Detection and Classification of Skin Diseases Based on Their Causes with Convolutional Neural Networks (CNN)

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Abstract

The cause of skin disease is a major factor in emerging skin diseases. Some of the causes of skin diseases include bacteria, fungi, bite infections, viruses. Sometimes the cause of skin disease is still difficult to detect with only the sense of sight; therefore, deep learning methods are applied to overcome this problem. The Convolutional Neural Networks (CNN) method is the right choice for classifying images, but what kind of CNN architecture is suitable to classify images of these skin diseases, which is the main problem in this study. The causes of skin diseases used in this research are bacteria, fungi, bite infections, viruses, and several skin disease causes, obtained from the book "Skin Disease Diagnosis and Treatment". The available image dataset requires several pre-processes techniques, including to remove the background, trim to maximum squared, dimension reduction, grayscaling, and normalization. The dataset consists of 1004 images in the dataset, and it is found that an unbalanced dataset makes the model difficult to learn, so that a balancing process is required on the dataset. The evaluation result of the model is in the form of an accuracy matrix. The evaluation results of each model will be compared, and then the best results will be selected which determines the best model.

Keywords: skin diseases, causes, images, machine learning, deep learning, CNN.