

CLASSIFICATION OF POTATO DISEASES BASED ON LEAVES USING THE CONVOLUTIONAL NEURAL NETWORK (CNN) METHOD.

ALDIANTO DICKYU SEPTIAN
Informatics Study Program, Faculty of Science & Technology
Yogyakarta University of Technology
Jl. North Ringroad Jombor Sleman Yogyakarta
E-mail: dickyu63@gmail.com

ABSTRACT

Potato plants are essential food commodities for the community. However, potato production frequently encounters challenges due to diseases affecting the plants, particularly leaf diseases. The most prevalent potato leaf diseases are early blight and late blight, which can lead to reduced yields or even total crop failure. To address this issue, an accurate and efficient method for identifying diseases in potato leaves is necessary. This study aims to develop and implement an effective Convolutional Neural Network (CNN) model for classifying potato diseases based on leaf images. CNNs are a type of artificial neural network architecture designed explicitly for visual pattern recognition and have demonstrated significant effectiveness in classifying plant diseases using leaf images. The potato leaf image dataset undergoes processing through data augmentation and normalization techniques. The CNN model incorporates convolutional, pooling, and fully connected layers to facilitate feature extraction and classification. In this study, the CNN model was trained using the Adam optimization algorithm and the categorical cross-entropy loss function. The evaluation of the model was conducted using test data, with accuracy metrics being employed to assess its performance. The findings demonstrated that the developed CNN model attained the maximum classification accuracy of 95.93% by using the VGG16 architecture, thereby facilitating the identification of late blight, early blight, and healthy leaves. This CNN implementation provides an effective solution for potato leaf disease classification.

Keywords: Convolutional Neural Network, Deep Learning, Potato, Streamlit

