Cross-lingual Transfer Performance Variability in PaLI and Flamingo with Intermediate Task Data Size

Assignee Research

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Abstract

Recently, although pre-trained language models have achieved great success on multilingual NLP (Natural Language Processing) tasks, the lack of training data on many tasks in low-resource languages still limits their performance. One effective way of solving that problem is to transfer knowledge from rich-resource languages to low-resource languages. However, many previous works on cross-lingual transfer rely heavily on the parallel corpus or translation models, which are often difficult to obtain. We propose a novel approach to conduct zero-shot cross-lingual transfer with a pre-trained model

1 Introduction

This paper examines: Zero-shot Cross-lingual Transfer without Parallel Corpus. Research question: What is the impact of varying the size of intermediate task training data on zero-shot cross-lingual transfer performance for models like PaLI and Flamingo on the XTREME-R benchmark?.

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 7.9/10.

3 Results

11 papers retrieved. 25 claims extracted; 21 independently verified. Quality review score: 7.9/10.

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 Cross-Lingual Sentiment (CLS) dataset is used to verify the performance of the proposed method.	✓	0.24
The CLS dataset is a sentiment classification dataset in 4 different languages: English, German, French, and Japanese.	✓	0.21
The English data in the CLS dataset are used as the source language, and the target languages include German, French, an	✓	0.19
The CLS corpus is collected from reviews of certain kinds of products from Amazon, including books, DVDs, and music.	✓	0.25
A review with more than three stars in the CLS dataset is labeled as positive and is labeled negative if less than three	✓	0.20
In each language of the CLS dataset, all the corpus are split into three subsets: training, test, and unlabeled, whose s	✓	0.28
The CoNLL2002 and CoNLL2003 datasets are used to test the performance of the model on the NER task.	✓	0.17
CoNLL2002 contains two languages, Spanish and Dutch, while CoNLL2003 contains English and German.	✓	0.23
English is used as the source language, and German, Spanish, and Dutch as the target languages during the experiments on	✓	0.21
The CoNLL datasets provide the training set, validation set, and test set for each language.	✓	0.19
The training and validation set of English in CoNLL datasets are used for training and evaluation, respectively.	✓	0.21
Test sets of other languages in CoNLL datasets are used for testing.	✓	0.16
In the BFT process, task-related unlabeled data are collected directly from Wikipedia rather than using training sets in	✓	0.21
For the CLS dataset, the maximum length of input sentences is set to be 256.	✓	0.29
In the Bilingual task fitting stage for the CLS dataset, an AdamW optimizer with a 0.1 warm-up rate and a 2e-5 maximum l	✓	0.28
The training batch size for the CLS dataset is 32.	✓	0.20
MBERT is used as the multi-lingual pre-trained model for the CLS dataset.	×	0.13
The parameters of the embedding layer and the bottom three transformer layers of MBERT are frozen during training for th	×	0.13
MBERT is a transformer-based multi-lingual	✓	0.25

References

- http://arxiv.org/abs/2310.04726v1
- http://arxiv.org/abs/2005.13013v2
- http://arxiv.org/abs/2504.09480v1