ABSTRACT

BANANA AND ORANGE CLASSIFICATION DETECTION USING CONVOLUTIONAL NEURAL NETWORK (CNN)

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Fruits play a crucial role in human health, with an average consumption of 81.14 grams per capita per day in Indonesia, where bananas and oranges are the most consumed fruits. Inconsistent fruit quality can influence consumer decisions, typically evaluated manually by farmers and can be subjective. The use of artificial intelligence (AI) and computer vision technology can enhance efficiency and consistency in analyzing fruit quality. Artificial intelligence, particularly deep learning, plays an important role in fruit image analysis. Convolutional neural network (CNN) is effective in image recognition, mimicking the processing and vision systems of humans. The CNN structure, including pooling layers,convolutional layers,output layers,fully connected layers, enables efficient feature extraction and fruit classification based on learned features. This research uses the Convolutional neural network (CNN) approach to classify the quality of bananas and oranges, based on a dataset comprising 4000 images. The images were allocated with a 10% for Test data., 80% portion for Training data, and 10% for Validation. Each accuracy of the three models is model 1 getting an accuracy value of 96,25%. model 2 gets an accuracy value of 97,66%, *model 3 gets a value of* 96,94%. *The results show that the CNN model is capable of classifying the quality of bananas and oranges with high accuracy and good evaluation results.*

Keywords: Artificial Intelligence, Convolutional neural network, Fruits, Fruits Quality, Machine Learning.