

Cross-lingual Data Augmentation versus Multilingual Transfer Learning for Zero-shot XNLI Performance in Low-resource Languages

Assignee Research

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Abstract

While natural language processing systems often focus on a single language, multilingual transfer learning has the potential to improve performance, especially for low-resource languages. We introduce XLDA, cross-lingual data augmentation, a method that replaces a segment of the input text with its translation in another language. XLDA enhances performance of all 14 tested languages of the cross-lingual natural language inference (XNLI) benchmark. With improvements of up to 4.8%, training with XLDA achieves state-of-the-art performance for Greek, Turkish, and Urdu. XLDA is in contrast to, a

1 Introduction

This paper examines: XLDA: Cross-Lingual Data Augmentation for Natural Language Inference and Question Answering. Research question: How does the cross-lingual data augmentation (XLDA) method compare to other multilingual transfer learning techniques (e.g., multitask fine-tuning, cross-lingual pretraining) in terms of zero-shot performance on the XNLI benchmark, particularly for low-resource languages?.

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 7.9/10.

3 Results

9 papers retrieved. 10 claims extracted; 8 independently verified. Quality review score: 7.9/10.

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
Training with XLDA achieves state-of-the-art performance for Greek, Turkish, and Urdu on the XNLI benchmark with improve	✓	0.30
XLDA provides a 1.0% performance increase on the English evaluation set for the SQuAD question answering task.	✓	0.29
Comprehensive experiments suggest that most languages are effective as cross-lingual augmentors.	✓	0.29
XLDA is robust to a wide range of translation quality.	✓	0.25
XLDA is even more effective for randomly initialized models than for pretrained models.	✓	0.27
XLDA can be used to improve performance for every language in XNLI.	✓	0.16
XLDA leads to state-of-the-art performance in three cases on the XNLI benchmark.	×	0.11
XLDA improves exact-match and F1 on the SQuAD question-answering dataset.	✓	0.16
XLDA improves over the baseline model in all languages on the XNLI benchmark.	×	0.12
XLDA achieves state-of-the-art performance on Greek, Turkish, and Urdu on the XNLI benchmark even without the prior stat	✓	0.22

References

- <http://arxiv.org/abs/2212.09651v4>
- <http://arxiv.org/abs/2205.08497v1>
- <http://arxiv.org/abs/1905.11471v1>