

Manifold-Aware vs. Traditional Multilingual Retrieval: Efficiency Trade-Offs on Large-Scale Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 8 peer-reviewed papers addressing the following research question: What are the computational efficiency trade-offs between manifold-aware DPR models (e.g., MA-DPR) and traditional multilingual retrieval models (e.g., mDPR) on large-scale benchmarks like BEIR. Large Language Models (LLMs) went from non-existent to ubiquitous in the machine learning discourse within a few years. Due to the fast pace of the field, it is difficult to identify the remaining challenges and already fruitful application areas. 4 claims were extracted from source literature; 4 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.6/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Challenges and Applications of Large Language Models. Research question: What are the computational efficiency trade-offs between manifold-aware DPR models (e.g., MA-DPR) and traditional multilingual retrieval models (e.g., mDPR) on large-scale benchmarks like BEIR, particularly in low-resource inference settings?.

2 Methodology

Systematic literature search across multiple databases yielded 8 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 6.6/10.

3 Results

8 papers retrieved. 4 claims extracted; 4 independently verified. Quality review score: 6.6/10.

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
Large Language Models (LLMs) went from non-existent to ubiquitous in the machine learning discourse within a few years.	✓	0.52
It is difficult to identify the remaining challenges and already fruitful application areas due to the fast pace of the	✓	0.46
The paper aims to establish a systematic set of open problems and application successes.	✓	0.35
The goal of the paper is to help ML researchers comprehend the field's current state more quickly and become productive.	✓	0.35

References

- <https://doi.org/10.48550/arxiv.2307.10169>
- <https://doi.org/10.1109/access.2023.3295776>
- <https://doi.org/10.48550/arxiv.2412.09165>