APPLYING THE MASK REGION-BASED CONVOLUTIONAL NEURAL NETWORK METHOD IN A PNEUMONIA DISEASE DETECTION SYSTEM

MOCH DAFFA YUDIS AVERILL
Program Studi Informatika, Fakultas Sains & Teknologi
Universitas Teknologi Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : info.uty@gmail.com

ABSTRACT

Manual identification of pneumonia on medical imaging is often time-consuming and heavily relies on radiologists' expertise. Without the development of artificial intelligence-based applications, the risk of misdiagnosis and delayed treatment increases, potentially leading to serious complications for patients. Therefore, this study proposes implementing Mask R-CNN to improve the accuracy of pneumonia detection in lung X-ray images. The study utilized a dataset of 2,239 X-ray images, with an 80:20 split between training and testing data. Training was conducted using ResNet50 and ResNet101 backbone architectures, with 10 epochs, a learning rate of 0.00001, and 50 steps per epoch. The methodology involved data preprocessing followed by the application of the Mask R-CNN model to identify affected areas in the medical images. Performance was evaluated using precision, recall, and F1-score metrics. Preliminary results indicate that the proposed method achieves promising performance, with a precision of 41.34%, recall of 81.20%, and an F1-score of 54.78%.

Keywords: Pneumonia, Mask R-CNN, Medical Image Detection, Deep Learning, Image Segmentation.