[1]Yogendra Narayan Prajapati

Dr Manish Sharma

Predictive Modeling of Infection from Chest X-ray Images with ResNet34 and Deep learning CNN approach

Journal of Electrical Systems

Abstract: - The timely and precise detection of infected persons is still a major issue in the ongoing fight against the COVID-19 epidemic. With its ability to provide information on the severity and development of the illness, chest X-ray imaging has become a useful diagnostic and surveillance technique for COVID-19 pneumonia. This paper suggests a unique method for predictive modeling of COVID-19 infection from chest X-ray pictures by using the capabilities of deep learning, namely ResetNet architecture. In image classification tasks, ResNet34, a convolutional neural network (CNN) variation, has shown impressive performance, particularly in situations with little training data. Here, we report a comprehensive training and validation protocol for the ResetNet model using a large dataset of chest X-ray images that includes both positive and negative COVID-19 instances. To improve feature extraction, the dataset is preprocessed. All data size: 5856,Train size: 4684, Val size: 585, Test size: 587. To reduce overfitting and boost generalization, data augmentation methods are used. Our suggested method uses chest X-ray pictures to reliably distinguish COVID-19 patients from non-COVID-19 cases by using deep learning's discriminative capabilities. The result of model with TRAINING: Epoch: 19, Loss: 0.08099747663349896, Accuracy: 97.11and TEST: Epoch: 19, Loss: 0.08553645759820938, Accuracy: 96.76.

Keywords: CT-Scan, Covid-19, Infection ratio, Statistical texture feature, ResNet34, CNN.

I. INTRODUCTION

Leveraging Deep Learning for Chest X-ray-Based Early COVID-19 Detection: This paper highlights the use of deep learning, particularly ResNet34 architecture, for COVID-19 early detection. Using Chest X-rays to Accurately Diagnose COVID-19 with ResNet34: The use of ResNet34 for precise COVID-19 diagnosis is highlighted in this paper, along with its potential to enhance patient treatment and monitoring.Enriching Data and Deeply Extracting Features for Sturdy COVID-19 Classification on Chest X-rays:

The primary methods in your model—deep feature extraction and data augmentation—as well as how they support reliable classification are highlighted in this paper.The timely and precise detection of infected persons is still a major issue in the ongoing fight against the COVID-19 epidemic. With its ability to provide information on the severity and development of the illness, chest X-ray imaging has become a useful diagnostic and surveillance technique for COVID-19 pneumonia.

This paper suggests a unique method for predictive modeling of COVID-19 infection from chest X-ray pictures by using the capabilities of deep learning, namely ResetNet architecture. In image classification tasks, ResetNet, a convolutional neural network (CNN) variation, has shown impressive performance, particularly in situations with little training data. Here, we report a comprehensive training and validation protocol for the ResetNet model using a large dataset of chest X-ray images that includes both positive and negative COVID-19 instances. To improve feature extraction, the dataset is preprocessed. To reduce overfitting and boost generalization, data augmentation methods are used. Our suggested method uses chest X-ray pictures to reliably distinguish COVID-19 patients from non-COVID-19 cases by using deep learning's discriminative capabilities.

Our main goal in this research project is to create a highly accurate and advanced forecasting system. Employing cutting-edge machine-learning methodologies, this technology harnesses CT scan imagery to precisely gauge the extent of COVID-19 infection, providing a comprehensive assessment of severity with remarkable accuracy. Our objective is to efficiently classify infection severity into three separate stages: severe, moderate, and mild [9,10]. To do this, we use sophisticated segmentation algorithms to extract important factors including infection ratio and textural qualities. In order to verify and improve our suggested model, a large dataset consisting of different CT scans with different levels of illness severity is being used. By taking an all-encompassing approach, we hope to

[1]*Correspondence: ynp1581@gmail.com

Phd Scholar CSE Department, Quantum University, Roorkee India

Professor CSE Department, Quantum University, Roorkee India