## ABSTRACT

Potato leaf disease is a plant disease that attacks the leaves of potato plants. Symptoms of this disease include yellowing and wilting of leaves, and the development of brown spots on the leaves. This can reduce the plant's ability to photosynthesize and ultimately reduce potato yields. This potato leaf disease can be caused by a variety of factors, including fungal and bacterial infections, insects, and environmental stress. Basically, the classification of potato leaf disease can be done manually by looking at the characteristics of each form of leaf condition, but due to human limitations and knowledge, checking or classifying potato leaf becomes ineffective, if checking the leaves is done in large quantities.

In previous studies, a classification study of potato leaf disease was carried out using the support vector machine method with an accuracy rate of 80%. Subsequent research uses image processing with the convolutional neural network (CNN) method. Producing 95% accuracy training and 94% accuracy validation. In this study, a classification system was created using the CNN architecture *ResNet*-50 method and a dataset of 1500 images with 3 classes of early blight, late blight and healthy leaves.

By using the ResNet-50 architecture convolutional neural network (CNN) method, there are 5 stages of testing carried out to get the best results, namely resize, optimizer, learning rate, epoch and batch size. The best results obtained in this final project are size 224, optimizer Adam, learning rate 0.00001, epoch 60 and batch size 16. The results obtained include accuracy 99.67%, *loss* 0.0072, precision 99.67%, recall 99.67%, and F1-Score 99.67 %.



Keywords: Potato Leaf Disease, Convolutional Neural Network (CNN), Residual Network (*ResNet*)-50.