

## ABSTRACT

Rice is one of the main food ingredients for the majority of the population in Indonesia which comes from rice seeds, in addition to being the main staple food, rice is also a raw material in the manufacture of various types of food and snacks. Rice has various types, and one of the characteristics of each type of rice is that it can be seen from the appearance or image of the rice. Currently determining the type of rice manually requires a relatively large and long time, determining the type of rice automatically using a computer system can make it easier for humans to sort and check during food production, and will be able to minimize the occurrence of human errors. The use of a rice type detection system using the Convolutional Neural Network (CNN) method is one of the new breakthroughs in sorting and determining the type of rice in a computerized production system.

Convolutional Neural Network (CNN) has significant results in recognizing images. This final project uses the Rice Image Dataset, which consists of 5 classes, each class contains 500 images, so the total is 2.500 images. This research uses preprocessing resize and VGG-16 architecture. The VGG-16 architecture is used because of its low complexity and simplicity. The system is designed using the Google Colab platform with Python programming language and the dataset is obtained from [www.kaggle.com](http://www.kaggle.com).

In this final project, the test uses 5 scenarios, namely testing on the input image size, optimizer, learning rate, batch size, and epoch. The dataset used in this study amounted to 2.500 images. The best parameters obtained from testing the scenario are using input size  $128 \times 128$ , Adamax optimizer, learning rate 0.001, batch size 64, and epoch 50. The results obtained from the best parameters are the accuracy value of 100%, loss value of  $1.1332e-08$ , value of precision, recall, and f1 score of 99,4%.

**Keywords:** Rice, Normal, CNN, VGG-16