ABSTRACT

TUBERCULOSIS CLASSIFICATION APPLICATION BASED ON DEEP LEARNING USING THE CONVOLUTIONAL NEURAL NETWORK ALGORITHM

Jaja Jumhara.[1)] Ida Nurhaida.[2)]
[1)] *Student of Informatic Major, Pembangunan Jaya University*
[2)] *Lecturer of Informatic Major, Pembangunan Jaya University*

Lungs are one of the important organs in humans. Functions as a respiratory system in humans to exchange oxygen in the air with carbon dioxide in the bloodstream. Tuberculosis is a major problem in Indonesia. Using analysis of x-ray images or X-ray results on parts of the body, doctors can diagnose tuberculosis. There is a problem in making the diagnosis done visually with the results of x-rays done by doctors, especially in areas where there is still a shortage of pulmonary specialists. Using a visual manual method takes time, if there is also a lot of data that must be read by the doctor, it is possible for errors to occur in the diagnosis. This desktop-based application applies deep learning technology and uses a convolutionall neural network or CNN algorithm or method. Using python language and Pycharm software. The data set was obtained from the credible site kaggle.com and added to the dataset from the pulmonary hospital. The dataset used consists of 200 data, which includes 20 test data and 180 training data. The image used has a size of 150x150 pixels. Model training was carried out with 50 epochs and achieved an accuracy of 94%. The application trial used 50 x-ray images, consisting of 25 normal x-ray images and 25 tuberculosis x-ray images. The test results showed that the system succeeded in classifying 47 of the 50 data used correctly. The system succeeded in classifying 23 data as normal images and 24 data as TBC images. The accuracy obtained during testing was 94%.

Keywords: *Lungs, Tuberculosis, X-Ray Image, Convolutional Neural Network.*