

Robustness of Llama3.1 and Mistral 7B with RAG in Adversarial Battery Management Scenarios

Assignee Research

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Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: What is the robustness comparison between Llama3.1 and Mistral 7B with and without RAG integration when evaluated on adversarial or noisy cyber-physical system battery management datasets, measured. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Review of Large Language Models for Energy Systems: Applications, Challenges, and Future Prospects. Research question: What is the robustness comparison between Llama3.1 and Mistral 7B with and without RAG integration when evaluated on adversarial or noisy cyber-physical system battery management datasets, measured using F1-scores under varying perturbation levels?.

2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.3/10.

3 Results

3 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 8.3/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Large language models (LLMs) have been rapidly developed and offer new opportunities for applications in the energy sector	✓	0.28
LLMs improve decision-making, anomaly detection, and optimization procedures in complex energy systems by leveraging vast	✓	0.25
This study reviews the origins, evaluation, and fine-tuning techniques of LLMs and their integration into energy systems	✓	0.37
The performance of LLMs in terms of explainability, generalization ability, and scalability for energy-related applications	✓	0.26
Significant challenges to the adoption of LLMs include the need for computing power, lack of data, and ethical issues such as	✓	0.23
Solutions discussed for the challenges of LLMs include power-efficient models, hybrid AI platforms, and domain-specific	✓	0.26
Future areas of interest for LLMs in energy systems include multi-modality for maximal forecasting and operational intelligence	✓	0.27
This paper summarizes current developments and provides insights into LLM-driven innovation in energy systems while main	✓	0.29

References

- <https://doi.org/10.22541/au.175501749.91343297/v1>
- <https://doi.org/10.1109/access.2025.3610994>
- https://doi.org/10.13118/blefari-francesco_phd2025-12-04