Transformer-Based Multimodal Models vs. Decoder-Only LLMs in Cross-Modal Retrieval Performance

Assignee Research

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Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: How do transformer-based multimodal models compare to decoder-only LLMs in cross-modal retrieval tasks on MSCOCO and Flickr30K when using manifold-aware distance metrics versus cosine similarity for. 9 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: The Power of Generative AI: A Review of Requirements, Models, Input–Output Formats, Evaluation Metrics, and Challenges. Research question: How do transformer-based multimodal models compare to decoder-only LLMs in cross-modal retrieval tasks on MSCOCO and Flickr30K when using manifold-aware distance metrics versus cosine similarity for downstream performance?.

2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.7/10.

3 Results

12 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.7/10.

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
Generative AI has emerged as a powerful technology with numerous applications in various domains.	✓	0.26
There is a need to identify the requirements and evaluation metrics for generative AI models designed for specific tasks	✓	0.35
The research aims to investigate the fundamental aspects of generative AI systems, including their requirements, models,	✓	0.48
The study addresses key research questions and presents comprehensive insights to guide researchers, developers, and pra	✓	0.34
The requirements necessary for implementing generative AI systems are examined and categorized into three distinct categ	✓	0.35
The study explores different types of generative AI models described in the literature by presenting a taxonomy based on	✓	0.47
A comprehensive classification of input and output formats used in generative AI systems is provided.	✓	0.38
The research proposes a classification system based on output types and discusses commonly used evaluation metrics in ge	✓	0.39
The findings contribute to advancements in the field, enabling researchers, developers, and practitioners to effectively	✓	0.35

References

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- https://doi.org/10.3390/fi15080260
- https://doi.org/10.48550/arxiv.2303.14465