**Deep learning approaches for covid 19 detection**

COVID-19 is a novel virus that causes infection in both the upper respiratory tract and the lungs. In the scale of a global pandemic, numbers of cases and deaths have increased daily. CT scan is one of the tests that can give a better picture on the severity of COVID-19. For monitoring various lung diseases, chest X-ray illustrations have proven useful, and they are used to monitor the COVID-19 disease.

In this project, I am going to work on deep-learning-based approaches, namely deep feature extraction, fine-tuning of pretrained convolutional neural networks (CNN), and end-to-end training of a developed CNN model, have been used to classify COVID-19 and normal (healthy) chest X-ray images. For deep feature extraction, pretrained deep CNN models (ResNet18, ResNet50, ResNet101, VGG16, and VGG19) were used. For classification of the deep features, the Support Vector Machines (SVM) classifier was used with various kernel functions, namely Linear, Quadratic, Cubic, and Gaussian. The pretrained deep CNN models were also used for the fine-tuning procedure.

A new CNN model is proposed in this study with end-to-end training. A dataset containing 180 COVID-19 and 200 normal (healthy) chest X-ray images will be used in the study’s experimentation. Classification accuracy was used as the performance measurement of the study. The experimental works reveal that deep learning shows potential in the detection of COVID-19 based on chest X-ray images. The results of which showed the deep approaches to be quite efficient when compared to the local texture descriptors in the detection of COVID-19 based on chest X-ray images.

The ability to process large numbers of features makes deep learning very powerful when dealing with unstructured data. If the data is too simple or incomplete, it is very easy for a deep learning model to become overfitted and fail to generalize well to new data.

I have chosen this project due to two main reasons. COVID-19 pandemic and its impacts are part of our daily life, and many researchers and scientists are still trying to find the right solution for this. Second reason is that Deep leaning is a vast concept that can help us with huge unstructured data like text, images, videos, audios etc. Working on this project will surely help me gaining more knowledge and practical experience in deep learning while addressing and applying the deep learning techniques to the present problems.