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COVID-19 Lung Mask Segmentation and Severity Estimation using Deep Learning

A Dissertation by

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Abstract

The outbreak of COVID-19, a type of pneumonia transmissible person-to-person caused by the Severe Acute Respiratory Syndrome Coronavirus 2(SARS_COV-2), has caused a global pandemic. In January 2020, the World Health Organization (WHO) declared COVID-19 as a global health emergency. One of the most common features identified with COVID-19 infected patients is the presence of Ground Glass Opacities in lung CT scans. This feature has the potential of COVID-19 diagnosis and severity estimation. This research proposes a tool that can be used to screen COVID-19 infection mask segmentation and the severity estimation of the disease. The UNet architecture has been used to build a model capable of segmenting the infection masks and a pre-built model is allocated to perform the severity scoring. This tool is expected to be supportive for medical professionals such as doctors and radiologists to minimize the issues caused by COVID-19 pandemic.

Keywords: UNet Architecture, Deep Learning, COVID-19 severity estimation, segmentation, image processing