overall networks life time may increases. In this paper, we are also trying to propose an important methodology to save the energy of a node in the Wireless sensor network. In this model we are trying to use the movable sink, which collect the data from the node in the network and playing important role for communication. In our proposed model sink can be moved in a certain sensor network area.**

Keywords — Wireless Sensor Networks (WSN), Dynamic Wireless sensor network (DWSN), Movable sink, Network Lifetime, Network Security.

I. INTRODUCTION

In the past few years, we have seen the drastic development of wireless communication technologies. Today wireless technologies are extensively used crossover the globe to maintain the communication requirements of a enormous number of end users. A Dynamic Wireless network is a group of wireless movable nodes energetically forming a momentary network without the exploit of presented network infra-structure or centralized administration.

Movable sink is a one type of machine which we assume that it has a more battery backup and more resources .Sensor node Generate data, node which will act for generating the data is known as the Source node. Sensor node transmit their data to the sink node for analysis's and processing the data .In the transmission of data from node to sink we consider that data is not being harm by the intruder .For the Transmission of the data from node to movable sink it uses two modes of transmission either data transmission may be done by the push method or data transmission done by the pull method.

When movable sink comes to the node or near the node send the data to the movable sink. Due to the movable characteristics of the movable sink movable sink leave the containing data to its proper destination. The DWSN sensor network does not move to its position but for the data gathering movable sink move in a certain wireless sensor network. Due to the mobility in the network area we called it a Dynamic wireless sensor network.

Now a day's Dynamic wireless sensor network is one of the tremendous technologies in the area of the wireless sensor network. Earlier days in the wireless sensor network sensor node do they all work like sensing, data collecting and data forwarding by doing that node lost their Energy quickly and gets disconnected from the network.

In the push method sensor node transmit the data to the sink whenever the sink come into the range .but in the case of the pull method sink data transmission is going to done only by the request by the sink to source node .

The chief source-to-sink communication model is multi-hop communication rely, as sinks are out of the broadcast range of More number of sources. The message path from coverage sources to a sink form a reverse multi-cast tree rooted at the sink. It has been observed that, the sensor node which is nearest to the sink discharge its battery very quickly According to sensor node which is nearest to the sink discharge its battery 90% more than the node which is far away from the node.

For the explanations of the energy hole problem Researcher has built energy models and if energy hole occurs network performance lead to degraded .if all the node nearest to the sink degrade its energy to do the task of another node after some time. node will be discharge and sink get isolated if sink get isolated then entire network fails. Since physical alternate/recharge of sensor batteries is frequently not suggested due to operational factors, it is preferred to decrease and sense of balance energy usage between sensors.

There are so many method has been proposed to save the energy of the node Power-aware routing have been studied to keep away from energy-scarce sensors and attain maximum network lifetime. In our model we propose that the sink will move in the network to collect the data from the node. when the sink move from one position to another position in the network, before leave its position sink will send or indicate the node for stopping the sending packet so that packet drop can be overcome.

When sink will situated to the new position it send the beacon frame to the entire node they are available in the range of the sink to indicate that sink is available to gather your data.

II. EVOLUTION

Gyudong Shim and Daeyeon Park investigate about Mobile sinks in wireless sensor networks require an additional communication mechanism of geographic routing. Because the sink's location as the destination in geographic routing is changed dynamically, sinks' location should be propagated continuously though the sensor field for sensor's future data report. However this frequent location updates can drain up the sensor's battery power and increase wireless channel contentions. As a support to the mobile sinks, they proposed locators for mobile sinks that track current sinks' location. If a sensor reports sensed data to sinks later, it can acquire sinks' location from the locators. The locators are uniformly distributed uniformly to the sensor fields by hash bashed structured replication. Sinks update own location only immediate locators and other locators are fed location information by locators self location propagation. We implemented our locator protocol with Network simmulator-2 and compared previous work TTDD, Two-Tier Data Dissemination. Our results show that locators handle multiple source environments with low overhead of location acquisition process.

In 2001, I.F. Akyildiz, W. Su, Y. Sankarasubramaniam, E. Cayirci studied about wireless sensor networks in which they describe the concept of sensor networks which has been made viable by the convergence of microelectro- mechanical systems technology, wireless communications and digital electronics. First, the sensing tasks and the potential sensor network applications are explored, and a review of factors influencing the design of sensor networks is provided. Then, the communication architecture for sensor networks is outlined, and the algorithms and protocols developed for each layer in the literature are explored. Open research issues for the realization of sensor networks are also discussed [1].

In 2002, Jason Lester Hill design System Architecture for Wireless Sensor Networks they present an operating system and three generations of a hardware platform designed to address the needs of wireless sensor networks. Their operating system, called TinyOS uses an event based execution model to provide support for fine grained concurrency and incorporates a highly efficient component model. TinyOS enables us to use a hardware architecture that has a single processor time shared between both application and protocol processing. They show how a virtual partitioning of computational resources not only leads to efficient resource utilization but allows for a rich interface between application and protocol processing. This rich interface, in turn, allows developers to exploit application specific communication protocols that significantly improve system performance [2].

In 2004, Raquel A.F. Mini, Antonio A.F. Loureiro, Badri Nath develops The distinctive design characteristic of a wireless sensor network: the energy map in which The key challenge in the design of a wireless sensor network is maximizing its lifetime. This is a fundamental problem and new protocol engineering principles needing to be established in order to achieve this goal. The information about the amount of available energy in each part of the network is called the energy map and can be useful to increase the lifetime of the network. They propose using the energy map as a protocol engineering principle for this kind of network. They argue that an energy map can be the basis for the entire design trajectory including all functionalities to be included in a wireless sensor network. Furthermore, they show how to construct an energy map using both probabilistic and statistical predictions-based approaches. Simulation results compare the performance of these approaches with a naive one in which no prediction is used. The experiments performed as an energy dissipation model that they have proposed to simulate the behavior of a sensor node in terms of energy consumption. The results show that prediction-based approaches outperform the nave in a variety of parameters [3].

In 2005, Wei Wang, Vikram Srinivasan, Kee-Chaing Chua investigate the benefits of a heterogeneous architecture for wireless sensor networks composed of a few resource rich mobile nodes and a large number of simple static nodes. These mobile nodes can either act as mobile relays or mobile sinks. To investigate the performance of these two options and the trade-offs associated with these two options, They first consider a finite network. They then compute the lifetime for different routing algorithms for three cases (i) when the network is all static (ii) when there is one mobile sink and (iii) when there is one mobile relay. They find that using the mobile node as a sink results in the maximum improvement in lifetime. They contend in that in hostile terrains, it might not always be possible for the sink to be mobile. They then investigate the performance of a large dense network with one mobile relay and show that the improvement in network lifetime over an all static network is upper bounded by a factor of four. Also, the proof implies that the mobile relay needs to stay only within a two hop radius of the sink. They then construct a joint mobility and routing algorithm which comes close to the upper bound. In this algorithm requires all the nodes in the network to be aware of the location of the mobile node. They then proposed an alternative algorithm, which achieves the same performance, but requires only a limited number of nodes in the network to be aware of the location of the mobile. They finally compare the performance of the mobile relay and mobile sink and show that for a densely deployed sensor field of radius R hops, They require $O(R)$ mobile relays to achieve the same performance as the mobile sink [4].

In 2006, Adam Dunkels, Niclas Finne, Joakim Eriksson, Thiemo Voigt suggest that while in general the overhead of a virtual machine is high, a combination of native code and virtual machine code provide good energy efficiency. Dynamic run-time linking can be used to update the native code, even in heterogeneous networks [5].

In 2006 John Paul Walters, Zhengqiang Liang, Weisong Shi, and Vipin Chaudhary decribes As wireless sensor networks continue to grow, so does the need for effective security mechanisms. Because sensor networks may interact with sensitive data and/or operate in hostile unattended environments, it is imperative that these security concerns be addressed from the beginning of the system design. However, due to inherent resource and computing constraints, security in sensor networks poses different challenges than traditional network/ computer security.

There is currently an enormous research potential in the field of wireless sensor network security. Thus, familiarity with the current research in this field will benefit researchers greatly. With this in mind, they survey the major topics in wireless sensor network security, and present the obstacles and the requirements in the sensor security, classify many of the current attacks, and finally list their corresponding defensive measures [6].

In 2007 Prabhudutta Mohanty, Sangram Panigrahi Nityananda Sarma, Siddhartha Sankar Satapathy they explored general security threats in wireless sensor network and made an extensive study to categorize available data gathering protocols and analyze possible security threats on them. [7].

In 2008 Zoran S. Bojkovic, Bojan M. Bakmaz, and Miodrag R. Bakmaz deals with some security issues over wireless sensor networks (WSNs). A survey of recent trends in general security requirements, typical security threats, intrusion detection system, key distribution schemes and target localization is presented.

In order to facilitate applications that require packet delivery from one or more senders to multiple receivers, provisioning security in group communications is pointed out as a critical and challenging goal. Presented issues are crucial for future implementation of WSN [8].

In 2008 Jennifer Yick, Biswanath Mukherjee, Dipak Ghosa The goal of their survey is to present a comprehensive review of the recent literature since the publication of [I.F. Akyildiz, W. Su, Y. Sankarasubramaniam, E. Cayirci, A survey on sensor networks, IEEE Communications Magazine, 2002]. Following a top-down approach, they give an overview of several new applications and then review the literature on various aspects of WSNs.

They classify the problems into three different categories: (1) internal platform and underlying operating system, (2) communication protocol stack, and (3) network services, provisioning, and deployment. We review the major development in these three categories and outline new challenges [9].

In 2009 Chiara Buratti Andrea Conti Davide Dardari and Roberto Verdone their survey paper aims at reporting an overview of WSNs technologies, main applications and standards, features in WSNs design, and evaluations. In particular, some peculiar applications, such as those based on environmental monitoring, are discussed and design strategies highlighted; a case study based on a real implementation is also reported. Trends and possible evolutions are traced. Emphasis is given to the IEEE 802.15.4 technology, which enables many applications of WSNs. Some example of performance characteristics of 802.15.4-based networks are shown and discussed as a function of the size of the WSN and the data type to be exchanged between nodes [10].

In 2010 Amar Adnan Rasheed M.S., Northeastern Dr. Rabi N. Mahapatra In their dissertation, they consider a number of security schemes for WSN (wireless sensor network) with MS. The schemes offer high network's resiliency and low communication overhead against nodes capture, MS replication and wormhole attacks. They propose two schemes based on the polynomial pool scheme for tolerating nodes capture: the probabilistic generation key pre-distribution scheme combined with a polynomial pool scheme, and the Q-composite generation key scheme combined with a polynomial pool scheme. The schemes ensure low communication overhead and high resiliency.

For anti MS replication attack scheme, they propose the multiple polynomial pools scheme that provides much higher resiliency to MS replication attack as compared to the single polynomial pool approach. Furthermore, to improve the network resiliency against wormhole attack, two defensive mechanisms were developed according to the MS mobility type. In the first technique, MS uses controlled mobility. They investigate the problem by using a single authentication code from sensor networks to verify the source of MS beacons, and then they develop a defensive approach that divides the sensor network into different authentication code's grids. In their second technique, random mobility is used by MS.

They explore the use of different communication channels available in the sensor hardware combined with polynomial pool scheme [11].

In 2011 A. LAKSHMI S.V. MANISEKARAN DR.R.VENKATESAN in their paper they propose novel energy efficient algorithm FDPCA for Wireless Sensor Networks (WSN). However, energy consumption is one of the major drawbacks in most of the Wireless Sensor Networks. Parameters like End to End Delay and Received Signal Strength Indicator (RSSI) are considered in exercising the influence on transmit power. These parameters are fuzzy field and optimal transmission power levels are selected. The throughput for both DPCA and FDPCA are compared. High throughput is obtained by using FDPCA. In their first phase, the parameters are calculated. Their proposed algorithm can effectively save energy without degrading the throughput of the network and reduce the energy consumption of the network. Their experimental results demonstrate that the proposed algorithm significantly overtake previous method, in terms of throughput [12].

In 2012 Xiaojiang Ren Weifa Liang In their paper they consider data collection in an energy harvesting sensor network with a mobile sink, where a mobile sink travels along a trajectory for data collection subject to a specified tolerant delay constraint T. The problem is to find an optimal close trajectory for the mobile sink that consists of sojourn locations and the sojourn time at each location such that the network throughput is maximized, assuming that the mobile sink can only collect data from one-hop sensors, for which they first show that the problem is NP-hard. Then they devise novel heuristic algorithms. They finally conduct extensive experiments to evaluate the performance of the proposed algorithms.

They also investigate the impact of different parameters on the performance. The experimental results demonstrate that the proposed algorithms are efficient. To the best of our knowledge, this is the first kind of work of data collection for energy harvesting sensor networks with mobile sinks [13].

III. PROPOSED ALGORITHM

A Dynamic wireless Sensor network is widely used in world wide. In communication time delay plays an important. We proposed an algorithm which tries to decreases the time delay in communication for Dynamic Wireless sensor network.

Dynamic movement

$Tp_1 = S_0 (a_0, b_0)$

Assume that at time Tp1 sink is at spot $S_0 (a_0, b_0)$ Sink should be named according to its pervious spot we can calculate the other values from the given method .at the Nth spot

$b_m = b_{m-1} + \alpha\, h(a_{m-1}, b_{m-1})$

$a_m = a_{m-1} + \alpha$

Where h is fixed values and (a_0, b_0) are the previous spot and (a_m, b_m) are the current spot.

The Euler's method as designed to alter the different levels of Dynamic movement.

Approach for movement of the movable sink. In this approach we assume that movable sink has a sufficient energy and when the node passes the data to the sink that means it pass the data to the wireless network.

Step 1	We decide the initial spot of the movable sink by the Dynamically.
Step 2	In the initial spot to movable sink send the becon frame to its neighbor.
Step 3	After received the becon frame node will involve sending the data and sending the data to the movable sink.
Step 4	Before changing the spot sink again sends the frame to the entire sender node to stop transmitting the packet (this is because to overcome the data drop in the network).
Step 5	No sink ill change its position.
Step 6	Repeat the step this process ill continue till current time does reach to the simulation time.

IV. CONCLUSION AND FURTHER DEVELOPMENT

Dynamic wireless Sensor technology is widely used for communication. The importance of the Dynamic wireless sensor network in every day life, we have discussed about movable sink for dynamic wireless sensor network and we have discussed the advantages of these technologies over the static sink technology. Further we are trying to implementing multiple movable sink for wireless sensor networks.

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