ABSTRACT

Wireless sensor networks are becoming popular in real world applications. Due to the features of the resource-constrained and battery-aware sensor, in WSNs energy use has created to be a main interesting subject of research. WSNs create battery-powered nodes which are connected with the base station to for certain action or task. As sensor nodes are battery-powered i.e. will become dead after the use of the battery which is also called lifetime of WSNs. So using the energy is well-organized way may result in delay the lifetime of the WSNs. In this paper, a survey on various routing protocols has been done. From the survey, it has been found that none of the technique performs effectively in all fields. Therefore the paper ends with a future scope to overcome these issues.

KEYWORDS: - WSNs, DATA AGGREGATION

1. INTRODUCTION

A wireless sensor network act made of “nodes” from a few to several hundreds or even thousand, where each node is related to one or sometimes several sensors. WSN are commonly composed like big figure about little amount also actual short similar sensor node connected by wireless sensor network because aggregate data toward exist thing nearby or deliver through the sink node by multi-hop wireless communication. It uses mainly:

a) Radio tranceiver
b) Microcontroller
c) Electronic circuit

APPLICATIONS

i) Health Care Monitoring: -Medical application possibly from two way. Firstly, Wearable tool used about the external body of a human or closeness from user. Secondly,Implantable medical tools are those that are added internal the body.

ii) Natural Disaster Prevention: -It cans efficiently doing to check the waves of natural disaster, like floods.

iii) Water Quality Monitoring: -It determines water effect in dams, rivers, lakes & oceans, along with underground water supply.

DATA AGGREGATION

In typical WSNs, sensor nodes are commonly resource-constrained and battery-limited. Now to accumulate resources and energy, data have to be aggregated to checkvastrange of traffic within the network. There has been general focus on data aggregation schemes in sensor networks. The function of data aggregation is the details that eliminate redundant data transmission and enhances the interval of energy in wireless sensor network. Data aggregation is the method of just one or several sensors then collect the finding be an effect of other sensor. The composed data wants to be by sensor to reduceloadby these are towards base station or sink. The wireless sensor network has consisted three different types of nodes.Simple normal sensor nodes, aggregator node and query.Usual sensor nodes sense data packet through the situation and send towards the aggregator nodes essentially these aggregator nodes collect data from multiple sensor belonging to the network, aggregates the information packet using some aggregation functionsimilar to addition, average, count, max min after which sends aggregates express to upper aggregator node or maybe the query node who produce the query. It possibly will be the base station or occasionally an outer user having authorization to communicate with the network. Data transmission between sensor nodes, aggregators along with the query consume lot of energy in wireless sensor network.

Cluster-Based Approach: In energy-constrained sensor networks of huge amount, it can be ineffective for sensors to distribute the information directly away to the sink. Cluster based approach is hierarchical approach. In cluster-based approach, entire network is separated in to various clusters. Each cluster possesses a cluster-head which is positively chosen among cluster members. Cluster-heads execute
the task of aggregator which aggregate data received from cluster members nearby after which transmit the cause base station (sink). Recently, several cluster-based network group and data-aggregation protocols have been entirely planned for those wireless sensor network.

The cluster heads can communicate with the sink directly via long range transmissions or multi hopping through other cluster heads.

**2. Tree-Based Approach:** The tree based approach is major aggregation as of construct an aggregation tree. The form of tree is minimum spanning tree, sink node think about near live a beginning and Source node consider as leaves. Information flowing of information start on with leaves node as various because root means sink (base station).

Fig 1: Cluster dependent sensor network

Drawback to this strategy, like wireless sensor network generally are not clear of fully crash, in case present data packet loss at any higher level of tree, the results will most likely be lost not limited to single level however for whole linked sub tree as well. This strategy is suitable for designing best aggregation techniques.

Fig 2: Tree dependent data aggregation

**3. Hybrid-Based Approach:** Hybrid approach followed between tree and cluster based method. Inside this, the details aggregation arrangement can adjust in agreement with detailed network condition and by some act information.

Fig 3: Hybrid Model for Data Aggregation

**II. TECHNIQUES**

**DIFFERENT ROUTING PROTOCOLS TECHNIQUES**

Grouping about routing protocols now mobile specified network possibly perform in many method however these kind of are executed allow to routing scheme & network design.

**FLAT ROUTING PROTOCOLS:** It is split into two classes.

**A) PRO-ACTIVE / TABLE DRIVEN ROUTING PROTOCOLS**

Proactive protocols as well as mention through as Table – Driven network nodes are regularly communicated with the base station.

**B) REACTIVE (ON DEMAND) PROTOCOLS**

Portable nodes notebooks, palmtops or even mobile phones usually make wireless ad-hoc networks. Ad-hoc on demand distance Vector (AODV). In this network node are communications only when some specific event happen called Reactive network.

**HYBRID ROUTING PROTOCOLS**

Hybrid method uses both Proactive and Reactive. Hybrid routing used to determinesimilarity between both protocols. Proactive working are limited to small
range, whereas, Reactive protocols are used for finding nodes away from direction.

HIERARCHICAL ROUTING PROTOCOLS

Range of the wireless network boost, the flat routing protocols may outcome excessive overconsidering the system. Hierarchical solution may be preferable.

a) Hierarchical state Routing (HSR)

b) Zone Routing protocol (ZRP)

c) Cluster-Head Gateway Switch Routing Protocol (CGSR)

GEOGRAPHICAL ROUTING PROTOCOLS

A geographic routing protocol are control network wide finding for stations. Recent geographical coordinates called then command and data packets can be issued in the general charge of the station. This situation passescammand over in the network. A limitation is that entire nodes condition hasaccess to their geographical coordinate’s entire time toward create the geographical routing protocols effective. Routing renewessentially all over faster in compare network mobility amount toward recognize the location-based routing up. This is because area of nodes may correction quickly. Geographical routing protocols examples are as follow:

i) Geocast (Geographic Addressing and Routing)

ii) DREAM (Distance Routing Effect Algorithm for Mobility)

III. LITERATURE SURVEY

Zahra Beiranvand, et al. (2013) [1] have discussed large capacity of energy in nodes of a Wireless Sensor Networks (WSN) is assign as the near network connection. Energy useful routing methods arranged which saves a meaningful allocation of close network communication energy. It checks sensor nodes correctly and make clusters specific technique through access WSN period lower common energy abstraction per each sensor node.

Jianbin Xue et al. (2013) [3] has arranged a routing method established on Ant Colony Algorithm. This method renewes pheromone allow to the direction length, to access the shortest direction against the starting node to end node. The interval is enough there but the energy is not huge. Thus, the nearby the interval, the lesser the energy is not necessarily. Uncertainly demand toward choose the direction give to the energy need of the direction. It is situated about the energy call through refresh the pheromone and that arrangement the cluster head node to the coming node. Again, search a direction which the transmission energy need of the network.

Basavaraj S. Mathapatisiddarama et al. (2012) [4] has discussed to current energy arranged for the sensor nodes are securely arranged in the routing protocol called energy maintain various routing sensor networks, there are capabilities as the nearby sensor protocol for wireless sensor accepting data nodes to extend along sensing range. Whereas, irrelevant or aggregation method, data aggregation is mostly used to gather and aggregate data popular an energy useful way so that parallel data are composed through the sensor networks. In layout tonetwork save the energy, the data combine is affected which lifetime is improve

Shuo Shi et al. (2012) [5] have discussed a cluster method in which cluster heads are randomly chosen against the nodes by energy upon the normal, and the image strengthen method is apply to discover the perfect result among suitable area to make less the energy waste of cluster head. First, we choose a combine of cluster heads and then enchanting transmission as well as acknowledgement interested within analysis creates a representation of cluster head energy apply. It resolveweight the quadratic calculation of the distances as ofevery cluster head toward its associate nodes below the finest result. At last, the great energy operate used for a particular cluster head in the subsequently about resolution exist expected, and every nodes among stability energy better than the measured occupation determination beus near a new surrounding of image strengthen to discover a superior result. Hence, failure of the cluster head used for each about is able to be continued eventually.

Pin Nie et al. (2011) [6] have discussed to restricted energy is one of the major challenges in modest case. Individual range experiments scheme positive detail to a short Wireless Sensor Network. Within the function, bestrecordscollection is lifetime be the maincomplexity verify WSN service duration longedifficulty. Data aggregation calculation untreated records interested infollow. Energy assembly methods
givewell valuable information as well as declining necessary record broadcast energy cost. Though, within lot of helpful locations, hence, significant energy and data storage Base, as well as they are not sufficient to generate good use for the failure of cluster tasks be able to transmit more commonly.

David Hasenfratz et al. (2010) [7] have discussed the energy assembly have been commonly achieve object, during the wireless sensor network normally. Instead of minimize the energy make use of with maximize a network’s valuable instance, the major dispute in energy gathering sensor networks best use of the data move through relate the dissimilarity change of full energy.

Shao Jie Tang, et al. (2010) [8] has discussed with mobile sink toward make bigger sensor network duration include be well identified. Though, small probability system effect with time-dependant network topology. Regard as the finest routing arrangement used for fixed sensor network. Others suggest quantity of measures level use for the mobile sink to collect actual data as off fixed sensor network, among the aim to maximize the network duration. Particularly, we regard as a more real form wherever the affecting speed and direction used for mobile sinks are necessity. Significant tests prove that method be able to really transmit on entire network duration and reduce release delay.

Rabindra Bista, et al. (2010) [9] have discussed to several wireless sensor network applications would like privacy of the individual data throughout broadcast of the basis node in the direction of a data collect tool. If an well-organized data aggregation method among preserve data confidentiality is a difficulty in WSNs. While protected data aggregation in WSNs has been fine calculated in the current years, which aim on defending sensor data not just as the same well as connecting a trust sensor node. The initial one is high statement charge payable to redundant traffics in the network through data transmissions. The next one is high calculation charge due to the make use of performance to modify sensor data.

Motahareh Bahrami Zanjani et al. (2010) [10] has discussed among significant matter in wireless sensor networks few position extra restrictions in excess of the aim and position of an greatest WSN like channel capacity, resiliency, energy saving due to the restricted accessibility to energy in wireless nodes, data privacy and confidentiality. A broadly use energy-saving procedure to concern data aggregation.

Data aggregation can decrease the amount of transmit file within the network and delay the Keri-time. In come again, data redundancy is necessary for secured broadcast and privacy in inspection limited and noisy environment. A greatly protected data aggregation method for WSN is planned which ensures that in sequence used for entire successively node surrounded by the network is available within the sink node among the smallest redundancy. In this method, data of every running nodes stored in the sink are achievable within the sink even if the wireless channel is corrupted by noise and interference.

Nandini S. Patil et al. (2010) [11] have discussed to Wireless Sensor Networks are set of sensor nodes which together send sensed data to base station. As sensor nodes are cluster enforced, an useful capacity is essential arrange to apply networks for extended interval therefore it is necessary to decrease data transfer within sensor networks, reduce total of data so as to require send to base station. The most important objective of data aggregation method is to gather and aggregate data in an energy well-organized way so devices to check the situation is that it does not need maintain such as charged mains used for control provides and wired lines designed for internet relations to gather data, no require human interface while show. These sensor nodes are able to observe the situation through collecting in sequence of their background, and effort kindly to launch the data to a base station, or sink, for study that network duration is develop. Wireless sensor network suggest an additional sensor nodes require fewer power for processing. The major goal of data aggregation methods is to while compare toward transmit data. Initial matter is, several cluster must be created that appearance in conditions of energy capability in contrast possible valuables various performance limitations. Next might be through the lacking data aggregation in wireless sensor network and near access the agreement of the protocol in allocation wherever several nodes must be in use in near a particular cluster. Third assets are restricted main problem is the collection method of cluster head.

Haitao Xiao, et al. (2010) [12] has discussed to Wireless Sensor network are present to examine the situation, however their own health condition is comparatively not clear to network administrator, in most cases. In bridge finding arrangement, build up a wireless sensor network to collect the vibration data of bridge. In past Field Bridge finding research, node failure and data packets failureconstantly happen in WSN and cannot be detected. It causes a few composed data is not working and cannot be used.
to evaluate the health condition of bridge. Also, in field research it is constantly complex to locate the location of nodes in arrange to make certain the value of connection is fine. Consider the difficulty of monitor the health of nodes, the value of associations and the healthiness of bridge findings data as of energetic continuous capacity in wireless sensor networks. Regulate to develop the performance of active monitoring method applies spread data aggregation to decrease the quantity of statement and energy make use of. The monitoring scheme contains three functions, monitoring the healthiness of bridge finding data. Correct the arrangement in the wireless sensor network developed for bridge finding and achieve the consequence in field research.

Muhammad Tahir et al. (2009) [13] has deal with the difficulty network lifetime calculation used for a particular category of wireless sensor networks particularly, wireless multimedia sensor networks. High data charge, in these networks at the sensor nodes, compared to the general sensor networks and the existence of high physical connection in the sampled data create them a correct applicant for the inner-network dealing out, normally at the sensor node itself. Using these dissimilar features of wireless multi-media sensor networks to advantages planned arrangement and probable agreement among communication and estimate capacity use greatest to network duration maximization below the delay quality of apply necessity. The delivered function of the scheme achieving the planned arrangement is achieve with duality assumption. A max-min reliability index based allocation of network duration maximization is planned as a purpose of continuous interruption thresholds. Numerical results explain how the whole network power applies is allocated among the communication and the control power utilize. Results prove that the superior performance in conditions of max-min justice indicator at advanced continuous interruption thresholds is mostly useful to the linked lesser assessment cost compared to the statement charge.

IV. GAPS IN LITERATURE

The review on the existing techniques has shown the following limitations:

1) The use of the mobility of the base station has been neglected in the most of existing protocols.
2) The use of ACO for efficient path selection has also been neglected by the most of researchers.
3) However the NLEACH outperforms over the LEACH in terms of the networks lifetime, but has very poor stability period i.e. the first node become dead too early.

V. CONCLUSION AND FUTURE SCOPE

In this paper, a survey on various routing protocols has been done. From the survey, it has been concluded that the usage of the mobility of the base station has been neglected in the most of existing protocols. Moreover the usage of ACO for efficient path selection has also been neglected by the most of researchers. However the NLEACH outperforms over the LEACH in terms of the networks lifetime, but has very poor stability period i.e. the first node become dead too early. In near future, inter-cluster Ant Colony Optimization algorithm will be used that build upon ACO algorithm for routing of data packets in the network and an attempt has been made to minimize the efforts wasted in transferring the redundant data sent by the sensors which lie in the performance of NLEACH protocol.

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