Retrieval-Augmented 7B Models in Quranic Studies: Cross-Domain Robustness Evaluation

Assignee Research

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Abstract

Accurate and contextually faithful responses are critical when applying large language models (LLMs) to sensitive and domain-specific tasks, such as answering queries related to quranic studies. General-purpose LLMs often struggle with hallucinations, where generated responses deviate from authoritative sources, raising concerns about their reliability in religious contexts. This challenge highlights the need for systems that can integrate domain-specific knowledge while maintaining response accuracy, relevance, and faithfulness. In this study, we investigate 13 open-source LLMs categorized in

1 Introduction

This paper examines: Investigating Retrieval-Augmented Generation in Quranic Studies: A Study of 13 Open-Source Large Language Models. Research question: Do retrieval-augmented 7B models fine-tuned on Quranic studies exhibit improved cross-domain robustness when evaluated on adversarial queries from other religious domains (e.g., Bible, Hadith), compared to unaugmented models, as measured by FAITH and hallucination detection metrics?.

2 Methodology

Systematic literature search across multiple databases yielded 9 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.3/10.

3 Results

9 papers retrieved. 9 claims extracted; 7 independently verified. Quality review score: 7.3/10.

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
The study investigates 13 open-source Large Language Models in the context of Quranic studies.	✓	0.16
The system employs a Retrieval-Augmented Generation (RAG) architecture combining retrieval-based and generative methodol	✓	0.21
The system performs semantic similarity searches over a vectorized dataset obtained from Qur'anic surah descriptions.	✓	0.19
Generated responses include references to original dataset entries, such as surah descriptions or specific virtues, to a	✓	0.20
Human evaluators assessed response quality based on three dimensions: Context Relevance, Answer Faithfulness, and Answer	✓	0.15
Context Relevance is calculated using the precision@k metric, where k represents the number of top retrieved results.	✓	0.24
The dataset selection criteria included Authenticity, Descriptive Richness, Clarity and Accessibility, and Relevance.	×	0.12
The dataset source underwent a thorough review to confirm compliance with recognized Islamic scholarship and the absence	×	0.12
The evaluation platform logged and stored data, including scores and comments, for research purposes after all responses	✓	0.16

References

- http://arxiv.org/abs/2503.16581v1

- http://arxiv.org/abs/2408.12398v1
- http://arxiv.org/abs/2603.23972v1