

Diastolic (mmHg)	110
BMI	30.8
Glucose Level	376
HbA1c	8.6
Cholesterol	230
Smoking	Yes
Hypertension	Yes
Duration (yrs)	16
Insulin Use	Yes
Medication	Yes
Physical Activity	1

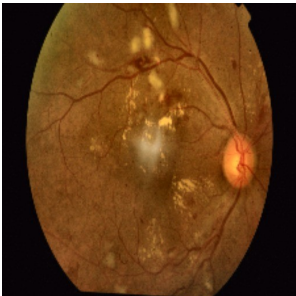
Diagnostic Overview

Stage: MODERATE

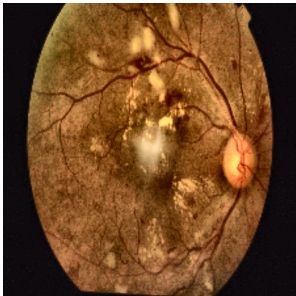
Confidence: 44.51%

Risk score: 95.55%

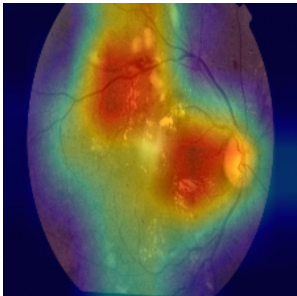
Original



Processed



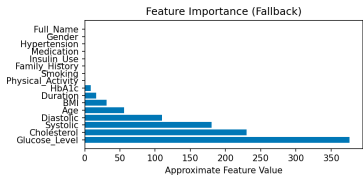
GradCAM



LIME



SHAP



Lesion Quantification

Exudates: 3.212
Hemorrhages: 5.341
Cotton wool: 0.0
Lesion percentage: 8.553

AI Clinical Narrative

Moderate NPDR: multiple dot-blot hemorrhages and signs consistent with vascular leakage. Lesion distribution suggests increased activity compared to mild disease.

Suggested plan: Shorter surveillance interval (3–6 months), optimize systemic risk factors, and consider OCT to assess macular thickness. Discuss referral thresholds for specialist review.

Explainability Notes

- GradCAM: Spatial heatmap highlighting regions that influenced the image CNN predictions.
- LIME: Local superpixel contributions showing positive/negative influences on the predicted label.
- SHAP: Global metadata feature importance (when metadata model available).

Model Performance

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

Clinical Recommendations

- Consider OCT to evaluate for macular edema.
- 3–6 month follow-up and coordinate with primary care for systemic optimization.