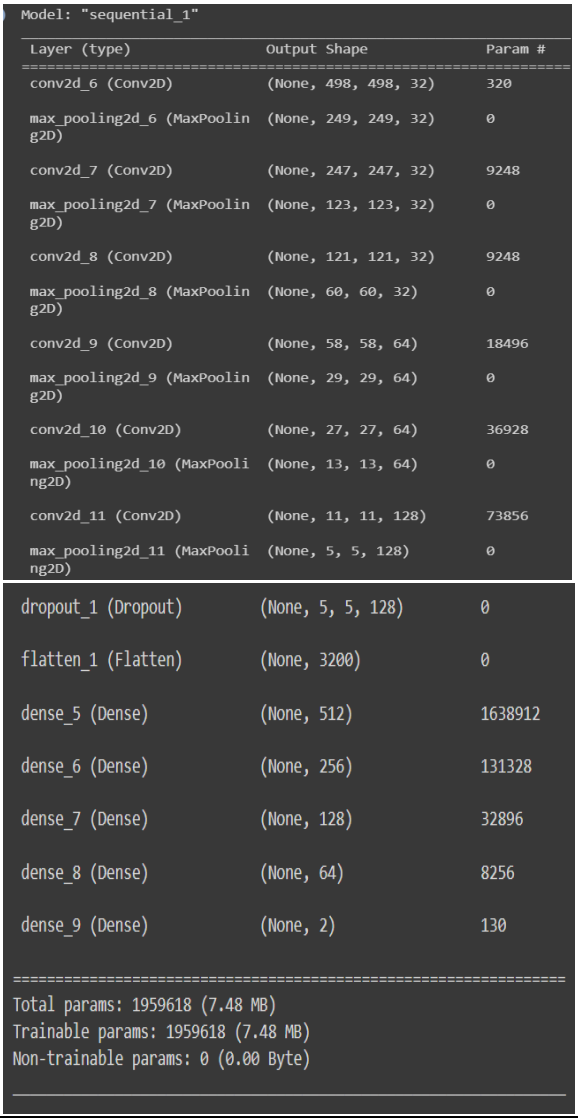
Project Development Phase
Model Performance Test

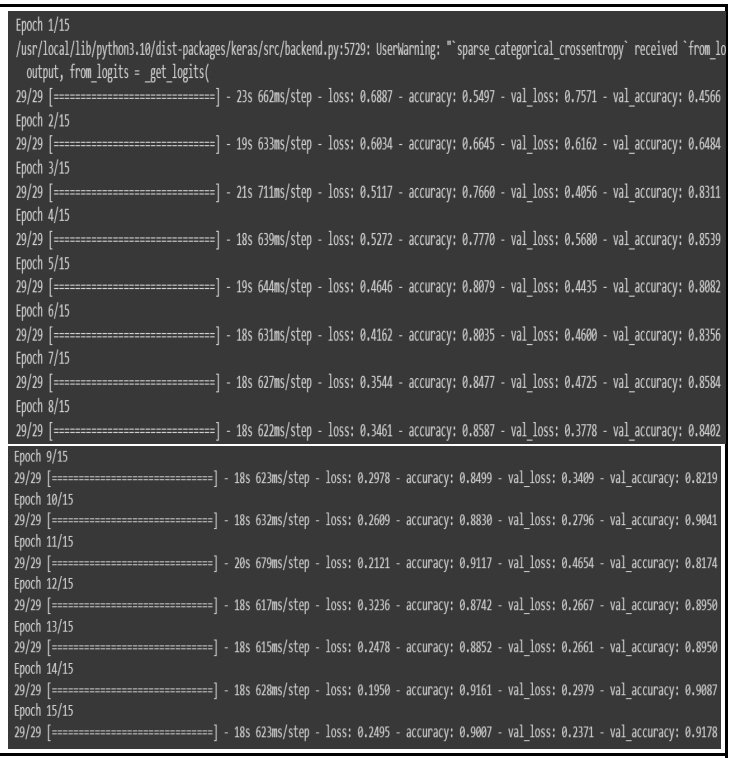
Date	17 November 2023
Team ID	Team-591814
Project Name	COVID-19 Detection From Chest X-Ray Using Deep Learning Techniques
Maximum Marks	10 Marks

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: 19,59,618** **Trainable params: 19,59,618** **Non-trainable params: 0**	

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_6 (Conv2D)           (None, 498, 498, 32)      320

 max_pooling2d_6 (MaxPoolin  (None, 249, 249, 32)      0
 g2D)

 conv2d_7 (Conv2D)           (None, 247, 247, 32)      9248

 max_pooling2d_7 (MaxPoolin  (None, 123, 123, 32)      0
 g2D)

 conv2d_8 (Conv2D)           (None, 121, 121, 32)      9248

 max_pooling2d_8 (MaxPoolin  (None, 60, 60, 32)        0
 g2D)

 conv2d_9 (Conv2D)           (None, 58, 58, 64)        18496

 max_pooling2d_9 (MaxPoolin  (None, 29, 29, 64)        0
 g2D)

 conv2d_10 (Conv2D)          (None, 27, 27, 64)        36928

 max_pooling2d_10 (MaxPooli  (None, 13, 13, 64)        0
 ng2D)

 conv2d_11 (Conv2D)          (None, 11, 11, 128)       73856

 max_pooling2d_11 (MaxPooli  (None, 5, 5, 128)         0
 ng2D)

 dropout_1 (Dropout)         (None, 5, 5, 128)         0

 flatten_1 (Flatten)         (None, 3200)              0

 dense_5 (Dense)             (None, 512)               1638912

 dense_6 (Dense)             (None, 256)               131328

 dense_7 (Dense)             (None, 128)               32896

 dense_8 (Dense)             (None, 64)                8256

 dense_9 (Dense)             (None, 2)                 130

=================================================================
Total params: 1959618 (7.48 MB)
Trainable params: 1959618 (7.48 MB)
Non-trainable params: 0 (0.00 Byte)
_________________________________________________________________
```

2.	Accuracy	Training Accuracy – 90.07 Validation Accuracy – 91.78	
3.	Confidence Score (Only Yolo Projects)	Class Detected - NA Confidence Score - NA	Not Applicable

Screenshot:

Model Summary

```
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 conv2d_9 (Conv2D)           (None, 58, 58, 64)        18496

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 max_pooling2d_11 (MaxPooli  (None, 5, 5, 128)         0
 ng2D)
```

```
 dropout_1 (Dropout)         (None, 5, 5, 128)         0

 flatten_1 (Flatten)         (None, 3200)              0

 dense_5 (Dense)             (None, 512)               1638912

 dense_6 (Dense)             (None, 256)               131328

 dense_7 (Dense)             (None, 128)               32896

 dense_8 (Dense)             (None, 64)                8256

 dense_9 (Dense)             (None, 2)                 130

=================================================================
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_________________________________________________________________
```

Accuracy

```
Epoch 1/15
/usr/local/lib/python3.10/dist-packages/keras/src/backend.py:5729: UserWarning: "`sparse_categorical_crossentropy` received `from_lo
  output, from_logits = _get_logits(
29/29 [==============================] - 23s 662ms/step - loss: 0.6887 - accuracy: 0.5497 - val_loss: 0.7571 - val_accuracy: 0.4566
Epoch 2/15
29/29 [==============================] - 19s 633ms/step - loss: 0.6034 - accuracy: 0.6645 - val_loss: 0.6162 - val_accuracy: 0.6484
Epoch 3/15
29/29 [==============================] - 21s 711ms/step - loss: 0.5117 - accuracy: 0.7660 - val_loss: 0.4056 - val_accuracy: 0.8311
Epoch 4/15
29/29 [==============================] - 18s 639ms/step - loss: 0.5272 - accuracy: 0.7770 - val_loss: 0.5680 - val_accuracy: 0.8539
Epoch 5/15
29/29 [==============================] - 19s 644ms/step - loss: 0.4646 - accuracy: 0.8079 - val_loss: 0.4435 - val_accuracy: 0.8082
Epoch 6/15
29/29 [==============================] - 18s 631ms/step - loss: 0.4162 - accuracy: 0.8035 - val_loss: 0.4600 - val_accuracy: 0.8356
Epoch 7/15
29/29 [==============================] - 18s 627ms/step - loss: 0.3544 - accuracy: 0.8477 - val_loss: 0.4725 - val_accuracy: 0.8584
Epoch 8/15
29/29 [==============================] - 18s 622ms/step - loss: 0.3461 - accuracy: 0.8587 - val_loss: 0.3778 - val_accuracy: 0.8402
```

```
Epoch 9/15
29/29 [==============================] - 18s 623ms/step - loss: 0.2978 - accuracy: 0.8499 - val_loss: 0.3409 - val_accuracy: 0.8219
Epoch 10/15
29/29 [==============================] - 18s 632ms/step - loss: 0.2609 - accuracy: 0.8830 - val_loss: 0.2796 - val_accuracy: 0.9041
Epoch 11/15
29/29 [==============================] - 20s 679ms/step - loss: 0.2121 - accuracy: 0.9117 - val_loss: 0.4654 - val_accuracy: 0.8174
Epoch 12/15
29/29 [==============================] - 18s 617ms/step - loss: 0.3236 - accuracy: 0.8742 - val_loss: 0.2667 - val_accuracy: 0.8950
Epoch 13/15
29/29 [==============================] - 18s 615ms/step - loss: 0.2478 - accuracy: 0.8852 - val_loss: 0.2661 - val_accuracy: 0.8950
Epoch 14/15
29/29 [==============================] - 18s 628ms/step - loss: 0.1950 - accuracy: 0.9161 - val_loss: 0.2979 - val_accuracy: 0.9087
Epoch 15/15
29/29 [==============================] - 18s 623ms/step - loss: 0.2495 - accuracy: 0.9007 - val_loss: 0.2371 - val_accuracy: 0.9178
```