

Automatic Detection of Coronavirus Disease (COVID-19) Using X-ray Images and Deep Convolutional Neural Networks

The 2019 novel coronavirus (COVID-19), originating from Wuhan China, has spread rapidly among people living in other countries, and is approaching approximately 12,245,417 cases worldwide according to the statistics of European Centre for Disease Prevention and Control (ECDC). There are a limited number of COVID-19 test kits available in hospitals due to the increasing cases daily. Therefore, it is necessary to implement an automatic detection system as a quick alternative diagnosis option to prevent COVID-19 spreading among people. Presently, COVID-19 has posed a serious threat to researchers, scientists, health professionals, and administrations around the globe from its detection to its treatment. The whole world is witnessing a lockdown like situation because of COVID-19 pandemic. Persistent efforts are being made by the researchers to obtain the possible solutions to control this pandemic in their respective areas. One of the most common and effective methods applied by the researchers is the use of CT-Scans and X-rays to analyze the images of lungs for COVID-19. However, it requires several radiology specialists and time to manually inspect each report which is one of the challenging tasks in a pandemic. In this paper, I have proposed a deep learning neural network-based method nCOVnet, an alternative fast screening method that can be used for detecting the COVID-19 by analyzing the X-rays of patients which will look for visual indicators found in the chest radiography imaging of COVID-19 patients, machine learning (ML) methods can play vital roles in identifying COVID-19 patients by visually analyzing their chest x-ray images. In this paper, a new ML-method proposed to classify the chest x-ray images into two classes, COVID-19 patient or non-COVID-19 person.

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