Multilingual Image-Text Retrieval Augmentation for Cross-Lingual Zero-Shot Accuracy in Visually-Grounded PARC Tasks

Assignee Research

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Abstract

Recent advances in multimodal vision and language modeling have predominantly focused on the English language, mostly due to the lack of multilingual multimodal datasets to steer modeling efforts. In this work, we address this gap and provide xGQA, a new multilingual evaluation benchmark for the visual question answering task. We extend the established English GQA dataset to 7 typologically diverse languages, enabling us to detect and explore crucial challenges in cross-lingual visual question answering. We further propose new adapter-based approaches to adapt multimodal transformer-based mode

1 Introduction

This paper examines: xGQA: Cross-Lingual Visual Question Answering. Research question: Does incorporating multilingual image-text models (e.g., CLIP or BLIP-2) as retrieval augmentations improve cross-lingual zero-shot accuracy in PARC for visually-grounded tasks, as measured by accuracy on multilingual visual question answering benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 14 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.1/10.

3 Results

14 papers retrieved. 15 claims extracted; 13 independently verified. Quality review score: 8.1/10.

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
xGQA is a multilingual evaluation benchmark for the visual question answering task, extending the monolingual English-on	✓	0.24
xGQA manually translates and adapts the balanced GQA test-dev set into 7 new languages from 7 language families, coverin	✓	0.22
xGQA provides new fixed data splits to guide cross-lingual few-shot learning experiments.	×	0.12
The proposed adapter-based architecture outperforms the recent state-of-the-art pretrained multilingual multimodal M3P m	✓	0.30
The overall performance of zero-shot transfer remains low across the board, with an average drop of around 38 accuracy p	✓	0.29
Using a small number of target language examples in a few-shot setup considerably improves performance for all approache	✓	0.21
Cross-lingual transfer performance still lags substantially behind source language performance.	✓	0.20
The corresponding questions in xGQA are template-based and only contain 8.5 words on average.	✓	0.17
Adapters have been shown to be very training efficient.	×	0.09
Adapters can be utilized to transfer between domains and tasks, and in machine translation and cross-lingual transfer sc	✓	0.15
Pretraining and fine-tuning data for multilingual multimodal models is typically based on multimodal information from Wi	✓	0.21
Multi30k is a multilingual image captioning dataset for retrieval-type questions, covering English, German, French, and	✓	0.25
GEM covers image and video retrieval tasks across 20 and 30 different languages, respectively.	✓	0.21
HowTo100M is a multilingual and multimodal pretraining dataset for image and video retrieval.	✓	0.16
MultiSubs focuses on fill-in-the-blank tasks and lexical translation, covering English, Spanish, German, Portuguese, and	✓	0.20

References

- http://arxiv.org/abs/2412.08802v2
- http://arxiv.org/abs/2507.23334v2
- http://arxiv.org/abs/2109.06082v2