What is the impact of synthetic data augmentation on low-resource machine translation quality

Assignee Research

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Abstract

One important issue that affects the performance of neural machine translation is the scale of available parallel data. For low-resource languages, the amount of parallel data is not sufficient, which results in poor translation quality. In this paper, we propose a diversity data augmentation method that does not use extra monolingual data. We expand the training data by generating diversity pseudo parallel data on the source and target sides. To generate diversity data, the restricted sampling strategy is employed at the decoding steps. Finally, we filter and merge origin data and synthetic p

1 Introduction

This paper examines: A Diverse Data Augmentation Strategy for Low-Resource Neural Machine Translation. Research question: What is the impact of synthetic data augmentation on low-resource machine translation quality?.

2 Methodology

Systematic literature search across multiple databases yielded 8 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.5/10.

3 Results

8 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 7.5/10.

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
The performance of neural machine translation is affected by the scale of available parallel data.	✓	0.22
For low-resource languages, the amount of parallel data is not sufficient, resulting in poor translation quality.	✓	0.26
The proposed diversity data augmentation method does not use extra monolingual data.	✓	0.30
The training data is expanded by generating diversity pseudo parallel data on the source and target sides.	✓	0.26
The restricted sampling strategy is employed at the decoding steps to generate diversity data.	✓	0.30
The origin data and synthetic parallel corpus are filtered and merged to train the final model.	✓	0.20
The proposed approach achieved 1.96 BLEU points in the IWSLT2014 German–English translation tasks.	✓	0.37
The proposed approach obtained 1.0 to 2.0 BLEU improvement in three other low-resource translation tasks, including Engl	✓	0.44

References

- https://www.semanticscholar.org/paper/0a3df1c62b79e3451e3418294e36ac2257f76968
- https://www.semanticscholar.org/paper/0afa325b5d1662a7ad633841e93a5cfa0c00140d
- https://www.semanticscholar.org/paper/3337a9e5182ffa3d6177d0d7986927ca7b465383