

Inference Efficiency and Human Attention Alignment in Large-Scale Vision Models for Object Detection

Assignee Research

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Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: What is the impact of model inference efficiency on the correlation between human attention prediction accuracy and downstream task performance in large-scale vision models. Object detection is one of the most important and challenging branches of computer vision, which has been widely applied in people's life, such as monitoring security, autonomous driving and so on, with the purpose of locating instances of semantic objects of a certain class. 10 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.5/10. 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: What is the impact of model inference efficiency on the correlation between human attention prediction accuracy and downstream task performance in large-scale vision models?.

2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.5/10.

3 Results

15 papers retrieved. 10 claims extracted; 10 independently verified. Quality review score: 9.5/10.

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 one of the most important and challenging branches of computer vision.	✓	0.28
Object detection has been widely applied in people’s life, such as monitoring security, autonomous driving and so on.	✓	0.30
The purpose of object detection is to locate instances of semantic objects of a certain class.	✓	0.23
With the rapid development of deep learning algorithms for detection tasks, the performance of object detectors has been	✓	0.37
The survey analyzes the methods of existing typical detection models and describes the benchmark datasets.	✓	0.20
The survey provides a comprehensive overview of a variety of object detection methods in a systematic manner, covering t	✓	0.36
The survey lists the traditional and new applications of object detection.	✓	0.17
The survey analyzes some representative branches of object detection.	✓	0.19
The survey discusses the architecture of exploiting these object detection methods to build an effective and efficient s	✓	0.28
The survey points out a set of development trends to better follow the state-of-the-art algorithms and further research.	✓	0.26

References

- <https://doi.org/10.1109/access.2019.2939201>
- <https://doi.org/10.1007/s41095-022-0271-y>
- <https://doi.org/10.48550/arxiv.1709.01507>