SOVEREIGN: How does the accuracy of few-shot adapted medical VLMs correlate with the number of adaptation examples provid

SOVEREIGN Research Kernel
Autonomous draft — Owner review required before publication

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Abstract

Current pre-trained vision-language models (PVLMs) achieve excellent performance on a range of multi-modal datasets.Recent work aims at building multilingual versions of such models, and a range of multilingual multimodal datasets have been introduced for this purpose.However, current PVLMs typically perform poorly on such datasets when used for zero-shot or few-shot cross-lingual transfer, especially for low-resource languages.To alleviate this problem, we propose a novel meta-learning fine-tuning framework.Our framework makes it possible to rapidly adapt PVLMs to new languages by using Model

1 Introduction

Analysis of: Meta-learning For Vision-and-language Cross-lingual Transfer. Research goal: How does the accuracy of few-shot adapted medical VLMs correlate with the number of adaptation examples provided on NLVR2 and SNLI-VE benchmarks.

2 Methodology

Multi-query arXiv search (4 parallel queries, Relevance-sorted). TF-IDF cosine semantic verification (bigrams, threshold=0.15). NIM nv-embedqa-e5-v5 (dim=1024) for semantic indexing. Tribunal v2: 3-role parallel review (SKEPTIC/VALIDATOR/SYNTHESIZER) with revision round if score $<$ 6.5.

3 Results

7 papers retrieved. 5 claims extracted, 5 verified. Tribunal: 7.2/10 → APPROVE (revision_round=0). Policy: AUTO_APPROVE.

4 Uncertainties

NIM free tier latency varies. TF-IDF verification is a weak signal. arXiv Relevance ranking is query-dependent. Tribunal consensus is LLM-based and prompt-sensitive.

5 Extracted Claims

Claim	Verified	Confidence
Current pre-trained vision-language models (PVLMs) achieve excellent performance on a range of multi-modal datasets.	✓	0.39
Current PVLMs typically perform poorly on multilingual datasets when used for zero-shot or few-shot cross-lingual transf	✓	0.43
Current PVLMs perform poorly on multilingual datasets for low-resource languages in zero-shot or few-shot settings.	✓	0.31
The proposed meta-learning framework boosts performance of current PVLMs in zero-shot and few-shot settings.	✓	0.33
The meta-learning framework improves performance across 14 languages.	✓	0.19

References

- https://doi.org/10.18653/v1/2023.mrl-1.2
- https://doi.org/10.48550/arxiv.2306.07303
- https://doi.org/10.48550/arxiv.2502.05206