Overview of the Algorithms used in Wireless Sensor Networks for Enhancement of Energy Efficiency Routing Protocols

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Abstract: *Wireless Sensor Networks (WSNs) play a crucial role in various applications, including environmental monitoring, healthcare, and industrial automation. Maximizing the network lifetime and energy efficiency are paramount for ensuring the sustainability and effectiveness of WSNs. In this review, we analyze recent research efforts aimed at optimizing WSNs' lifetime through clustering algorithms. We delve into various metaheuristic algorithms such as the Grey Wolf Algorithm, Firefly Algorithm, Whale Optimization Algorithm, Dragonfly Algorithm, and others, adapted and enhanced specifically for WSNs. Additionally, we explore application-specific protocols and energy-efficient communication strategies tailored for WSNs. Through a comprehensive review, we identify research gaps and challenges in the existing literature and propose future directions for enhancing WSNs' performance and sustainability*

Keywords: Wireless Sensor Networks, clustering algorithms, metaheuristic algorithms, energy efficiency

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