Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

AI-Based Dermatological Observation System

Emeka Adimora - BEng (H) in Software & Electronic Engineering

Summary

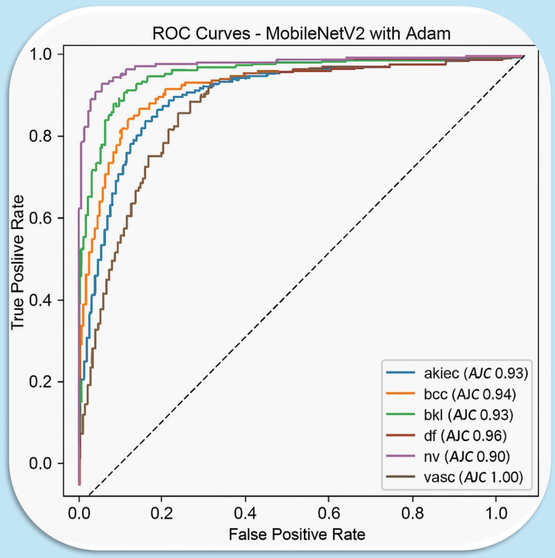
ABDOS is an advanced web application that uses artificial intelligence to detect and analyze skin cancer from uploaded images.

The system provides users with risk assessments and recommendations for further medical consultation.

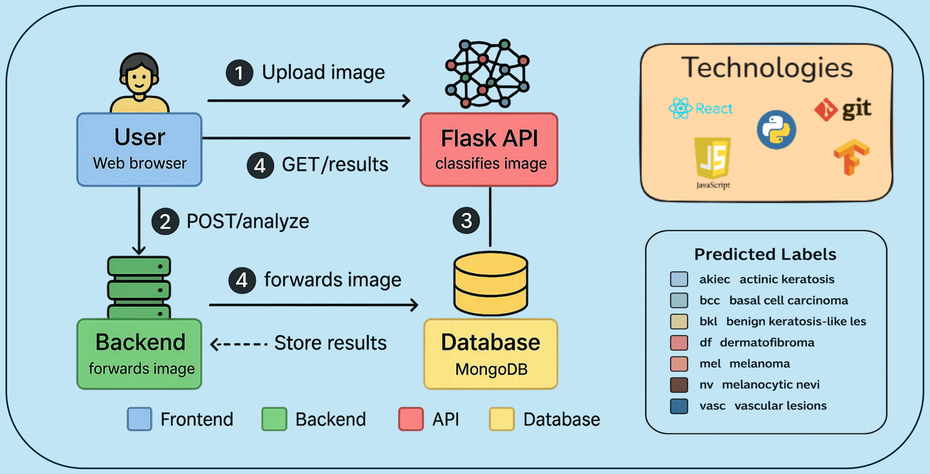
Identifies 7 common types of skin cancer with 90%+ accuracy.

RocCurve

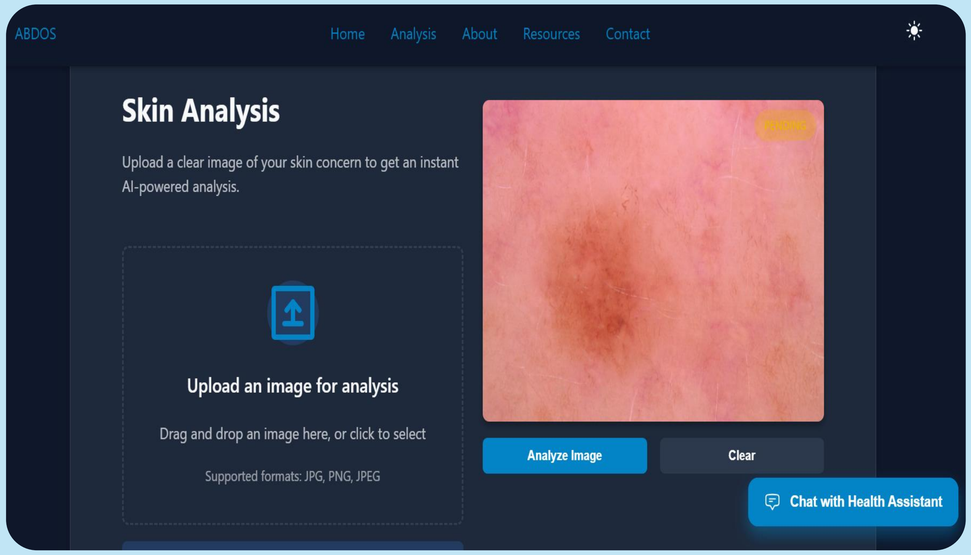
Model shows strong discrimination ability with AUC values 0.90-1.00. Vascular lesions (1.00) and Dermatofibroma (0.96) demonstrate highest performance.



Architecture Diagram



Website



How it Works:

Upload a clear image of your skin concern to get an instant AI-powered analysis. ABDOS provides quick assessments with confidence scores for 7 common skin conditions, helping you determine if medical consultation is needed.
Our user-friendly interface guides you through capturing high-quality photos for optimal results. Educational resources are also available to help you understand different skin conditions and preventative measures.

Features

User Interface: Simple image upload system with step-by-step photo guidance and multiple analysis tabs for different needs.

Responsive Design: Fully optimized for desktop, tablet, and mobile devices with customizable dark/light themes.

Technical Architecture: Built with Next.js frontend and Flask/TensorFlow backend for reliable image classification through a RESTful API.

Metrics

Confusion matrix shows high accuracy for Dermatofibroma (93%) and Nevi (99%), with some overclassification as Nevi indicating areas for refinement.