

# Comparative Analysis of Dual-Contrastive Learning and Label Projection for Low-Resource Cross-Lingual NER

Assignee Research

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## Abstract

Cross-lingual Named Entity Recognition (NER) has recently become a research hotspot because it can alleviate the data-hungry problem for low-resource languages. However, few researches have focused on the scenario where the source-language labeled data is also limited in some specific domains. A common approach for this scenario is to generate more training data through translation or generation-based data augmentation method. Unfortunately, we find that simply combining source-language data and the corresponding translation cannot fully exploit the translated data and the improvements obtained

## 1 Introduction

This paper examines: A Dual-Contrastive Framework for Low-Resource Cross-Lingual Named Entity Recognition. Research question: How do dual-contrastive learning frameworks compare to label projection methods in cross-lingual NER accuracy for low-resource languages when source-language labeled data is limited?.

## 2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.0/10.

## 3 Results

12 papers retrieved. 15 claims extracted; 8 independently verified. Quality review score: 7.0/10.

## 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 |
|--|----------|------------|
| Fine-tuning mBERT on 1000 English WikiAnn samples and their translations yields a score of 67.06 for Bulgarian.          | ×        | 0.13       |
| Fine-tuning mBERT on 1000 English WikiAnn samples and their translations yields a score of 67.35 for German.             | ×        | 0.13       |
| Fine-tuning mBERT on 1000 English WikiAnn samples and their translations yields a score of 52.03 for Hungarian.          | ×        | 0.12       |
| Fine-tuning mBERT on English data combined with translated data (En + Trans) yields a score of 66.98 for Bulgarian.      | ×        | 0.13       |
| Fine-tuning mBERT on English data combined with translated data (En + Trans) yields a score of 66.15 for German.         | ×        | 0.13       |
| Fine-tuning mBERT on English data combined with translated data (En + Trans) yields a score of 47.92 for Hungarian.      | ×        | 0.12       |
| Simply combining source-language data and corresponding translation results in limited improvement or performance degrad | ✓        | 0.17       |
| The proposed model is named ConCNER (Contrastive Framework for Cross-lingual NER).                                       | ✓        | 0.19       |
| ConCNER proposes two contrastive objectives: a label contrastive objective and a translation contrastive objective.      | ✓        | 0.20       |
| The label contrastive objective encourages token representations with the same label to be closer and those with differe | ✓        | 0.35       |
| The translation contrastive objective encourages translated sentence representations to be closer and other sentence rep | ✓        | 0.29       |
| ConCNER extends knowledge distillation to exploit language-specific knowledge from unlabeled target-language data.       | ✓        | 0.24       |
| In the ConCNER knowledge distillation setup, the model trained with contrastive objectives serves as the teacher.        | ×        | 0.10       |
| The code for ConCNER is available at <a href="https://github.com/GKLMIP/ConCNER">https://github.com/GKLMIP/ConCNER</a> . | ✓        | 0.16       |
| ConCNER tends to outperform multiple baseline methods in experiments across a wide variety of target languages.          | ✓        | 0.21       |

## References

- <http://arxiv.org/abs/2305.13628v2>
- <http://arxiv.org/abs/2204.00796v1>
- <http://arxiv.org/abs/2501.18750v1>