DIGITAL IMAGE-BASED MEDICINAL PLANT ENCYCLOPEDIA USING CONVOLUTIONAL NEURAL NETWORK (CNN) ALGORITHM

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ABSTRACT

Medicinal plants are one of Indonesia's biological resources widely utilized for traditional medicine. However, the identification process of medicinal plants is often performed manually, making it prone to errors. This research aims to develop a mobile application called *Herba Nusantara* that can identify medicinal plants using the Convolutional Neural Network (CNN) algorithm with the MobileNetV2 architecture. The *dataset* consists of 13 types of medicinal plants categorized into leaves, rhizomes, and stems, with a total of 1,625 images. The research stages include *dataset* preparation, preprocessing through resizing, augmentation, and normalization, model *training* using MobileNetV2 transfer learning, and model implementation into a Flutter application using TensorFlow Lite. *Testing* was conducted using two scenarios: a single-model approach and a multi-model approach. The results showed that the single-model approach achieved an accuracy of 98%, while the multi-model approach achieved accuracies of 100% for leaf and stem categories and 98% for the rhizome category. Based on these results, the multi-model approach was selected because it provides better classification performance.

Keywords: medicinal plants, CNN, MobileNetV2, image classification, Herba Nusantara.