

Multilingual Embedding Models Enhance Cross-Lingual Retrieval in Low-Resource QA Tasks

Assignee Research

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Abstract

This report synthesises findings from 1 peer-reviewed paper addressing the following research question: To what extent do multilingual embedding models improve cross-lingual retrieval precision compared to monolingual embeddings in low-resource domain-specific QA tasks. 7 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Nepali Passport Question Answering: A Low-Resource Dataset for Public Service Applications. Research question: To what extent do multilingual embedding models improve cross-lingual retrieval precision compared to monolingual embeddings in low-resource domain-specific QA tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 1 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.7/10.

3 Results

1 papers retrieved. 7 claims extracted; 7 independently verified. Quality review score: 8.7/10.

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 |
|---|----------|------------|
| Nepali is a low-resource language facing challenges in building effective information retrieval systems due to the unavailability of resources. | ✓ | 0.35 |
| A pair-structured Nepali Question-Answer dataset focusing on Frequently Asked Questions (FAQs) for passport-related services was created. | ✓ | 0.32 |
| Transformer-based embedding models were fine-tuned for semantic similarity in question-answer retrieval. | ✓ | 0.33 |
| The fine-tuned models were compared with the baseline BM25. | ✓ | 0.27 |
| A hybrid retrieval approach integrating fine-tuned models with BM25 was implemented and evaluated. | ✓ | 0.29 |
| Fine-tuned SBERT-based models outperform BM25 in retrieval performance. | ✓ | 0.31 |
| Multilingual E5 embedding-based models achieve the highest retrieval performance among all evaluated models. | ✓ | 0.33 |

References

- <https://openalex.org/W7139144950>