

ABSTRACT

Pneumonia is a worldwide health problem that causes death. *Pneumonia* can be identified by looking at a chest x-ray. However, the possibility of the diagnosis of *Pneumonia* can occur due to errors in identifying *Pneumonia* manually. Then a computer-based image system is used to assist in diagnosing *Pneumonia* so as to minimize errors and speed up the process of identifying *Pneumonia*. One method in a computer-based image management system that functions to detect *Pneumonia* is the Convolutional Neural Network (CNN).

In this final project, testing is carried out using chest x-ray images for *Pneumonia* detection with Convolutional Neural Network (CNN). The architecture used is VGG-19. The dataset used is 5,840 images. The image used in this study is divided into 2 classes, namely normal and *Pneumonia*. The image will be resized preprocessing, namely changing the Image Size, Optimizer, Learning Rate, Epoch, and Batch Size. Image division will be divided into 80% training data and 20% testing data.

The results obtained in this final project were obtained with the best parameters, namely image size 64×64 , Optimizer RMSprop, Learning Rate 0.0001, Epoch 20, and Batch size 16. With performance results, namely accuracy 92.95%, Loss value 0.2223, 93% precision value, the recall value is 93%, and the f1 score is 93%.

Keywords : *Pneumonia, Convolutional Neural Network (CNN), VGG-19, Image Size, Optimizer, Learning Rate, Epoch, Batch Size.*