

ABSTRAK

Kentang (*Solanum tuberosum L.*) merupakan komoditas hortikultura bernilai ekonomi tinggi di Indonesia. Produksinya sering terganggu oleh penyakit seperti busuk daun (*late blight*) yang disebabkan *Phytophthora infestans* dan bercak kering (*early blight*) oleh *Alternaria solani*. Deteksi dini sangat penting untuk mencegah penyebaran dan mengurangi risiko gagal panen. Penelitian ini membandingkan performa dua arsitektur *Convolutional Neural Network* (CNN), yaitu *GoogLeNet (InceptionV3)* dan VGG16, dalam mengklasifikasikan gambar daun kentang ke dalam tiga kategori: *Early Blight*, *Late Blight*, dan *Healthy*. Dataset terdiri dari 1.500 gambar yang telah melalui pra-pemrosesan (*resizing, rescaling, dan augmentasi*). Hasil pengujian menunjukkan *GoogLeNet* mencapai akurasi pelatihan 95% dan klasifikasi yang konsisten pada seluruh kelas. VGG16 mencapai akurasi 94%, dengan performa sedikit lebih baik dalam ketepatan kelas *Early Blight*. Namun, pelatihan model VGG16 memerlukan waktu lebih lama dibanding *GoogLeNet*. Walaupun selisih akurasi keseluruhan kecil, *GoogLeNet* dinilai lebih efisien dari segi waktu pelatihan serta konsistensi hasil. Kedua model menunjukkan potensi yang baik dalam deteksi penyakit daun kentang, dengan keunggulan masing-masing tergantung prioritas evaluasi yang diinginkan.

Kata Kunci: Penyakit Daun Kentang, CNN, *GoogLeNet*, VGG16, *Deep Learning*, Klasifikasi Citra



KARAWANG

ABSTRACT

*Potato (*Solanum tuberosum* L.) is a horticultural commodity with high economic value in Indonesia. Its production is often disrupted by diseases such as late blight caused by *Phytophthora infestans* and early blight caused by *Alternaria solani*. Early detection is essential to prevent the spread and reduce the risk of crop failure. This study compares the performance of two Convolutional Neural Network (CNN) architectures, namely GoogLeNet (InceptionV3) and VGG16, in classifying potato leaf images into three categories: Early Blight, Late Blight, and Healthy. The dataset consists of 1,500 images that have gone through pre-processing (resizing, rescaling, and augmentation). The test results show that GoogLeNet achieves 95% training accuracy and consistent classification across classes. VGG16 achieves 94% accuracy, with slightly better performance in the accuracy of the Early Blight class. However, the training of the VGG16 model takes longer than GoogLeNet. Although the difference in overall accuracy is small, GoogLeNet is considered more efficient in terms of training time and consistency of results. Both models show good potential in detecting potato leaf diseases, with their respective advantages depending on the desired evaluation priority.*

Keywords: Potato Leaf Disease, CNN, GoogleNet, VGG16, Deep Learning, Image Classification

