

LSA Framework Enhances Cross-Domain Robustness in Multimodal Models

Assignee Research

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Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: Does the LSA framework improve cross-domain robustness in multimodal models (e.g., LLaVA) when evaluated on adversarial examples from the LLaVA benchmark compared to baseline adversarial training. 8 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Layer-wise Regularized Adversarial Training using Layers Sustainability Analysis (LSA) framework. Research question: Does the LSA framework improve cross-domain robustness in multimodal models (e.g., LLaVA) when evaluated on adversarial examples from the LLaVA benchmark compared to baseline adversarial training methods?.

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 4.7/10.

3 Results

14 papers retrieved. 8 claims extracted; 1 independently verified. Quality review score: 4.7/10.

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
The Moon dataset consists of 2D features that visualize two interleaving half-circles generated by the Scikit-learn popu	×	0.02
The MNIST dataset comprises 28 \times 28 black and white images of handwritten digits with 60000 training and 10000 test sample	×	0.02
The CIFAR-10 dataset consists of 32 \times 32 color images with 60000 and 10000 samples for training and test divisions respect	×	0.01
Model A is a simple multilayer perceptron (MLP) architecture used for toy classification problems on the Moon dataset.	×	0.05
Model B is a convolutional neural network (CNN) for the MNIST dataset.	×	0.11
VGG-19 is used as model C to show its wide usage for benchmark neural networks on the CIFAR-10 dataset.	×	0.06
WideResNet architecture as model D is used for wide CNN architectures on the CIFAR-10 dataset.	×	0.05
The proposed LSA framework could be applied to any neural network architecture.	✓	0.19

References

- <http://arxiv.org/abs/2405.18770v6>
- <http://arxiv.org/abs/2202.02626v3>
- <http://arxiv.org/abs/2403.10883v2>