Manifold-Aware Fine-Tuning and Inference Throughput in Adversarial Image Detection

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How do manifold-aware fine-tuning techniques impact the inference throughput (queries per second) compared to Euclidean-based models on adversarial image detection benchmarks such as ImageNet-Adv. 12 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Survey of Deep Learning-Based Object Detection. Research question: How do manifold-aware fine-tuning techniques impact the inference throughput (queries per second) compared to Euclidean-based models on adversarial image detection benchmarks such as ImageNet-Adv?.

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 6.7/10.

3 Results

10 papers retrieved. 12 claims extracted; 9 independently verified. Quality review score: 6.7/10.

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
Object detection is a branch of computer vision.	×	0.12
Object detection is applied in security monitoring.	×	0.13
Object detection is applied in autonomous driving.	✓	0.16
The purpose of object detection is to locate instances of semantic objects of a certain class.	✓	0.21
The performance of object detectors has greatly improved with the rapid development of deep learning algorithms.	✓	0.31
The survey analyzes methods of existing typical detection models.	✓	0.18
The survey describes benchmark datasets for object detection.	×	0.13
Object detection methods include one-stage detectors.	✓	0.20
Object detection methods include two-stage detectors.	✓	0.20
The survey lists traditional and new applications of object detection.	✓	0.16
The survey discusses the architecture of exploiting object detection methods to build effective and efficient systems.	✓	0.24
The survey points out a set of development trends for object detection algorithms.	✓	0.18

References

- https://doi.org/10.1109/access.2019.2939201
- https://doi.org/10.1186/s40537-021-00444-8
- https://doi.org/10.1109/access.2020.3045078