IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 7, April 2023

COVID-19 Detection using Deep Learning

Shani Deo Pandey[1], Gautam Sharma[2], Chandra Shekhar[3], Aditya Chauhan[4], Ms. Shailja Varshney[5]
Department of Computer Science andEngineering[1,2,3,4,5]
ITS Engineering College, Greater Noida, Uttar Pradesh, India

Abstract: *The COVID-19 pandemic has had a significant impact on public healthcare worldwide, and medical imaging techniques like computed tomography (CT) have emerged as a potential alternative to RT-PCR as a screening method. However, the limited availability of COVID-19 imaging data has made it challenging to develop effective automated picture segmentation methods for quantitative assessment and disease monitoring. To address this issue, deep learning techniques have been employed for picture segmentation and classification on CT scans of the lungs. The proposed method utilizes an infection segmentation model that uses the U-NET model to identify infected areas and classify patients as COVID-19 positive or negative. The segmentation of infections and lungs in the suggested method is achieved by preprocessing the images to enhance contrast and remove irrelevant background elements. The dice similarity coefficient is used to evaluate the performance of two different U-NET models. The results demonstrate that the proposed method outperforms existing alternatives, advances the state of the art in COVID-19 segmentation, and improves medical image analysis with limited data availability. Therefore, deep learning techniques offer a promising approach for automated picture segmentation in medical imaging, particularly in the context of COVID-19.*

Keywords: Convolutional Neural Network, CLAHE Contrast Enhancement, Dice Similarity Coefficient, Infection Segmentation, lung segmentation, U-NET Model Architecture

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