The Secure And Energy Balanced Routing Method Based On Tarf And Faf Factor

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ABSTRACT

As an important part of industrial application (IA), the wireless sensor network (WSN) has been an active research area over the past few years. Due to the limited energy and communication ability of sensor nodes, it seems especially important to design routing rules for WSNs so that sensing data can be transmitted to the receiver effectively. An energy-balanced routing method based on forward-aware factor (FAF-EBRM) In FAF-EBRM, the next-hop node is selected according to the awareness of link weight and forward energy density. Furthermore, a spontaneous reconstruction mechanism for local topology is designed additionally. In the experiments, TARF provides trustworthy and energy-efficient route. Most importantly, TARF proves effective against those harmful attacks developed out of identity deception, FAFEBRM is compared with LEACH and EEUC, experimental results show that FAF-EBRM outperforms LEACH and EEUC, which balances the energy consumption, prolongs the function lifetime and guarantees high Quos of WSN.

Keywords---- Leach, Energy balance, Sensor network, Data packets

I. INTRODUCTION

Wireless network consists of distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. And also to cooperatively send their data through the wireless network to main location. The recent modern networks are bi-directional and also enabling the control of sensor activity. Wireless Sensor Networks(WSN) have many applications such as, in military it will be used in battlefield surveillance and in now days it will be used in industrial and consumer applications as well.
function lifetime of network and also in this work I provide trust aware routing framework for wireless sensor network.

II. EXISTING SYSTEM

In existing system, BBV model is used to study and analyse the real each connection varies considerably in wireless sensor network because of these different distances to the sink. Global information is limited in wireless sensor network of industrial applications, in their local world the sensors exchange data or information between them only. Overall weighted network and local world theory is effective model wireless sensor network of industrial applications. Low Energy Adaptive Clustering Hierarchy (LEACH) and Energy Efficient Uneven Clustering (EEUC) protocols will not balance the energy consumption efficiently, hence degrade the network lifetime and affect to system performance.

Disadvantages of existing system

- The ability of computing, capacity of storage, communication ability and power supply are limited or restricted for the sensor node and the router
- Due to the limited energy and communication ability of sensor node, it is very important to design and apply a routing protocol for wireless sensor network so that sensed data can be transmitted to the receiver successfully.
- Have maximum resources to maintain the wireless network
- If one node is lost then it affects the whole network and network fails.
- These methods are expensive.

III. PROPOSED SYSTEM

Energy balanced routing method is proposed in this work which are based on forward aware factor. The next hop node is selected according to the link weight and forward energy density. A spontaneous reconstruction method for local topology is designed additionally. In this work, forward aware factor energy balance routing method compared with the LEACH and EEUC. The experimental results of FAF-EBRM shows better performance compared to existing protocols like LEACH and EEUC. FAF-EBRM balances the energy consumption and prolongs the function lifetime and gives the high quality of service of network.

Based on the study and analysis of the data transmission mechanism of wireless sensor network, here it will be quantified the forward transmission area which defined forward energy density, which constitutes forward aware factor with link weight and propose a new energy balance based routing protocol based on forward aware factor. Thus balancing the energy consumption and prolonging the function lifetime node (Sink).

Advantages

1. This method maintains the same energy for whole transmission in sensing field of network.
2. In this method the next hop node is selected according to the awareness of link weight and forward energy density.
3. A spontaneous reconstruction mechanism for local topology is efficiently designed and applied.
4. By using network simulator, the routing method automatically implemented.
5. All the nodes are compared via graph by using network simulator.

IV. MODULE DESCRIPTION

The modules which are considered for this work are given below

- Network Topology
- Forward Aware Factor - EBRM
- Reconstruction Mechanism
- Performance Evaluation

Network Topology

Sensor nodes are randomly distributed in a rectangular sensing field, then it finds the communication range for all nodes in the sensing field. Each and every sensor node has a particular energy level. During the process this energy level will decrease and Nodes dies after exhausting the energy entirely. Data is sent to the cluster head, and then transferred to the sink. The sensor node can broadcast message to all nodes in the sensing field.

Forward Aware Factor – EBRM

In FAF-EBRM, the next hop node is selected based on communication link quality and forward energy density. Before selecting the cluster head, it calculates the FED if it is higher than the neighbor nodes, that is selected as a cluster head node. The cluster head will collect the data packets from their neighbor nodes and then forward to the sink node. The communication launch node can calculate the weight of edge between neighbors. And neighbors can get its own forward energy density (FED). The FED can be found using this formula.

\[
\text{FORWARD ENERGY DENSITY } FED_{(i)} = \sum SFTA(i) E_{(j)} SFTA(j)
\]

Reconstruction Mechanism

In the actual routing procedure, nodes with greater signal strength will have more communication link and result in faster energy consumption. The whole network cannot work under these topology structures. So in this project proposed reconstruction mechanism checks the energy density of the node which finishes the transmission. If it is less than the average value of the strength, the reconstruction mechanism should be launched. Before reconfiguration mechanism is launched, remove the link between the low level strength of the node and get the new set nodes. According to this mechanism we can balance energy level of nodes and avoid the dead nodes.

Performance Evaluation

In this section, to check the performance of simulation, this paper is using the graph to evaluate the performance. It also choose the four evaluation metrics: Packet reception ratio – it is the ratio between number of
received packets and number of sending packets, End-to-End delay the time taken to be data transmitted from source to destination, Energy balanced factor, Energy level – residual energy. Using these evaluation metrics, it shows the performance level.

V. CONCLUSION

This work proposes the balanced energy routing method which is based on criteria of forward aware. According to the forward energy density and the awareness of the link weight the (FAF-EBRM) forward aware factor-energy balanced routing method is picked. The data is sent to the destination by the technique of spontaneous reconstruction mechanism. FAF-EBRM is made compared with the EEUC and LEACH and then compared results indicates that the FAF-EBRM provides the better performance and then balances energy consumption, Increases the lifetime and then gives good quality of service of network.

REFERENCES