

Deep Learning-Based Image Processing for Skin Disease Identification

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Abstract: Millions of people around the world suffer from skin diseases, and accurate and timely diagnosis plays a key role in their proper treatment. This paper introduces a skin disease detection system by applying the U-Net algorithm for image segmentation while comparing and combining two other machine learning algorithms for better diagnosis accuracy. The input images obtained through user engagement undergo preprocessing to eliminate noise and artifacts, enhancing further segmentation and classification. The system classifies the diseases, for example, melanoma, eczema, and psoriasis, by performing feature extraction using the segmented region of interest. The strength of generalization is guaranteed based on a rich image dataset used for training and evaluation, and the comparative analysis brings out the superiority of the U-Net in terms of segmentation accuracy, and insights into effectiveness of other alternatives. The output is a disease classification which is easy to interpret and that can lead to early diagnosis along with the proposal of treatment, and this work highlights the application of deep learning and image processing in dermatology to assist medical professionals and bring diagnostic tools within reach.

Keywords: Skin disease detection, U-Net, image segmentation, classification, deep learning, dermatology