Robust Fine-Tuning with Parallel Corpora Enhances Cross-Lingual Alignment Stability Against Adversarial Perturbations in

Assignee Research

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Abstract

Pre-trained multilingual language encoders, such as multilingual BERT and XLM-R, show great potential for zero-shot cross-lingual transfer. However, these multilingual encoders do not precisely align words and phrases across languages. Especially, learning alignments in the multilingual embedding space usually requires sentence-level or word-level parallel corpora, which are expensive to be obtained for low-resource languages. An alternative is to make the multilingual encoders more robust; when fine-tuning the encoder using downstream task, we train the encoder to tolerate noise in the contex

1 Introduction

This paper examines: Improving Zero-Shot Cross-Lingual Transfer Learning via Robust Training. Research question: Does robust fine-tuning with parallel corpora improve cross-lingual alignment stability against adversarial perturbations in zero-shot settings on XTREME-R classification tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.1/10.

3 Results

11 papers retrieved. 10 claims extracted; 7 independently verified. Quality review score: 7.1/10.

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
The proposed method improves zero-shot cross-lingual transfer performance by an average of 2.1 points on the PAWS-X benc	×	0.14
The proposed method improves zero-shot cross-lingual transfer performance by an average of 1.6 points on the XNLI benchm	×	0.13
Robust training improves generalized cross-lingual transfer where input sentence pairs belong to two different languages	✓	0.21
Multilingual BERT, XLM, and XLM-R are pre-trained multilingual language models proposed for zero-shot cross-lingual tran	✓	0.22
XTREME and XGLUE provide benchmarks for zero-shot cross-lingual transfer learning.	✓	0.17
Many approaches to align contextual word embedding spaces require additional supervision signals such as parallel senten	✓	0.19
Additional supervised corpora like parallel sentence pairs and bilingual dictionaries are usually expensive for low-reso	×	0.15
Some research handles embedding misalignment by considering syntactic features such as part-of-speech and dependency par	✓	0.18
Syntactic features required for embedding misalignment handling require large resources.	✓	0.15
The code for the Robust-XLT method is available at https://github.com/uclanlp/Robust-XLT.	✓	0.17

References

- http://arxiv.org/abs/2101.08231v4

- http://arxiv.org/abs/2104.08645v2
- http://arxiv.org/abs/2603.29410v1