ABSTRACT

One of the most important organs in the human respiratory system is the lungs. However, due to infection by viruses and bacteria, the lungs can sometimes become unable to function correctly. If the proper steps are not done, this might have a negative impact on the body's health. In order to establish a patient's condition and take appropriate action, the doctor may need to perform an x-ray examination. However, because x-ray examination results are not always positive, doctors are hesitant to diagnose the patient's condition. To solve this, a system that assists clinicians in diagnosing patients utilizing one of the deep learning methods, such as Convolutional Neural Networks (CNN). CNN is a classification method that performs in classifying images and objects. This research needs a lung x-ray image dataset of 2000 images with four different conditions or data classes, namely Covid-19, Normal, Pneumonia, and Tuberculosis. Aside from this dataset, a smaller dataset with fewer photos is also being generated for the system testing procedure, which has been finished. Two dataset distribution schemes were created during the training phase in order to generate two separate findings for comparison in the study. The first scheme divides the dataset into 80 percent training data and 20% validation data, while the second scheme divides the dataset into 60 percent training data and 40% validation data. As a result, the system trained with the first scheme had a 95 percent accuracy, which was higher than the system trained with the second scheme. Meanwhile, the results of the tests suggest that the method developed is capable of accurately predicting the Covid-19, Pneumonia, and Tuberculosis classes with 90 percent precision.

***Keyword**: Lungs, X-ray, Predict, Deep Learning, CNN.*