

1 Introduction

1.1 Background

Various types of skin diseases are suffered by humans. These skin diseases have their respective causes. The cause of this skin disease is a major factor in emerging skin diseases. Some of the causes of skin diseases include autoimmune, bacteria, insects, drugs, viruses, fungi, mites, too often being exposed to UV rays, and so on. In setting health priorities, skin disease is sometimes considered in planning terms as a minor player in the global disease league compared to diseases that cause significant mortality, such as HIV / AIDS, pneumonia, and tuberculosis. However, skin problems are generally the most commonly seen disease in the tropics, and in some areas where infectious diseases such as *tinea imbricata* or *onchocerciasis* are endemic, they are the predominant symptom. For example, the World Health Organization's 2001 report on the global burden of disease showed that skin disease had a mortality rate of 20,000 in Sub-Saharan Africa in 2001. This burden is comparable to the mortality rates associated with meningitis, hepatitis B, obstructed labor, and rheumatic heart disease. at the same time. The rapid development of technology makes it easier for us in all aspects of our work. The deep learning methods that experts use to classify and predict things, make it a valuable method in computer science. Collaborating health science with computer science is possible in today's era. Several studies have shown that Convolutional Neural Networks are a deep learning method with the highest accuracy in classifying images, especially common skin diseases.

1.2 Topics and Limits

The formulation of the problems to be resolved in this study are:

1. What is the appropriate CNN architecture for classifying the dataset?
2. How much accuracy has the CNN architecture obtained for classifying this skin disease dataset?
3. Are there any differences in the final result between the RGB image and the grayscaled image?

There are also problem limitations in this study, including:

1. Diseases and their causes are obtained from books "Skin Disease Diagnosis and Treatment" by Thomas P. Habif, M. Shane Chapman, James G. H. Dinulos, Kathryn A. Zug [11]
2. There are 757 images from atlasdermatologico.com.br, 81 images from dermatlas.net, 81 images from dermnetnz.org, and 70 images from hellenicdermatlas.com. Altogether there are 1004 Images
3. The causes of skin diseases that will be tested are bacteria, fungi, bite infections, and viruses
4. Image size 100x100

1.3 Goals

This study aimed to implement the CNN method in classifying images of skin diseases based on their cause. Based on this, this study intends to obtain:

1. CNN architecture is considered optimal in classifying the skin disease dataset.
2. Knowing the accuracy of the classification results using the selected CNN algorithm.
3. Knowing the comparison of the final RGB image with a grayscale image.

Table 1.1Goals

No	Goals	Testing	Conclusion
1	The CNN architecture is considered optimal in classifying the skin disease dataset	Several experiments were carried out using CNN models, the CNN models were then evaluated and the results compared.	Obtain the best CNN model
2	Knowing the accuracy of the classification results using the selected CNN algorithm	The best CNN models will be evaluated to test data which will later obtain a classification report matrix from the CNN model.	Obtain the best CNN model evaluation results.

3	Knowing the comparison of the final RGB image with a grayscale image	Two experiments (RGB and grayscale images) were carried out in evaluating the CNN model, the results of the model evaluation of the two experiments would later be compared	The results of the comparison of the evaluation results of the CNN model against RGB and grayscale images.
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