

A Review for Improve the Lifetime of a Sensor Node in Wireless Sensor Network

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Abstract :- Wireless Sensor Network is a wide Research area in today due to its large applications in the Health monitoring, environment monitoring, Radiations, Nuclear Threats detection, army intelligence, signal communication, Biomedical, etc. WSN is providing the large solutions at a low price for real world problems. In wireless sensor network , sensors are cheap and limited energy for operations. For work properly of a sensor in wireless sensor network energy consumption of the sensor must be low so that it can operate for a long time and can communicate properly. In this paper, we will study the energy efficient secure routing protocol for low energy consumption. The energy consumption techniques are Designed Path (DP), Earliest First Tree(EF-TREE), Source -Initiated Dissemination (SID), Fuzzy Variable Energy Efficient Clustering Protocol (FZ-LEACH) and optimized Energy Efficient Routing Protocol (OEERP).

Keywords- *Wireless Sensor Networks (WSNs), Low-Energy Adaptive Clustering Hierarchy (LEACH) & Secure Positioning for Sensor Networks (SPIN).*

I. INTRODUCTION

In the present time, Wireless Sensor Network (WSN) are giving more attraction to Researcher for Research due to the large application of WSN in Real World. Wireless Sensor Network contain the combination of sensing, Calculation and Sharing into a portable Private Device which is Based on micro electromechanical system (MEMS) technology [2]. WSN can be used for a task in which we want to take observation before taking any action. WSN have low development Coast and contain large usage in many applications. Wireless sensor network is divided into two parts

1: - Proactive Sensor Network

2:- Reactive Sensor Network

In the proactive Sensor Network , Nodes will switch in a regular interval time .

These types of proactive sensors are good for standard interval data monitoring type application while in reactive sensors network, nodes will respond only to some specific events. So we can say that reactive network can work for time crucial

system. Sensor network works for centric information. In this information will request assured attribute based. In a conventional network, definite node will request the information. Sensors of the WSN can be sens by the mobile phones, Laptop and very small with simple sensing devices. Today wireless sensor network are selected and control by choosing the terms of memory, power consumption, communication ability. So today mostly sensors are designed by keeping this property in mind. The power consumption of sensor and energy consumption of sensor play a major role in the wireless sensor network. Normally the life of wireless sensor network will be in years. But if we want to improve the life of a sensor network then we can use some algorithms and protocols which can also work for the, reduce the energy consumption of the sensor. If the energy consumption reduces then, battery lifetime will increase, and if the battery lifetime increases then, the sensor will work continuously for a long time.

II. ROUTING TECHNIQUES

Some designed Algorithms can reduce the energy consumption of the sensor. Here we will discuss some algorithms and protocols which can work for reducing the power consumption of the nodes. There are LEACH, PEGASIS, and TEEN, etc.

A. LEACH(Low Energy Adaptive Clustering Hierarchy)

In paper [6],[7], W.R. Heinemann gives an idea of LEACH protocol for transferring the data from the source node to BS. LEACH is a set of Rules which connect the nodes from cluster among all the cluster members (CM). Cluster Head are working more than one job. Cluster Head working as a Local information reception, Control energy consumption of sensor nodes. The working of the cluster head with dynamism to change such that high energy consumption is using for transmitting the data from the base station to the all distributed nodes. LEACH-C and LEACH are controlled by round which contains two Stage steps and Steady State Stage. Cluster Head are selected in the stage of setup, and they provide TDMA schedule . Cluster member will be active for the allocated time slot. In study state phase all the cluster Head will be active.

B. Power-Efficient Gathering in Sensor info. Systems (PEGASIS)

In paper [8],[9], S. Lindley present power efficient gathering in the sensor for communication in between source node to BS. This protocol is working between a source node to BS. This protocol collaborates on the Bases chain, cluster head from the dedicated chain. Randomly selected, Paper load matching will occur when sensor receives the data from its neighbor nodes. But chain will be reconstructed if any node will die. It excludes the dying node. In the study, we find that PEGASIS provide the 100-300% increment in the life time. As compare to the LEACH .

C. TEEN (Threshold Sensitive Ener. efficient sensor network)

In paper [10,11], A.Manjeshwor provide a new type of protocol by name Threshold sensitive Ener. Efficient sensor network and also introduce adaptive -TEEN. In this TEEN Network, two types of threshold found TEEN Hard threshold (HT) and TEEN Soft Threshold (ST).

III. LITERATURE REVIEW

In paper [12], Yong-ki, Jae-Woo[et.al] presented a paper in 2009 for an approach which is providing low power consumption data aggregation in WSN. A Wireless Sensor Network is a Collection of the large sensor which is using low

power consumption for transferring the data from one node to another node. Multi-Hop is a network in which sink node is using for collect the data and transmit the data to the sensor node. But it will create a problem in Hotspot because the sensor nodes are too close the sink node. Due to this, some drawbacks will occur in the network there are lost serviceability of the network, left energy for the other node. By select the data sending path data can be transmitted by nodeless traffic . For overcome this issue, author give a Designated Path (DP) algorithm for balanced and efficient data aggregation.

In paper [13], Yanwei Xiang-yang Mo[et.al] presented a paper in 2010 for energy -efficient wake up scheduling for a Data Aggregation and Data collection. For monitoring the area, the sensor is placed in wireless sensor network which produces data periodically. The working of the network has transmitted the data which is sensed by the sensor to the base station node for the further processing of the sense data. The primary task in WSN is to manage the nodes so that the power connection get reduce. In this Research, we find the low power energy efficient protocol. In this sensors consumes lots of energy efficient protocol . In this sensors consume lots of energy for operation of (sleeping, listening, Receiving, Transmitting).

Year	Author	Title	Methodology	Outcomes
2009	Bista, Yong-ki, Jae-woo	A new Approach for Energy Balanced Data Aggregation in Wireless Sensor Network	Designated path technique	DP Scheme is more energy efficient than the existing scheme directed diffusion and hierarchical data aggregation
2010	Yanwei Xiang-Yang , Mo, Wei	Energy -Efficient Wake up Scheduling for Data collection and Aggregation	TDMA as the MAC Layer protocol	Rducing the number of states transitions
2010	Arabi	Hybrid energy efficient routing using a fuzzy method in wireless sensor network	EF-Tree (Earliest -First Tree) and SID (Source -Initiated Dissemination) Accoridng to Fuzzy Varaiation	HERF has improved energy efficient
2011	Katiyar , Chand , Gautam , Kumar	Improvment in LEACH protocol for Large -Scale Wireless Sensor Networks	Energy Efficient clustering prtocol	FZ-LEACH algorithm outperforms LEACH in terms of energy utilization
2012	Chand , Bharti , Ramanjaneyulu	Optimized Energy Efficient Routing protocl for life -Time improvment in wireless sensor network	Optimized Energy Effiecint Routing protocl , it is a cluster based protocol .	Improves the life time of wireless sensor network (WSN)
2013	Tyagi, Gupta , Tanwar , Kumar	Enhance heterogeneous LEACH protocol for lifetime enhancement of wireless SNs	Enhanced Heterogeneous LEACH protocol for Lifetime Enhacenment of SNs	EHE-LEACH has better network lifetime than LEACH and SEP

Table I:- Summary of Literature Review

In paper [14], Arabi[et.al] presented a paper in 2010 for a hybrid energy efficient routing (HERF) by using the fuzzy method in wireless sensor network. Authors main focus is based on broadcast in WSN. The system algorithms depend on practice condition, power, application areas. For these parameters various type of algorithms have been designed. In hybrid energy efficient routing algorithm two types of

algorithms are using, EF-Tree(Earliest First -Tree) and SID(Source -Initialized Dissemination) to disseminate data and select a group head for the Fuzzy method and it is the toggle in between two approaches SID and EF-Tree.

In paper [15], Katiyar [et.al] presented a paper in 2011 for improvement in LEACH protocol in Large Scale WSN. LEACH protocol is providing an elegant solution for such

type of protocols . One problem is the presentation of the procedure for the large and small cluster in the network. It will be able to reduce the lifetime of a wireless sensor network. In this Research paper, they focus on the propose a new protocol by name FZ-LEACH which can overcome this problem by use Far-Zone. It is a collection of sensor nodes, and the location of the sensor nodes are selected where the energy loss are lower than the threshold. In the last, we can say that FZ-LEACH is performing a good performance as compared to LEACH regarding energy consumption and network existence .

In paper [16], Chand[et.al] presented a paper in 2012 for investigating optimized energy efficient routing protocol for the improvement in the lifetime for wireless sensor network. In this article, they present a paper for optimized energy efficient routing protocol (OEER) which is able for the improve the lifetime of a system. This protocol based on cluster Head protocol in which nodes will work as a cluster head, and it also gets changed in each time period. It will update the lifetime enhancement into terms first is consistency battery drain of the nodes and second is that no node will depend on at Beacon-Transmission for a long time duration.

In paper [17], Tyagi[et.al] presented a paper in 2013 for Enhance Heterogeneous (EHE-LEACH) protocol for improvement in the lifetime of a wireless sensor network . A distance based concept is using for data transmission.

IV. CONCLUSION AND FUTURE SCOPE

It has been got from Literature Review of the papers that in wireless sensor network for improve the performance we have to improve the performance of the lifetime , system stability, energy efficient EHE-LEACH makes a high Life time-based protocols which is using for Enhance the performance of wireless sensor network as compared to LEACH.

In future, we can use a model of Heterogeneous wireless sensor node protocol for improving the lifetime of a network with low power consumption of the sensor nodes.

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