

## Energy-Efficient Clustering and Routing Algorithm using Deer Hunting Optimization in Wireless Sensor Networks

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### Abstract:

(WSNs) Wireless sensor networks have been available aimed at over an era and are employed in various critical applications. Two significant challenges for such applications are power and dependability. Because data transmission reliability is a vital component of data transmission quality, it is an essential issue in WSNs. Therefore, the primary objective of this research is to find the best header in each packet; it offers a Deer Hunting Optimization (DHO) algorithm to solve the most significant issue of finding the optimum header in each packet. Furthermore, the Adaptive Threshold Sensitive Energy Efficient Sensor Network (APTEEN) algorithm determines the best direction-finding path since the cluster head (CH) to the base station (BS). In addition, the APTEEN algorithm finds the straight routing path to minimize power usage. The proposed method is then evaluated using performance analysis on various criteria. The suggested method is utilized to evaluate PDR, end-to-end latency, throughput, network longevity, and packet loss rate, and the findings beat existing methods. Throughput findings for quality-of-service characteristics include PDR (98.5%), end-to-end latency (3.2ms), throughput (1Mbps), network lifetime (6800 rounds), and PLR (1%) for 100 nodes.

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I. Introduction

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