

Multi-source Teacher-Student Distillation for Cross-lingual NER in Low-Resource Languages

Assignee Research

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Abstract

Cross-lingual named entity recognition task is one of the critical problems for evaluating the potential transfer learning techniques on low resource languages. Knowledge distillation using pre-trained multilingual language models between source and target languages have shown their superiority in transfer. However, existing cross-lingual distillation models merely consider the potential transferability between two identical single tasks across both domains. Other possible auxiliary tasks to improve the learning performance have not been fully investigated. In this study, based on the knowledg

1 Introduction

This paper examines: An Unsupervised Multiple-Task and Multiple-Teacher Model for Cross-lingual Named Entity Recognition. Research question: Does multi-source teacher-student distillation improve cross-lingual NER F1 scores on low-resource languages compared to direct mBERT transfer?.

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 8.2/10.

3 Results

11 papers retrieved. 8 claims extracted; 7 independently verified. Quality review score: 8.2/10.

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
Cross-lingual named entity recognition is a critical problem for evaluating transfer learning techniques on low resource	✓	0.33
Knowledge distillation using pre-trained multilingual language models between source and target languages has shown supe	✓	0.37
Existing cross-lingual distillation models merely consider the potential transferability between two identical single ta	✓	0.36
The study introduces a similarity metric model as an auxiliary task to improve cross-lingual NER performance on the targ	✓	0.36
An entity recognizer and a similarity evaluator are trained in parallel as two teachers from the source domain.	✓	0.31
Two tasks in the student model are supervised simultaneously by the entity recognizer and similarity evaluator teachers.	✓	0.26
Empirical studies were conducted on three datasets across 7 different languages.	×	0.14
The empirical studies confirm the effectiveness of the proposed model.	✓	0.20

References

- <https://doi.org/10.18653/v1/2022.acl-long.14>
- <https://doi.org/10.1609/aaai.v37i11.26507>
- <https://doi.org/10.48550/arxiv.2307.06435>