Adaptive Retriever Portfolios Enhance Robustness in Cross-Domain Question Answering

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: Can adaptive retriever portfolios improve robustness in cross-domain question-answering (e.g., AmbiEval) under adversarial query conditions, as measured by a decrease in false-positive retrieval rates. 16 claims were extracted from source literature; 2 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.6/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Retriever Portfolios: A Principled Approach to Adaptive RAG. Research question: Can adaptive retriever portfolios improve robustness in cross-domain question-answering (e.g., AmbiEval) under adversarial query conditions, as measured by a decrease in false-positive retrieval rates?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.6/10.

3 Results

16 papers retrieved. 16 claims extracted; 2 independently verified. Quality review score: 4.6/10.

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
Retriever portfolios were evaluated on four QA benchmarks: HotpotQA, 2WikiMultiHopQA, TriviaQA, and MusiQue.	×	0.11
Two answer models were used for evaluation: Gemma-3-27B-It and Llama-3.1-70B-Instruct.	×	0.02
The evaluation addressed three questions: (1) do learned portfolios provide better retrieval coverage as the portfolio s	×	0.12
Portfolio selection is not equivalent to picking the best retrievers on average.	×	0.04
A natural alternative to portfolio optimization is to perform a grid search over retriever configurations, rank candidat	×	0.04
At k = 5, the baseline reaches only 0.492 support recall and 0.432 support F1, while the learned portfolio reaches 0.594	×	0.02
The portfolio is trained once on the pooled training queries from all four benchmarks and then evaluated on the correspo	×	0.03
The top-k average list is dominated by closely related GraphDense/E5 configurations, so additional members add little ne	×	0.03
Gains are not explained by retrieving more documents.	×	0.02
The method was evaluated on diverse open-domain and multi-hop QA benchmarks: HotpotQA, 2WikiMultihopQA, TriviaQA, and Mu	×	0.08
The method consistently yields better retrieval recall and answer accuracy compared to single-retriever baselines and in	✓	0.18
The method significantly reduces latency and token usage.	×	0.07
Retrieval-augmented generation (RAG) has become a standard approach for grounding large language models (LLMs) in extern	✓	0.22
RAG combines neural retrievers with sequence-to-sequence generators for open-domain QA.	×	0.04
Early work combined neural retrievers with sequence-to-sequence generators for open-domain QA (Karpukhin et al., 2020; L	×	0.06
Subsequent work has extended this paradigm to more complex settings, including multi-hop reasoning and conversational ag	×	0.08

References

- http://arxiv.org/abs/2605.31176v1
- http://arxiv.org/abs/2007.08428v4
- http://arxiv.org/abs/1701.05311v1