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Skin Disease Detection using Machine Learning

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Abstract: *Skin diseases represent a significant global health concern, affecting millions across all demographics. Traditional diagnostic approaches depend heavily on dermatologist expertise, which can be subjective, time-intensive, and inaccessible in underserved regions. This paper present san automated skin disease detection system utilizing deep learning and Convolutional Neural Networks (CNNs) to classify skin conditions from digital images. The system identifies multiple disease categories including acne, eczema, lupus, hyper pigmentation, moles, and healthy skin conditions. Built using Python, TensorFlow, Keras, and Flask frameworks, the application provides a user-friendly web interface where users can upload skin images and receive instant predictions with confidence scores and severityanalysis. The CNN model employs data augmentation techniques including rotation, zooming, and flipping to enhance training robustness and prevent overfitting. Image preprocessing through OpenCV ensures standardized input quality through resizing, normalization, and noise reduction. Testing demonstrated the system's capability to provide rapid, consistent diagnostic support with accuracy comparable to preliminary clinical assessments. The automated notification of severity levels assists both patients and healthcare providers in prioritizing medical attention. This research demonstrates how artificial intelligence can bridge healthcare accessibility gaps, support early disease detection, and reduce diagnostic delays in resource-limited settings.*

Keywords: Skin Disease Classification, Convolutional Neural Networks, Medical Image Analysis, Deep Learning Healthcare, Automated Diagnosis, Flask Web Application, Computer Vision

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