

ABSTRACT

Rice plants are a source of life for humans, not only as a food need, rice is also an object of livelihood for farmers. Nutritional deficiencies or nutritional deficiencies also often occur in rice plants, thus affecting the level of production quality. Nutrient deficiency in general can be seen from the color and shape of unhealthy leaves, therefore it can be detected early to reduce the symptoms of nutritional deficiency in rice plants.

This study, classifies the symptoms of nutritional deficiency in rice plants using the Convolutional Neural Network (CNN) GoogleNet architecture based on image processing. There are 1156 images with a dataset sourced from Kaggle which is divided into three classes, namely Nitrogen(N), Phosphor(P) and Potassium(K) deficiency.

The parameters analyzed in this study were accuracy, loss, precision, recall, and F1-Score. Five test scenarios for hyperparameters were carried out in the form of optimizer, learning rate, batch size, input size, as well as testing the original image and CLAHE. From the tests that have been carried out, the best results are obtained with the original image using the Adam optimizer, the learning rate is 0.001, the batch size is 64, and the input size is 512×512 . From this configuration, it is obtained that the test accuracy is 93.94% with a testing loss of 0.2370.

Keywords: *Nutritional Deficiency, CNN, GoogleNet, Rice, Classification*