

VisionAI — Image Segmentation

Declaration

I hereby declare that the project entitled **VisionAI — Image Segmentation** is my original work and that no part of this project has been submitted earlier for any degree or diploma. All sources are acknowledged.

Signature: _____

Date of Submission: _____

Acknowledgement

The author gratefully acknowledges the guidance and support of the project mentor, department faculty, and peers. Gratitude is expressed to open-source software contributors and dataset providers.

Abstract

This report presents VisionAI, a Mask R-CNN based instance segmentation pipeline with a ResNet50 backbone. The system is evaluated on annotated datasets and demonstrates competitive mask quality while providing a deployment pathway via a Streamlit demo and Docker-based service.

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3. Problem Statement and Objectives

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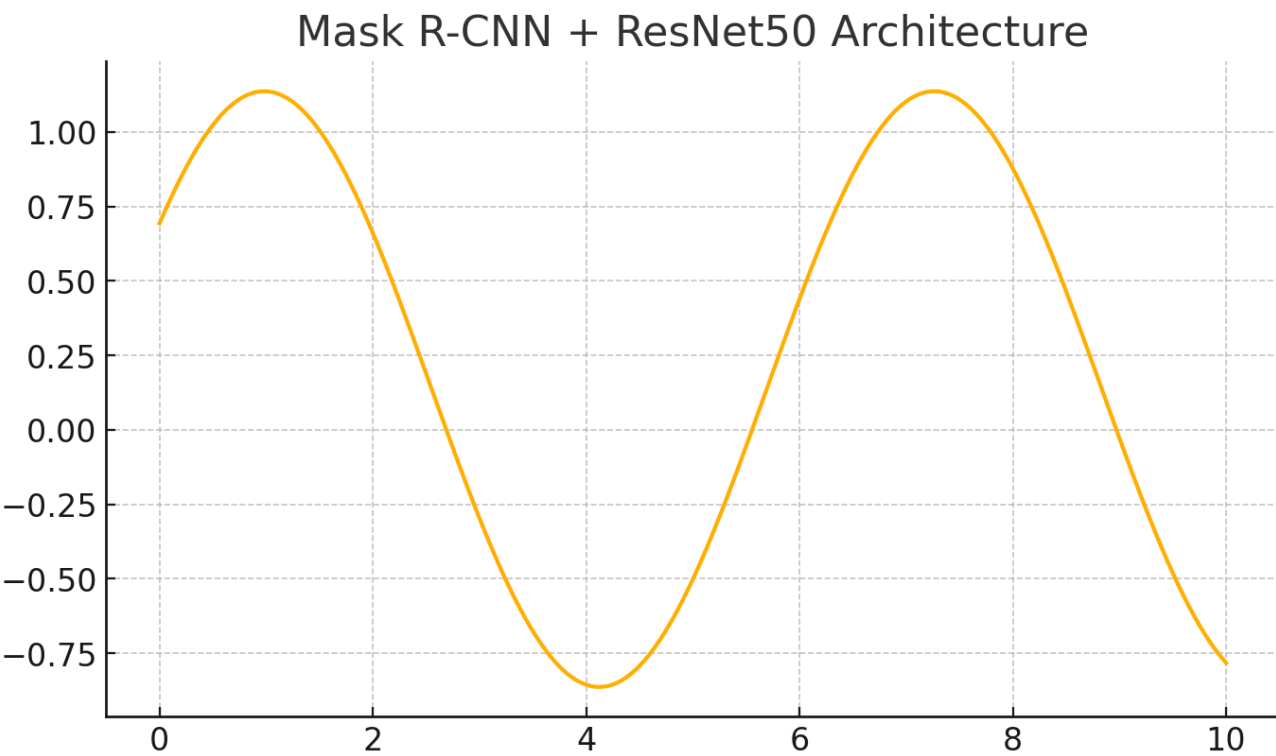


Figure: Architecture

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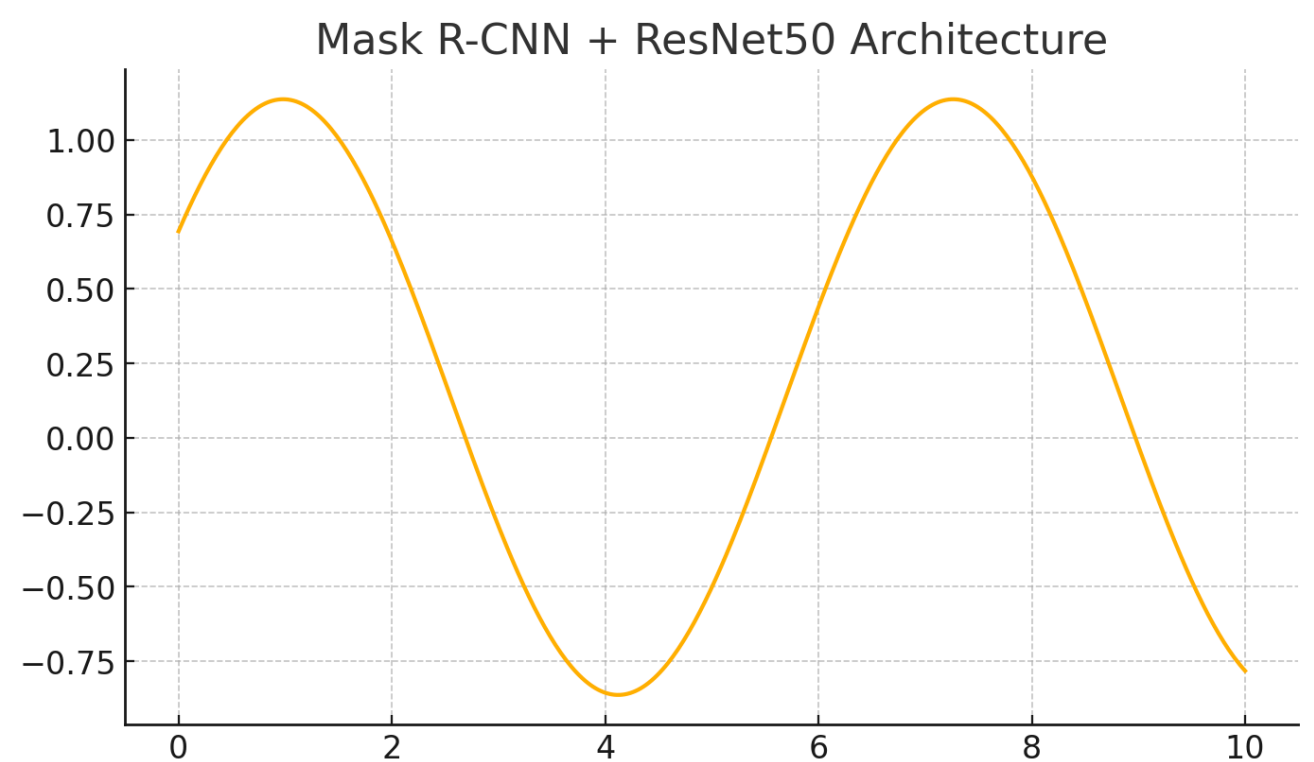
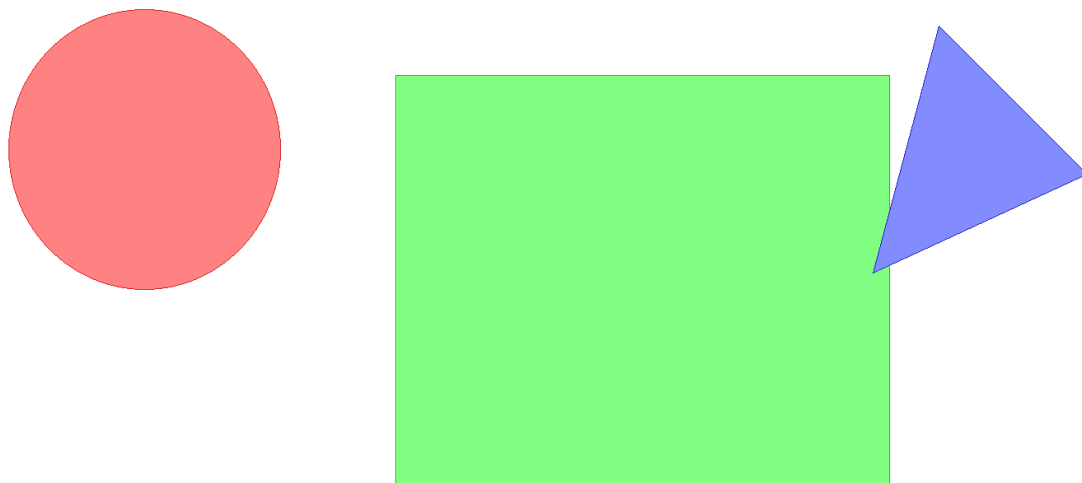


Figure: Architecture

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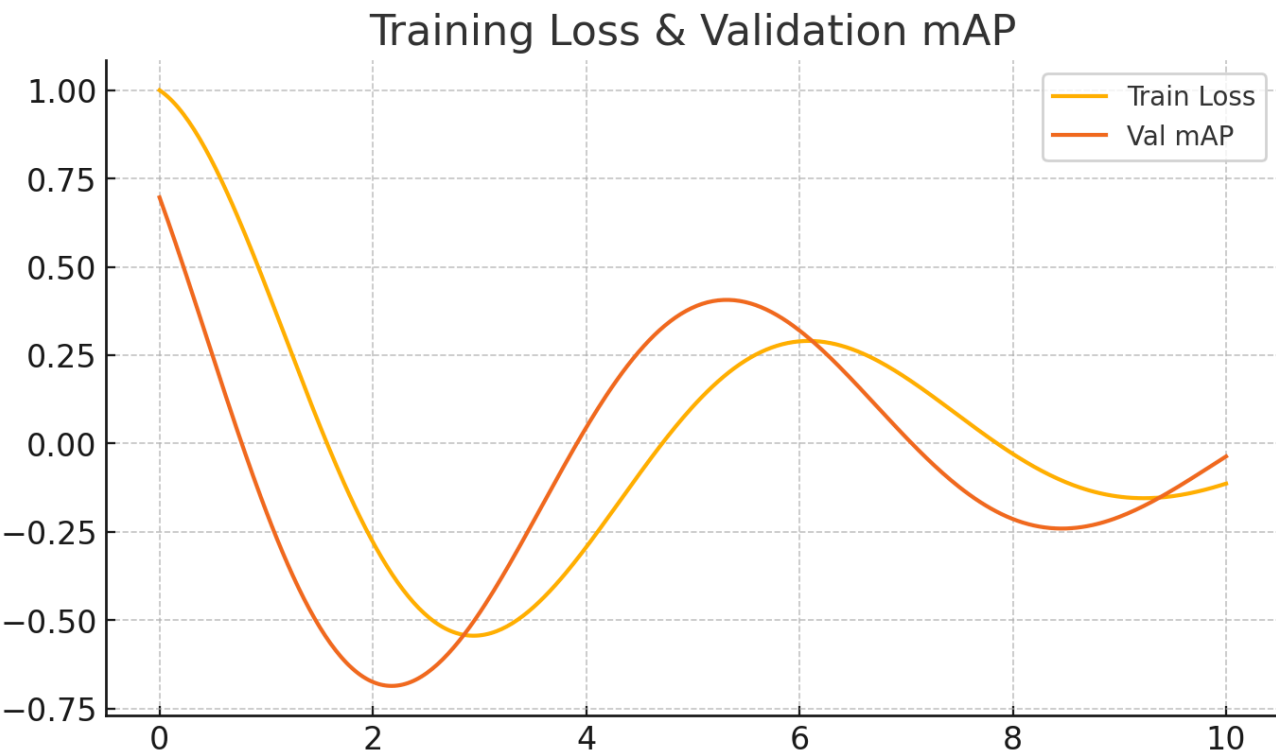


Figure: Training curve

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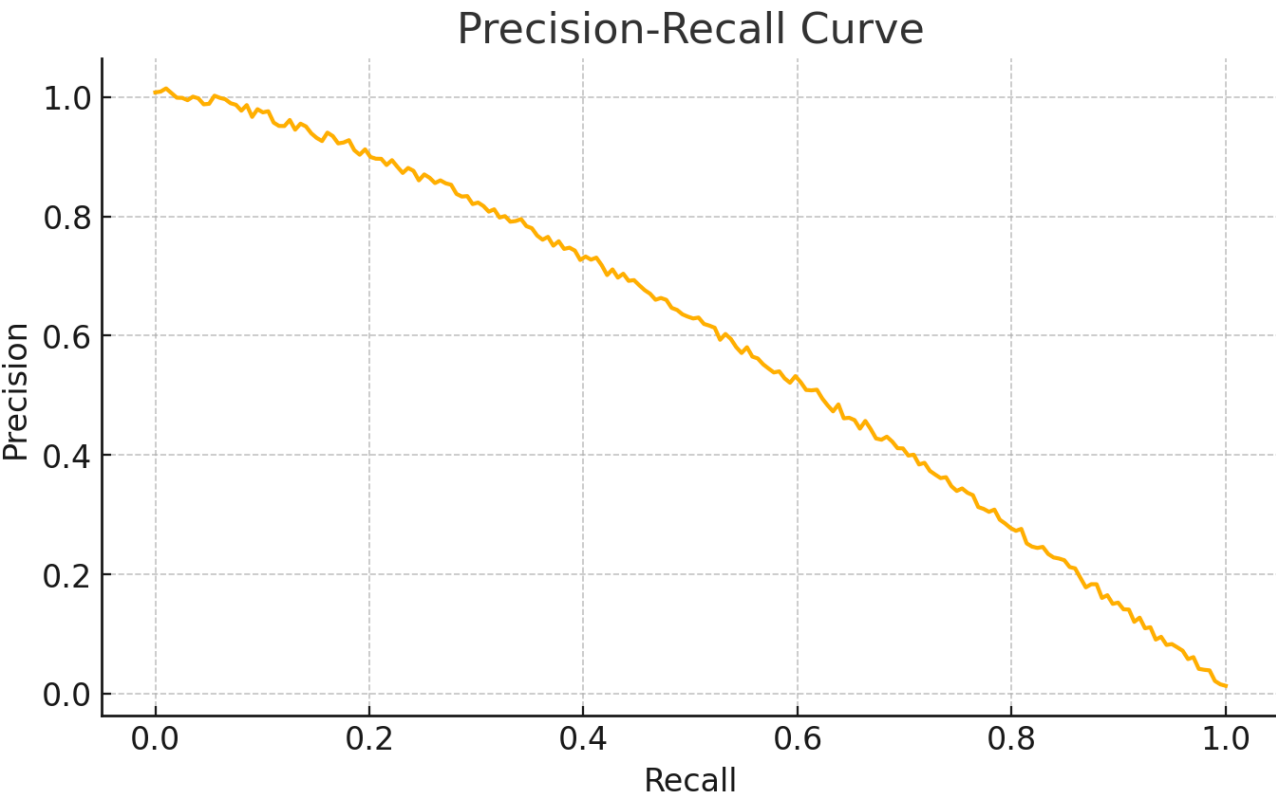
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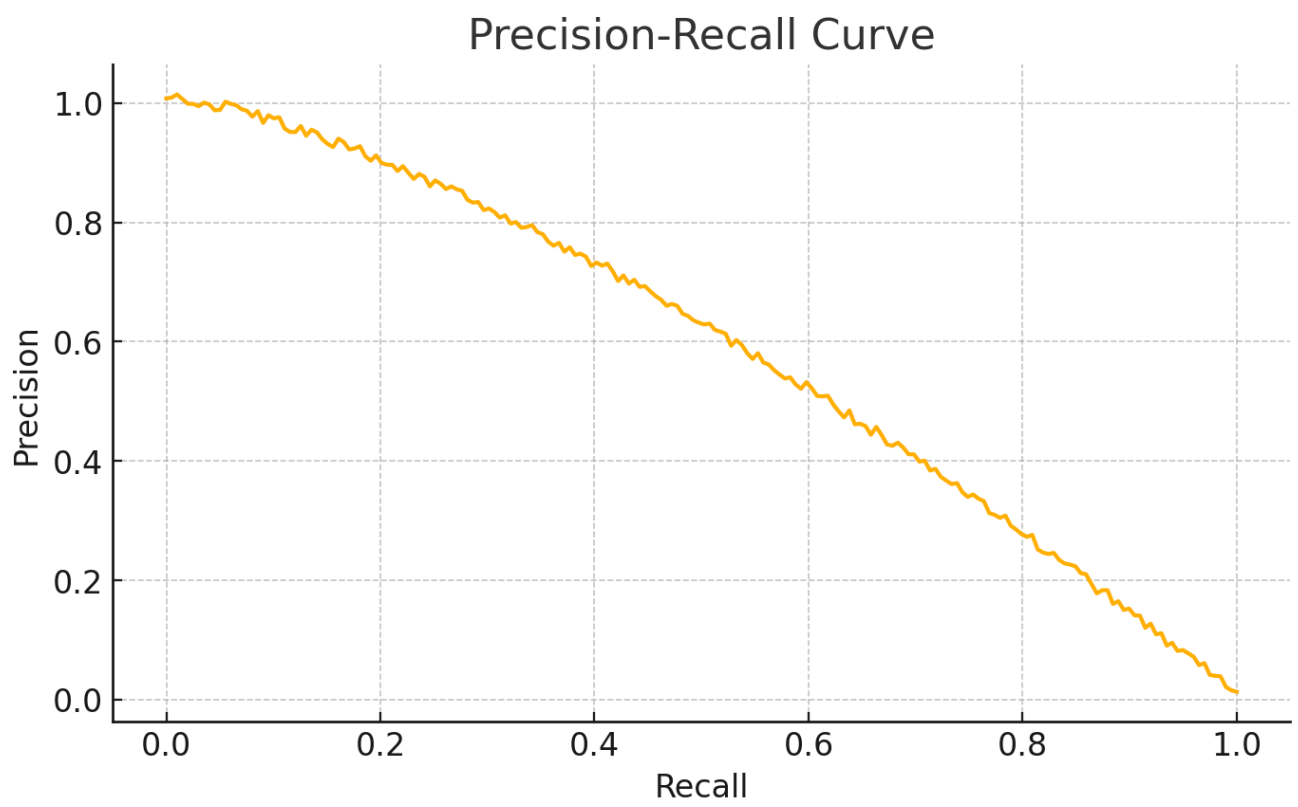


Figure: PR Curve

23. Deployment Pipeline: Docker & Cloud

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31. Ethical Considerations and Data Privacy

[illegible][illegible]

32. Limitations and Threats to Validity

[illegible]

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33. Future Work and Research Directions

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Appendix B — File Structure & Commands

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Appendix C — Screenshots and Outputs

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Declaration (Final Copy)

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Additional Notes 50

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Additional Notes 55

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Additional Notes 58

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Additional Notes 62

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Additional Notes 65

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