One-to-Many Image-Text Relationships Enhance CLIP Robustness Against Multimodal Adversarial Attacks

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does leveraging one-to-many image-text relationships affect the robustness accuracy of CLIP-based models under gradient-based multimodal adversarial attacks compared to standard contrastive loss. 11 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.6/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Metaverse: Taxonomy, Components, Applications, and Open Challenges. Research question: How does leveraging one-to-many image-text relationships affect the robustness accuracy of CLIP-based models under gradient-based multimodal adversarial attacks compared to standard contrastive loss defenses?.

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 7.6/10.

3 Results

10 papers retrieved. 11 claims extracted; 10 independently verified. Quality review score: 7.6/10.

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
Previous studies on the Metaverse were based on Second Life.	✓	0.26
The current Metaverse is based on the social value of Generation Z that online and offline selves are not different.	✓	0.32
Deep learning-based high-precision recognition models and natural generation models are contributing to the strengthenin	✓	0.25
The Metaverse includes factors ranging from mobile-based always-on access to connectivity with reality using virtual cur	✓	0.23
The integration of enhanced social activities and neural-net methods requires a new definition of the Metaverse differen	✓	0.32
This paper divides the concepts and essential techniques for realizing the Metaverse into three components: hardware, so	✓	0.32
This paper divides the approaches to the Metaverse into three categories: user interaction, implementation, and applicat	✓	0.17
The paper's analysis approach differs from marketing or hardware-only approaches.	×	0.11
The paper describes essential methods based on three components and techniques applied to Ready Player One, Roblox, and	✓	0.24
Ready Player One, Roblox, and Facebook research are identified as representative examples of the Metaverse in the domain	✓	0.18
The paper summarizes limitations and directions for implementing the immersive Metaverse as social influences, constrain	✓	0.28

References

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