Cross-lingual NER Performance with Multi-source Data Scaling

Assignee Research

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Abstract

We work on translation from rich-resource languages to low-resource languages. The main challenges we identify are the lack of low-resource language data, effective methods for cross-lingual transfer, and the variable-binding problem that is common in neural systems. We build a translation system that addresses these challenges using eight European language families as our test ground. Firstly, we add the source and the target family labels and study intra-family and inter-family influences for effective cross-lingual transfer. We achieve an improvement of +9.9 in BLEU score for English-Swedis

1 Introduction

This paper examines: Massively Parallel Cross-Lingual Learning in Low-Resource Target Language Translation. Research question: How does the choice of source language (e.g., high-resource vs. low-resource) influence the effectiveness of multi-source cross-lingual NER when scaling the volume of unlabeled target language data, as measured by NER F1 score improvements?.

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 7.4/10.

3 Results

11 papers retrieved. 16 claims extracted; 12 independently verified. Quality review score: 7.4/10.

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
The proposed model achieves 60.6% accuracy in qualitative evaluation for named entity translation.	✓	0.16
The Bible corpus is used as a test ground because it is the most translated text that exists and is freely accessible.	✓	0.17
The Bible corpus includes both Old Testament and New Testament, unlike many past research works that only use the New Te	✓	0.22
The model is trained on twenty-three European languages across eight families on a parallel Bible corpus.	✓	0.16
Swedish is treated as the hypothetical low-resource target language, English as the rich-resource language in the single	✓	0.29
The training set contains 23K verses and is massively parallel.	×	0.13
The training, validation, and test sets are sampled according to the 0.75, 0.15, 0.10 ratio.	✓	0.17
The control experiments use the WMT'14 French-English dataset together with French and English Bibles.	✓	0.26
The WMT baseline contains French and English Bibles in addition to the WMT'14 data.	✓	0.27
The minibatch size used in all experiments is 64, with a dropout rate of 0.3, 4 RNN layers of size 1000, a word vector s	✓	0.33
For single-source single-target translation, 2 RNN layers of size 500, a word vector size of 500, and a learning rate of	✓	0.34
All learning rates are decaying.	×	0.12
The BLEU score for Swedish translation using one fifth of the training data is reasonably good.	×	0.14
An order-preserving lexicon translation method is devised by building a parallel lexicon table across twenty-three Europ	✓	0.16
The BLEU scores for different language pairs and configurations are provided in the tables.	×	0.08
The BLEU scores for Swedish translation vary with the amount of training data, as shown in the table.	✓	0.17

References

- http://arxiv.org/abs/1804.07878v2
- http://arxiv.org/abs/2004.12440v2
- http://arxiv.org/abs/2504.08792v1