Abstract

This research discusses the application of Deep Convolutional Generative Adversarial Network (DCGAN) technique in pneumonia classification on lung X-ray images. The research is complemented with hyperparameter discovery using genetic algorithm (GA) to improve the performance of DCGAN. This abstract explains the background of the pneumonia problem, why the application of DCGAN is important, and how GA is used to find the optimal hyperparameters. The advantage of this research is that it increases the classification accuracy to 98%, with a fitness value reaching 99%, compared to the previous condition without using GA. This result proves the significant contribution of genetic algorithms in optimizing the performance of the DCGAN model. This research not only identifies problems in pneumonia detection through X-ray images, but also presents effective solutions using DCGAN technology and genetic algorithms. With a focus on improving accuracy and fitness, this research contributes to the development of image-based lung disease detection systems with innovative approaches.

Keywords: Pneumonia, *Deep Convolutional Generative Adversarial Network, Genetics Algorithm*