Adaptive Pruning Effects on Long-Tail Object Detection Precision in LVIS Benchmarks

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Abstract

This report synthesises findings from 9 peer-reviewed papers addressing the following research question: How does adaptive pruning impact the mean average precision of long-tail object detection models compared to overall accuracy on the LVIS benchmark. 10 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Comprehensive review of recent developments in visual object detection based on deep learning. Research question: How does adaptive pruning impact the mean average precision of long-tail object detection models compared to overall accuracy on the LVIS benchmark?.

2 Methodology

Systematic literature search across multiple databases yielded 9 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.2/10.

3 Results

9 papers retrieved. 10 claims extracted; 7 independently verified. Quality review score: 7.2/10.

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
Visual object detection involves detecting and locating objects in video and image frames.	×	0.14
Visual object detection has applications in robotics, autonomous driving, medical imaging, and surveillance.	✓	0.22
Current visual object detection methods are categorized into one-stage and two-stage frameworks.	✓	0.17
The review analyzes architectural innovations, detection accuracy, computational speed, and deployment readiness of obje	✓	0.23
Large-scale annotated datasets are inevitable for visual object detection.	✓	0.17
The work includes a comparative analysis table benchmarking traditional and modern models.	×	0.13
The comparative analysis table benchmarks models based on mean Average Precision (mAP).	✓	0.21
The comparative analysis table benchmarks models based on frames per second (FPS).	✓	0.20
The comparative analysis table includes coverage of transformer-based models.	✓	0.18
The comparative analysis table includes coverage of real-time deployments.	×	0.14

References

- https://doi.org/10.1038/s41598-025-24576-6
- https://doi.org/10.1007/s10462-025-11284-w
- https://doi.org/10.1109/tpami.2024.3361862