ABSTRACT

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) or commonly called COVID-19 is a virus that attacks the respiratory system. This virus has spread throughout the world and was considered a pandemic disease by the World Health Organization (WHO) on March 11, 2020. The corona virus has similar symptoms to Pneumonia and Tuberculosis, while the symptoms that usually appear are sore throat, cough, fever, and difficulty in breathing. breathe. To assist the disease detection process, you can usually use the Chest X-Ray method. Chest X-Ray serves as a medium for diagnosis, treatment and re-examination.

Based on this, the author tries to create a system model using the Convolutional Neural Network method using the Residual Network-34 architecture to classify four types of lung disease classes, namely COVID-19, Pneumonia, Tuberculosis (TBC), and Normal. The input from the system is an x-ray image consisting of 2,304 images, which is divided equally into 576 images in each class. System analysis is conducted by comparing the effect of testing the amount of training data and test data, the effect of pre-processing testing, the effect of testing different input sizes, the effect of testing using different optimizers, namely Adam, RMSprop, and SGD, the effect of epoch velue, the effect of learning rates testing, and the effect of batch sizes value.

From the study results, the system is capable of classifying lung disease using pre-processing data, with an input size of 50x50, using a total ratio of 80% training data and 20% test data, the accuracy is 100% for training accuracy and 95%. for testing accuracy, using SGD Optimizer with learning rate 0.01, epoch 50 and batch size 16.

Keywords: Deep Learning, Convolutional Neural Network, Python, Chest X-Ray, and ResNet-34.