**PROJECT PROPOSAL**

**ARTIFICIAL INTELLIGENCE**



**DEPARTMENT OF COMPUTER SCIENCE**

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**CoronaVirus Classification using X Rays**

**Project Motivation:**

At the end of 2019, COVID-19 has emerged as one of the contiguous pandemic and spread all over the world . To diagnose the disease equipment were expensive and insufficient.Although COVID-19 tests were used to detect the disease but the turnaround time for COVID-19 test results range from 3 to 48 hours and not all countries have the access of those test kits. According to Fleischner Society chest X-ray is also an option for the Hospitals and Countries which cannot afford test kits Chest X-Rays can also be used to detect COVID-19.

**Problem Definition:**

Through X-ray images we want to develop an algorithm for the detection of COVID-19 which will help countries and hospitals which are unable to buy laboratory kits for testing .

The data we encounter in real life will be imbalanced. Therefore it is important to evaluate which CNN architecture will be used. We used XCEPTION pretrained model,which is efficient for imbalanced data.We also used Augmented Images(images which are generated to increase the data for training and testing) .In this study ,1500 normal , 225 covid images are used. The classification was performed between COVID-19 and normal images.

**Relevant Method/Model**

We will use Transfer learning as a method of deep learning.Transfer learning includes usage of pretrained model (imagenet) and customizes top layer for solving relevant problems.we will include top layers(Pooling layer,Flatten Layer,64 unit of dense layer with Relu as a activation function,Dropout layer and 2 unit of output layer of sigmoid activation function).The model will predict one of two classes ie Corona or Normal.The model can be called as binary classifier.

**Performance Measurement**

The performance will be measured on a test dataset(covid + normal) that will be obtained from hold out validation i.e. 20% test data.After training on 80 percent of dataset,performance will be measured by testing model on test data.We expect the accuracy of at least 80 to 90 percent.

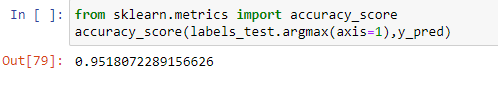
**Risks and Dependencies**

As you know that viruses continuously change themselves and adapt to the environment,there may be chances that the virus may change the effect on the lungs differently so we need to retrain the model.

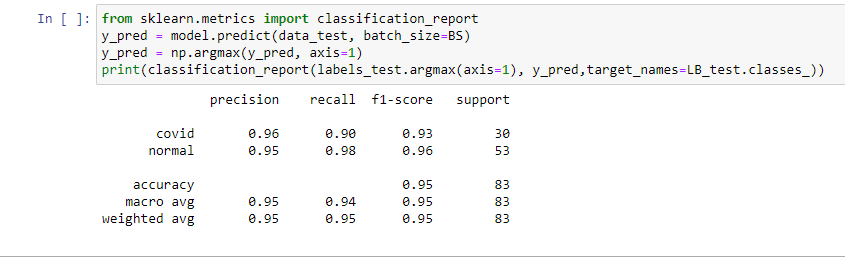
Secondly there may be chances that virus would not longer leave patches on lungs so it will make difficult to detect using x-rays

**Run performance checks:**

**Classification Accuracy:**

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**Confusion Matrix:**

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