ABSTRACT

Fruits and vegetables are important food sources that humans need. Damage during harvest, storage, and distribution can cause economic losses. Deep learning has shown promising results in damage prediction. This research is expected to provide useful information to select the best deep learning model to predict damage in different types of fruits and vegetables. To improve prediction accuracy, research was conducted by combining ResNet-50 and InceptionV3 models. This study analyzes and compares the performance of two deep learning models ResNet-50 and InceptionV3, in predicting damage to fruits and vegetables by analyzing the architecture of a convolutional neural network (CNN). This is done using the ensemble learning method, which combines the results of several models to produce more accurate predictions. The results show that both models have their own advantages and disadvantages. ResNet-50 is able to overcome the vanishing gradient problem, while InceptionV3 offers good computational efficiency. Improving modeling accuracy is recommended to increase the dataset and ensure the quality of input data technology updates on hardware and software, so as to explore other deep learning models that may be more suitable for predicting damage to different types of fruits and vegetables, This study compared ResNet-50 and InceptionV3 models for fruit and vegetable damage prediction. Both models achieved good performance with the highest accuracy of 95.40% (ResNet-50) and 98.70% (InceptionV3). This research is expected to make a significant contribution in the fields of agriculture, food technology and retail, especially in distribution and storage activities.

Keywords: Damage Prediction, Fruits, InceptionV3, ResNet-50, Vagetable