

Multi-Task Vision-Language Models vs. Single-Task Baselines in Low-Resource Medical Imaging

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: What is the comparative memory footprint and inference latency of multi-task trained vision-language models versus single-task baselines on low-resource medical datasets. 10 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.6/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A foundation model for generalizable disease detection from retinal images. Research question: What is the comparative memory footprint and inference latency of multi-task trained vision-language models versus single-task baselines on low-resource medical datasets?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.6/10.

3 Results

16 papers retrieved. 10 claims extracted; 8 independently verified. Quality review score: 7.6/10.

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
RETFound is a foundation model designed for retinal images.	✓	0.24
RETFound learns generalizable representations from unlabelled retinal images.	✓	0.30
RETFound was trained on 1.6 million unlabelled retinal images.	✓	0.29
RETFound utilizes self-supervised learning for its training phase.	×	0.09
RETFound is adapted to disease detection tasks using explicit labels.	✓	0.19
Adapted RETFound consistently outperforms several comparison models in the diagnosis of sight-threatening eye diseases.	✓	0.27
Adapted RETFound consistently outperforms several comparison models in the prognosis of sight-threatening eye diseases.	✓	0.26
Adapted RETFound consistently outperforms several comparison models in the incident prediction of heart failure.	✓	0.21
Adapted RETFound consistently outperforms several comparison models in the incident prediction of myocardial infarction.	✓	0.21
Adapted RETFound achieves superior performance with fewer labelled data compared to comparison models.	×	0.13

References

- <https://doi.org/10.1038/s41586-023-06555-x>
- <https://doi.org/10.1007/s10915-022-01939-z>
- <https://doi.org/10.1109/tnnls.2021.3070843>