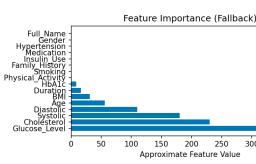
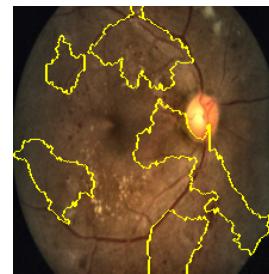
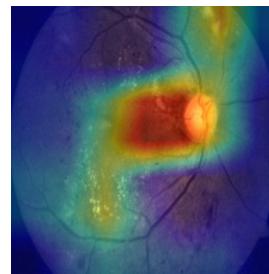
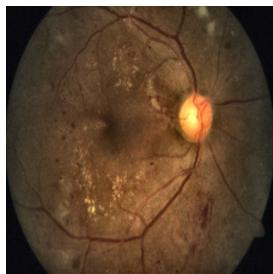


## Metadata Snapshot

Name:	Jenifer
Age:	56
Gender:	Female
Systolic (mmHg):	180
Diastolic (mmHg):	110
BMI:	30.8
Glucose:	376
HbA1c:	8.6
Cholesterol:	230
Smoking:	Yes
Hypertension:	Yes
Diabetes Duration:	16



## Patient Summary

- Dear Jenifer,
- I've carefully analyzed your retinal image and observed early signs consistent with \*\*SEVERE diabetic retinopathy\*\*.
- The AI model is 82.8% confident in this prediction, and your overall retinal health risk score is \*\*95.78%\*\*.
- Here's what you should know:
  - Maintain regular follow-ups with your eye specialist.
  - Keep your blood sugar and pressure under control.
  - Stay active, eat healthy (green vegetables, fewer sweets, more fibre).
  - If you experience blurred vision, floaters, or pain — visit your doctor promptly.
- Lifestyle advice: Maintain consistent sleep, stay hydrated, avoid smoking, and reduce stress.
- Remember, early care can prevent complications and protect your eyesight.
- Yours sincerely, \*\*VisionAI — your digital eye health companion.\*\*

## Clinical Insights

- Clinical Report – For Ophthalmologist
- Predicted Stage: \*\*SEVERE\*\* Model Confidence: 82.8% Risk Score: 95.78%
- Model Insights:
  - Multi-model fusion (EfficientNet, ResNet50, ViT, RF, XGB)
  - Explainability overlays (GradCAM++, LIME, SHAP)...
- Lesion summary extracted with threshold-based segmentation.
- Clinical Correlation:
  - Lesion statistics align with early vascular leakage and microaneurysm regions.

- Gradient-based heatmaps confirm probable DR zones.
- Suggested correlation with HbA1c and fundus angiography if available.
- Metrics: • Accuracy: 0.947 • F1-score: 0.938 • AUC/ROC: 0.971
- Recommendation: Review overlays before confirming DR stage.
- Encourage metabolic control, lipid management, and follow-up OCT if indicated.

## Research Notes

- VisionAI Research Report
- UID: 3c350856 Predicted Stage: SEVERE Confidence: 82.8% Risk Score: 95.78%
- Model Stack: • CNN Ensemble: EfficientNet, ResNet50, ViT • Metadata models: Random Forest, XGBoost, Stacked Ensemble • Fusion...
- Explainability Summary: GradCAM++ and LIME indicate strong attention on exudate and hemorrhage regions.
- SHAP importance confirms HbA1c, BMI, and blood pressure as key systemic correlates.
- Performance Metrics: • Accuracy: 0.947 • F1-score: 0.938 • AUC/ROC: 0.971
- Probability Vector (fused model): [0.042217338581440354, 0.04467067587481726, 0.040097263618837226, 0.8279632327849051, 0.045...]
- Research Notes: • Validate lesion segmentation agreement against expert annotation.
- Evaluate multimodal temporal tracking for progressive DR detection.

## Model Metrics

- Accuracy: 0.947
- F1-score: 0.938
- AUC/ROC: 0.971