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Green Anaconda Optimization Based Energy Aware Clustering Protocol for 6G Wireless Communication Systems
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Abstract
The massive communication abilities of 6G wireless systems that will contribute considerably to global environmental sustainability and provide huge support for different services to promote healthy and economic stability cannot be overemphasized. Wireless sensor network (WSN) contains less power and lowest price sensor nodes (SNs). Each SN is located in particular area and wireless system process via self-organizing. Still, data communication among nodes in a potential way is impossible because of different complicated factors, namely wireless links, limited energy, battery operation, and so on. Clustering is a famous method for creating data transmission more efficient. The clustering technique divided SNs into different groups. Each cluster in network takes exclusive cluster head (CH) nodes that send data to other SNs in cluster. In recent times, some considerations like high reliability and less energy consumption are essential to choosing the optimum CH nodes in clustering-related metaheuristic mechanisms. The selection of proper CHs using metaheuristic algorithms finds useful in design of energy-efficient WSNs. Therefore, this study presents a new Green Anaconda Optimization Based Energy Aware Clustering Protocol (GAOB-EACP) approach for WSN. The projected GAOB-EACP approach mainly inherits characteristics of green anaconda (GA) to choose CHs. The GAOB-EACP technique improves load balancing among nodes from the network to extend the lifetime and reduce energy utilization. In addition, an objective function is designed to accomplish Quality of Service (QoS) in WSN using three input parameters, namely energy, distance, and delay. The GAOB-EACP technique assured efficient clustering of the nodes, leading to high stability, minimal energy utilization, and maximum lifetime. To exhibit superior performance of GAOB-EACP method, an extensive range of simulations can be implemented. The complete comparative analysis underlined enhanced network efficacy of GAOB-EACP method compared to other clustering approaches.

Author Keywords
6G networks; 6G networks; Clustering; Energy efficiency; Green anaconda optimization; Network lifetime; Wireless communication system; Wireless sensor networks

Index Keywords
Cluster analysis, Data communication systems, Energy utilization, Optimization, Power management (telecommunication), Quality of service, Queueing networks, Routing protocols, Sensor nodes, Sustainable development; 6g network, Clustering protocol, Clusterings, Energy aware, Green anaconda optimization, Network lifetime, Optimisations, Wireless communication system, Wireless systems; Energy efficiency

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