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# To Avoid Replication Attack in Clusters through Witness Node

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***Abstract - Wireless sensor network is used in the harsh environments for sensing the information. Sensor nodes used for sensing the information has been stationary or in mobility. In this paper different approaches have been studied for sensing the information. in this paper the clustering approaches have been discussed that have been used for development of clusters. The leach is the best approach that has been used for clustering. In this paper the approach has been discussed by selection of best cluster head on the basis of energy. In these paper different attacks detection technique has been described.***

***Keyword: WSN, Leach, M-Leach, clone attack and clustering***

## I. INTRODUCTION

A **wireless sensor network (WSN)** are spatially distributed autonomous sensors to *monitor* physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bi-directional, also enabling control of sensor activity. The development of wireless sensor networks was motivated by military applications such as battlefield surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on.

### 1.1 Terms in WSN:

**1.1.1 Sensor Node:** This is a core component of WSN. This node plays a multiple roles in WSN, such as simple sensing; data storage; routing; and data processing.

**1.1.2 Clusters:** Clusters are the organizational unit for WSNs. The dense nature of these networks requires the need for them to be broken down into clusters to simplify tasks such a communication.

**1.1.3 Cluster heads:** Cluster heads are the managing the cluster head. They often are needed to managing task in the cluster. These tasks include but are not limited to data-aggregation and organizing the communication schedule of a cluster.

**1.1.4 Base Station:** The base station is at the upper level of the hierarchical WSN. It provides the communication link between the sensor network and the end-user.

**1.1.5 End User:** The data in a sensor network can be used for a wide-range of applications. Therefore, a particular application may make use of the network data over the internet, using a PDA, or even a desktop computer.

### 1.2 Clustering:

Clustering is the task of grouping a set of objects in such a way that objects in the same group (called a cluster) are more similar (in some sense or another) to each other than to those in other groups (clusters). It is a main task of exploratory data mining, and a common technique for statistical data analysis, used in many fields, including machine learning, pattern recognition, image analysis, information retrieval, and bioinformatics. Cluster analysis itself is not one specific algorithm, but the general task to be solved. It can be achieved by various algorithms that differ significantly in their notion of what constitutes a cluster and how to efficiently find them. Popular notions of clusters include groups with small distances among the cluster members, dense areas of the data space, intervals or particular statistical distributions.

**Static and Dynamic Clustering:** A common examination for a distribution strategy that makes utilization of element bunching is to utilize a static grouping system. A case of the utilization of static grouping is the division orders made by expansive file firms. Ordinarily bunches are structured focused around the sort of business or industry connected with an organization (ie utilities, vitality and so on). The Dow Jones Industrial Average contains 30 substantial top stocks that have a long exchanging history. Besides, each one stock can be effectively grouped by their particular S &p segment. This static grouping can likewise structure as the premise for fusing danger equality strategies for portfolio assignment.

Element grouping holds a little yet steady focal point over static bunching. The element strategy produces higher returns and danger balanced returns over a long back test period. At the end of the day, Cluster Risk Parity (element grouping with danger equality or danger equality etc) does better than some other danger equality variation. Besides, element bunching likewise delivers better returns and danger balanced returns than non-grouping strategies. Interestingly, static bunching was not as successful as disregarding groups inside and out. This proposes that the changing instability and relationship contain data that is exploitable on an element premise.

## II. RELATED WORK

**Parveer Kaur et al [1]** "A Review of To Avoid Replication Attack in Clusters through Witness Node" A wireless sensor network is a gathering of specific transducers with a correspondences foundation for observing and recording conditions at diverse areas. In this work we used LEACH Protocol to find the cluster heads & Sub cluster Heads. Low Energy Adaptive Clustering Hierarchy ("LEACH") is a TDMA-based MAC convention which is incorporated with bunching and a straightforward directing convention in remote sensor systems (WSNs). Problem of Energy consumption is occurred in the network, which is reduced by using Leach Protocol.

**Guanglai Chen et al [2]** "The design of wireless wave height sensor network node based on Zigbee technology" Wireless sensor network is consisted of a large number of sensor nodes, which have advantages, such as small size, lower power consumption, with wireless communication, sensing and data processing capabilities. And the Zigbee is a wireless communication protocols using for the short distance, low rate, low power consumption. It is fit for the wireless sensor network since it supports facile applying feature. Following a introduction of the performance and structural features of CC2420, this paper describes the key points of the wireless sensor network node. So the design has broad application prospects based on CC2420 wireless sensor network with low cost, energy consumption and other characteristics.

**Vithya, G. et al [3]** "Actuation sensor with adaptive routing and QOS aware checkpoint arrangement on Wireless Multimedia Sensor Network" Wireless Multimedia Sensor Network (WMSN) is a blooming field due to the development of CMOS cameras and Microphones which are wirelessly interconnected devices that are able to retrieve multimedia content such as video and audio streams, still images and scalar sensor data from the environment. As of today, almost all deployed wireless sensor data networks measure scalar physical parameters like temperature, pressure humidity etc. To capture the image, video Wireless Multimedia Sensor nodes are to be deployed. The node of W MSn is equipped with cameras, microphones, and sensors producing multimedia content. Routing in Wireless Sensor Network is an important issue since WMS nodes that senses the data need to be communicated to the base station. The key issues in design of routing protocol in the WMSN are energy efficiency, adaptive routing, and multimedia packet scheduling, Quality of service (QOS) and high bandwidth demand. Many routing protocols have been proposed for the WMSN.

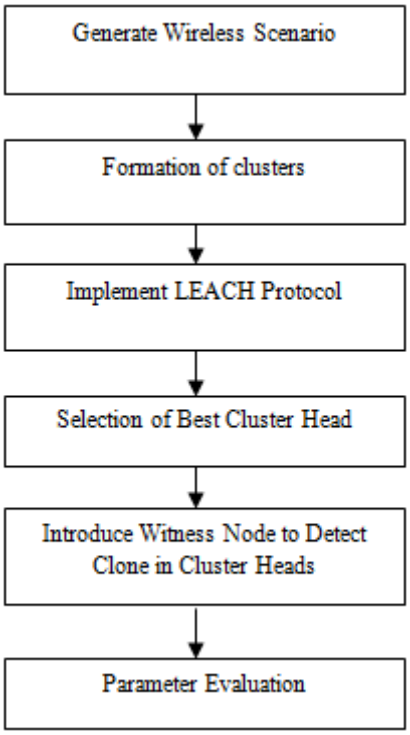
**Desponded, V.V. et al [4]** "Energy efficient clustering in wireless sensor network using cluster of cluster heads" Energy of sensor nodes is scarce resource in wireless sensor network. It is vital to reduce energy consumption to improve lifetime of wireless sensor network. A proficient way to improve lifetime is to partition sensor network into groups called cluster with high energy node acting as leader of the cluster called cluster head. Cluster head is responsible for managing intra-cluster and inter cluster communication. Energy level of cluster head at a given point of time determines life of cluster and thereby whole sensor network. Failure in the cluster head brings cluster communication to halt and may require re-clustering to get sensor network back on track. These activities involve additional energy expenditure and ultimately possess great impact on lifetime of sensor network as a whole. To balance energy consumption among the cluster heads this paper proposes to have cluster of cluster heads within the cluster of sensor nodes.

**Xiangwen Zhang et al [5]** "Key Technologies of Passive Wireless Sensor Networks Based on Surface Acoustic Wave Resonators" In this paper, we present the passive wireless sensor network based on the surface acoustic wave (SAW) resonators. The sensor node consists of the SAW sensor that is small, light, reliable, stable, sensitive, wireless and passive, so the battery is needless and its life-span is infinite. The sink node gathers data from the sensor nodes processes the data with intelligent algorithms and transmits the needed data to the exterior network timely. The basic structure and the realization of the passive wireless sensor network are elaborated. The five main characteristics of the passive wireless sensor network, that is passive sensor nodes, simple and small sensor nodes, organized sensor nodes, intelligent sink nodes, high security, good extendibility, are explained concretely. Specially, the key techniques in our research, such as coding and decoding techniques of the sensor node, signal frequency measurement techniques of the sensor node, intelligent signal processing techniques, measurement error compensation techniques and network security techniques, are discussed exhaustively. In the end, we point out the problems at present and forecast the application prospect and research direction in the future.

**Wei Zhao et al [6]** "Kernel-based Markov random fields learning for wireless sensor networks" Distributed information inference in wireless sensor networks is of significant importance for many real-world applications in which graphical modeling of a deployed wireless sensor network is fundamental. One critical issue faced today is how to learn the graphical model parameters of a deployed sensor network as efficiently as possible, since it is usually expensive or even impossible to collect a large amount of training data in a deployed wireless sensor network given the resource constraints of tiny wireless motes. This paper attempts to address this issue. We propose a novel kernel-based approach in graphical model learning for wireless sensor networks to minimize the number of training samples of real sensor data needed. We demonstrate the proposed approach by simulations using real-world wireless sensor network data. Our results show that the proposed kernel-based learning approach can substantially reduce the number of training data needed for constructing a Markov random field model of the sensor network in comparison to the traditional learning approach without affecting the constructed model's performance in distributed information inference.

## III. METHODOLOGY




## IV. ALGORITHM USED

**LEACH Protocol**

Low Energy Adaptive Clustering Hierarchy ("LEACH") is a TDMA-based MAC protocol which is integrated with clustering and a simple routing protocol in wireless sensor networks (WSNs). The goal of LEACH is to lower the energy consumption required to create and maintain clusters in order to improve the life time of a wireless sensor network. LEACH is a hierarchical protocol in which most nodes transmit to cluster heads, and the cluster heads aggregate and compress the data and forward it to the base station (sink). Each node uses a stochastic algorithm at each round to determine whether it will become a cluster head in this round. LEACH assumes that each node has a radio powerful enough to directly reach the base station or the nearest cluster head, but that using this radio at full power all the time would waste energy. Nodes that have been cluster heads cannot become cluster heads again for P rounds, where P is the desired percentage of cluster heads. Thereafter, each node has a 1/P probability of becoming a cluster head in each round. At the end of each round, each node that is not a cluster head selects the closest cluster head and joins that cluster. The cluster head then creates a schedule for each node in its cluster to transmit its data. All nodes that are not cluster heads only communicate with the cluster head in a TDMA fashion, according to the schedule created by the cluster head. They do so using the minimum energy needed to reach the cluster head, and only need to keep their radios on during their time slot.

## V. CONCLUSION

Clustering is the best method for utilization of energy in wireless sensor network. In this process different protocols have been used for development of clusters. These cluster head selection has been done on the basis of the energy. In this paper different clustering approaches have been discussed. These approaches provide best clustering for data sensation in minimum energy consumption. The clone attacks is main issue occurred in the wireless sensor network. In this attack node copy the id of other node and receive all the data. In this paper the best approach is described that can reduce the affect of data loss.

## REFERENCES

[1] Parveer Kaur "A Review of To Avoid Replication Attack in Clusters through Witness Node", International Journal of Advanced Research in Computer Science and Software Engineering, 2015, pp 1733-1737.

[2] Guanglai Chen "NoticeofRetraction the design of wireless wave height sensor network node based on Zigbee technology", 978-1-4244-8036-4, 3683 – 3686, IEEE, 2011.

[3] Vithya, G "Actuation sensor with adaptive routing and QOS aware checkpoint arrangement on Wireless Multimedia Sensor Network", 978-1-4577-0588-5, 444 – 449, IEEE, 2011.

[4] Deshpande, V.V. "Energy efficient clustering in wireless sensor network using cluster of cluster heads", 978-1-4673-5997-9, 2151-7681, IEEE, 2013.

[5] Xiangwen Zhang "Key Technologies of Passive Wireless Sensor Networks Based on Surface Acoustic Wave Resonators", 978-1-4244-1685-1, 1253 – 1258, IEEE, 2008.

[6] B. Karp and H. T. Kung. GPSR: Greedy Perimeter Stateless Routing for Wireless Networks.In Proceedings of the 6th Annual International Conference on Mobile Computing and Networking pp.243-254.

[7] T.P.Lambrou and C.G. Panayiotou.2009.A Survey on Routing Techniques Supporting Mobility in Sensor Networks.In Proceedings of the 5th international conference on Mobile Ad Hoc and Sensor Networks (MSN'09). pp. 78-85.

[8] S. Kwangcheol, K. Kim and S. Kim. 2011. ADSR: Angle-Based Multi-hop Routing Strategy for Mobile Wireless Sensor Networks.In proceedings of the IEEE Asia-Pacific Services Computing Conference (APSCC). pp.373-376.

[9] D. Kim and Y. Chung. 2006. Self-Organization Routing Protocol Supporting Mobile Nodes for Wireless Sensor Network.In proceedings of the 1st international multi-symposiums on Computer and Computational Sciences (IMSCCS'06). pp.622-626.

[10] U. Ahmed and F.B. Hussain. 2011. Energy efficient routing protocol for zone based mobile sensor networks.In proceedings of the 7th international Wireless Communications and Mobile Computing conference (IWCMC). pp. 1081-1086.