VisionAI — Clinical Diagnostic Report

Report for Case: **aug_3223686**

Patient ID	aug_3223686
Age	61.0
Gender	Male
Blood Pressure	142.0/72.0
Glucose Level (mg/dL)	110.0
Other risk factors	Yes

AI Findings & Interpretation (spoken by VisionAI):

Findings (AI):

AI Detection Summary: The model indicates **PDR (Proliferative DR)** with a risk level marked as **Critical**.

Lesion coverage estimate: **26.51%** of the retinal area shows activations consistent with lesions.

Approx. exudates (brightness clusters): **0.42%**; hemorrhages: **1.44%**; cotton wool spots: **5.37%**.

Metadata-based risk notes:

Age > 60 increases risk of progression.

Interpretability & Rationale:

Grad-CAM++ locates model-activated regions — useful to localize vascular changes and hemorrhage patterns.

LIME highlights patch-level influence; interpret as local evidence, not a substitute for clinical imaging exams.

SHAP (metadata) shows which systemic features most influenced the model's prediction.

Clinical Recommendations (AI):

Urgency: For PDR (Proliferative DR) — urgent ophthalmology referral required within 48–72 hours.

Diagnostic: Consider fluorescein angiography and OCT to evaluate neovascularization and macular edema.

Medical: Optimize systemic control — aim for tighter glycemic control (target A1c individualized).

Monitoring: If not PDR, schedule close imaging follow-up (4–8 weeks) depending on risk and symptoms.

Documentation: Include these AI heatmaps in patient record to support clinical decisions.
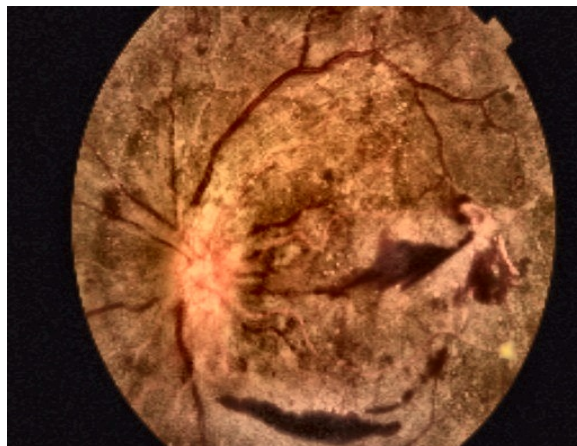
Limitations & Caution:

This is an AI screening tool — not a standalone diagnosis.

Lesion percentage is a heuristic derived from activation maps and is sensitive to preprocessing and camera artifacts.

Confirm findings with slit-lamp and dilated fundus exam where possible.
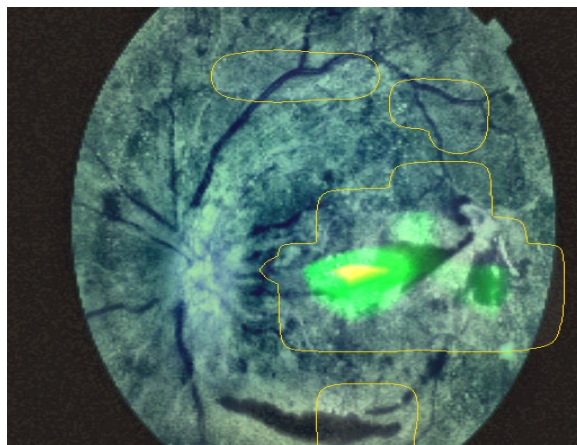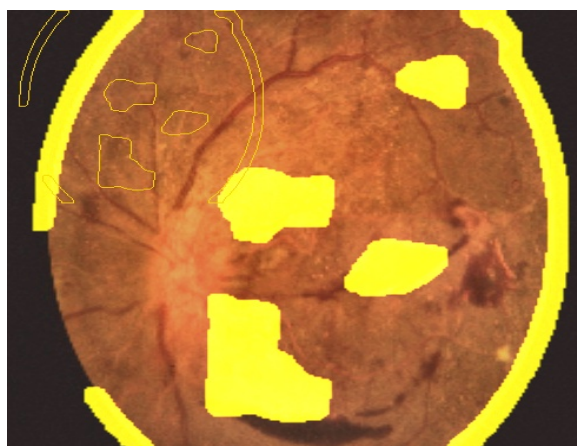
Visual Evidence (images):

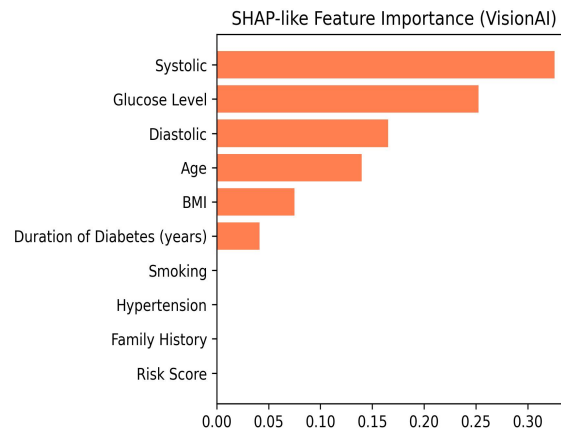**Original Fundus Image**
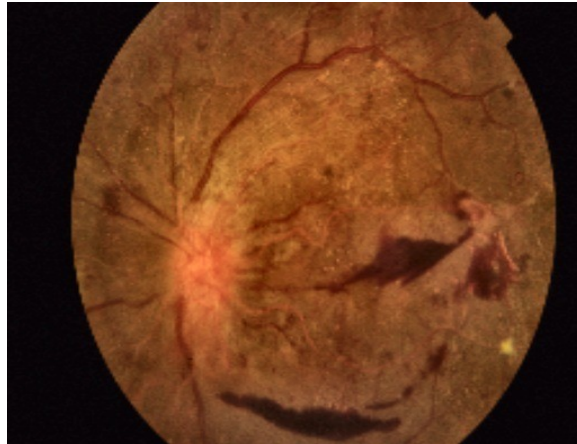
Preprocessed (CLAHE)

Grad-CAM++ heatmap

LIME++ explanation

SHAP-like Feature Importance (VisionAI)

SHAP metadata

Clinical Action Plan (AI suggestions):

• If PDR / Critical risk → Urgent referral to retina specialist within 48–72 hours.
• Confirm with multimodal imaging (OCT, fundus fluorescein angiography) where possible.
• If high lesion burden but no urgent signs, schedule expedited clinic review (within 2 weeks).
• Address systemic factors: improve glycemic control, optimize blood pressure, counsel on smoking cessation.
• Record AI maps in patient file to track lesion progression.

Caveats (what the AI cannot replace):

• This tool is a screening assistant — not a substitute for dilated fundus exam or specialist judgment.
• Image artifacts, camera glare, media opacity (cataract), or off-axis capture may degrade reliability.
• SHAP/LIME/Grad-CAM are interpretability aids — they provide insights but are not definitive lesion labels.