

Review of: "Generative Artificial Intelligence Using Machine Learning on Wireless Ad Hoc Networks"

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Potential competing interests: No potential competing interests to declare.

This paper "**Generative Artificial Intelligence Using Machine Learning in Wireless Ad Hoc Networks**" presents a thorough and well-structured analysis of using Generative Artificial Intelligence and Machine Learning in wireless Ad Hoc networks. The methodology is robust, and the results are clearly presented and discussed. While there are some areas for improvement, particularly in making the content more accessible, the paper makes a significant contribution to the field and lays the groundwork for future research.

The abstract provides a comprehensive overview of the research, detailing the use of Generative Artificial Intelligence (GenAI) and Machine Learning to enhance wireless Ad Hoc network efficiency. It clearly states the focus on generative neural networks and the methodologies employed, such as Multilayer Perceptron (MLP) and Radial Basis Function (RBF). The paper aims to analyze and improve access point placement, reduce blind spots, and optimize network performance.

The introduction effectively sets the context by highlighting the rapid evolution of wireless networks and the challenges posed by the proliferation of IoT devices and new technologies. The objectives are clearly stated, aiming to improve network performance and security using GenAI and Machine Learning.

The methodology is well-detailed, explaining the use of metrics, data collection, training, and validation phases. The distinction between metric selection and extraction is clearly outlined, with a focus on the role of neural networks in optimizing network parameters. The explanation of experimental data processing and the use of a normalization formula demonstrates a robust approach to handling data.

The paper provides a thorough description of the experimental setup and the variables considered. The use of MLP and RBF for modeling and the explanation of their impact on network performance are well-explained. The consideration of multiple hidden layers and elements per layer showcases a thoughtful approach to understanding the network's complexities.

The results indicate that increasing the number of hidden layers and elements can decrease the accuracy of regression analysis, highlighting the challenges in achieving optimal solutions. The discussion around metrics like signal interference, noise levels, and channel overlap is insightful, providing a clear understanding of the factors affecting network performance.

The conclusion succinctly summarizes the contributions of the research, emphasizing the potential of GenAI in optimizing

wireless Ad Hoc networks. The suggestion for future work, including experimenting with more layers and elements, demonstrates a forward-thinking approach and a recognition of the need for more computational resources.

Strengths:

1. Comprehensive coverage of the topic, from problem definition to methodology and results.
2. Clear explanation of the technical aspects, such as neural networks and metric selection.
3. Thoughtful discussion of the challenges and limitations encountered in the research.
4. Well-structured presentation of the findings and their implications.

Weaknesses:

1. The paper could benefit from a more in-depth explanation of the practical implications and potential real-world applications of the findings.
2. Some technical terms and concepts may not be fully accessible to a general audience, suggesting a need for additional clarification or explanation in certain sections.