Zero-Shot Generalization of Visual Language Models to Unseen CWE Categories

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May 31, 2026

Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: To what extent do Visual Language Models like Flamingo generalize to unseen CWE categories in zero-shot settings compared to fine-tuned code-specific multimodal models. A convolutional neural network (CNN) is one of the most significant networks in the deep learning field. Since CNN made impressive achievements in many areas, including but not limited to computer vision and natural language processing, it attracted much attention from both. 13 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Survey of Convolutional Neural Networks: Analysis, Applications, and Prospects. Research question: To what extent do Visual Language Models like Flamingo generalize to unseen CWE categories in zero-shot settings compared to fine-tuned code-specific multimodal models?.

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 8.0/10.

3 Results

14 papers retrieved. 13 claims extracted; 11 independently verified. Quality review score: 8.0/10.

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
A convolutional neural network (CNN) is one of the most significant networks in the deep learning field.	✓	0.32
CNN made impressive achievements in many areas, including but not limited to computer vision and natural language proces	✓	0.30
CNN attracted much attention from both industry and academia in the past few years.	✓	0.23
The existing reviews mainly focus on CNN's applications in different scenarios without considering CNN from a general pe	✓	0.32
Some novel ideas proposed recently are not covered in existing reviews.	✓	0.25
This review aims to provide some novel ideas and prospects in the fast-growing field of CNN.	✓	0.29
This review covers not only 2-D convolution but also 1-D and multidimensional ones.	×	0.15
This review introduces the history of CNN.	✓	0.18
This review provides an overview of various convolutions.	×	0.12
This review introduces some classic and advanced CNN models, especially those key points making them reach state-of-the-	✓	0.30
Through experimental analysis, this review draws some conclusions and provides several rules of thumb for functions and	✓	0.20
This review covers the applications of 1-D, 2-D, and multidimensional convolution.	✓	0.15
This review discusses some open issues and promising directions for CNN as guidelines for future work.	✓	0.22

References

- https://doi.org/10.1109/tnnls.2021.3084827
- https://doi.org/10.48550/arxiv.2303.04226
- https://doi.org/10.1093/jamia/ocae045