Deep Features for the Evidence of Covid-19 Screening Using Chest X-rays

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Abstract. The novel coronavirus was identified in December 2019 in the Wuhan province of China. In January 2020, it was declared a global pandemic by the World Health Organization (WHO). Since then, the spread rate of Covid-19 is high, a number of AI-driven tools have been used to help predict, screen, and diagnose Covid-19 positive cases. In such infectious diseases, early detection tools would facilitate largely to mitigate the spread and save lives. In this study, we employ deep learning models, such as CheXNet, DenseNet, ResNet, and VGG to detect Covid-19 positive cases using chest x-ray images. On a dataset of size 4,716 CXRs (2,358 Covid-19 positive cases and 2,358 non-Covid cases (Healthy and Pneumonia cases)) and with k (=5) fold cross-validation technique, we achieve the following performance scores in CheXNet: accuracy of 0.98, AUC of 0.99, specificity of 0.98 and sensitivity of 0.99. On such a large dataset, our results can be compared with state-of-the-art results.