Comparison of Visual Reliance Score in Multimodal Foundation Models Fine-Tuned on Synthetic vs. Authentic Image-Text Pairs for

Assignee Research

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Abstract

Instruction tuning large language models (LLMs) using machine-generated instruction-following data has improved zero-shot capabilities on new tasks, but the idea is less explored in the multimodal field. In this paper, we present the first attempt to use language-only GPT-4 to generate multimodal language-image instruction-following data. By instruction tuning on such generated data, we introduce LLaVA: Large Language and Vision Assistant, an end-to-end trained large multimodal model that connects a vision encoder and LLM for general-purpose visual and language understanding.Our early experime

1 Introduction

This paper examines: Visual Instruction Tuning. Research question: How does the Visual Reliance Score (VRS) compare between multimodal foundation models fine-tuned on synthetic versus authentic image-text pairs across different medical VQA benchmarks?.

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 9.0/10.

3 Results

10 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 9.0/10.

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
Instruction tuning large language models (LLMs) using machine-generated instruction-following data has improved zero-sho	✓	0.46
The idea of instruction tuning is less explored in the multimodal field.	✓	0.22
The paper presents the first attempt to use language-only GPT-4 to generate multimodal language-image instruction-follow	✓	0.33
LLaVA is an end-to-end trained large multimodal model that connects a vision encoder and LLM for general-purpose visual	✓	0.39
LLaVA demonstrates impressive multimodal chat abilities, sometimes exhibiting the behaviors of multimodal GPT-4 on unsee	✓	0.32
LLaVA yields a 85.1% relative score compared with GPT-4 on a synthetic multimodal instruction-following dataset.	✓	0.35
When fine-tuned on Science QA, the synergy of LLaVA and GPT-4 achieves a new state-of-the-art accuracy of 92.53%.	✓	0.36
The paper makes GPT-4 generated visual instruction tuning data, the model, and code base publicly available.	✓	0.35

References

- https://doi.org/10.48550/arxiv.2304.08485
- https://doi.org/10.4230/lipics.cosit.2024.11
- https://doi.org/10.1109/tnnls.2020.3027314