IMPLEMENTATION OF DEEP LEARNING FOR FUNGI IMAGE CLASSIFICATION USING THE CONVOLUTIONAL NEURAL NETWORK (CNN) ALGORITHM
(Case Study of the Classification of the Fungal Genus Pleurotus and Amanita Fungi)

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ABSTRACT

One of the agricultural developments in the food sector with good prospects is mushrooms. Overall, mushrooms can be classified into two groups, namely mushrooms that are suitable for consumption and mushrooms that are not suitable for consumption. However, distinguishing between types of mushrooms that are suitable for consumption and those that are not suitable for consumption is complicated. The main objective of this research is the identification of potential toxins in mushrooms using the CNN method which is expected to provide a new contribution in the development of a more efficient and accurate approach in classifying mushrooms that are suitable for consumption and those that are not suitable for consumption. The results show that the model trained with augmented data achieved the highest accuracy, namely 95.85% for training data and 92.04% for validation data, with a lower loss rate. This shows that CNN is an efficient and accurate approach in classifying fungi based on their genus. Apart from that, this research also found that parameters such as number of epochs, number of batch sizes, optimizer, image size, and image augmentation influence the model training process.

Keywords: Classification, CNN, Fungal Genus, Deep Learning, Tensorflow.