

Informatics Institute of Technology In Collaboration With
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TeleDerm

SKIN DISEASE IDENTIFICATION TELEDERMATOLOGY MOBILE APPLICATION

A dissertation by

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Abstract

This Research presents an image classification teledermatology app that can identify common skin diseases in Sri Lanka. The app is particularly relevant due to the increased awareness and attention towards skin diseases following the outbreak of Monkeypox during the 2021 pandemic. This project has chosen 7 prevalent skin diseases among Sri Lankans: Acne, Chickenpox, Eczema, Monkeypox, Psoriasis, Ringworm, and Rosacea. And this suggest to provide Sri Lankan-based medical advice, taking into account the traditional and Ayurveda treatments commonly used in the country. Skin health has a direct impact on mental health, and with the increasing number of patients suffering from depression, reducing skin diseases can help alleviate mental health issues. However, some people may be hesitant to seek medical treatment for skin conditions due to the appearance of lesions and privacy concerns. To address this, the author proposes a teledermatology concept that allows users to record and maintain a self-journal application, which stores images and videos of their skin disease lesions to track their progress.

For this research project the author created a new dataset of 5600 original images by combining existing datasets and collecting Sri Lankan patient's data. And the author implemented an Augmentation model to augment 25 images from one image using the Skimage library. And the Author evaluated the image classification model using ResNet, EfficientNet and MobileNet with Transfer Learning and CNN custom model. Finally Author selected the EfficientNet Transfer learning model for feature extraction due to the high accuracy and evaluation matrix results. And researcher combined feature extraction model with simple neural network model for classification with merge model. And the author verified that the EfficientNet model has not been used in existing skin disease classification models and it received 98% of overall accuracy.

Subject Descriptors: Skin Disease Diagnosis System, Teledermatology

Keywords: Image processing, Multi-class image classification, Augmentation, Feature Extraction, Transfer Learning, Neural Network , CNN, EfficientNet