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A Review on Techniques to Improve the Lifetime of Wireless Sensor Networks

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ABSTRACT

In today's world network is growing very fast and users of internet are increasing day by day .in industries technology is playing a key role in improvement of industries .WSN is making this improvement.

Keywords : Wireless Sensor Network, Sink Node, Network Lifetime ,Mobile Base Station, System Design, Energy Effciency, Sink Reloction

I. INTRODUCTION

Wireless Sensor Network is a very vast area to study. It is form with the combination of sensor nodes over a limited area. These sensor nodes gather the different kinds of information from the atmosphere like temperature, Pressure and Humidity. These nodes will also sense miss happenings like forest and industrial fire. These sensor nodes are designed in way that if any unnecessary event occurs like fire then they quickly pass the information to the sink node or base station or data centre. So in the whole process power is one of the most important factors that increase or decrease the WSN performance and efficiency. These nodes also have cache memory so can recover the lost information. The sensor nodes are very cost effective but less power storage and once the nodes are deployed in field to sense and gather the information, these will start working very quickly. Mostly these nodes will work in very extreme hot and cold environment and these nodes will not get power charge easily or on daily basis. Decrease the battery consumption and increase the efficiency of the node and gather more information. So in this paper we are studying different technologies and methods to decrease the power consumption.

II. METHODS AND MATERIAL

AST-EASR Approach

In this method the data collection and transfer is divided into two parts, first one is sink transmission and second one is sink relocation. In this approach lower power consumption nodes will transfer the data and high power consumption nodes will collect the data. The nodes which consume lover power will work as sink transmission to utilize the maximum power. In this approach there are two types of nodes normal nodes and advance nodes. Normal nodes have low energy communication and advance nodes have high energy communication levels. The advance nodes will transfer data because they have high data transmission range. In this approach sensor strength will check by the use of heterogeneous sensor node. In this heterogeneous lower power consumption method creates a cluster head on the basis of 3 specifications, first is average distance (equal to all nodes), second is less power consumption and third is nodes have less overhead.

In this approach sink relocation will start in the picture after sink transmission. In sink relocation, first find out the average distance between the

neighbouring nodes and the sink nodes on the basis of computed weight. The average weight is calculated on the basis of sensing of grid. After that check the strength of the single and calculate the sink relocation positions available in the network. On the basis of results of signal strength relocate the sink towards high signal strength.

Data Aggregation Routing Protocol

In this approach nodes will sense all the information and collect them but only useful data will be sent to the base station. Nodes consume most of the power in collecting the data and transmitting the data and if the distance between the nodes and the base station is long then it consume more power. So in this approach all the nodes sense all the data but do not transfer the data to the base station. This approach use aggregate nodes in between nodes which only collect the information from other nodes and transfer only useful information and this process of collecting data and transferring data is called data aggregation. This approach uses some key of message for path setting and routing tree. Using this approach data will transmit only when it is useful and this will reduce the power consumption.

Maximum Capacity Path

In a network there are so many nodes and there are so many paths for data transmission for nodes to the base station. This approach finds the shortest and maximum energy utilized path to transmit the data. In this approach nodes with less energy will find out and the data transmission path will not includes those nodes which have less power. Due to this the maximum utilization of power will reach and nodes which have less power will save the energy.

III. CONCLUSION

In this paper we have studied so many approaches which will save the power consumption of a node. We have studied that most of the power has consumed by a node in collection of data and transmission of data. Power plays an important role in a reliable and efficient network. If a node which is placed where a miss happening will done and that node was in sleeping condition due to power discharge then we will not find out the miss happening as well as we will not find out the reasons for that. So we need to develop some methods by which we utilize the maximum power of a node and make our network more efficient and reliable.

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