
Abstract:

With the continued rise in the number of infected people and deaths from the coronavirus (COVID-19) daily, along with the collapse of the health care systems in many countries of the world, especially in diagnosing the virus, it becomes necessary to devise an achievable and rapid way for diagnosing the virus. Since radiographs like X-ray images and Computed Tomography (CT) scans are broadly available at public health amenities, hospital Emergency Rooms (ERs), as well as at non-urban clinics. Therefore, they might be utilized for the rapid detection of COVID-19 induced lung infections. In this paper, for automating the detection of COVID-19 from X-ray images, deep learning techniques have been used to distinguish between (COVID-19) and normal cases. A dataset used by this work is publicly published, which comprised 5000 Chest X-ray images with their labels. A subset of 2000 X-ray images was used to train two trendy convolutional neural networks, which are AlexNet and ResNet50. While the remaining 3000 images were used for testing. The parameters of these network models have been adjusted precisely to achieve optimum detection decision. Results show these models can achieve an accuracy of nearly 99.6% with F1-Scores of 0.939 for COVID-19 and 0.998 for non-COVID-19 via the AlexNet model, while the ResNet50 model realized an accuracy of 99.3% with F1-Scores of 0.91 and 0.996 for COVID-19 and non-COVID-19, respectively. From these results, the AlexNet model can be an enthralling tool to assist radiologists in the early diagnosis and detection of COVID-19 cases.