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SURVEY ON COVERAGE AND ENERGY BASED CLUSTERING TECHNIQUES TO INCREASE THE LIFETIME OF NETWORK

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ABSTRACT: *A heterogeneous wireless sensor network consists of different types of nodes in sequence. Some of these nodes have high process powers and significant energy, which are called the manager nodes or super-nodes. The second type nodes, which have normal process power, are only used as monitoring nodes or act as relay nodes in the path to the manager nodes are called the normal nodes. In this paper, an energy-aware algorithm is presented for the optimum selection of sensor and relay groups that are used for monitoring and sending messages from goals in point coverage, using the competition between the nodes. This algorithm is effective in decreasing the energy consumption of the network and increasing its life-time. We also focus on a maximum lifetime scheduling of target cover and data collection for a WSN, even if all the sensors have the same sensing radius and the same transmission radius. Finally, we present the practical efficiency of our algorithms is analysed through simulation. These extensive simulation results show better performances of our algorithms.*

Keywords: Lifetime Maximization, Clustering Technique, Wireless Sensor Network (WSN)

I. INTRODUCTION

In many wireless sensor network (WSN) applications, sensors are evenly distributed in a fixed area to keep a record of current or natures conditions, such as pressure, humidity, temperature, etc., and to send the recorded data towards a base station. sometimes, a set of these target points are monitored in a specific area. On the another point of view, for a better result guarantees, the each and every point of interest should be observed by at least one sensor at all times. But, the consumption of energy by a sensors should be minimized since, in maximum cases, working of sensors is totally based on battery.So, to preserve energy power supplies of these sensors must turn off when they are not in use .Sensor networks are often wished to be buitt in remote environments, like forest or desert. Since the capacity of the nodes is restricted, it seems to be very difficult to recharge or change the battery of all the sensor nodes. However, in many monitoring devices it is assumed that the

system will operate as long as possible. So, some techniques must be applied to save energy. The most efficient method for saving energy is to put as many sensors to an inactive mode. But at this time, the network must maintain the connectivity that the base station must be able to connect to any active sensors. Since every node in a specific area sense a comman data,its not mandatory that all of them must be active, as long as there are sufficient working sensors to give surety of system's function. Therefore, the lifetime of a sensor network can be increased respectively if we schedule work of the sensors. In a continuously operating sensor networks, unused sensors are deployed, but only a few of them are active on that time, though the major part of sensors are kept inactiveand for the purpose of preserving energy. The clustering techniqus that will be applied in this paper will form the clusters of the k size. Depending on this, a cluster head will be assigned, that will be useful to preserve the energy in the clusters while the transmission of data through the sensors.

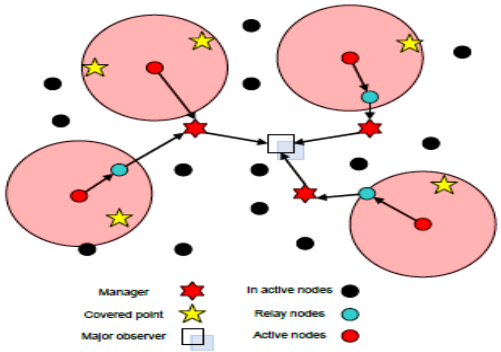

Fig: subset of sensor to monitor the target point in each round

II. LITERATURE SURVEY

Zaixin Lu, et. al proposeed that in any sensor scheduling problem, the target monitoring and collection both are considerd for the mazamization of network lifetime. The problem is studied both theoretically and practically. Also, they have stated thatit is NP-hard for efficient network lifetime though all the nodes and target points are in a Euclidean plane. By the other side of the issue, a polynomial-time approximation scheme is developed, assuming that the density of target points is enclosed, and a constant-factor approximation algorithm for the general case. The practical efficiency of algorithms, that is compared with the greedy algorithm is evaluated. The result was that the proposed algorithm was efficient then the previous one [1]. Fatemeh Mansour et. al suggested that the selection of active sensor nodes are based on the competition among the nodes close to each node. The lifetime of a network is
prolonged by the maximum use of each node in a specific area and by moderating the energy consumption. For the minimal selection of sensor that are used for monitoring and sending messages by competition between two nodes in any coverage network. For selection of disjoint subset a competitive algorithm is applied in heterogeneous network in this two types of nodes are used. The first type is 'manager' and second is 'normal' nThe manager node have large energy sources and communication ranges. These nodes maintain connectivity of network. The normal nodes are lower energy nodes. These nodes are grater in number to the manager nodes in a network [2]. L. Ding et al explained that the power consumption rate is reduced in coverage by the alternation of sensor modes. The coverage nodes are divided into several rounds. Some sensors
will be in active mode where others will be in inactive mode, in each round.
The main thing is the assurity that the active sensor must cover all the targets in every round.The main contribution is the proposal of MLCP as per the performancr ratio $(4 + \xi)$, as per improvement of +1 in it. Here $\xi > 0$ and n is the number of sensors. Also an approximation algoritm is also designed for MWSCP as performance ratio $(4 + \varepsilon)$, where $\varepsilon > 0$ [3]. J.Wu have proposed the problem of prolonging network lifetime of sensor network, in which sensor-target coverage and connectivity are maintain.The focus is on a generic connectivity condition that can be used when the range of transmission is less than twice its range of sensing. Main focus is done on both sensing targets as well as transmitting data for the consumption of energy. The collection of data is slow than target sensing. A transmission usage ratio is adopted for characterization of frequency of data transmission within lifetime of network. Maximization of lifetime of wireless sensor networks by scheduling sensors is not a new problem, The important contributions made here is that

- The problem of Adjustable Sensing Range Connected Sensor Cover (ASR-CSC) is introduce, here target coverage and connectivity are maintain.
- A generic connectivity condition is also presented.
- An efficient distributed heuristic is designed to solve the ASR-CSC problem [4].

M. Cardei et al proposed an efficient method to extend the sensor network lifetime by organising sensor into a maximal number of set covers that are activated successfully only the current active sensors are responsible to sense and transmit the data . while the sensor that has low power enter into a sleep mode. The lifetime of a network is increased by dividing the number of sensor networks into respective number of set. During the coverage requirement the alteration betewweewn the active and sleep mode may result in increase of the network lifetime as compared to when all the sensor nodes are active constantly. A maximum set covers (MSC) set problem is defined to maximize the lifetime of network of coverage problem, it fwas discussed that MSC is NP-complete. For solving these MSC problem efficiently two heuristics approaches linear programming and greedy techniques were used[5]. D. Du define the covers problem demonstrated in disjoint set is NP-complete. For this a lower bound performance is determined a heuristic algorithm for set covers is computed. There are lot of literature issues in all layers of protocol stack the energy saving techniques used were that the operation allowed nodes to enter low energy states also the shortest pathn is consumed for the low energy [6]. Habib Mostafaei proposed a learning automata-based algorithm for maximum set cover problem in wireless sensor networks. In the proposed algorithm, each node in the network is equipped with a learning automaton. Learning automaton of each node, in cooperation with the learning automata of the neighboring nodes, helps the node to decide its proper activity state to obtain high target coverage [7]. B. Krishnamachari has proposed that in any application of remote monitoring sensor network data is not gathered constantly. So it is not possible to extract maximum information from local node storage network.This problem is suggested as linear problem.for the implementation of easy distribution. For the solution of these problem a greedy heuristic approach is suggested by approximation algoritm. The EMAX algorithm is most near optimised algoritm and is much better than the other shortest path routing protocols [8]. Mihaela Cardei et. al designed an application of wireless sensor network thelow energy is the main problem. So a power consumption technique must be designed to increase the lifetime of network but the cost must be reduced. Therefore to reduce the energy consumption the sensor nodes are organised into a maximum number of disjoint dominating sets (DDS) that are applied successfully by

this means energy consumption is also reduced in the network. The set of a sensor nodes used for transmission are altered in round robin fashion. So that for a fixed time a specific set of nodes are responsible to sense data and other nodes are in sleeping state[9].

III. PROPOSED WORK

In the existing system the clustering had been taken out with the help of Euclidian distance between pair wise nodes. Now we propose the another clustering technique and CDCT to reduce the coverage problem by determining active nodes. Also we proposed MLCS for achieving efficiency of energy of node to increase lifetime of Netwok.

IV. CONCLUSION

After discussing various clustering techniques the in the literature survey the main study will be applying an anonymous clustering techniques to the data set nodes, Most of the clustering techniques consume energy in the specified network. The proposed system aims to increase the lifetime of the network that will also save the energy of network and prolong its life.

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