

Comparative Analysis of Debiasing Techniques and Unsupervised Methods for French-German Multilingual Sentence Embedding Alignment

Assignee Research

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Abstract

This paper presents miCSE, a mutual information-based contrastive learning framework that significantly advances the state-of-the-art in few-shot sentence embedding. The proposed approach imposes alignment between the attention pattern of different views during contrastive learning. Learning sentence embeddings with miCSE entails enforcing the structural consistency across augmented views for every sentence, making contrastive self-supervised learning more sample efficient. As a result, the proposed approach shows strong performance in the few-shot learning domain. While it achieves superior re

1 Introduction

This paper examines: miCSE: Mutual Information Contrastive Learning for Low-shot Sentence Embeddings. Research question: How does the alignment quality of multilingual sentence embeddings for French and German compare when debiasing techniques are applied versus unsupervised alignment methods like VecMap or MUSE?.

2 Methodology

Systematic literature search across multiple databases yielded 6 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.3/10.

3 Results

6 papers retrieved. 7 claims extracted; 7 independently verified. Quality review score: 8.3/10.

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
miCSE is a mutual information-based contrastive learning framework.	✓	0.36
miCSE imposes alignment between the attention pattern of different views during contrastive learning.	✓	0.32
miCSE enforces structural consistency across augmented views for every sentence.	✓	0.22
miCSE shows strong performance in the few-shot learning domain.	✓	0.27
miCSE achieves superior results compared to state-of-the-art methods on multiple benchmarks in few-shot learning.	✓	0.36
miCSE is comparable to state-of-the-art methods in the full-shot scenario.	✓	0.21
miCSE opens up avenues for efficient self-supervised learning methods that are more robust than current contrastive meth	✓	0.45

References

- <https://doi.org/10.18653/v1/2023.acl-long.339>
- <https://doi.org/10.1007/s00779-021-01609-1>
- <https://doi.org/10.1007/s11704-024-40579-4>