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In Collaboration with

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Detecting Skin Diseases Along with Microorganisms & Recommending Ayurvedic Remedies

A Project Proposal by

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ABSTRACT

The increasing frequency of skin disorders, as well as their far-reaching effects on people's quality of life, need the development of an efficient, accurate, and easily accessible tool for early detection and diagnosis. Traditionally, skin disease diagnosis has relied significantly on dermatologist knowledge, which may be costly and time-consuming. Furthermore, the paucity of dermatologists in distant places and underdeveloped nations makes prompt and correct diagnosis difficult for many people. The complicated structure of skin illnesses, with similar visual characteristics shared by diverse diseases, makes diagnosis difficult, even for skilled dermatologists. The goal was to create a system capable of automatically and accurately identifying a variety of common skin illnesses using artificial intelligence.

To address this issue, we used deep learning, especially the Visual Geometry Group Network (VGG-19) model, a convolutional neural network (CNN) known for its great performance in picture identification applications. Because of its deeper network structure, which allows it to catch complex patterns and features in pictures, the VGG-19 was chosen. The author trained the model on a proper dataset of tagged skin illness photos from various diseases and skin types. The weights of the VGG-19 network were fine-tuned to our unique objective during the training phase. The model has 16 convolutional layers and three fully linked layers. The first layers learn to recognize lower-level elements (such as edges and textures), whereas the deeper layers learn to distinguish more complicated patterns associated with specific skin conditions. In the final layer, a softmax activation function was employed to output the probability of various skin illnesses.

The author has done a set of experiments using several data science indicators to assess the model's performance. On the test dataset, the model achieved an excellent accuracy of 89%, outperforming several conventional approaches. The model scored 89% test accuracy, 88% recall, and 88% F1-score, showing a well-balanced performance in properly diagnosing skin disorders while limiting incorrect diagnoses. These findings support the usefulness of this VGG-19-based model for skin disease detection and diagnosis, opening the path for a more accessible and efficient dermatalogical solution.