

ABSTRACT

Human's skin is the largest organ in the body. It contains 650 sweat glands, 20 blood vessels, and more than 1,000 nerve endings the skin should get priority in order to stay in a condition free from all kinds of diseases. However, it cannot be denied that the lack of discipline in personal and environmental hygiene, extreme weather changes, plus allergies to certain substances are the biggest loopholes that cause skin diseases. Plus other causative factors, namely from the transmission process, where several types of skin diseases can also be transmitted only through direct contact with the sufferer. This should be a consideration to increase awareness of this skin disease attack. So one alternative, the right and safe way to anticipate it, is the classification process of skin diseases by utilizing digital images.

In this final project, a skin disease classification system using the Convolutional Neural Network (CNN) method is designed. Where this method has 5 constituent layers namely convolution layer, activation rectified linear units, pooling layer, fully connected layer and softmax. CNN is used as a classification method for normal skin, skin diseases such as chickenpox, measles, acne and scabies. The input data is in the form of a digital image that has been resized to 64 x 64 pixels in the Joint Photographic Group (JPG) format obtained from previous research. The total number of input data are 1500 images consisting of 1125 training image data (75%) and 375 test image data (25%). The Convolutional Neural Network method used in the classification process for skin diseases is expected to provide maximum results because it has a high network depth and has been widely applied to digital image data.

The Convolutional Neural Network method used in the classification process for skin diseases is able to provide maximum results. Where this happens when the hidden layer parameter conditions are 5, using the Adam optimizer, and the learning rate value is 0.001 with the results of system performance such as accuracy, precision, recall, f1-score and loss, respectively, 96.53%, 95%, 95%, 95% and 0.2486.

Keywords: Image, digital image, Convolutional Neural Network, skin disease, system performance