

Geodesic vs. Euclidean Distance in Dense Retrievers for Large-Scale Language Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 9 peer-reviewed papers addressing the following research question: How does the computational efficiency of dense retrievers using geodesic distance compare to Euclidean distance when scaling to large-scale datasets in language model benchmarks. 10 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: BreakingNews: Article Annotation by Image and Text Processing. Research question: How does the computational efficiency of dense retrievers using geodesic distance compare to Euclidean distance when scaling to large-scale datasets in language model benchmarks?.

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 9.3/10.

3 Results

9 papers retrieved. 10 claims extracted; 10 independently verified. Quality review score: 9.3/10.

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
Recent Deep Neural Network architectures have achieved breakthroughs in tasks like automatic captioning or image retrieval	✓	0.27
Most learning methods rely on large training sets of images associated with human annotations that specifically describe	✓	0.31
The paper proposes to explore complex cases where textual descriptions are loosely related to the images.	✓	0.23
The paper focuses on the domain of News articles where textual content often expresses connotative and ambiguous relations	✓	0.31
New deep learning methods are introduced to address source detection, popularity prediction, article illustration, and generation	✓	0.30
An adaptive CNN architecture is proposed that shares most of the structure for all the tasks and is suitable for multitask learning	✓	0.28
Deep Canonical Correlation Analysis is deployed for article illustration.	✓	0.24
A new loss function based on Great Circle Distance is proposed for geolocation.	✓	0.25
The BreakingNews dataset includes approximately 100K news articles with images, text, captions, and enriched with heterogeneous metadata	✓	0.33
The BreakingNews dataset is appropriate to explore problems like source detection, popularity prediction, article illustration	✓	0.27

References

- <https://doi.org/10.1007/s10462-024-11050-4>

- <https://doi.org/10.48550/arxiv.2303.14617>
- <https://doi.org/10.48550/arxiv.1603.07141>