COVID-19-CNN-Image-Detection-from-Lung-X-Rays

This project aims to take a chest X-Ray image and detect if the patient has the COVID-19 infection. It uses a CNN to train on a large dataset of both normal and COVID lung images to learn how to process the difference in both images. COVID-19 or novel Coronavirus originated in Wuhan, China in 2019 and spread around the world. it has so far infected millions of people across the world.

As the number of cases are rapidly increasing, most of the countries are facing shortage of testing kits and resources. AI is already transforming many different fields. One such field is the area of Medical Diagnosis through accurate clinical computer-aided diagnosis (CAD) systems.

The limited quantity of testing kits and increasing number of daily cases encouraged us to come up with a deep learning model that can aid radiologists and clinicians in detecting COVID-19 cases using chest X-rays. This project aims to take a chest X-Ray image and detect if the patient has the COVID-19 infection. It uses a CNN to train on a large dataset of both normal and COVID lung images to learn how to process the difference in both images.

We applied a CNN Model, which we trained on a COVID-19 Radiography dataset containing Chest X-Rays, for detecting COVID-19 & achieved ~98% accuracy on the validation set with respective to Radiologist's clinical findings.

Literature Survey

1. **https://link.springer.com/article/10.1007/s42979-022-01182-1**
2. **https://www.kaggle.com/datasets/tawsifurrahman/covid19-radiography-database?resource=download**
3. **https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0262052**