Iterative vs Single-Shot Retrieval-Augmented Generation Accuracy on NaturalQuestions and TriviaQA

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does the answer accuracy on NaturalQuestions and TriviaQA differ between iterative retrieval-augmented generation (RGAR) and single-shot RAG when controlling for retrieval latency at different. 10 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: RAG over Tables: Hierarchical Memory Index, Multi-Stage Retrieval, and Benchmarking. Research question: How does the answer accuracy on NaturalQuestions and TriviaQA differ between iterative retrieval-augmented generation (RGAR) and single-shot RAG when controlling for retrieval latency at different query complexities?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.2/10.

3 Results

10 papers retrieved. 10 claims extracted; 0 independently verified. Quality review score: 3.2/10.

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
T-RAG achieves accuracy improvements ranging from 1.2% to 11.4% and recall gains from 1.5% to 12.5% when compared to tab	×	0.06
T-RAG achieves improvements of up to 9.4% in recall@50 on TFV and 8.2% in recall@10 on Multi-hop TQA compared to Table-t	×	0.09
T-RAG consistently improves cross-table question answering performance, yielding an average gain of 11.2% compared to th	×	0.07
The latency of T-RAG for TFV is 133.1 minutes, for Single-hop TQA is 78.8 minutes, and for Multi-hop TQA is 34.6 minutes	×	0.04
The number of tables remaining after coarse-grained multi-head retrieval for TFV is 4204 ($\downarrow$87.8%), for Single-hop TQA is	×	0.03
The number of tables remaining after fine-grained subgraph retrieval for TFV is 10 ($\downarrow$99.9%), for Single-hop TQA is 10 ($\downarrow$	×	0.03
The accuracy of DTR for TFV is 21.1% at 10, 27.8% at 20, and 36.2% at 50.	×	0.02
The recall of Table-E5 for Multi-hop TQA is 49.6% at 10, 56.9% at 20, and 69.1% at 50.	×	0.03
The EM@10 of Phi-3.5-mini for TFV is 22.3%, for Single-hop TQA is 26.2%, and for Multi-hop TQA is 13.9%.	×	0.03
The F1@50 of LLaMA-3.1-70B for TFV is 62.1%, for Single-hop TQA is 50.2%, and for Multi-hop TQA is 48.1%.	×	0.05

References

- http://arxiv.org/abs/2404.07220v2
- http://arxiv.org/abs/2502.11228v2
- http://arxiv.org/abs/2504.01346v4