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Reconnect Traffic Partitioned Node in Wireless Sensor Network using ETRSP (Encroach Traffic Reconnect Set-Up Partitioning) Technique

Navneet Kaur Padda[1], Guneet Kaur[2]

Student, ECE, ACET, Amritsar, India [1]

Assistant Lecturer, ECE, ACET, Amritsar, India [2]

Abstract: In wireless sensor network various Technique have been suggested for re-establish connectivity and energy consumption while efficient data collection ETRSP (Encroach Traffic Reconnect Set-Up Partitioning) Technique is proposed for finding irregularities in path while transmission. The proposed technique is used for reconstructing the network according to network framework .and provide optimal and reliable path for data transmission in network.

Keywords: WSN; TRSP; ETRSP; MASP.

I. INTRODUCTION

A wireless sensor network (WSN) is a wireless network using sensors to considerately monitor physical or environmental condition [4]. A wireless sensor network consists of three basic components: the sensor nodes, power source and a central controller. The sensor nodes in turn are comprised of sensors and transceiver module [5, 6]. Sensors are used to determine the changes to physical environment like pressure, humidity, sound, vibration and changes to the health of person like blood pressure, stress and heartbeat [6, 8]. The transceiver module transmits the data from sensor to the central controller through a wireless medium. The power source provides the power needed for the sensor nodes and this power is mostly regenerative. The central controller unit performs all the computations for the sensor networks. The controller receives the input from all sensors and processes simultaneously to make the essential decisions. [5, 6] A WSN usually consists of a large number of inexpensive, low-power, and multifunctional wireless sensor nodes, with sensing, wireless communications and computation capabilities [7]. The wireless sensor nodes communicate over short distance through a wireless medium and collaborate to achieve a common action, for example, environment monitoring, military surveillance, health care, structural monitoring, military, forest surveillance, habitat monitoring and agriculture. [9, 10]

One of the major issues of wireless sensor network is power consumption. To solve this problem two methods are defined. The first method is to establish aggregation points. Then there is reduction on the total number of messages exchanged between sensor nodes and saves some amount of energy. Usually aggregation points are common nodes that receive data from neighbouring nodes, carry out processing and then forward the filtered data to next hop. [3]

II. DATA AGGREGATION

Data aggregation is defined as the process of collecting the data from multiple sensor nodes to remove unnecessary transmission and provide amalgamated information to the base station [11]. Data aggregation generally involves the data in collective form from multiple sensor nodes at midway nodes and transmission of the aggregated data to the sink node (base station). [2] The most important purpose of data aggregation is to increase the network life span by reducing the utilization of sensor nodes such as battery energy and bandwidth.

III. RELATED WORK

Biju Paul et al. proposed TRSP method that is used to reconnect the network structure which gets partitioned for larger set of mobile elements. The proposed TRSP method performs effective data collection process with minimum energy consumption. In this paper phantom partitioning was used for identifying the exact positioning of partitioned nodes and also identified intermediate gaps between the partitioned nodes. Dattatray S. Waghole et al. focused on data collection or distribution using static & mobile sinks with effective result of quality of services. The author proposed CSS scheme for reducing the tour length as well as data collection latency in mobile elements. Mobile elements were designedly built into system to improve the life-time of the network. D.B. Shanmugam et al. proposed an efficient data collection scheme called MASP for wireless sensor networks with path-constrained mobile sinks. The proposed approach

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combined the benefits of controlled mobility and in-network data caching and can achieve a desirable balance between network energy saving and data collection delay. MASP technique collects the largest amount of data by using shortest path to balance the energy consumption. Node level and a particular node broadcasts the data to all other nodes by acting as cluster head .In MASP, the mapping between sensor nodes and sub sinks optimized to maximize the amount of data collected by mobile sinks and the energy consumption is balanced.

IV. PROPOSED METHOD

This work mainly focuses on enhancing the discover of finest route in WSNs approach named pattern variation discovery is used to solve this problem. In this, first we need to give the definition of normal patterns. This definition can be models of multiple sensory attributes or constraints among multiple attributes. The next step includes the discovery of irregularity. Whenever a normal pattern is broken at some point we want to discover the irregular distribution pattern among multiple sensory attributes along time. Then, for each time point, we can put the values of a group of sensory attributes at a series of sensor nodes into a matrix, which represents a distribution status. The problem then becomes to discover the irregular matrix among a set of matrices. An irregular matrix represents that, at the corresponding time point, the distribution pattern of all the sensory attributes on all the nodes are irregular irregularity appears. That is, the pattern variation happens.

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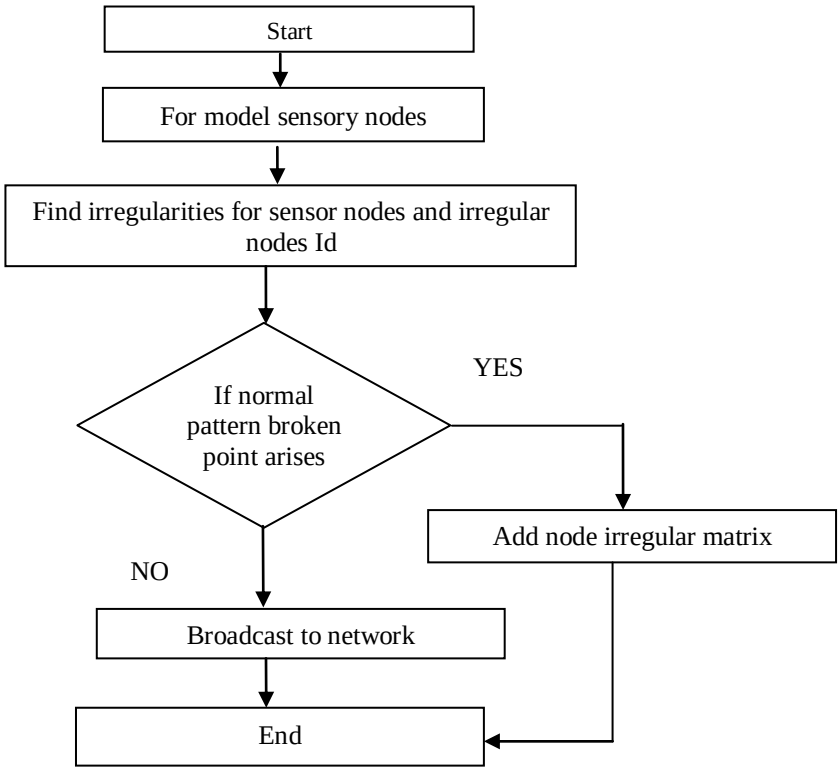
ALOGRITM: Sensory Irregularity Matrix
1: for time=1 to simulation time
2: for i=1:N, where N the number of Model Sensory nodes in network
3: for sensory nodes find: regularity and id of irregular node
4 Find normal pattern broken point
5: if normal pattern broken (i) arises
6: Add id irregular node into matrix
7:else
8:network with normal nodes and no irregularities
9: endif
10: end
11: end
12: end
```

Detection of sensor data irregularities find a route to Base Station



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V. RESULTS ANS ANALYSIS

S. No.	Parameter	Value(s)
1	Simulator used	NS 2.35
2	Simulation Time	10 Secs
3	Simulation Area	1000 X 1000
4	MAC	802.11
5	Number of nodes	25
6	Speed of Nodes	2 to 16 (m/sec)
7	Mobility Model	Random Waypoint

Energy Consumption

The analysis of Energy consumption using ETRSP for finding irregular path is shown in fig. 1. and table I.

TABLE I ENERGY CONSUMPTION

Energy Consumption	
No. of Nodes	ETRSP
10	6
20	12
30	16
40	26
50	32
60	48
70	50

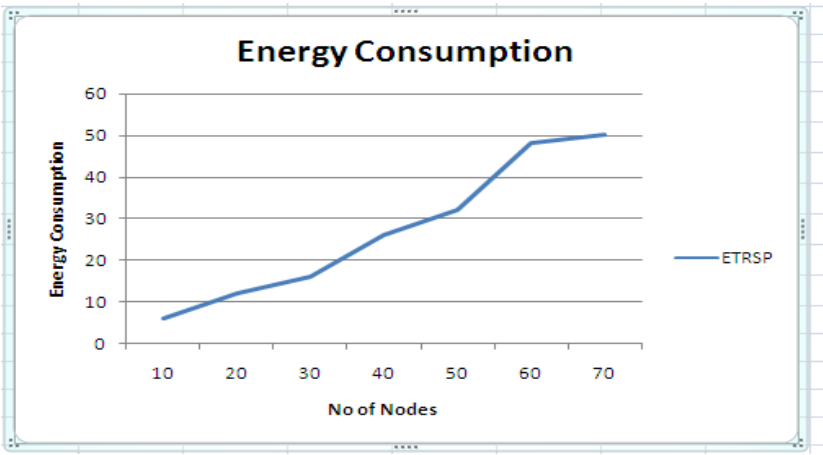

Fig. 1 Energy Consumption

Data Collection Efficiency

The Data Collection Efficiency Metric is used for finding effectiveness of ETRSP (Encroach Traffic Reconnect Set- Up Partitioning) with respect to number movable sensor nodes. The “Fig. 2.” and Table II values illustrate the relative measure of data collection efficiency using the proposed ETRSP.

TABLE II DATA COLLECTION EFFICIENCY

Data Collection Efficiency	
No. of Nodes	ETRSP
15	41
30	46
45	75
60	79
70	88
90	90

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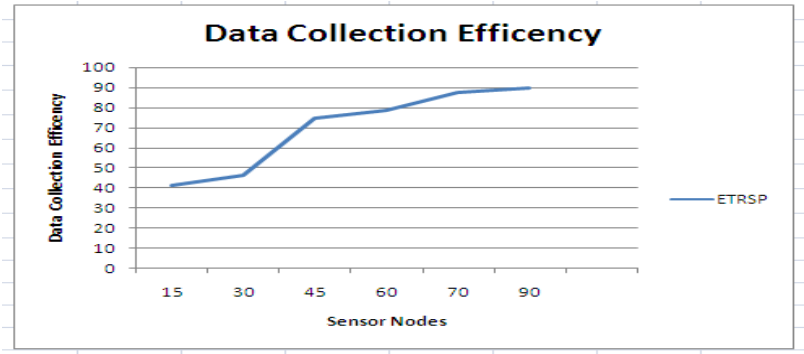

Fig. 2 Data Collection Efficiency

Re-Establish Connectivity

The analysis of re-establish connectivity of technique ETRSP (Encroach Traffic Reconnect Set-Up Partitioning) is shown in "Fig. 3." and Table III. Since irregularities in path are removed by proposed technique.

TABLE III RE-ESTABLISH CONNECTIVITY

Re-Establish Connectivity	
No. of Nodes	ETRSP
2	0.5
4	0.7
6	1.6
8	1.8
10	2.2
12	2.9

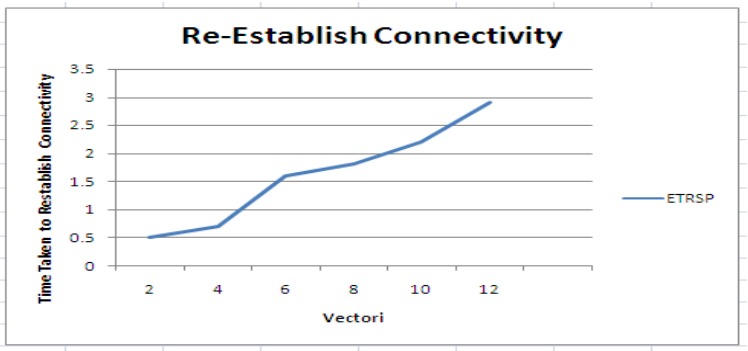

Fig. 3. Re-Establish Connectivity

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