Patent Search

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Abstract:

Regarding the image analysis of COVID-19, chest X-ray is an imaging method to diagnose COVID-19 infection adopted by hospitals, particularly the first image-based appro used in Spain. The protocol is that if a clinical suspicion about the infection remains after the examination of a patient, a sample of nasopharyngeal exudate is obtained to reverse- transcription polymerase chain reaction (RT-PCR) and the taking of a chest X-ray film follows. Because the results of the PCR test may take several hours to becom available, information revealed from the chest X-ray plays an important role for a rapid clinical assessment. This means if the clinical condition and the chest X-ray are nor patient is sent home while awaiting the results of the etiological test. But if the X-ray shows pathological findings, the suspected patient will be admitted to the hospital for monitoring. In general, the absence or presence of pathological findings on the chest X-ray is the basis for making a clinical decision in sending the patient home or keepin patient in the hospital for further observation. While radiography in medical examinations can be quickly performed and become widely available with the prevalence of c radiology imaging systems in healthcare systems, the interpretation of radiography images by radiologists is limited due to the human capacity in detecting the subtle visu features present in the images. Because AI can discover patterns in chest X-rays that normally would not be recognized by radiologists, there have been many studies repo literature about new developments of ML models using support vector machine for differentiating COVID-19 from non-COVID-19 using public databases of chest X rays. D learning (DL) methods in artificial intelligence (AI) play a dominant role as high performance classifiers in the detection of the disease using chest X-rays. Given many new models have been being developed for this purpose, the objective of this study is to investigate the fine tuning of pertained convolutional neural networks (CNNs) for the classification of COVID-19 using chest X-ray

Complete Specification

Description:This section describes DeepCovidNet method consisting of two phases, illustrated in Fig. 1: (i) data engineering and (ii) model training and validation. We use two chest X-ray image datasets in our method. Dataset contains total of 950 X-ray images3 labeled with more than fifteen types of disease findings such as: pneumocystis, streptococcus, klebsiella, legionella, SARS, lipoid, varicella, mycoplasma, influenza,
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herpes, aspergillosis, nocardia, COVID-19, tuberculosis and others. This image dataset contains anteroposterior (front to back), front postero-anterior (back to front) and lateral (side) X-ray image views. Front postero-anterior images give clear lung representations, therefore we selected 196 COVID+ pre processed chest X-ray images labelled with front view for our experiments and removed the rest. The
exponential increase in COVID-19 patients is overwhelming for healthcare systems across the world. With limited testing kits, it is impossible for every patient with respiratory illness to be tested using conventional techniques (RT-PCR). The tests also have long turn-around time, and limited sensitivity. Detecting possible COVID-19 infections on Chest X-Ray may help quarantine high risk patients while test results are awaited. X-Ray machines are already available in most healthcare systems, and with most modern X-Ray systems already digitized, there is no transportation time involved for the samples either

View Application Status