

Domain Adaptation Effects on Zero-Shot Cross-Lingual Transfer in Multilingual Multimodal Models

Assignee Research

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Abstract

Multilingual Neural Machine Translation (NMT) excels in sharing knowledge across languages and transferring insights from high-resource languages to improve performance in low-resource languages. However, its performance lags in specific domains such as legal and medical. Previous works have focused on adding language-specific and domain-specific adapters to achieve domain adaptation. Although effective, these adapter-based methods only use domain data to train additional parameters, limiting the performance of multilingual NMT. In this paper, we propose CDSTX, a novel approach that achieves r

1 Introduction

This paper examines: Toward Enhancing Cross-Lingual Domain Knowledge Sharing and Transferring for Multilingual Domain Adaptation in NMT. Research question: How does domain adaptation during fine-tuning influence the zero-shot cross-lingual transfer performance of multilingual multimodal models on XTREME-R, compared to models without domain-specific adaptation?.

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 8.5/10.

3 Results

11 papers retrieved. 10 claims extracted; 9 independently verified. Quality review score: 8.5/10.

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
Multilingual Neural Machine Translation (NMT) excels in sharing knowledge across languages and transferring insights fro	✓	0.37
Multilingual NMT's performance lags in specific domains such as legal and medical.	✓	0.22
Previous works have focused on adding language-specific and domain-specific adapters to achieve domain adaptation.	✓	0.33
Adapter-based methods only use domain data to train additional parameters, limiting the performance of multilingual NMT.	✓	0.30
CDSTX is a novel approach that achieves robust multilingual domain adaptation without relying on adapters, solely levera	✓	0.34
CDSTX utilizes the pretrained model XLM-R and frozen embeddings to preserve its robust multilingual capabilities.	✓	0.21
CDSTX includes separate training for the decoder and fine-tuning of the entire model.	✓	0.21
CDSTX uses special domain tokens at the beginning of the source and target sentences called Source&Target Domain Tags.	✓	0.28
CDSTX employs back translation to enhance the cross-lingual transfer ability.	×	0.13
CDSTX is evaluated on two datasets across three translation tasks: Single-domain Multilingual Translation.	✓	0.19

References

- <https://arxiv.org/abs/2406.12634>

- <https://arxiv.org/abs/2005.13013>
- <https://www.semanticscholar.org/paper/8e257245645904b0f1585205787bc4355051671d>