



Skin Disease Detection Using Customized CNN

Exploring a deep learning approach to automate skin disease diagnosis.





Introduction

Need for Automation

Automated detection aids early diagnosis and reduces workload.

Common Diseases

Focus on prevalent skin conditions: acne, eczema, psoriasis.

Diagnostic Speed

Faster and more accessible diagnosis improves patient outcomes.

Objective

Model Goal

Develop a binary CNN classifier.

Detection Focus

Classify acne vs. eczema and psoriasis.

Impact

Enhance diagnostic speed and accuracy clinically.

Dataset

Data Sources

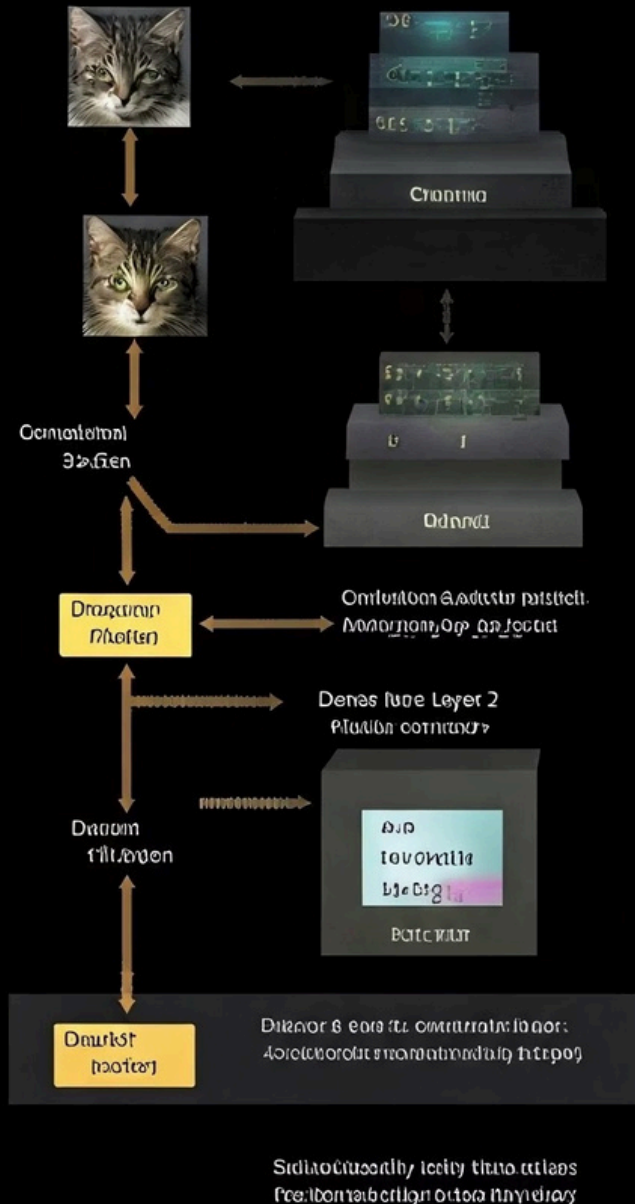
- Kaggle
- DermNet archives
- Web scraping from medical sites

Classes & Balance

- Acne (label 0)
- Eczema (label 1)
- Psoriasis (label 1)
- Balanced dataset ensures unbiased training

Image Type

High-quality dermoscopic images for clear lesion visibility.



CNN Architecture

Core Layers

3 Conv2D and MaxPooling2D blocks extract features.

Regularization

BatchNormalization and Dropout prevent overfitting.

Output Layer

Sigmoid activation produces binary classification output.

Model Training

1

Loss Function

Binary Cross-Entropy optimizes classification.

2

Optimizer

Adam optimizer adapts learning rates effectively.

3

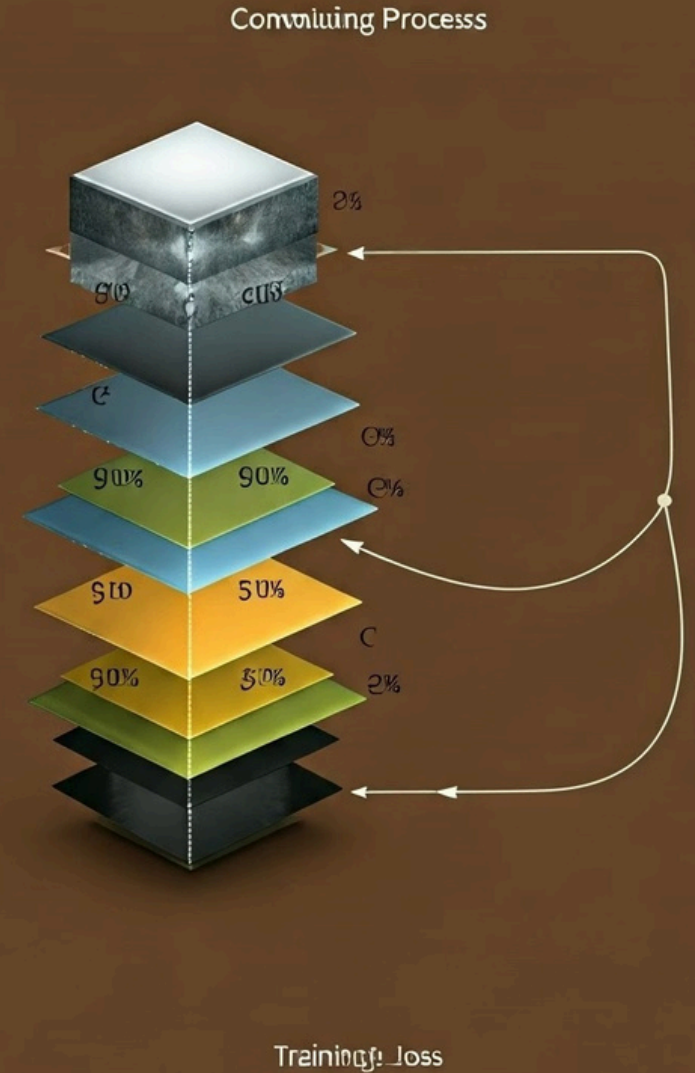
Training Details

20 epochs with batch size 32.

4

Data Split

70/30 train/validation split for evaluation.



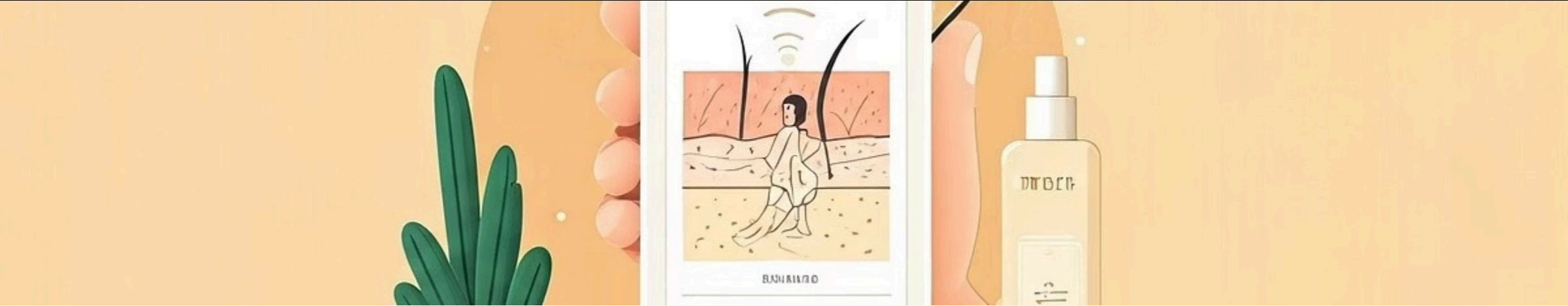
Model Evaluation

Performance

High accuracy and balanced recall on test data.

Robustness

Effective differentiation even with similar visual features.



Future Work

Multi-Class Extension

Expand detection to multiple skin disease categories.

Diverse Datasets

Include larger and ethnically diverse image collections.

Deployment

Develop mobile and web applications for widespread use.

Conclusion

Reliable Detection

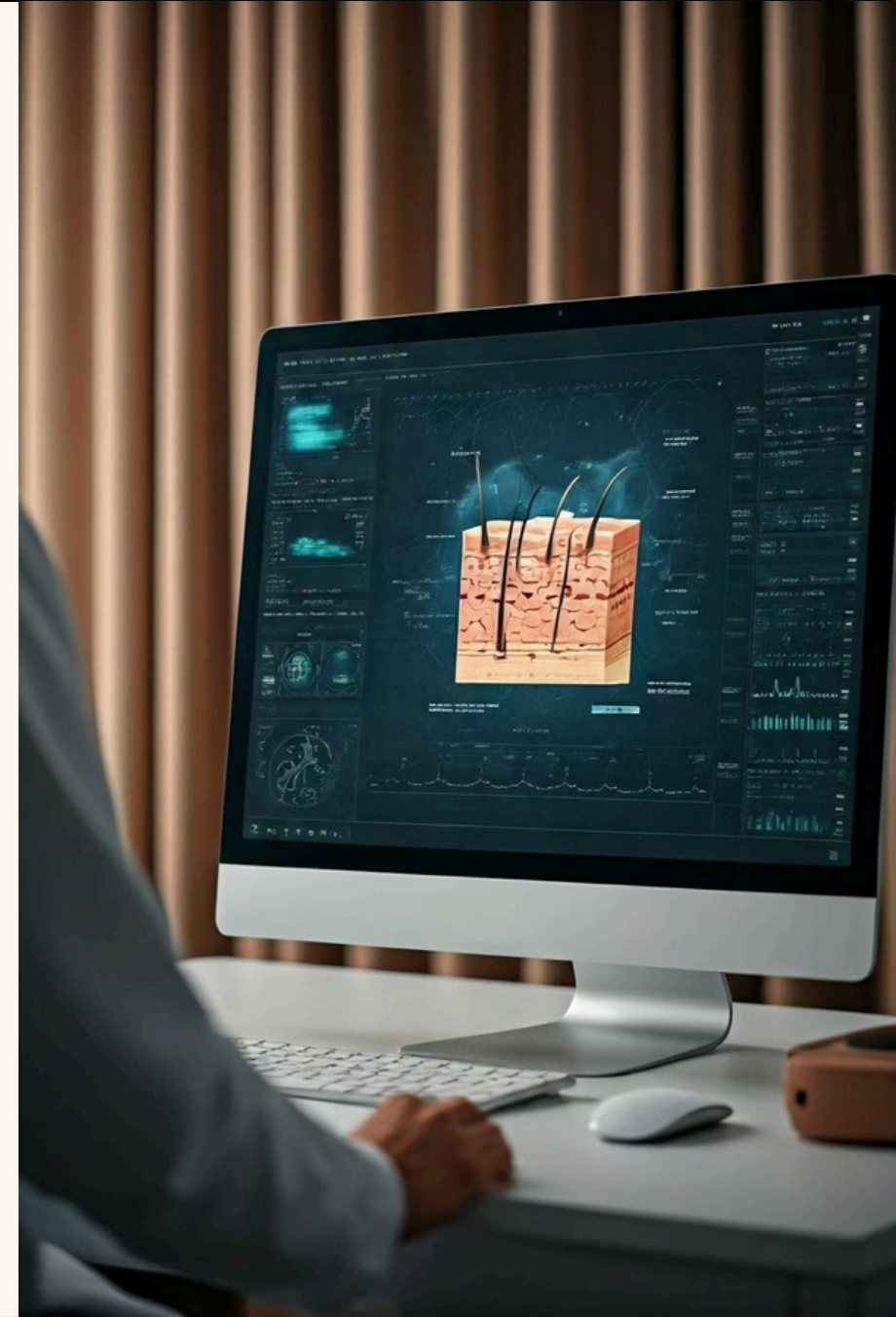
Customized CNN accurately detects key skin diseases.

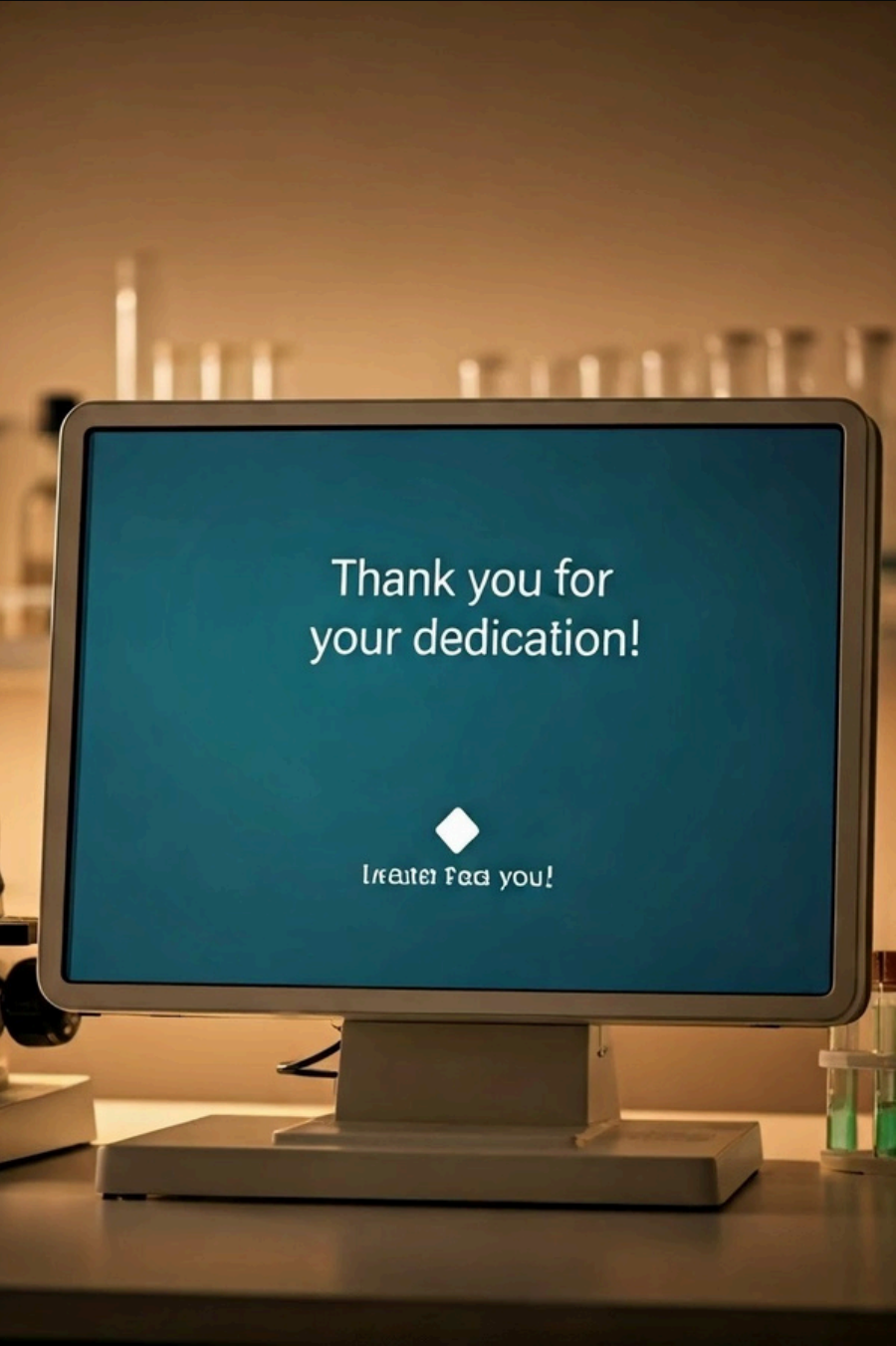
Clinical Assistance

Supports dermatologists and raises patient awareness.

Early Intervention

Enables prompt treatment through faster diagnosis.



A computer monitor is positioned on a dark surface, likely a desk, in a laboratory environment. The background is softly blurred, showing rows of test tubes in a rack and some laboratory equipment. The monitor's screen is a solid teal color and displays the text "Thank you for your dedication!" in a white, sans-serif font. Below this text is a small white diamond icon, and at the bottom of the screen, the text "L'Esprit Fed you!" is visible in a smaller white font.

Thank you for
your dedication!

L'Esprit Fed you!

Thank You

We appreciate your attention. Questions and discussions are welcome.