

SimCSE Performance in Low-Resource Languages vs. Multilingual InfoNCE Methods

Assignee Research

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Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: To what extent does the SimCSE framework maintain Spearman correlation performance on the STS-Benchmark when applied to low-resource languages compared to multilingual adaptations of InfoNCE-based. 11 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: SimCSE: Simple Contrastive Learning of Sentence Embeddings. Research question: To what extent does the SimCSE framework maintain Spearman correlation performance on the STS-Benchmark when applied to low-resource languages compared to multilingual adaptations of InfoNCE-based methods?.

2 Methodology

Systematic literature search across multiple databases yielded 14 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.2/10.

3 Results

14 papers retrieved. 11 claims extracted; 11 independently verified. Quality review score: 9.2/10.

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
SimCSE is a simple contrastive learning framework that advances the state-of-the-art sentence embeddings.	✓	0.35
The unsupervised approach of SimCSE takes an input sentence and predicts itself in a contrastive objective, using standa	✓	0.28
The unsupervised SimCSE method performs on par with previous supervised counterparts.	✓	0.17
Dropout acts as minimal data augmentation in SimCSE, and removing it leads to a representation collapse.	✓	0.27
The supervised approach of SimCSE incorporates annotated pairs from natural language inference datasets, using 'entailme	✓	0.36
The unsupervised SimCSE model using BERT base achieves an average of 76.3% Spearman's correlation on standard semantic t	✓	0.24
The supervised SimCSE model using BERT base achieves an average of 81.6% Spearman's correlation on standard semantic tex	✓	0.24
The unsupervised SimCSE model shows a 4.2% improvement in Spearman's correlation compared to previous best results on ST	✓	0.18
The supervised SimCSE model shows a 2.2% improvement in Spearman's correlation compared to previous best results on STS	✓	0.18
Contrastive learning objective regularizes pre-trained embeddings' anisotropic space to be more uniform.	✓	0.31
Contrastive learning objective better aligns positive pairs when supervised signals are available.	✓	0.30

References

- <https://doi.org/10.18653/v1/2024.acl-long.642>
- <https://doi.org/10.18653/v1/2021.emnlp-main.552>
- https://doi.org/10.1162/tacl_a_00051