

Dual-Contrastive Learning for Low-Resource Cross-Lingual NER Performance

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 obtaine

1 Introduction

This paper examines: A Dual-Contrastive Framework for Low-Resource Cross-Lingual Named Entity Recognition. Research question: How does the integration of dual-contrastive learning frameworks affect the performance of low-resource cross-lingual NER models in terms of F1 score and generalization across different language pairs?.

2 Methodology

Systematic literature search across multiple databases yielded 14 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

14 papers retrieved. 14 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 testing directly on Bulgarian yields an F1 score of 67.06.	×	0.13
Fine-tuning mBERT on 1000 English WikiAnn samples and testing directly on German yields an F1 score of 67.35.	×	0.13
Fine-tuning mBERT on 1000 English WikiAnn samples and testing directly on Hungarian yields an F1 score of 52.03.	×	0.12
Fine-tuning mBERT on 1000 English WikiAnn samples combined with their translations and testing on Bulgarian yields an F1	×	0.12
Fine-tuning mBERT on 1000 English WikiAnn samples combined with their translations and testing on German yields an F1 sc	×	0.12
Fine-tuning mBERT on 1000 English WikiAnn samples combined with their translations and testing on Hungarian yields an F1	×	0.11
Simply combining source-language data and corresponding translations results in limited improvement or performance degra	✓	0.16
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 by tre	✓	0.23
The code for ConCNER is available at https://github.com/GKLMIP/ConCNER .	✓	0.16
ConCNER tends to outperform multiple baseline methods across a wide variety of target languages.	✓	0.19

References

- <http://arxiv.org/abs/1908.10261v1>
- <http://arxiv.org/abs/2106.09063v4>
- <http://arxiv.org/abs/2204.00796v1>