Comprehensive Skin Lesion Analysis Report

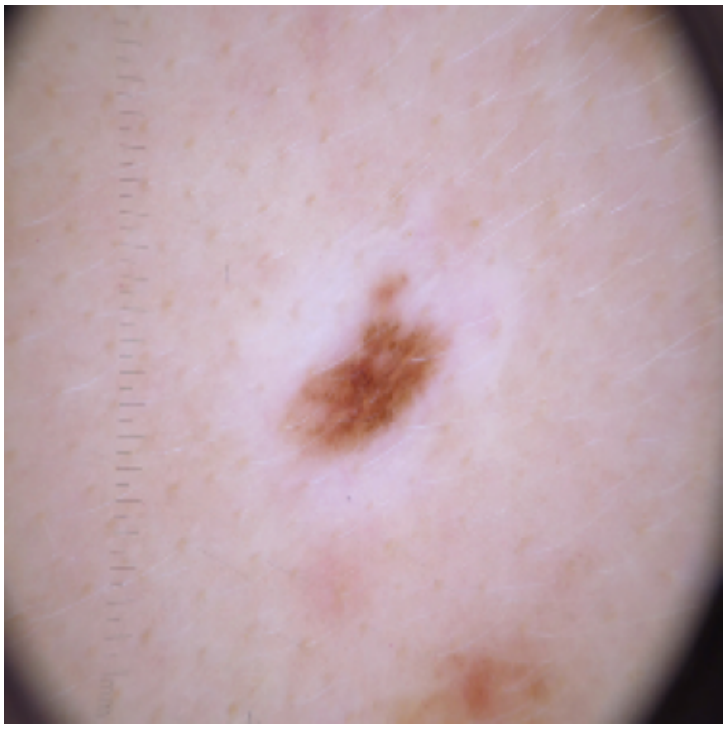
Prediction: nv

Confidence: 0.84

Generated on: 2025-03-19 08:13:11

Image and Predictions

Original Image



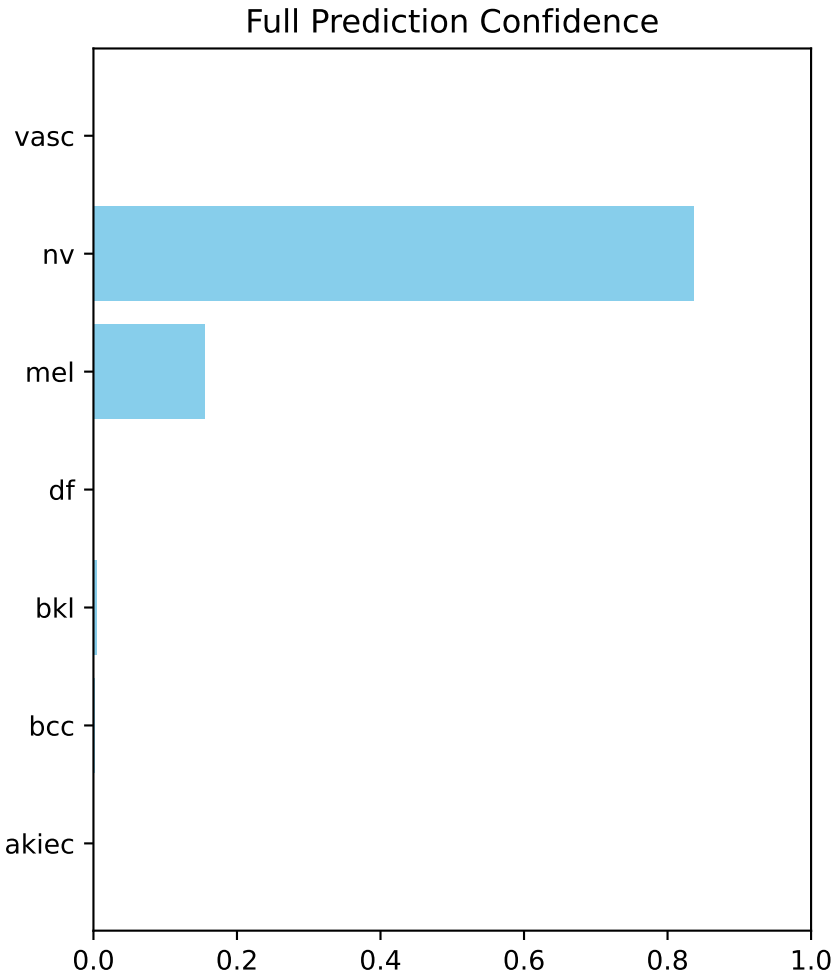
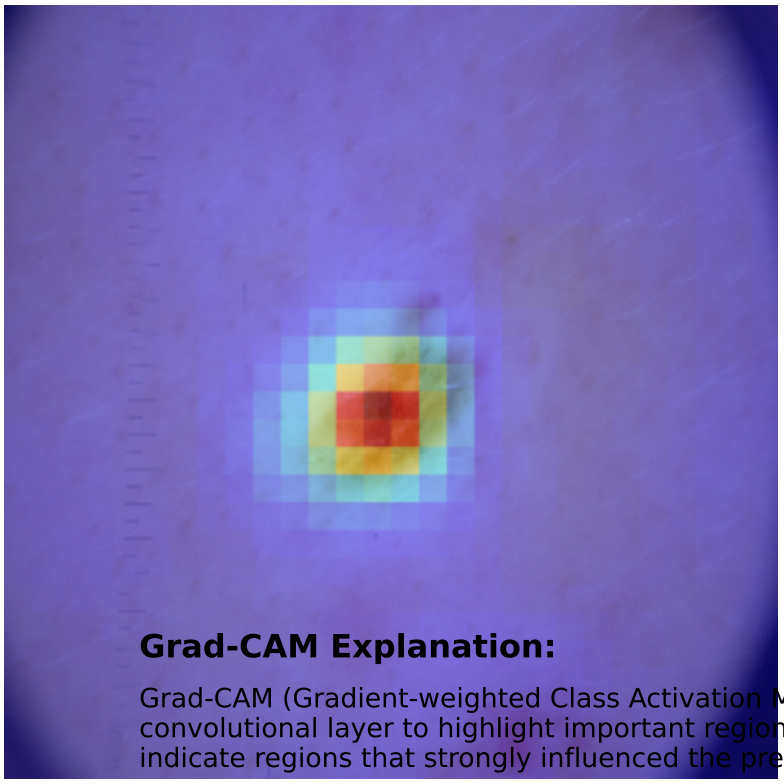


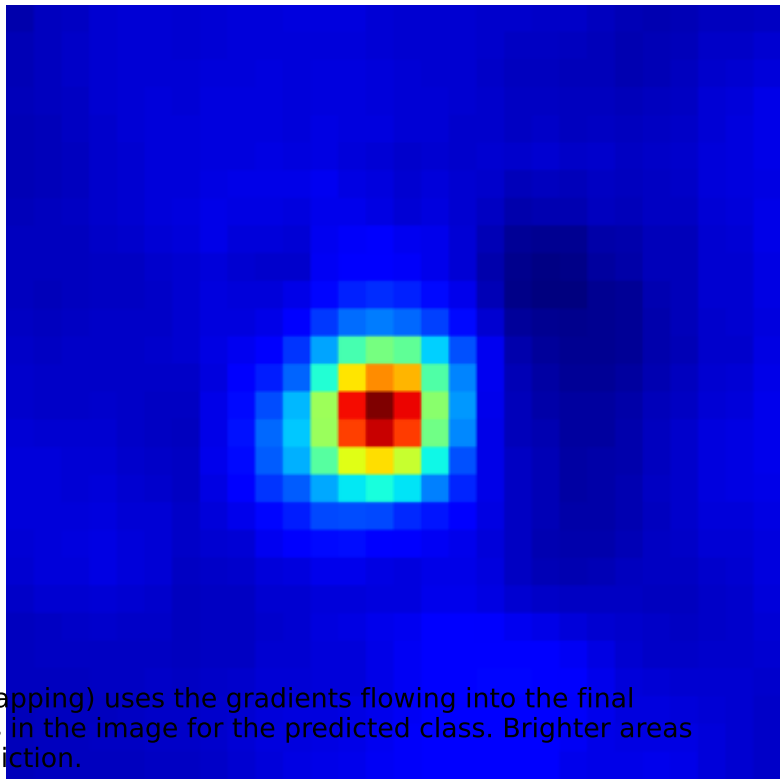
Image Name: sample_image
Date Analyzed: 2025-03-19 08:13:12
Model: SkinLesionModel
Image Size: 224x224
Top Predictions:
1. nv: 0.8362
2. mel: 0.1554
3. bkl: 0.0048

Explanation Methods - Part 1

Captum Grad-CAM Explanation



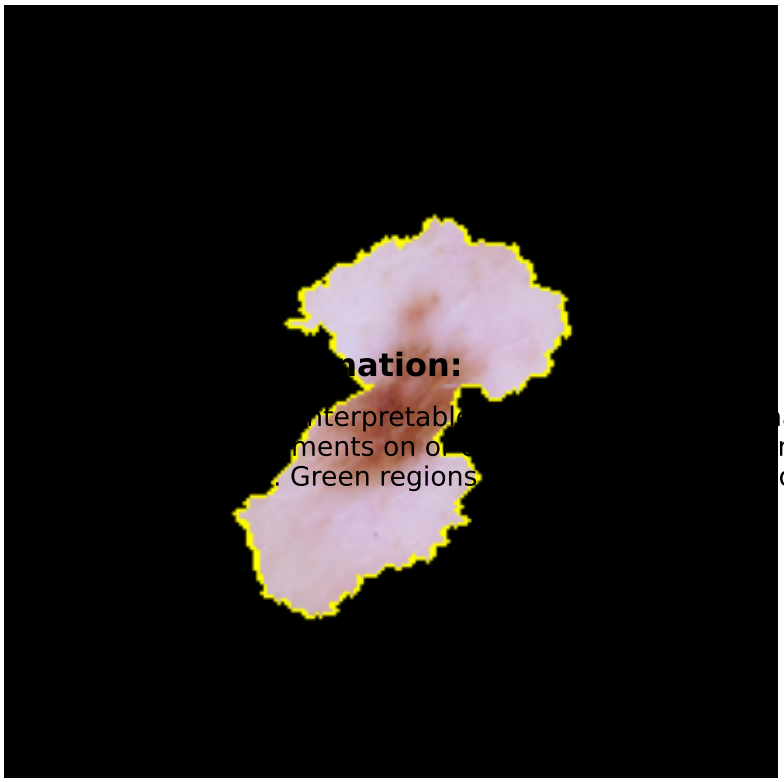
Grad-CAM Heatmap



Grad-CAM Explanation:

Grad-CAM (Gradient-weighted Class Activation Mapping) uses the gradients flowing into the final convolutional layer to highlight important regions in the image for the predicted class. Brighter areas indicate regions that strongly influenced the prediction.

LIME Explanation

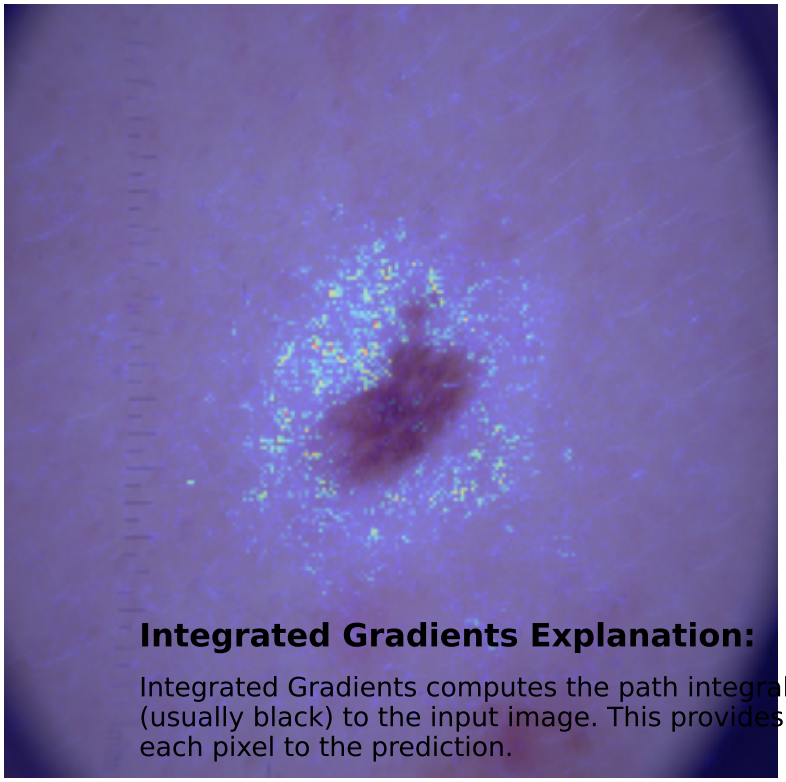


nation:

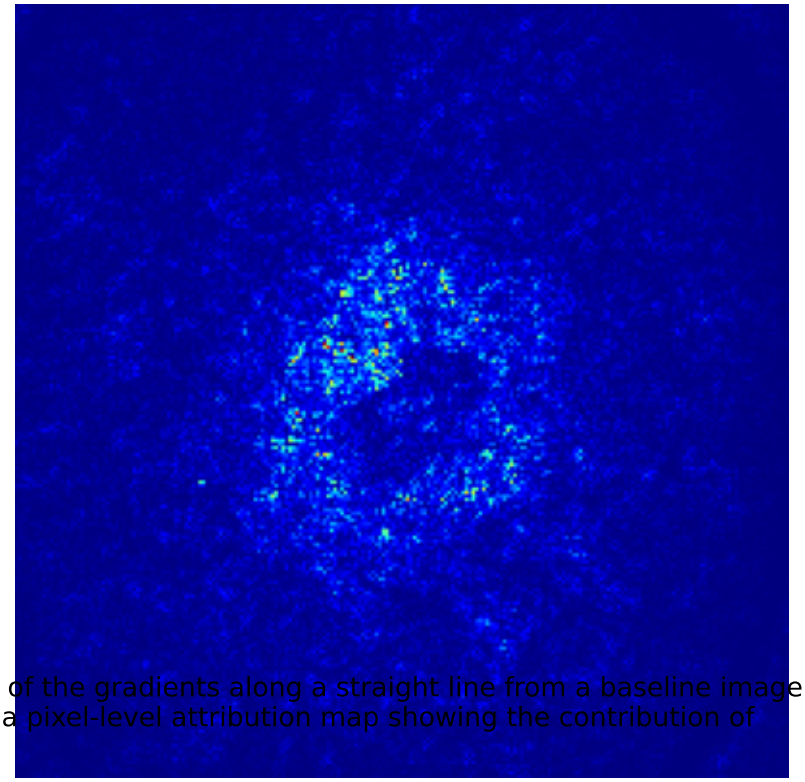
nterpretabl ations) perturbs the input image by segmenting it and
ments on o model to approximate how the segments affect the model's
. Green regions o the prediction, while red regions negatively contribute.

Explanation Methods - Part 2

Integrated Gradients Explanation



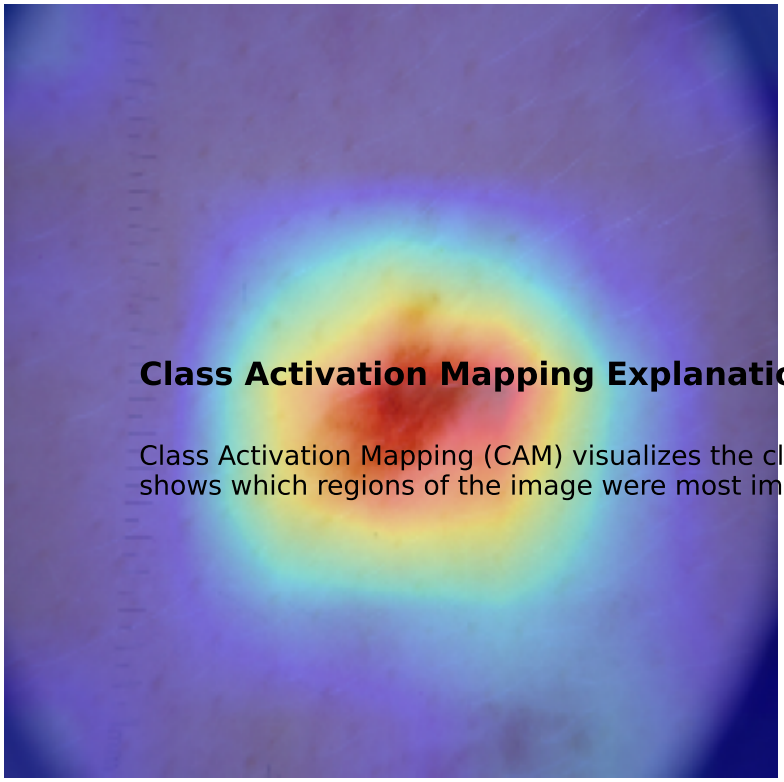
IG Attribution Map



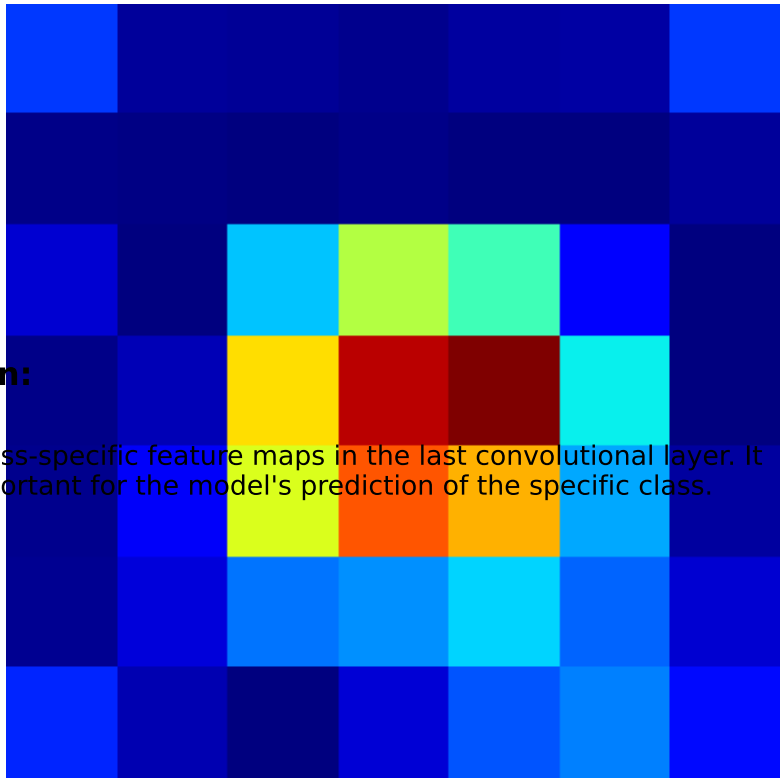
Integrated Gradients Explanation:

Integrated Gradients computes the path integral of the gradients along a straight line from a baseline image (usually black) to the input image. This provides a pixel-level attribution map showing the contribution of each pixel to the prediction.

Class Activation Mapping



CAM Heatmap



Class Activation Mapping Explanation:

Class Activation Mapping (CAM) visualizes the class-specific feature maps in the last convolutional layer. It shows which regions of the image were most important for the model's prediction of the specific class.

Explanation methods like Grad-CAM, LIME, and Integrated Gradients provide insight into the model's decision-making process, but they are approximations and should be interpreted with caution.

Important Information

For any concerns about skin lesions, please consult a qualified dermatologist. Early detection and proper medical assessment are crucial for skin cancer diagnosis and treatment.

About the Model:

Architecture: SkinLesionModel
Training Dataset: HAM10000
Classes: Melanocytic nevi (nv), Melanoma (mel), Benign keratosis (bkl), Basal cell carcinoma (bcc), Actinic keratoses (akiec), Vascular lesions (vasc), Dermatofibroma (df)

Explanations generated using multiple XAI (Explainable AI) techniques to provide a comprehensive understanding of the model's prediction.