

# Optimization of Anti Hail Gun Activity Using DEEC Teen Hybrid WSN System

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## ABSTRACT

The proposed investigate work uses the DEEC cross breed framework in enhancement strategies, which shapes the proficient WSN correspondence and decline the danger of false directing while minimization of deferral in way exchanging. In estimations exhibited for data transmission in such frameworks up to now, a singular course is used for data transmissions that result in reduced in essentialness of centers arranged on this course which therefore realizes expanding of residual vitality. In this exploration, another technique is proposed for assurance of data transmission course to comprehend the issue of the vitality request. This strategy depends on the TEEN based edge system and dead hubs as parameters and tally of hubs to BS. In this technique, normal vitality system will be assessed and the diminishment in vitality will be noted and contrasted and past framework. This will yield in expanded vitality protection in directing of the WSN.

**Keywords:** WSN, TEEN, DEEC, Anti Hail Gun, SEEC

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## I. INTRODUCTION

Climate expectation has been a standout amongst the most entrancing and testing area since past. Climate is a standout amongst the most utilitarian and intense constraint, which influences our lives from various perspectives. Antagonistic impacts of climate may make an incredible misfortune our lives, belongings, and properties. During the most recent decade accessibility of atmosphere, information has expanded massively because of upgraded technology. And it is imperative to discover viable and exact devices to investigate and pull back concealed learning from this data, which can assume an exceptionally essential part of understanding the atmosphere changeability in future. As atmosphere influences different segments like agriculture, vegetation, water assets and tourism and so forth.

**Anti-Hail Gun:** Frequent terrible climate and Hailstorm occasions harming a colossal measure of products amid a decade ago raised the alert over the circumstance. Consistently hailstorms crushes trim worth corers of cash. To determine this disturbing climatologist concocted Anti Hail Gun concept. Anti Hail Gun utilizes stun waves to cut the mists framed over the area with a specific end goal to keep the development of hails, and consequently bring safe rain as opposed to harming hails. It can be utilized as a part out of every other place on earth where the hails can cause a serious harm. Proposed system works on the beheading execution of shock waves based on the threshold value in wireless sensor network.

Wireless sensor network is widely considered as an important technology for the twenty-first century [1]. In previous decades, it has received tremendous attention from both academia and industry all over the world.

A WSN normally comprises of an expansive number of minimal cost, low-control, and multi-functional remote sensor hubs, with detection, remote correspondences and calculation capacities [2,3]. These sensor hubs impart over short partition through a remote medium and collaborate to satisfy an ordinary assignment, for instance, condition checking, military observation, and modern process control [4]. The essential reasoning behind WSNs is that, while the capacity of every individual sensor hub is constrained, the total energy of the whole system is adequate for the required purpose. Advances in remote sensor organize (WSN) innovation has given the accessibility of little and minimal effort sensor hubs with ability of detecting different sorts of physical and natural conditions, information handling, and remote correspondence. Assortment of detecting algorithms brings

about bounty of use in different territories.

Regardless, the characteristics of remote sensor frameworks require all the more convincing methods for data sending and getting ready. In WSN, the sensor center points have a limited transmission go, and their dealing with and limit capacities and moreover their essentialness resources are in like manner obliged. Coordinating traditions for remote sensor frameworks are responsible for keeping up the ways in the framework and need to ensure tried and true multi-source correspondence under these conditions. Thick association of the sensor center points enables a multipath guiding approach to manage assemble a couple of routes from particular sensor centers towards the objective.

Found ways can be used simultaneously to give sufficient system assets in escalated movement conditions. On the other hand, each source hub can utilize just a single way for information transmission and change to another way upon hub or connection disappointments. The last one is predominantly utilized for adaptation to internal failure purposes, and this is known as option way steering.

In the earlier decade, multipath controlling methodology has been large utilized for different framework organization purposes, for instance, upgrading data transmission constancy, giving lack tolerant coordinating, stop up control and Quality of Service (QoS) support in traditional wired and remote frameworks. Framework Design Objectives Most sensor frameworks are application specific and have assorted application essentials. Thus, all or part of the going with essential arrangement targets is considered in the layout of sensor frameworks: Small center point assess: Since sensor center points are regularly passed on in an unforgiving or disagreeable condition in immense numbers, decreasing center size can energize center point sending. It will in like manner diminish the power use and cost of sensor center points.

## II. LITRETURE REVIEW

**Artashes Arakelyan [5]** radiometric measurements of clear sky and various types of clouds brightness temperatures presented, measured at various frequencies and polarizations. The results have been obtained during the measurements carried out in Armenia from the measuring complex bui't under the framework of ISTC Projects A-872 and A-1524. The measurements were carried out at vertical and horizontal polarizations, under various angles of sensing by C-, Ku-, and Ka-band combined scatterometric-radiometric systems (ArtAr-5.6, ArtAr-15, and ArtAr-37) developed and built by ECOSERV Remote Observation Centre Co. Ltd. (ECOSERV ROC), under the framework of the above-mentioned Projects. As well as a new method of hail detection, anti-hail protection and hail suppression and a structure of autonomous and automate operating hail preventing sonic cannon will be discussed.

**KaebbehYaeghoobi [10]** The hierarchical routing with the idea of clustering like LEACH, HEED, SEP, and DEEC are already well known as the best protocols to provide energy efficiency. This paper presents analysis the efficiency of these routing protocols, and discussion about their merits and demerits in various conditions. Furthermore, comparisons of these protocols in terms of energy consumption, packet transmission, and network lifetime with a complete performance analysis and simulation are investigated. The simulations show that DEEC performs much better than the other protocols in terms of energy efficiency with maximum alive nodes and lowest dead nodes. Moreover HEED protocol performs well enhanced than the SEP and LEACH protocols in both heterogeneous and homogenous environments.

**Shen, Jian. [11]** Purpose a new energy-efficient centroid based routing protocol (EECRP) for WSN-assisted IoT to improve the performance of the network. The proposed EECRP includes three key parts: a new distributed cluster formation technique that enables the self-organization of local nodes, a new series of algorithms for adapting clusters and rotating the cluster head based on the centroid position to evenly distribute the energy load among all sensor nodes, and a new mechanism to reduce the energy consumption for long-distance communications. In particular, the residual energy of nodes is considered in EECRP for calculating the centroid's position. Our simulation results indicate that EECRP performs better than LEACH, LEACH-C, and GEEC. In addition, EECRP is suitable for networks that require a long lifetime and whose base station (BS) is located in the network.

**Sharma, Prachi [12]** concerned with the applications of Wireless Sensor Network (WSN) technology for large scale and long duration environmental monitoring. We illustrate here the technological difficulties and challenges that have been encountered in meeting end-users requirements for information gathering. The main aim is to provide greater reliability and productivity to influence the design choices of system hardware and software. WSN technology can be used for various large scale monitoring purposes, providing sensor measurements at high resolution. This technology, therefore, provides various information regarding different monitoring applications such as forests, waterways, buildings, security, agriculture, battlefield etc. Wireless Sensor Networks (WSNs) can also perform operations such as event detection, aggregation, sensing and actuation. We conclude with the discussion of long-term environmental monitoring using WSN technology. Considering future challenges and opportunities our objective is to provide the applications of WSN technology

in the field of environmental and agricultural monitoring.

**RavindranathVadlamudi** [13]Remote sensor systems with a large number of small sensor nodes are relied upon to discover wide relevance and expanding sending in coming years, as they empower dependable observing and investigation of the earth. In this paper, we propose a crossover steering convention (APTEEN) which permits for far-reaching data recovery. The hubs in such a arrange to respond to time-basic circumstances, as well as give a general photo of the system at intermittent interims in a exceptionally vitality effective way..

**Problem Formulation**Sensor lifetime proficiency convention is a sub classification of grouping based steering frameworks. It is an improved system arrangement device. The proposed arrangement of work bargains in 3 level progressive system based heterogeneity in WSN system to control the information imparting to low vitality utilization. This was not managed in past writing with non-uniform zone spread.

The accompanying issues are thought to be unsolved:

Study organize in non-direct condition, utilization of edge of information for sensor vitality use minimization and impact of proper hub arrange in framework.

Limit esteems for the sum total of what properties have been set in the wake of examining the different hail influencing parameters, past years recurrence of hails in every month and how different parameters influence each other adding to the arrangement of hails

**Winter Season**

IF (MaxTemp<=17,MinTemp>=3.5,SealevelPressure>1610,RelativeHumidity>=50 OR WindSpeed>0) then Hail=Yes

**Summer Season**

IF (MaxTemp<24,MinTemp>10,SealevelPressure>1560,RelativeHumidity>=55 OR WindSpeed>0) then Hail=Yes

**Monsoon Season**

IF (MaxTemp<23,MinTemp>14,SealevelPressure>1580,RelativeHumidity>=65 OR WindSpeed>0) then Hail=Yes

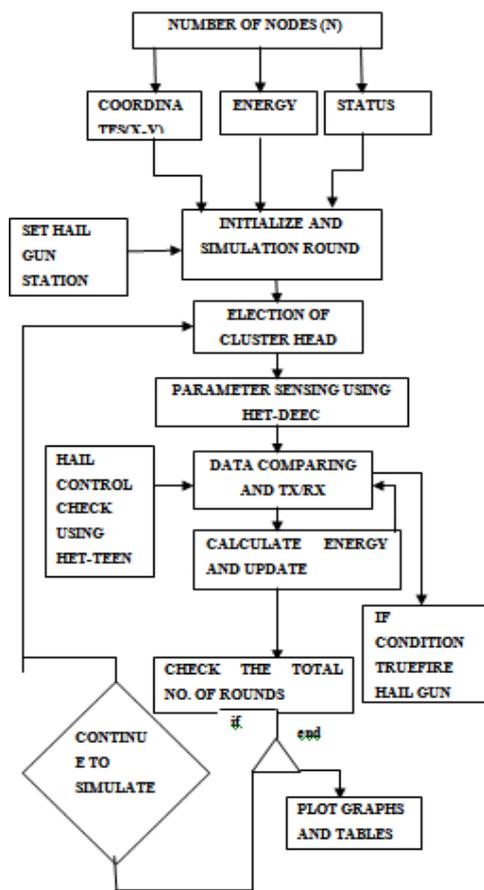


Figure1. Simulation and calculation of the network in HET-DEEC-TEEN hybrid system

### III. PROPOSED METHODOLOGY

- Firstly the system is started by choosing the hubs which are required for investigation
- The initials like vitality, TX, RX, information parcel, hostile to hail firearm area are started.
- After the introduction, the closest hub to hostile to hail firearm station is found and separation is figured.
- The process is reshaped for all the counter hail firearm stations when bunch head hub is chosen its vitality and separation are measured and after that, the correspondence with neighboring hubs is made.
- This decreases the vitality utilization of the edge with least postponement.
- Monitoring of the climate parameters and information transmission are controlled by TEEN based limit, this again diminishes the vitality misfortune because of the additional information bundle correspondence.
- The calculation keeps on observing the parameters and utilizations rest control to monitor adequate vitality.
- The convention ceaselessly searches for hail occasion and after that forward the likelihood of hail events and enhance the shooting time of the counter hail firearm framework.

### IV. Result Analysis

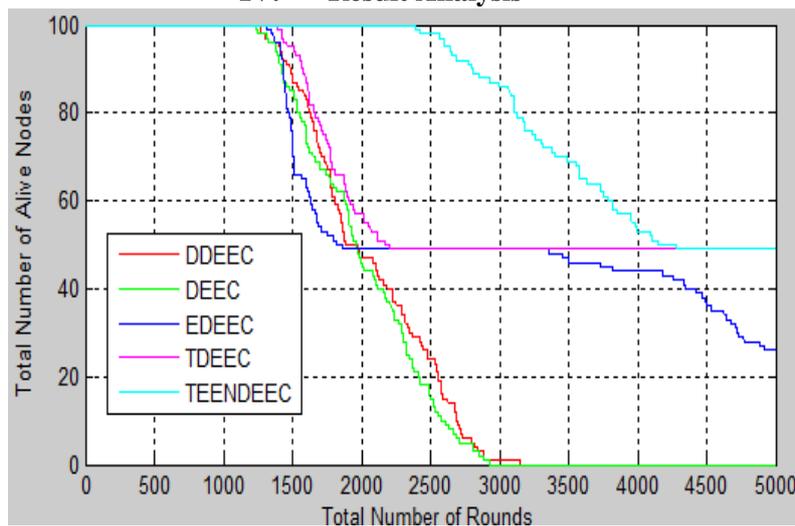


Figure 2 Number of Alive nodes versus total number of observed rounds

The above figure shows the number of total alive nodes with respect to the number of observed iterations as it can be seen that the total number of functional nodes decrease in number after 2000 round for SEEC hybrid system, for DEEC approach the first node dead occurs before 2000 iteration and for HET-DEEC hybrid it shows a decrease after 6500 iterations

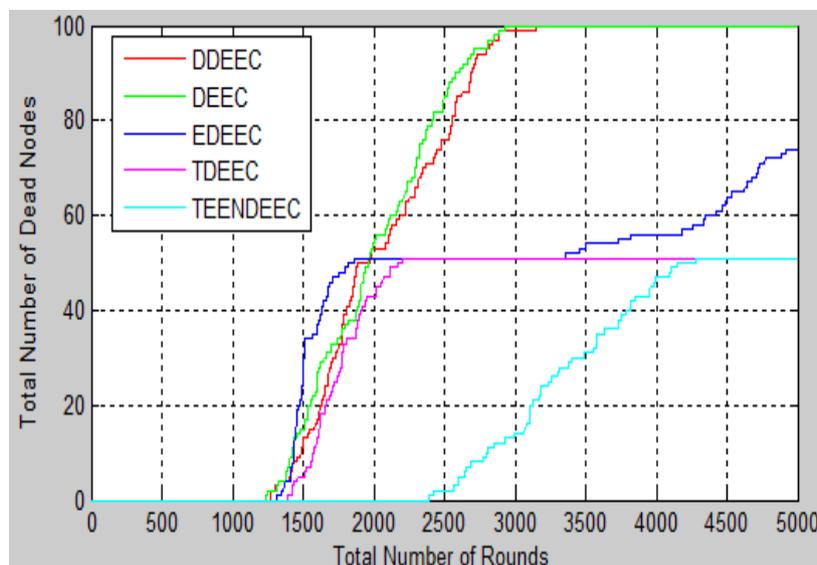


Figure 3. observed rounds shows the total dead node count for observed rounds

The above figure shows the dead node count with respect to the number of observed iterations both observations show the improvisation done by the proposed system over the base network control strategy. It can be seen that the HET-DEEC hybrid is decreasing the nodes after 400 iterations while the DEEC and DEEC hybrid reduce the node count after 1100 and 2400 iterations respectively.

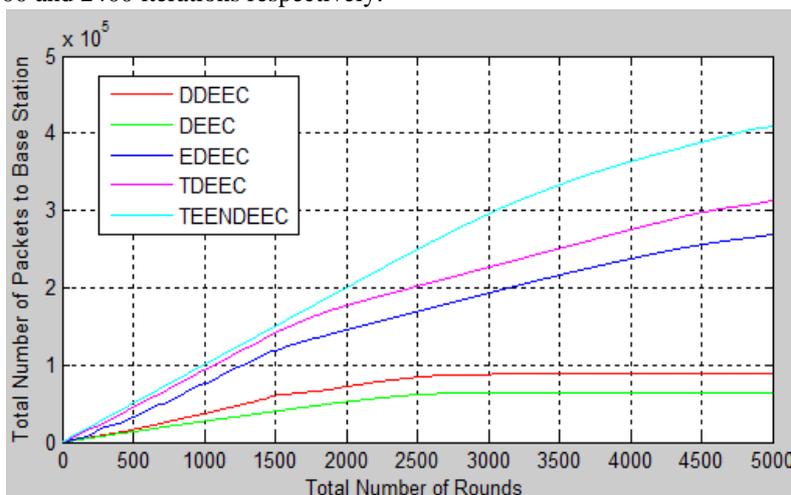


Figure 4. observed rounds shows the total packet counts for observed rounds

The above figure shows the packet count with respect to the number of observed iterations both observations show the improvisation done by the proposed system over the base network control strategy. It can be seen that the HET-DEEC hybrid is increasing the packet count after 400 iterations while the DEEC and DEEC hybrid reduce the packet count after 1100 and 2400 iterations respectively.

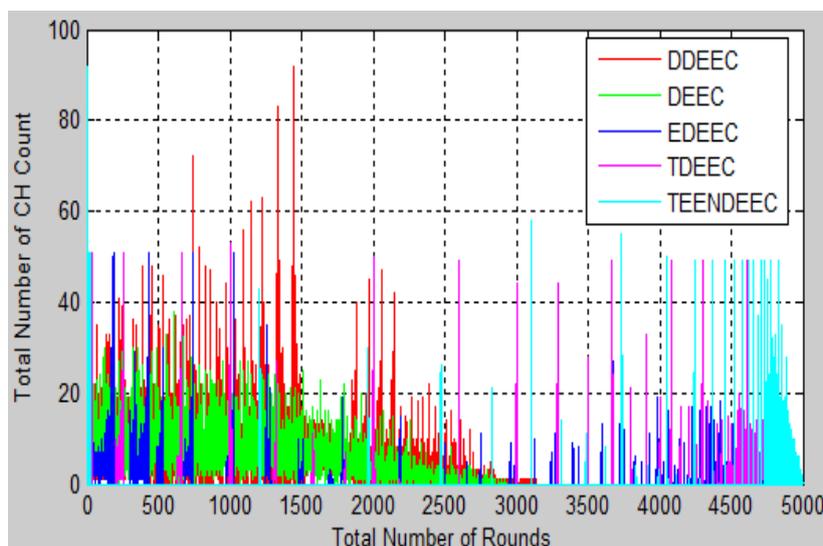


Figure 4. observed rounds shows the total cluster counts for observed rounds

The above figure shows the cluster count with respect to the number of observed iterations both observations show the improvisation done by the proposed system over the base network control strategy. It can be seen that the HET-DEEC hybrid system has stabilized cluster count even after 4500 iterations while the DEEC and DEEC hybrid reduce the packet count after 1100 and 2400 iterations respectively.

## V. CONCLUSION AND FUTURE WORK

One of the principal challenges in the plan was for WSNs is vitality productivity because of the rare vitality assets of sensors. The vitality utilization of the sensors is overpowered by information transmission and gathering. The proposed research work utilizes the DEEC hybrid system in optimization methods, which forms the efficient WSN communication and decrease the risks of false routing while minimization of delay in path switching. The proposed method is based on the DEEC-TEEN based threshold network and dead nodes as parameters and count of nodes to BS. In this method, average energy network will be estimated and the

reduction in energy will be noted. The authors likewise feature the plan tradeoffs amongst vitality and correspondence overhead reserve funds in a portion of the directing worldview, and additionally the focal points and impediments of each steering strategy. it a large number of these steering procedures looks supportive. This resulted in increased energy conservation in the routing of the WSN.

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