

ABSTRACT

Rice is one of the most widely consumed cereal foods by Asian, including in Indonesia. Generally, the most consumed type of rice by the community is white rice. There are various types of white rice on market. Each type of white rice has a similar grain shape and color that is relatively almost the same, so makes it difficult to distinguish rice if it only relies on eye vision, due to the limited time for humans to identify rice one by one, and to reduce the possibility of human error. Therefore, digital image processing can be used to identify the types of rice through the implementation of Deep Learning using the Convolutional Neural Network (CNN) method with Residual Network (ResNet-50) architecture.

The dataset used in this study was obtained from the Kaggle website in the form of rice image consisting of 5 classes, such as Arborio rice, Basmati rice, Ipsala rice, Jasmine rice, and Karacadag rice. For each class, 500 images of rice grains will be used, so the total dataset used in this study is 2500 images. The initial stage in this classification process is to do preprocessing, such as resizing and normalization the image size, then dividing the dataset as training data and validation data. Then go to the main processes: training and validation. First, the model will be trained using a combination of several hyperparameters, including input size, optimizer, learning rate, and batch size to get the best model for the classification. And then the results will be analyzed by accuracy and loss parameters.

Through this study, the best final results were obtained by using hyperparameter 64×64 pixels for the input size, Adam for the optimizer, learning rate with 0,001, and batch size with value 64, with validation accuracy of 98,20% and validation loss of 0,1109. So from this results, the system is proven to be able to classify rice types with reliable performance.

Keyword : Rice types, CNN, ResNet-50.