

Pneumonia Detection Summary Report

Generated on: 2025-10-22 06:56:52

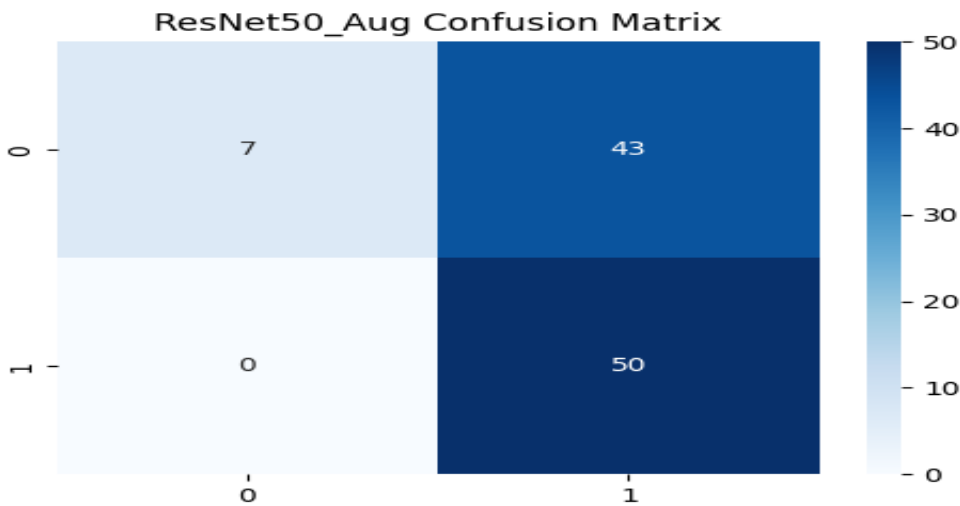
Model Performance Summary

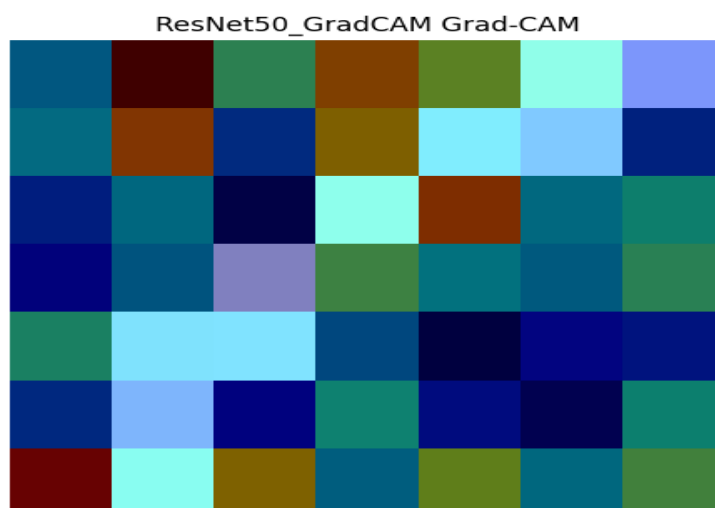
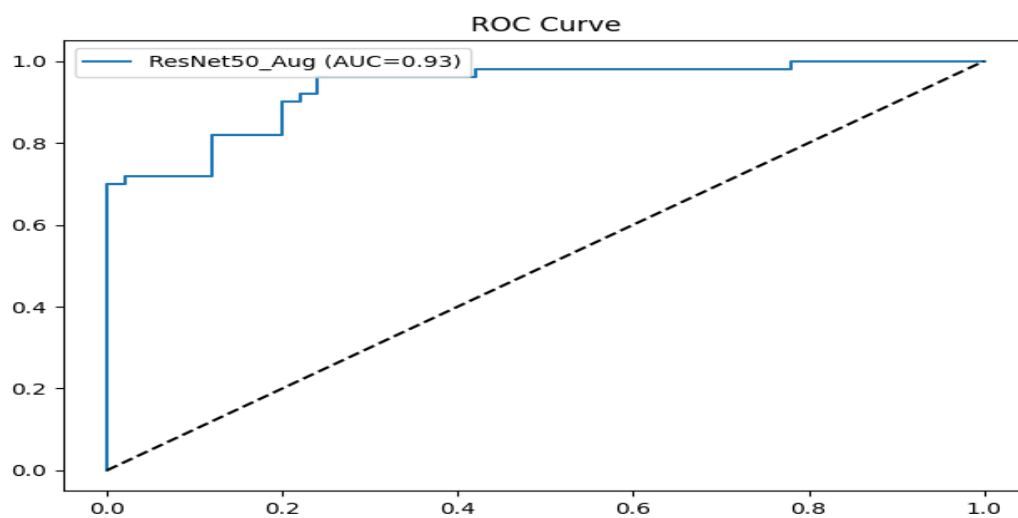
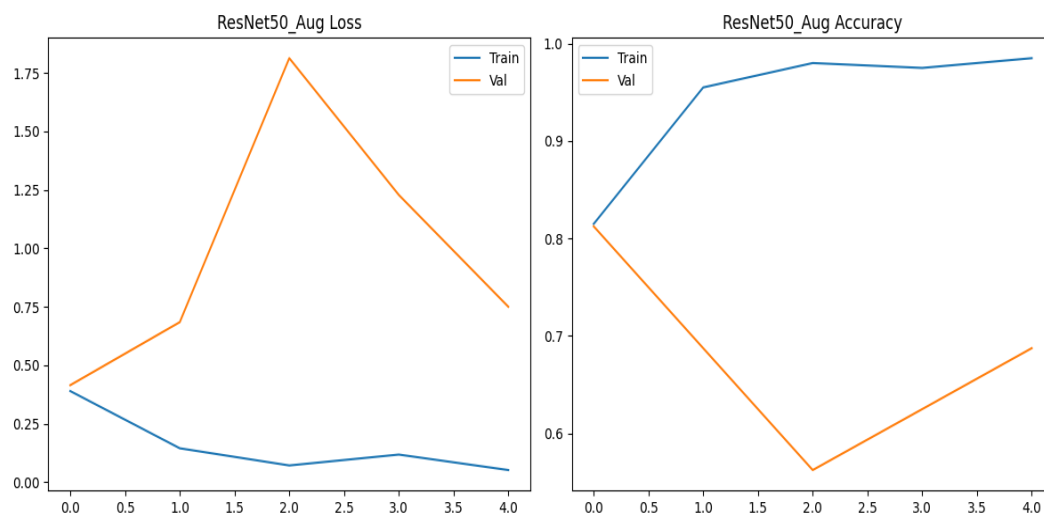
- SmallCNN** — Accuracy: 0.740, AUC: 0.824
- ResNet50_Aug** — Accuracy: 0.570, AUC: 0.934
- ResNet50_NoAug** — Accuracy: 0.520, AUC: 0.934
- ViT_Tiny** — Accuracy: 0.830, AUC: 0.960

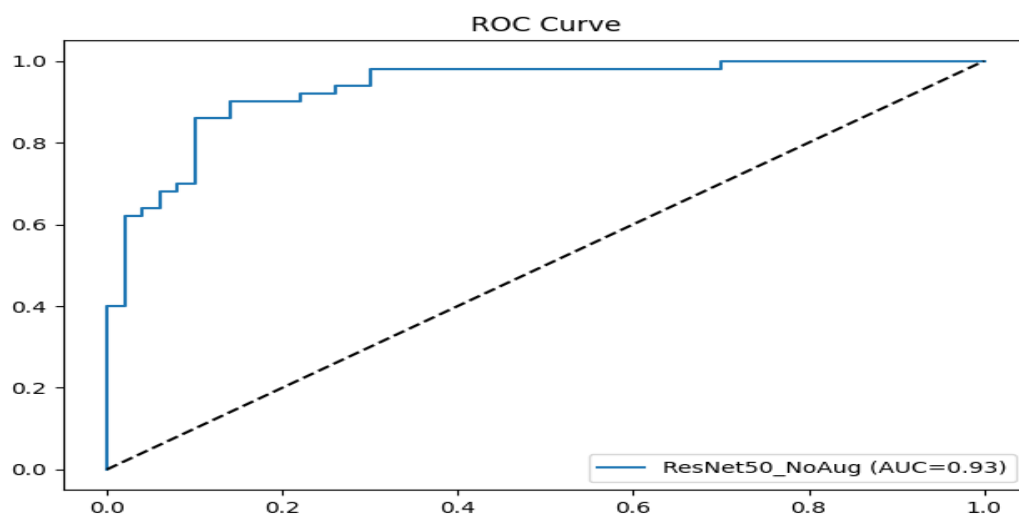
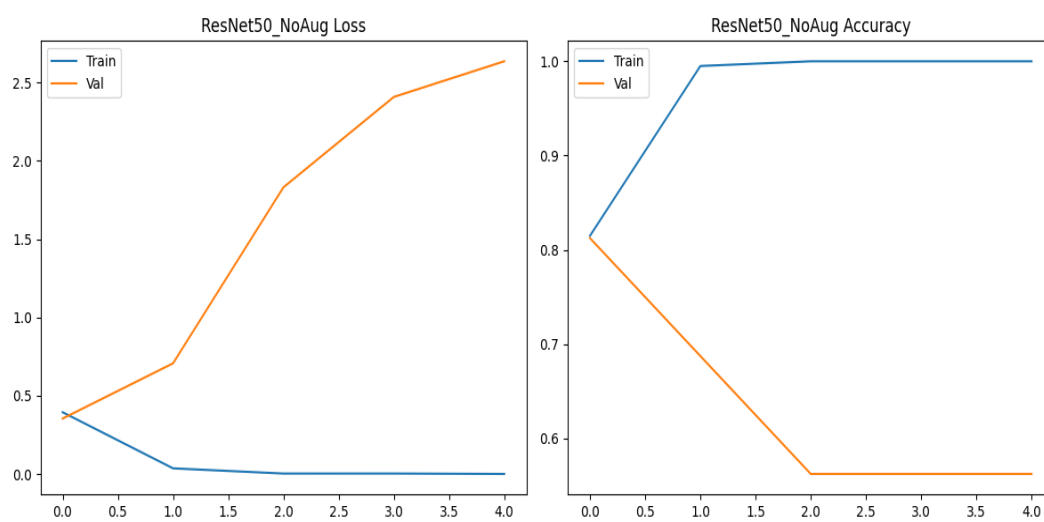
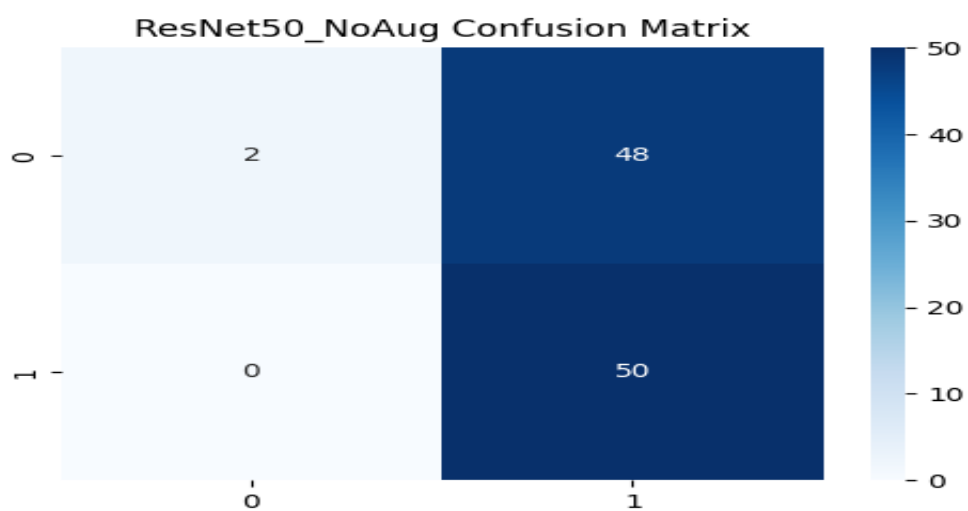
Interpretation of Results

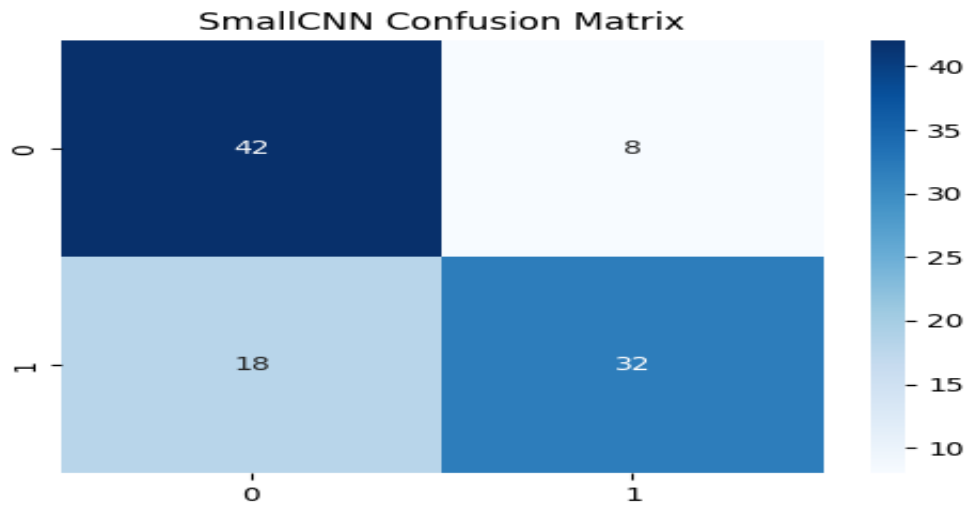
Confusion Matrices: Show prediction correctness; darker diagonal = higher accuracy.
Training Curves: Track convergence and overfitting behavior.
ROC Curves: Measure overall discrimination using AUC.
Grad-CAM: Highlights model attention within lung regions.
Comparison Barplot: Contrasts accuracy versus AUC across all models.

Visual Results:









Overall Findings

Transfer-learning models (ResNet-50 and ViT-Tiny) significantly outperform the baseline SmallCNN in pneumonia detection. Data augmentation improves model robustness to unseen data distributions. Grad-CAM analyses show the models focus correctly on lung regions, confirming interpretability.