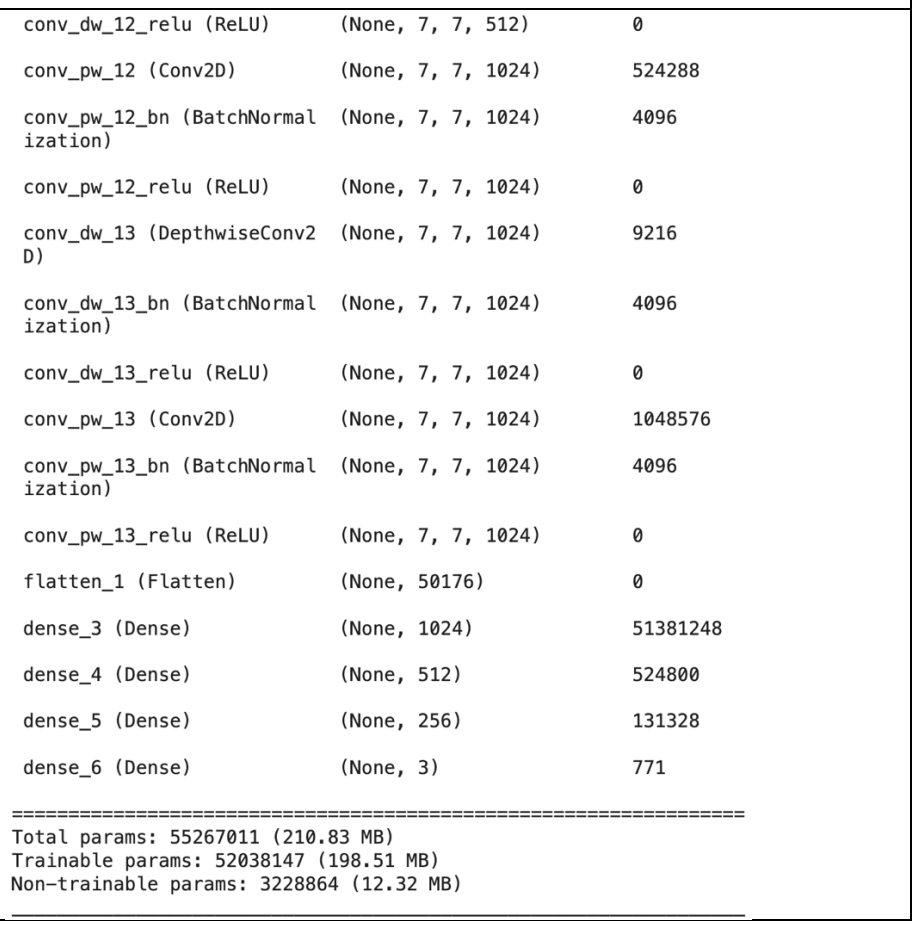
Project Development Phase

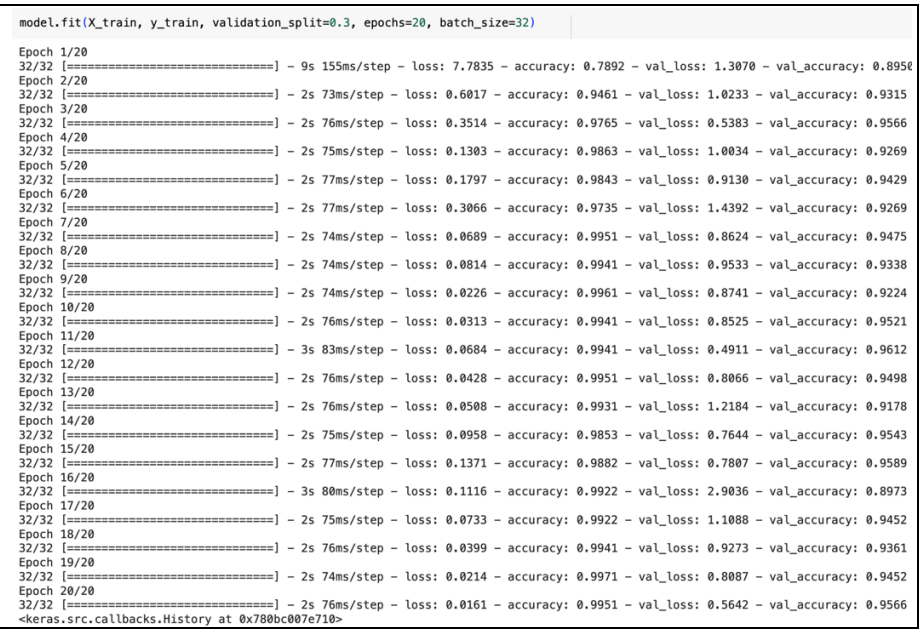
Model Performance Test

Date	09th Nov 2023
Team ID	Team- 592660
Project Name	***Detecting COVID-19 From Chest X-Rays Using Deep Learning Techniques***
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.no	Parameter	Values	Screenshot
1.	Model Summary	Total params : 55267011 (210.83 MB) Trainable params: 52038147 (198.51 MB) Non-trainable params: 3228864 (12.32 MB)	

2.	Accuracy	Training Accuracy : 99.5% Val_accuracy: 95.8%	

```
model.fit(X_train, y_train, validation_split=0.3, epochs=20, batch_size=32)
```

```
Epoch 1/20
32/32 [==============================] - 9s 155ms/step - loss: 7.7835 - accuracy: 0.7892 - val_loss: 1.3070 - val_accuracy: 0.8958
Epoch 2/20
32/32 [==============================] - 2s 73ms/step - loss: 0.6017 - accuracy: 0.9461 - val_loss: 1.0233 - val_accuracy: 0.9315
Epoch 3/20
32/32 [==============================] - 2s 76ms/step - loss: 0.3514 - accuracy: 0.9765 - val_loss: 0.5383 - val_accuracy: 0.9566
Epoch 4/20
32/32 [==============================] - 2s 75ms/step - loss: 0.1303 - accuracy: 0.9863 - val_loss: 1.0034 - val_accuracy: 0.9269
Epoch 5/20
32/32 [==============================] - 2s 77ms/step - loss: 0.1797 - accuracy: 0.9843 - val_loss: 0.9130 - val_accuracy: 0.9429
Epoch 6/20
32/32 [==============================] - 2s 77ms/step - loss: 0.3066 - accuracy: 0.9735 - val_loss: 1.4392 - val_accuracy: 0.9269
Epoch 7/20
32/32 [==============================] - 2s 74ms/step - loss: 0.0689 - accuracy: 0.9951 - val_loss: 0.8624 - val_accuracy: 0.9475
Epoch 8/20
32/32 [==============================] - 2s 74ms/step - loss: 0.0814 - accuracy: 0.9941 - val_loss: 0.9533 - val_accuracy: 0.9338
Epoch 9/20
32/32 [==============================] - 2s 74ms/step - loss: 0.0226 - accuracy: 0.9961 - val_loss: 0.8741 - val_accuracy: 0.9224
Epoch 10/20
32/32 [==============================] - 2s 76ms/step - loss: 0.0313 - accuracy: 0.9941 - val_loss: 0.8525 - val_accuracy: 0.9521
Epoch 11/20
32/32 [==============================] - 3s 83ms/step - loss: 0.0684 - accuracy: 0.9941 - val_loss: 0.4911 - val_accuracy: 0.9612
Epoch 12/20
32/32 [==============================] - 2s 76ms/step - loss: 0.0428 - accuracy: 0.9951 - val_loss: 0.8066 - val_accuracy: 0.9498
Epoch 13/20
32/32 [==============================] - 2s 76ms/step - loss: 0.0508 - accuracy: 0.9931 - val_loss: 1.2184 - val_accuracy: 0.9178
Epoch 14/20
32/32 [==============================] - 2s 75ms/step - loss: 0.0958 - accuracy: 0.9853 - val_loss: 0.7644 - val_accuracy: 0.9543
Epoch 15/20
32/32 [==============================] - 2s 77ms/step - loss: 0.1371 - accuracy: 0.9882 - val_loss: 0.7807 - val_accuracy: 0.9589
Epoch 16/20
32/32 [==============================] - 3s 80ms/step - loss: 0.1116 - accuracy: 0.9922 - val_loss: 2.9036 - val_accuracy: 0.8973
Epoch 17/20
32/32 [==============================] - 2s 75ms/step - loss: 0.0733 - accuracy: 0.9922 - val_loss: 1.1088 - val_accuracy: 0.9452
Epoch 18/20
32/32 [==============================] - 2s 76ms/step - loss: 0.0399 - accuracy: 0.9941 - val_loss: 0.9273 - val_accuracy: 0.9361
Epoch 19/20
32/32 [==============================] - 2s 74ms/step - loss: 0.0214 - accuracy: 0.9971 - val_loss: 0.8087 - val_accuracy: 0.9452
Epoch 20/20
32/32 [==============================] - 2s 76ms/step - loss: 0.0161 - accuracy: 0.9951 - val_loss: 0.5642 - val_accuracy: 0.9566
<keras.src.callbacks.History at 0x780bc007e710>
```

Classification Report :

```
print(classification_report(y_test_new, y_pred))
```

```
              precision    recall  f1-score   support

           0       1.00      1.00      1.00       108
           1       0.95      0.96      0.96       129
           2       0.96      0.95      0.96       128

    accuracy                           0.97       365
   macro avg       0.97      0.97      0.97       365
weighted avg       0.97      0.97      0.97       365
```

Training and Validation Loss / Training-Validation Accuracy Metric Graph :