Review of: "Optimized Low-Powered Wide Area Network within Internet of Things"

Mohammed Hayal[1]

1 Mansoura University

Potential competing interests: No potential competing interests to declare.

Referee Report:

Title: Optimized Low-Powered Wide Area Network within Internet of Things

Authors: Adamu Mohammed Gaddafi and Murtala Muhammad

Summary:
The manuscript titled "Optimized Low-Powered Wide Area Network within Internet of Things" addresses the crucial issue of energy efficiency in LoRaWAN for IoT applications. The research focuses on the development of a power consumption model, simulation of IoT wireless sensor networks, and the implementation of spreading factor allocation. The authors have performed experiments and presented results supporting their proposed model. Overall, the manuscript is well-written and contributes to the field of energy conservation in IoT networks. However, a few minor revisions and updates are recommended before resubmission.

Comments:

1. Introduction:
The introduction provides a good overview and context for the research topic. To enhance clarity, a brief definition or explanation of LPWAN and LoRaWAN could be added at the beginning, especially for readers who may not be familiar with these terms.

2. Statement of the Problem:
The authors have clearly identified the problem of energy inefficiency in LoRaWAN. To strengthen the statement, it would be beneficial to include some quantitative or statistical data highlighting the extent of this problem and the potential impact on IoT applications.

3. Aim and Objectives of the Study:
The aim and objectives of the study are well-defined. However, the objectives could be made more specific and measurable. For example, instead of stating "Perform an evaluation of the proposed model using a suitable tool," it would be clearer to specify the evaluation criteria or metrics that will be used.

4. Significance of the Study:

The significance section effectively addresses the importance of energy conservation in IoT networks. To further emphasize the contribution of the proposed research, it would be helpful to discuss potential real-world applications and the impact it could have on reducing energy consumption and extending battery life in IoT devices.

5. Scope and Limitation of the Study:
The scope section adequately specifies that the study focuses on LoRaWAN and uses MATLAB for simulation. It would be beneficial to briefly mention any potential limitations or constraints, such as the specific scenarios or conditions under which the model was tested.

6. Experimental Methodology and Results:
While the manuscript provides a good overview of the experiments and results, more detailed information is required. Specifically, clarity is needed regarding the implementation of SF allocation and the specific algorithms or approaches used for power optimization. Including a flowchart or diagram illustrating the experimental setup would greatly enhance the reader's understanding.

7. Discussion and Conclusion:
The conclusion section does a good job summarizing the key findings. To enhance the discussion, it would be valuable to compare the proposed model's results with other related studies in the field. This would reinforce the authors' claims regarding the improvement in power efficiency.

Minor Revision Recommendations:
1. Provide a brief definition or explanation of LPWAN and LoRaWAN in the introduction.
2. Strengthen the problem statement with quantitative data on energy inefficiency in LoRaWAN.
3. Make the objectives more specific and measurable by specifying the evaluation criteria or metrics.
4. Discuss potential real-world applications and the impact of the research on reducing energy consumption and extending battery life.
5. Briefly mention any limitations or constraints of the study, such as the specific scenarios under which the model was tested.
6. Provide more detailed information on the experimental methodology, including the implementation of SF allocation and power optimization algorithms.
7. Compare the proposed model's results with other related studies in the discussion section for a stronger argument of improvement.

Overall, with these minor revisions and updates, the manuscript will be ready for resubmission and publication. The study presents valuable contributions to the field of energy-efficient IoT networks and has the potential to advance the understanding and implementation of optimized low-powered wide area networks within the Internet of Things.