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Covid Detection Using Deep Learning from CT Scan Images

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Abstract

Background: COVID-19 has been killing people all over the globe at a large scale it has widely spread all over the world since the beginning of 2020. Doctors and researchers are doing their best to obtain the possible solutions. 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 and it is one of the challenging tasks in a pandemic. So, it is the high time to develop automatic and accurate detection of COVID-19 using chest CT.

Objective: To develop a fully automatic deep learning framework for COVID-19 diagnosis in chest CT scans.

Methodology: In this study, a deep learning algorithm named convolutional neural network (CNN) was used to extract visual features from volumetric chest CT scans for the detection of COVID-19. The datasets were collected from GitHub.

Result and discussion: The collected dataset consisted of 349 chest CT scans. The per-scan sensitivity and specificity for detecting COVID-19 in the independent test set was 80% (101 of 127 scans) and 85% (90 of 107 scans).

Future Work: Other deep learning-based algorithms may be applied to get better accuracy.