Efficient Energy Transmission for Data Transfer and Data Routing Using Particle Bee Forming

V. Deepa, S. Manimekalai and K. Jayraj

Abstract--- Wireless Sensor Networks (WSN) are limited by the battery lifetime of the sensor nodes to gateways able to send useful packets to the Sink. The sink mobility along a constrained path can improve the distributed energy efficiency in wireless sensor networks. To remain event discovery delay at a near to the ground value, in application that require instance data snapshots, it is for all time desirable to decrease the duration of a data collection process. Conversely, for applications that require unremitting monitoring, the number of DCPs concluded in a given period of point in time is important for reconstruct a correct data trend. In this manuscript, a delay-aware set of connections structure is planned for WSNs with following DCPs. Therefore, energy efficiency and data packets are the primary parameters which have to be considered while designing clustering and routing algorithms for WSN. In this paper, we proposed a particle bee forming algorithm (PBF) is to enhance the data collection efficiency and reduce the energy utilization and also we proposed a technique distributed fault detection (DFD) algorithm in a true time simulator based on clustering model where the cluster head or the sink node detects the failure nodes. Distributed algorithm to minimize the communication overhead of the network, but the performance is always providing good as all data are available with the central process while detecting the fault

Keywords--- Wireless Sensor Networks, Particle Bee Forming Algorithm, Distributed Fault Detection (DFD) Algorithm.

I. INTRODUCTION

Energy efficient operation has been considered as one of the important challenge of wireless sensor networks (WSNs) for their practical applications. This energy conservation problem may become a constriction for many sensor networks consisting of battery-driven sensor devices where battery replacement is very costly or becomes almost impossible for many cases such as in the battlefield, building maintenance etc. In order to continue the network operability for long time a common design consideration must be focus on using some form of energy-efficient approaches. One facet to consider for energy efficiency is the communication subsystem as it is the main energy consumer in WSNs. The energy efficient data communication approach in the context of clustering, where cluster heads are selected on the basis of remaining energy of sensor nodes and predefine probability. It increases the stability period of the network because cluster head needs more energy than normal nodes. Cluster head conserve energy to perform the operations like data reception, data aggregation and data transmission to base station, where as normal sensor node sense environmental conditions and send sense data to its respective cluster head.

A Wireless Sensor Network consists of a large number of sensors, each of which are physically small devices, and are equipped with the capability of sensing the physical environment, data processing, and communicating wirelessly with other sensors. Generally, we assume that each sensor in a wireless sensor network has certain

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constraints with respect to its energy source, power, memory, and computational capabilities. Wireless Sensor Networks (WSN) has emerged as one of the most exciting fields in Computer Science research over decades. Processors with on-board sensors are said to be nearing the size of a dust. Applications of WSN include military surveillance, habitat monitoring, structural monitoring and medical and health etc. Wireless Sensor Networks (WSNs) use tiny, inexpensive sensor nodes with several distinguishing characteristics: they have very low processing power and radio ranges, permit very low energy consumption and perform limited and specific monitoring and sensing functions. Several such wireless sensors in a region self-organize and form a WSN.

Information based on sensed data can be used in agriculture and livestock, driving or even in providing security at home or in public places. A key requirement from both the technological and commercial point of view is to provide adequate security capabilities. Fulfilling privacy and security requirements in an appropriate architecture for WSNs offering pervasive services is essential for user acceptance.

Five key features need to be considered when developing WSN solutions: scalability, security, reliability, self-healing and robustness.

Wireless Networks

A wireless network, which uses high-frequency radio waves rather than wires to communicate between nodes, is another option for home or business networking. Individuals and organizations can use this option to expand their existing wired network or to go completely wireless. Wireless allows for devices to be shared without networking cable which increases mobility but decreases range.

There are currently two types of mobile wireless networks. In a wireless network, the routers are responsible for forwarding packets in the network and hosts may be sources or sinks of data flows.

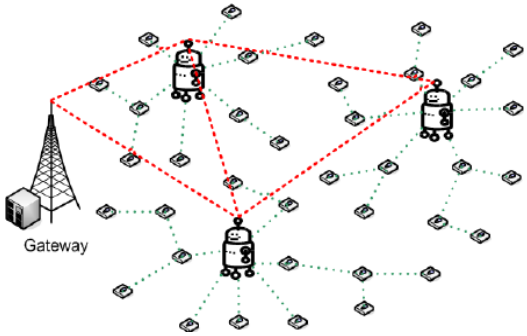

Figure 1.1: Wireless sensor network

A network is any collection of independent computers that communicate with one another over a shared network medium. A computer network is a collection of two or more connected computers. When these computers are joined in a network, people can share files and peripherals such as modems, printers, tape backup drives, or CD-ROM drives. A computer network is basically established by the network layer in the Open Systems Infrastructure model, popularly known as the OSI model. These networks divided into two parts. It may be wired (permanent, fixed) or Wireless (as via modems or null modems).

II. RELATED WORKS

Energy-Renewal Approach with Wireless Power Transfer Wireless sensor networks are constrained by limited battery energy. Thus, finite network lifetime is widely regarded as a fundamental performance bottleneck. In this paper, we investigate the operation of a sensor network under this new enabling energy transfer technology. We consider the scenario of a mobile charging vehicle periodically traveling inside the sensor network and charging each sensor node's battery wirelessly [1]. Wake-up Radio and Transmission control. Wireless sensor networks (WSNs) are free networks of spatially distributed sensor nodes which are capable of wirelessly communicating with each other in a multi-hop fashion. Among different metrics, network lifetime and utility and energy consumption regarding carbon footprint are key parameters that determine the performance of such a network and entail a sophisticated design at different abstraction levels [2]. Wireless networks become the most

popular way to communicate. However, information can be easily eavesdropped or extracted by eavesdroppers due to the broadcast nature of wireless communication. Multi-hop relay communication systems provide for higher secrecy performance than direct transmission techniques. In this paper, the physical layer secrecy performance of multi-hop decode-and-forward (DF) relay network is investigated in the presence of multiple passive eavesdroppers over Nakagami-m fading channels [3].On the false Rate detection and Asymptotic Assortment Command of Multi-Hop Two-Antenna Decode-and-Forward Relay Systems. Transfers with disentangling and-forward (DF) convention are outfitted with two receiving wires. Primarily, the amalgamation upper and lower limits on the average SER and the asymptotic assortment instruction are providing by originating a correct closed-form formulation for the consistent symbol pairwise error rate (SPER) [4]. The problem of rate maximization by jointly allocating power and selecting relays nodes with limited total power constraint of network nodes formulate when the channel state information (CSI) for all of the links is available and constant during the transmission. Showing the convexity of the problem we had separated the problem into two independent sub-problems without loss of optimality [5].

III. IMPLEMENTATION OF PROPOSED SYSTEM

In our proposed system used the wireless sensor networks. The wireless sensor network commonly used one Base Station. Then Each Clustering network have one cluster head node. The cluster head node is to be collecting information in to BS. Then using the energy-based clustering protocol to choose or find another path for data transmission. Using this path without packet loss all data will send into correct destination. In addition, to provide the opportunity for random generation of improved information, random virtual cross site nodes are generated and substituted in the optimization. The algorithm has been tested on several test functions that present difficulties common to many global optimization problems. Considering that minimizing the total energy consumption may not lead to the maximum network lifetime, we also plan to study the sub sink selection problem with network lifetime maximization as the optimization of this work. To avoid problem that the reincarnation clustering mechanism consumes large amounts of energy, PBF has a clustering process at network launch time. At the network deployment phase, the Sink node broadcasts a signal in the network with a given transmission power. The algorithm spilt to the Particle Bee Forming Algorithm and distributed fault detection (DFD) algorithm

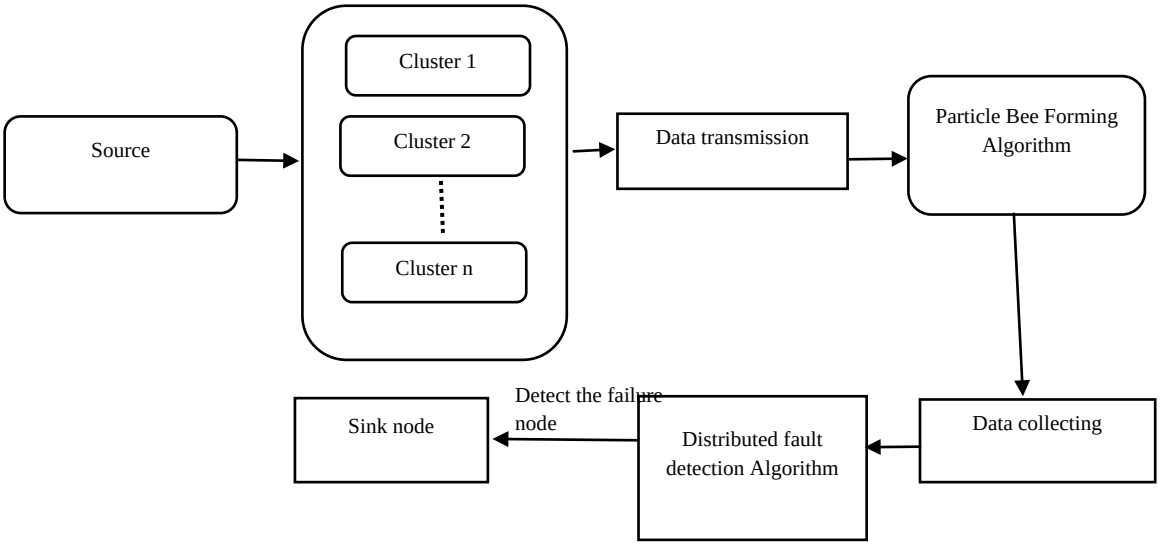

Figure 3.1: Implementation of proposed System

3.1 Particle Bee Forming Algorithm

The Enhance the data collection efficiency and reduce the energy utilization. Every sensor, the setup server initial determines a set of dadditional sensors whose probable positions are neighboring to the estimated location.

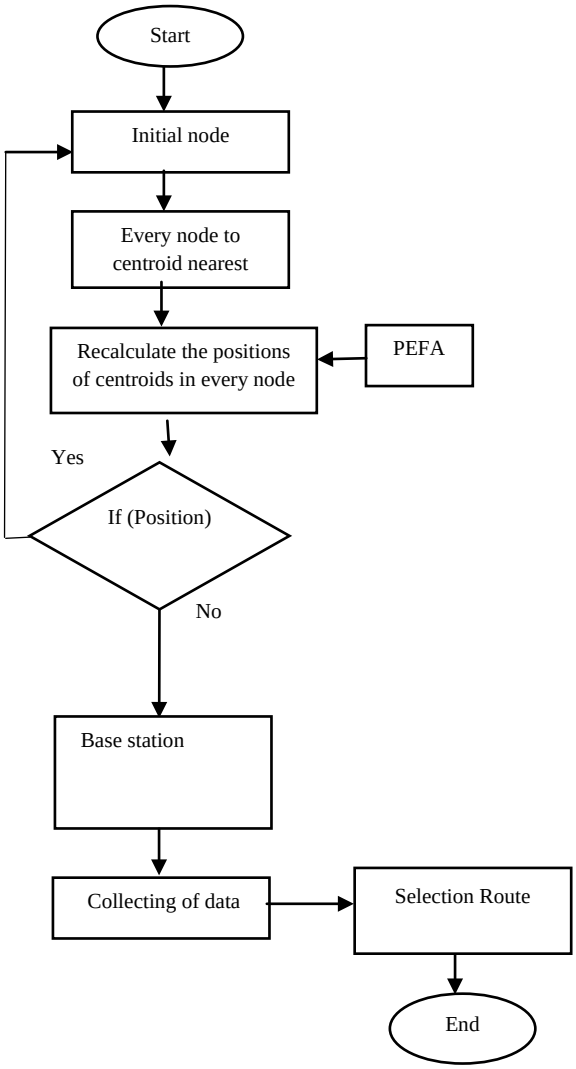

Figure 3.2: Particle Bee Forming Algorithm

Figure 3.2describes the every sensor node start the program to input selection cluster head with transmission route.

Input: Routine

Output: Selection route, all node region

Step 1: Start

Step 2:Initialize the list of previous nodes at each level Initialize the list of previous nodes at each level,.Initial node

Step 3: To assign the every node centroid

Step 4: To recalculate the positions of centroids in every cluster

Step 5: If (Position)

{

Assign every node

}

Else

{

Choose the cluster heads for every group

}

Step 6: To join the connection cluster then collecting the all data

Step 7: To sensor node sends to the base station

Step 9: Assume the all node region

Step 10: End

3.2 Distributed fault detection

One for the center node, where the event occurs, and the other one for the adjacent nodes. The error probabilities into the optimal event detection process .True time simulator based on clustering model where the cluster head or the sink node detects the failure nodes.Simultaneous occurring faults can also be handled. Sufficient conditions for solvability of the problematic.

Input: Selection route

Output: Performance

Step 1: Start

Step 2: Cluster node

Step 3: To compute average analysis

Step 4: To find the route

If (time)

{

Sink node

}

Else

{

Detects the failure nodes }

Step 6: To improve the performance

Step 7: End

IV. RESULTS AND DISCUSSIONS

Proposed methods are run simulated using the Distributed fault detection algorithm(DFDA) and Particle Bee Forming Algorithm (PBFA)could be a significant source wireless sensor network process. There is a substantial relationship among the network-related contaminants and parts to the nodes. During this, sensor nodes transmit to be a feature of distance from the source to destination.

Table 4.1: Details of parameter

Network Size	10^3
Speed	15 m/s
Simulation period	170 sec
Mobility model	Random waypoint
Traffic form	Constant Bit Rate (CBR)
Transmission ratio	8,16,32,64 p/sec
Routing protocol	AODV

Table 4.1 describes the specifics of dataset recycled to estimation the presentation of the proposed method.

4.1. Energy Efficient

Each area in the progressive multicast system reports its information to the sink along the multicast chain of importance, and any in the middle of information can total information ordinary from its locale.

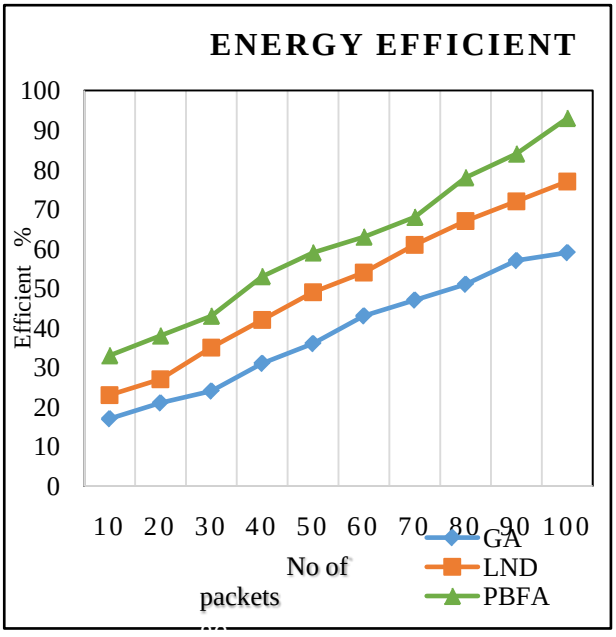

Figure 4.1: Comparison of energy performance

In this way, the vitality utilization is concentrated amid the region following stage.

Figure 4.1 describes the energy performance produced by different methods, and it indicates the proposed plan has increased the energy period.

4.2 Throughput

Throughput is the average of successful messages delivered to the destination.

In this way, the vitality utilization is concentrated amid the locale following stage.

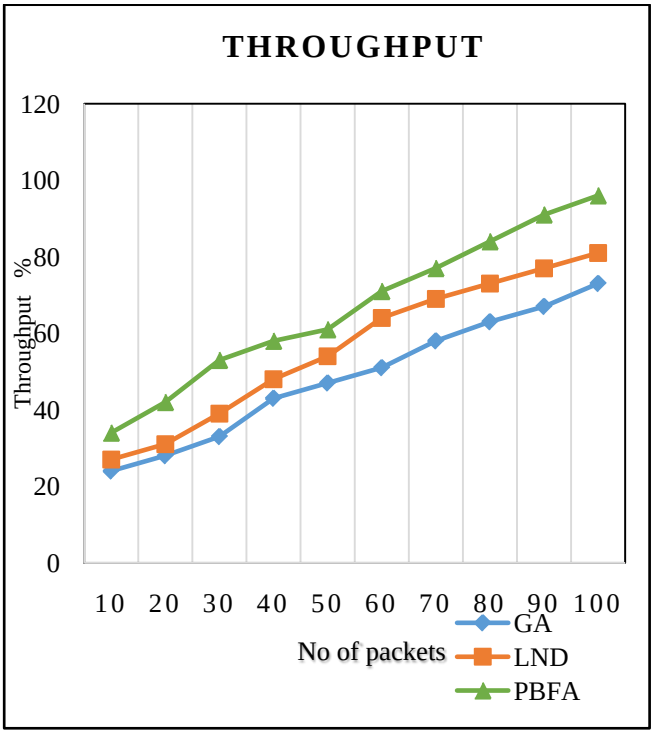

Figure 4.2: Comparison of throughput analysis

$$\textbf{Throughput} = \frac{\Sigma_0^n \, packets \;\; received \;\; (n) * packet \;\; Size}{1000}$$

Figure 4.2 describes the throughput performance is computed based on the number of packets being delivered to the destination at any point of the time interval.

It is the measure defines how fast a node can send the data through a network.

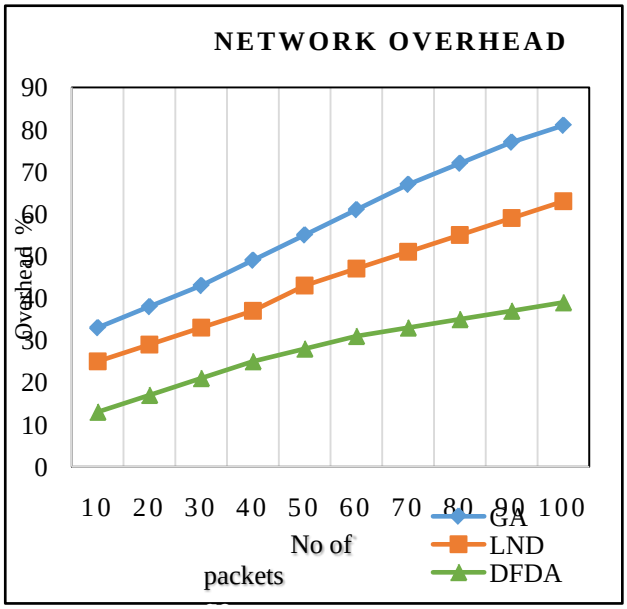

Figure 4.3: Network throughput

V. CONCLUSION

In this approach, a wireless sensor networks system is a user database store and manage transactions. The unbalanced primary energy capacity of separate nodes to the network lifetime in this distance source distance vector protocol .once the producing means is completed, a sample, and therefore the functionality of the key pre-distribution is processed. To perform a selection of process based on the performance and increase the network overhead of 85 and the Throughput is the decrease the one MB and transmission ratio is the decreases the 40%.

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