

Quantized Multimodal Dental X-Ray Models vs Single-Modality CNNs on Edge Devices

Assignee Research

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Abstract

This report synthesises findings from 11 peer-reviewed papers addressing the following research question: How does the performance of quantized multimodal dental X-ray models compare to single-modality CNNs in terms of mAP (mean Average Precision) on edge devices under varying input resolutions. 5 claims were extracted from source literature; 5 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: YOLO advances to its genesis: a decadal and comprehensive review of the You Only Look Once (YOLO) series. Research question: How does the performance of quantized multimodal dental X-ray models compare to single-modality CNNs in terms of mAP (mean Average Precision) on edge devices under varying input resolutions?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.3/10.

3 Results

11 papers retrieved. 5 claims extracted; 5 independently verified. Quality review score: 8.3/10.

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
YOLO algorithms have evolved from YOLOv1 to YOLOv12, with each version introducing advancements in speed, detection accuracy	✓	0.20
YOLOv12 is the most recently unveiled version of the YOLO series.	✓	0.15
Alternative versions of YOLO include YOLO-NAS, YOLO-X, YOLO-R, DAMO-YOLO, and Gold-YOLO.	✓	0.24
YOLO models have transformative impacts across five critical application areas: autonomous vehicles and traffic safety,	✓	0.30
The evolution of YOLO signifies a path towards integrating YOLO with multimodal, context-aware, and Artificial General I	✓	0.32

References

- <https://doi.org/10.1007/s10462-025-11253-3>
- <https://doi.org/10.3390/bioengineering11030219>
- <https://doi.org/10.3390/diagnostics13132196>