Parameter Scale Impact on Zero-Shot Cross-Lingual Transfer in Multilingual Visual Question Answering

Assignee Research

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Abstract

While several benefits were realized for multilingual vision-language pretrained models, recent benchmarks across various tasks and languages showed poor cross-lingual generalisation when multilingually pre-trained vision-language models are applied to non-English data, with a large gap between (supervised) English performance and (zero-shot) cross-lingual transfer. In this work, we explore the poor performance of these models on a zero-shot cross-lingual visual question answering (VQA) task, where models are fine-tuned on English visual-question data and evaluated on 7 typologically diverse l

1 Introduction

This paper examines: Improving the Cross-Lingual Generalisation in Visual Question Answering. Research question: What is the correlation between parameter scale (1B vs 7B vs 13B) and the effectiveness of English intermediate-task training for zero-shot cross-lingual transfer accuracy on multilingual visual question answering tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.8/10.

3 Results

10 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.8/10.

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
Multilingual vision-language pretrained models show poor cross-lingual generalisation when applied to non-English data.	✓	0.34
There is a large gap between supervised English performance and zero-shot cross-lingual transfer in multilingual vision-	✓	0.37
The study explores the poor performance of multilingual vision-language models on a zero-shot cross-lingual visual quest	✓	0.37
Models are fine-tuned on English visual-question data and evaluated on 7 typologically diverse languages.	✓	0.32
A linguistic prior objective is introduced to augment the cross-entropy loss with a similarity-based loss to guide the m	✓	0.30
Learning a task-specific subnetwork improves cross-lingual generalisation and reduces variance without model modificatio	✓	0.32
Training examples are augmented using synthetic code-mixing to promote alignment of embeddings between source and target	✓	0.27
Experiments on xGQA using the pretrained multilingual multimodal transformers UC2 and M3P demonstrate the consistent eff	✓	0.32
The proposed fine-tuning strategy outperforms existing transfer methods with sparse models.	✓	0.21

References

- https://doi.org/10.48550/arxiv.2402.06196
- https://doi.org/10.1609/aaai.v37i11.26574

- https://doi.org/10.48550/arxiv.2307.06435