Anglia Ruskin University

Lab Logbook

Bilal Sardar……<SID>2315119
Supervised by
Dr. Raj Mani Shukla

Neural Computing and Deep Learning
Anglia Ruskin University
Cambridge, United kingdom
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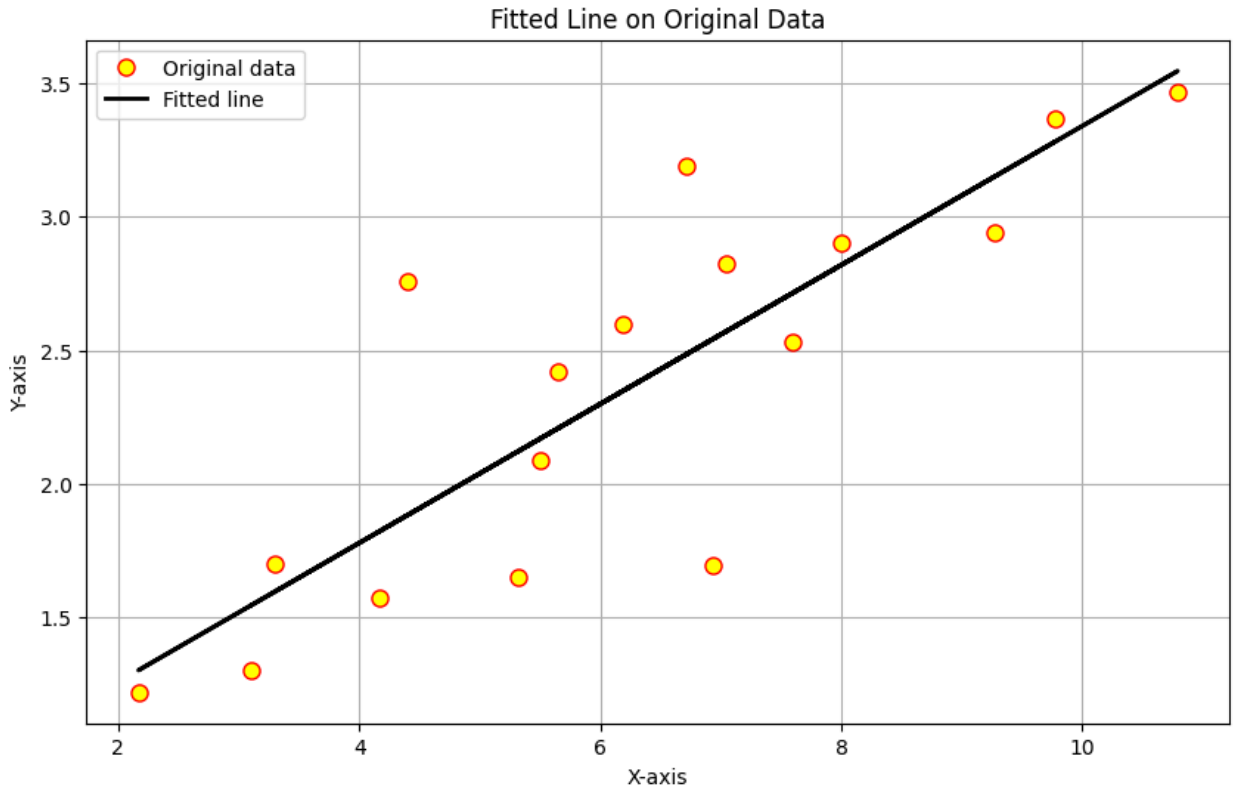
LAB1:



LAB2:

Task1: “91”

Task2:

Enter SSID: 2315119
0.6960345686960417
0.6960345686960417

LAB3:

Model summary:

Model: "sequential_1"

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Layer (type)	Output Shape	Param #
flatten_1 (Flatten)	(None, 784)	0
dense_3 (Dense)	(None, 128)	100480
dense_4 (Dense)	(None, 64)	8256
dense_5 (Dense)	(None, 10)	650

Total params: 109386 (427.29 KB)
Trainable params: 109386 (427.29 KB)
Non-trainable params: 0 (0.00 Byte)
_____

Accuracy: 0.8847
Task 2:

Final Predicted Output:
0.889550613969795 0.8003996080673895

Weights:
w1: 0.1426292115450811
w2: 0.2372865501866814
w3: 0.47051684618032436
w4: 0.5491462007467256
w5: 0.7131460577254054
w6: 0.786432750933407
w7: 0.6984692974318825
w8: 0.7984562338574279
w9: 0.8976344195574385
w10: 0.0976142308304555

Biases:
b1: 0.495359734641656
b2: 0.4960508500433624

LAB 4:

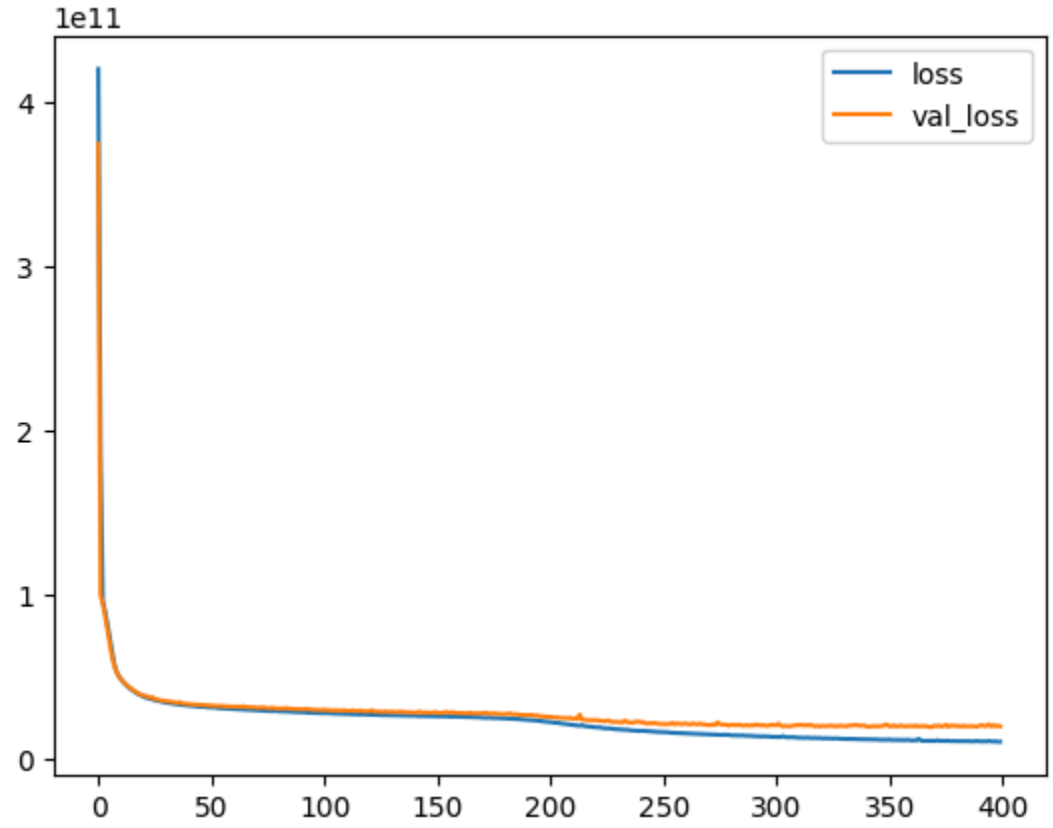
Model Sumary:

Model: "sequential_9"

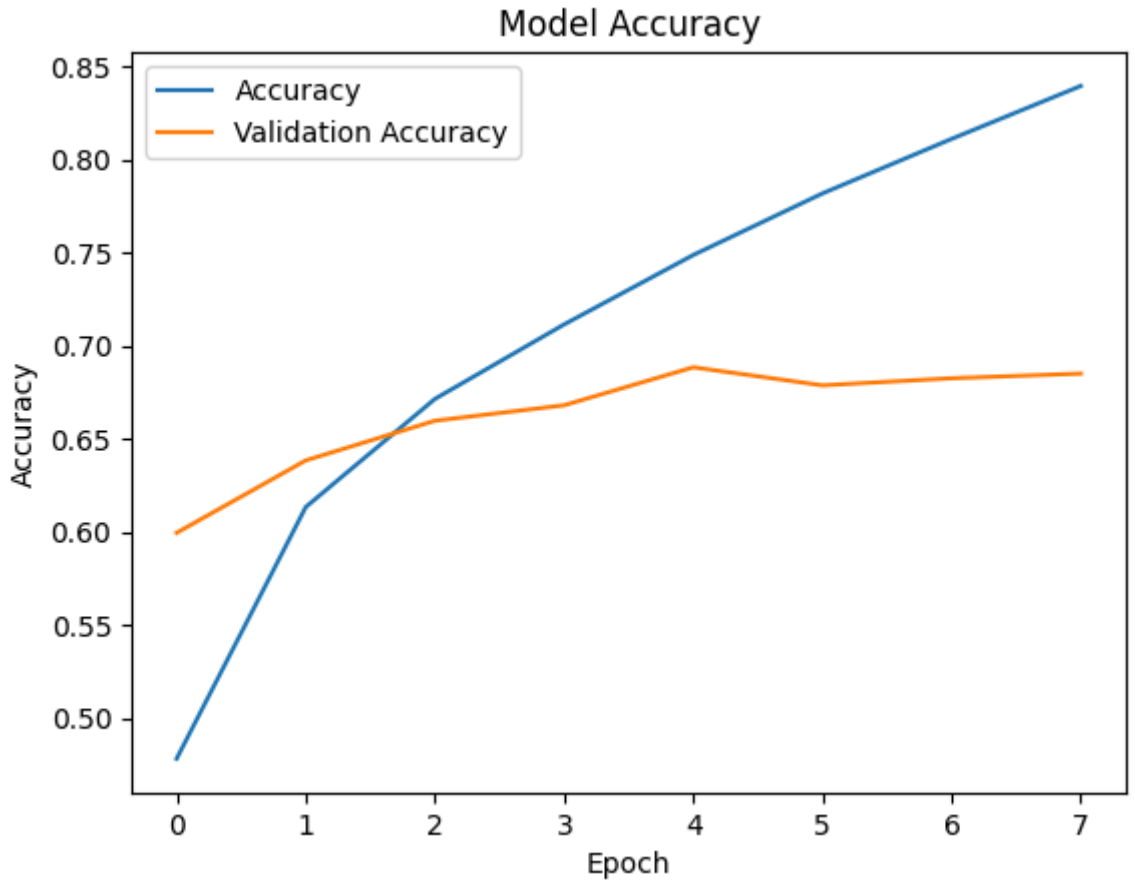
Layer (type)	Output Shape	Param #
dense_29 (Dense)	(None, 152)	3040
dense_30 (Dense)	(None, 114)	17442
dense_31 (Dense)	(None, 76)	8740
dense_32 (Dense)	(None, 19)	1463
dense_33 (Dense)	(None, 1)	20

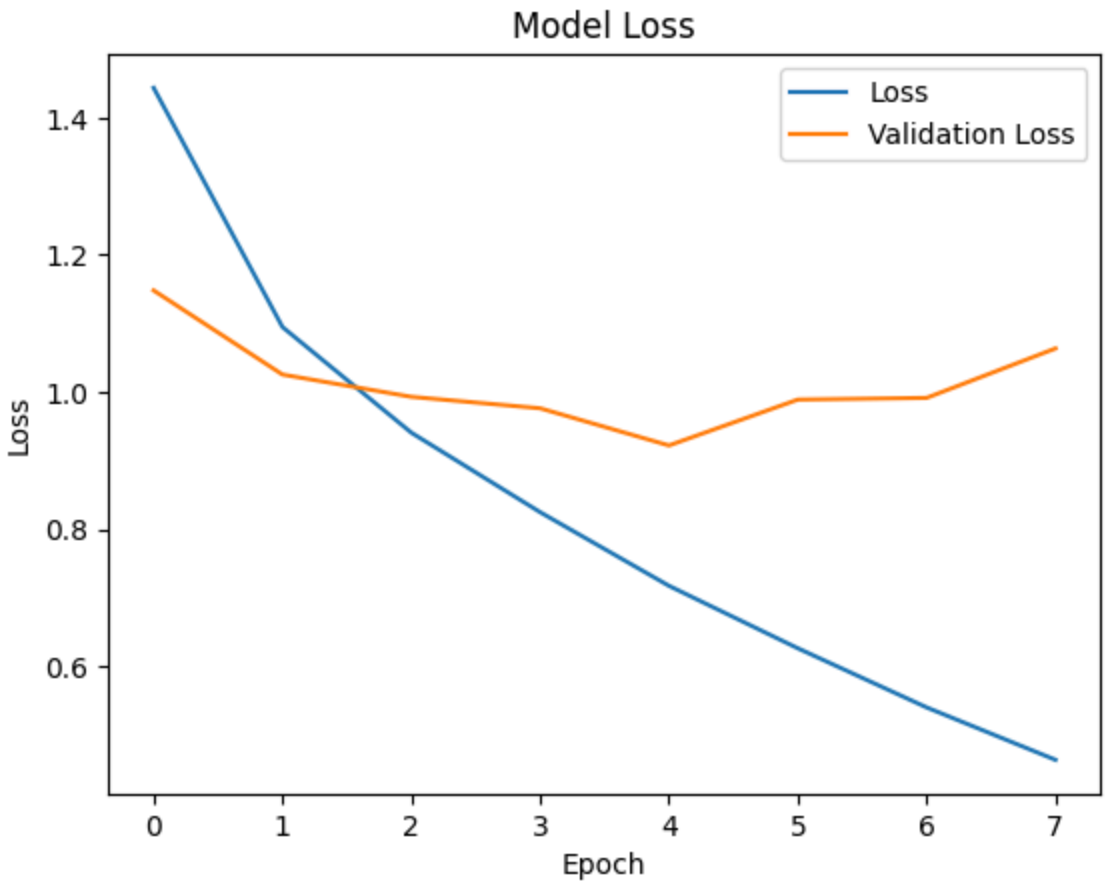
Total params: 30705 (119.94 KB)
Trainable params: 30705 (119.94 KB)
Non-trainable params: 0 (0.00 Byte)

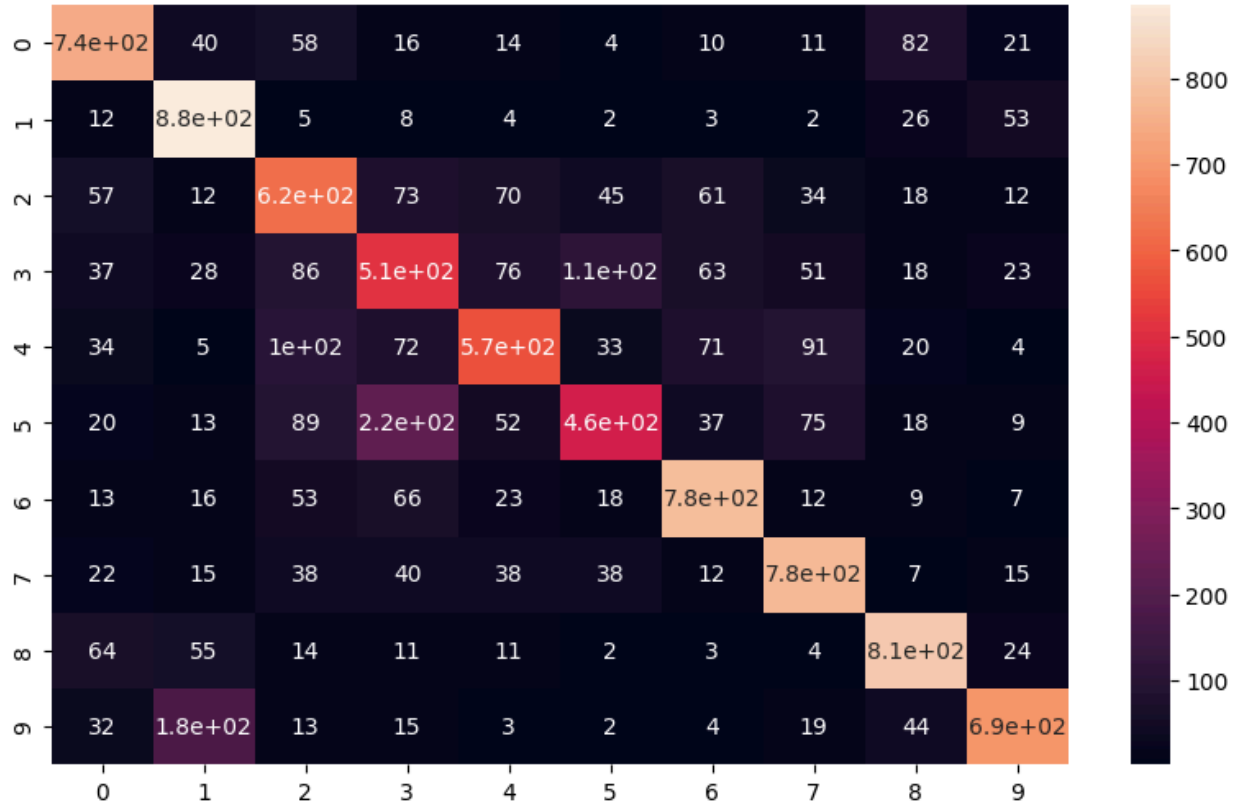
Model Loss:

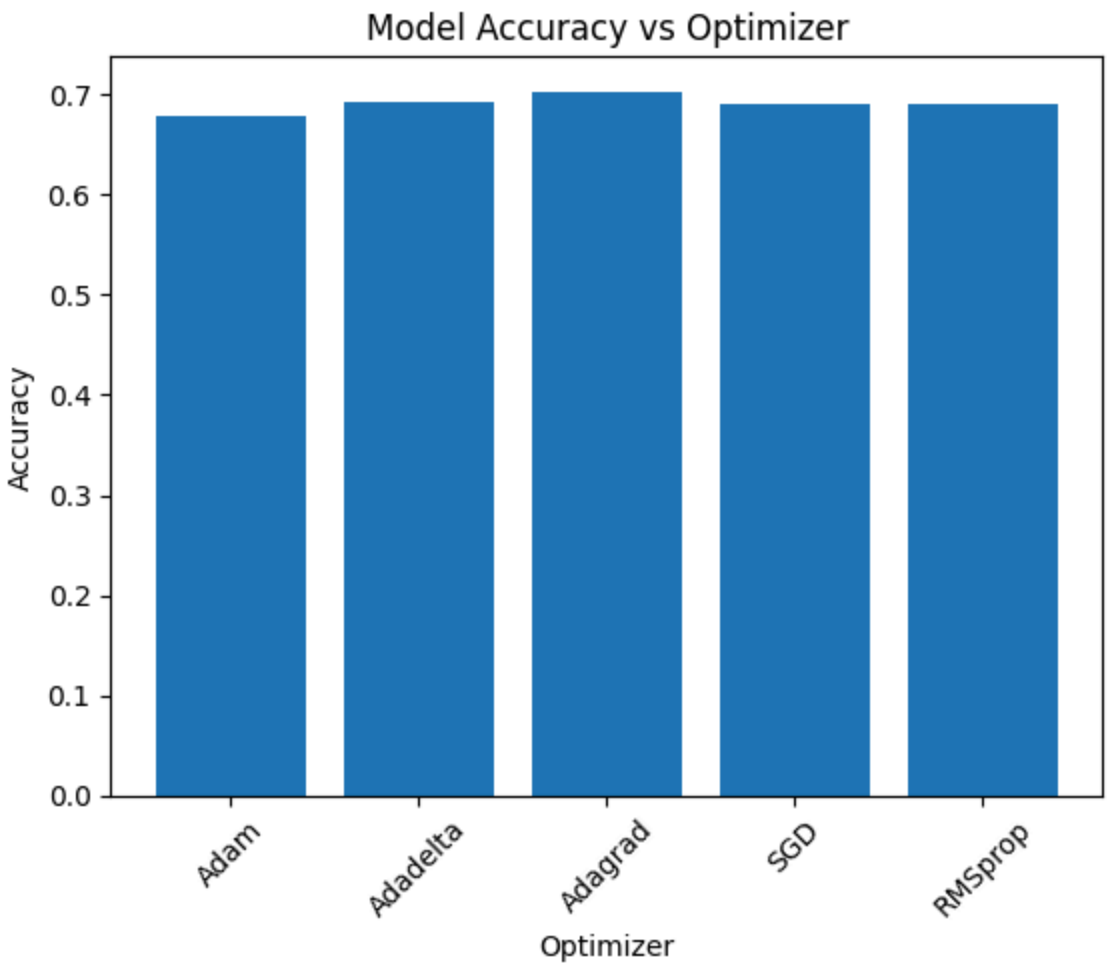


LAB5:

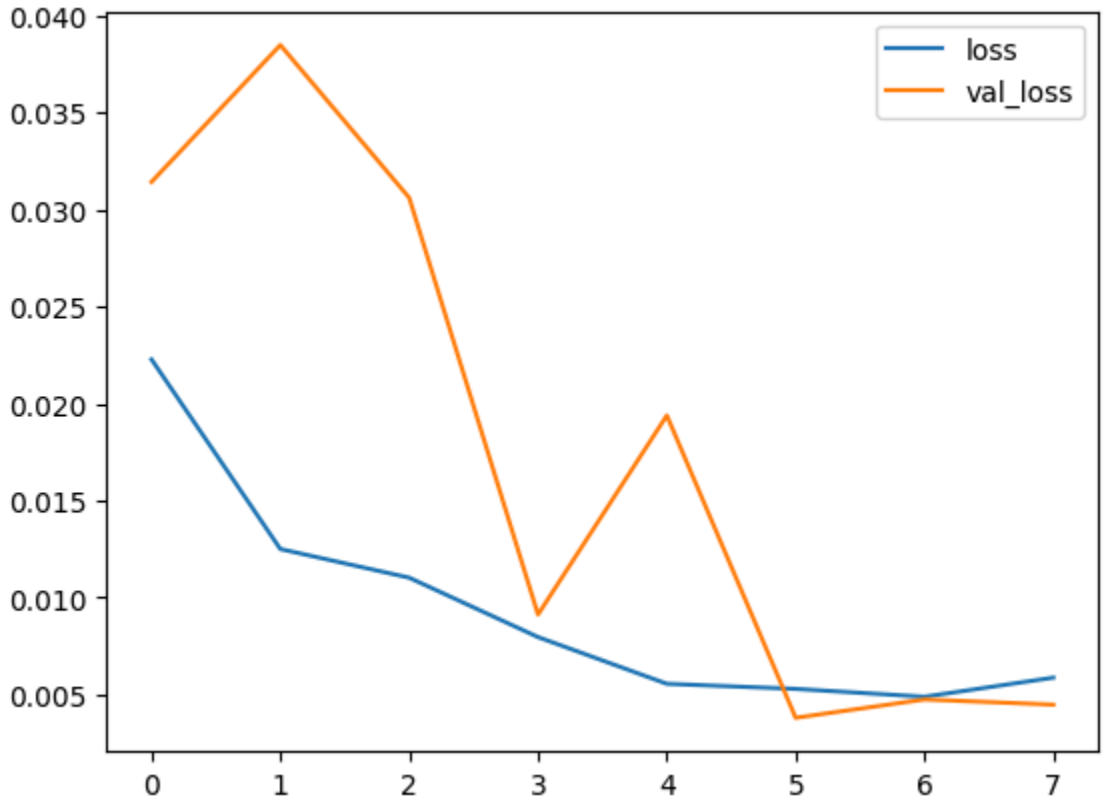

Model Accuracy
Accuracy
Validation Accuracy
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
Accuracy
0
1
2
3
4
5
6
7
Epoch

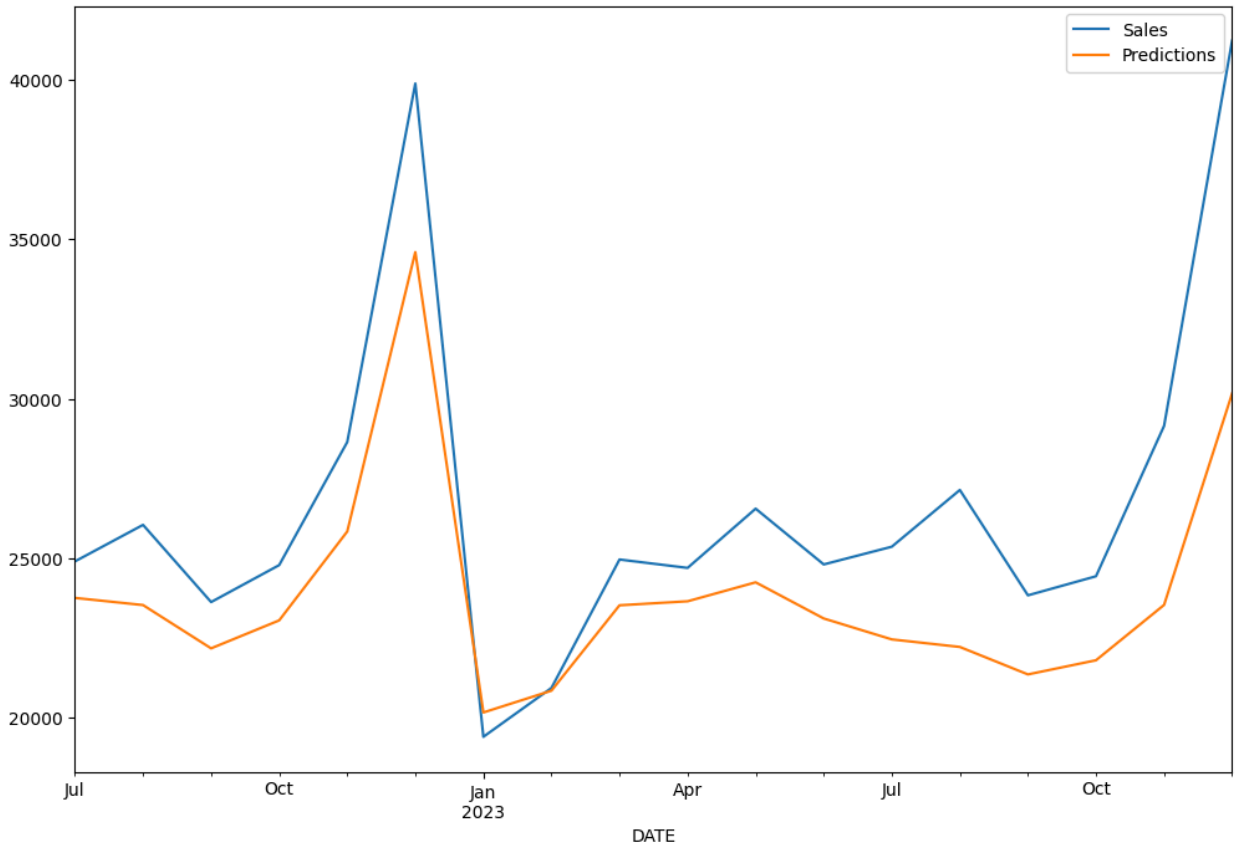

Model Loss
Loss
Validation Loss
1.4
1.2
1.0
0.8
0.6
Loss
0
1
2
3
4
5
6
7
Epoch

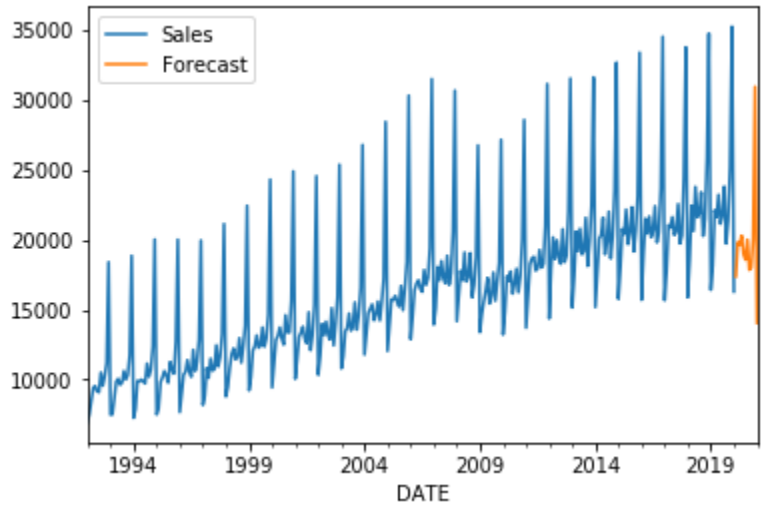

0 7.4e+02 40 58 16 14 4 10 11 82 21
1 12 8.8e+02 5 8 4 2 3 2 26 53
2 57 12 6.2e+02 73 70 45 61 34 18 12
3 37 28 86 5.1e+02 76 1.1e+02 63 51 18 23
4 34 5 1e+02 72 5.7e+02 33 71 91 20 4
5 20 13 89 2.2e+02 52 4.6e+02 37 75 18 9
6 13 16 53 66 23 18 7.8e+02 12 9 7
7 22 15 38 40 38 38 12 7.8e+02 7 15
8 64 55 14 11 11 2 3 4 8.1e+02 24
9 32 1.8e+02 13 15 3 2 4 19 44 6.9e+02
0 1 2 3 4 5 6 7 8 9
800
700
600
500
400
300
200
100

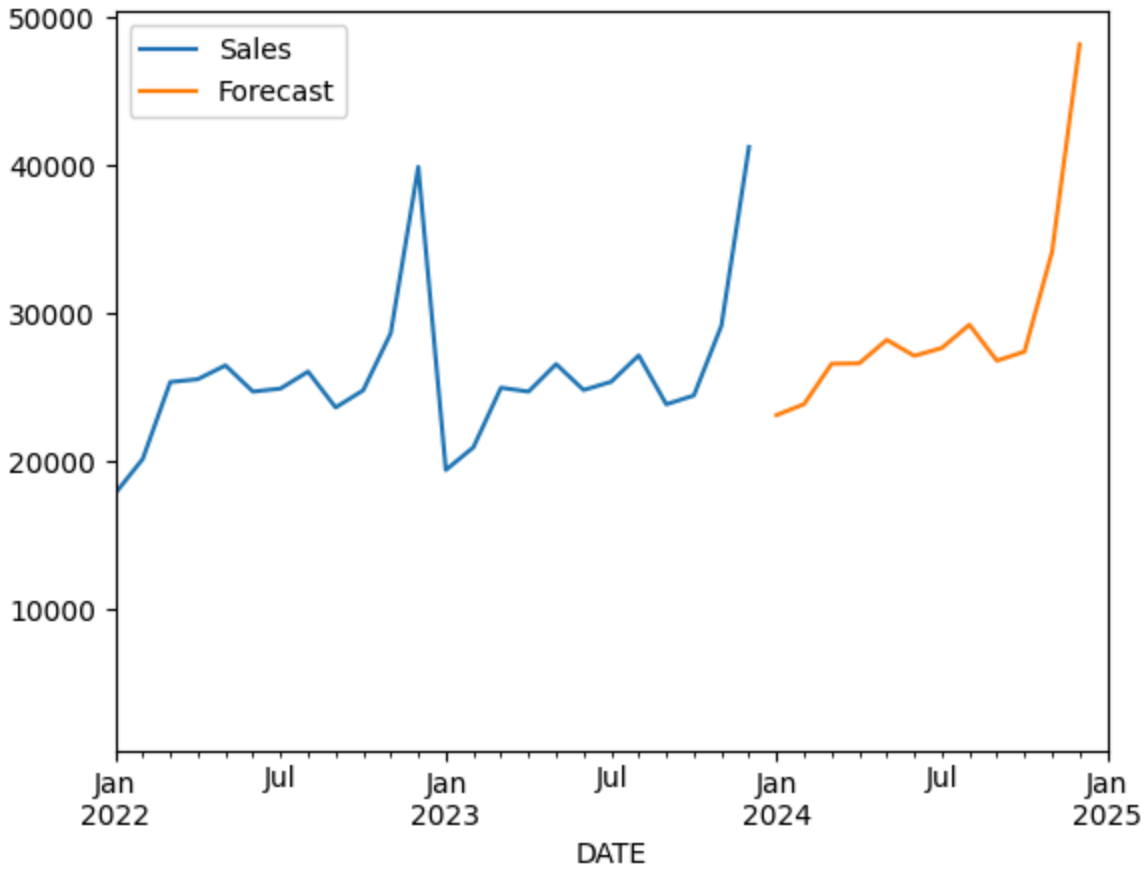

Model Accuracy vs Optimizer
Accuracy
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Adam
Adadelta
Adagrad
SGD
RMSprop
Optimizer

LAB6:


0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0
1
2
3
4
5
6
7
loss
val_loss


Sales
Predictions
40000
35000
30000
25000
20000
Jul
Oct
Jan
2023
Apr
Jul
Oct
DATE


Sales
Forecast
35000
30000
25000
20000
15000
10000
1994
1999
2004
2009
2014
2019
DATE



LAB7:

Encoder:
Model: "sequential_20"

Layer (type)	Output Shape	Param #
flatten_7 (Flatten)	(None, 784)	0
dense_40 (Dense)	(None, 400)	314000
dense_41 (Dense)	(None, 200)	80200
dense_42 (Dense)	(None, 100)	20100
dense_43 (Dense)	(None, 50)	5050

dense_44 (Dense) (None, 25) 1275

===
Total params: 420625 (1.60 MB)
Trainable params: 420625 (1.60 MB)
Non-trainable params: 0 (0.00 Byte)

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Decoder:

Model: "sequential_21"

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Layer (type)	Output Shape	Param #
dense_45 (Dense)	(None, 50)	1300
dense_46 (Dense)	(None, 100)	5100
dense_47 (Dense)	(None, 200)	20200
dense_48 (Dense)	(None, 400)	80400
dense_49 (Dense)	(None, 784)	314384
reshape_8 (Reshape)	(None, 28, 28)	0

===
Total params: 421384 (1.61 MB)
Trainable params: 421384 (1.61 MB)
Non-trainable params: 0 (0.00 Byte)

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Autoencoder:

Model: "sequential_22"

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Layer (type)	Output Shape	Param #
sequential_20 (Sequential)	(None, 25)	420625
sequential_21 (Sequential)	(None, 28, 28)	421384

===
Total params: 842009 (3.21 MB)
Trainable params: 842009 (3.21 MB)
Non-trainable params: 0 (0.00 Byte)

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TASK 2:

```
313/313 [==============================] - 1s 2ms/step
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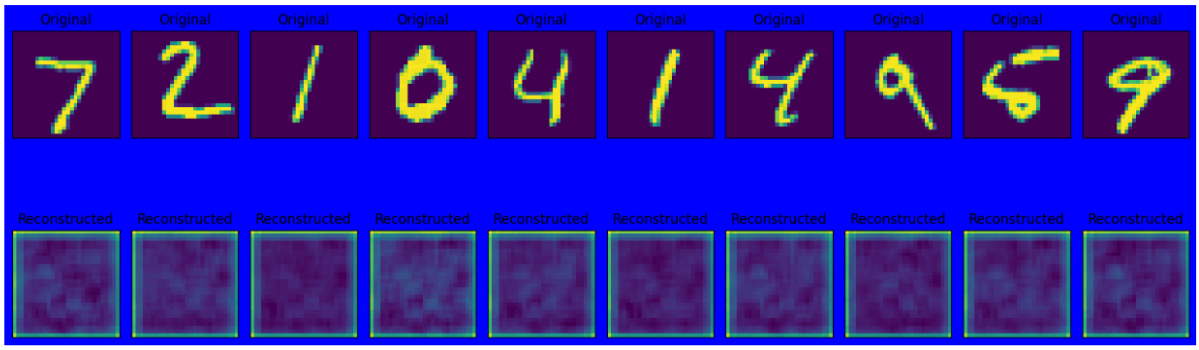
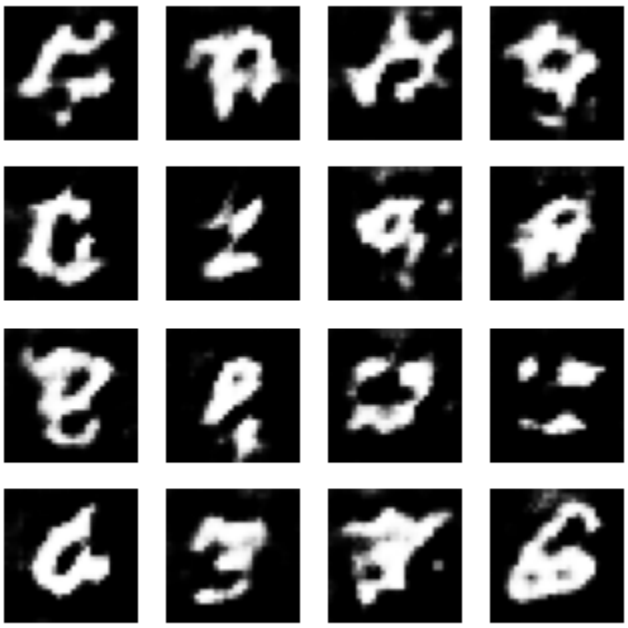


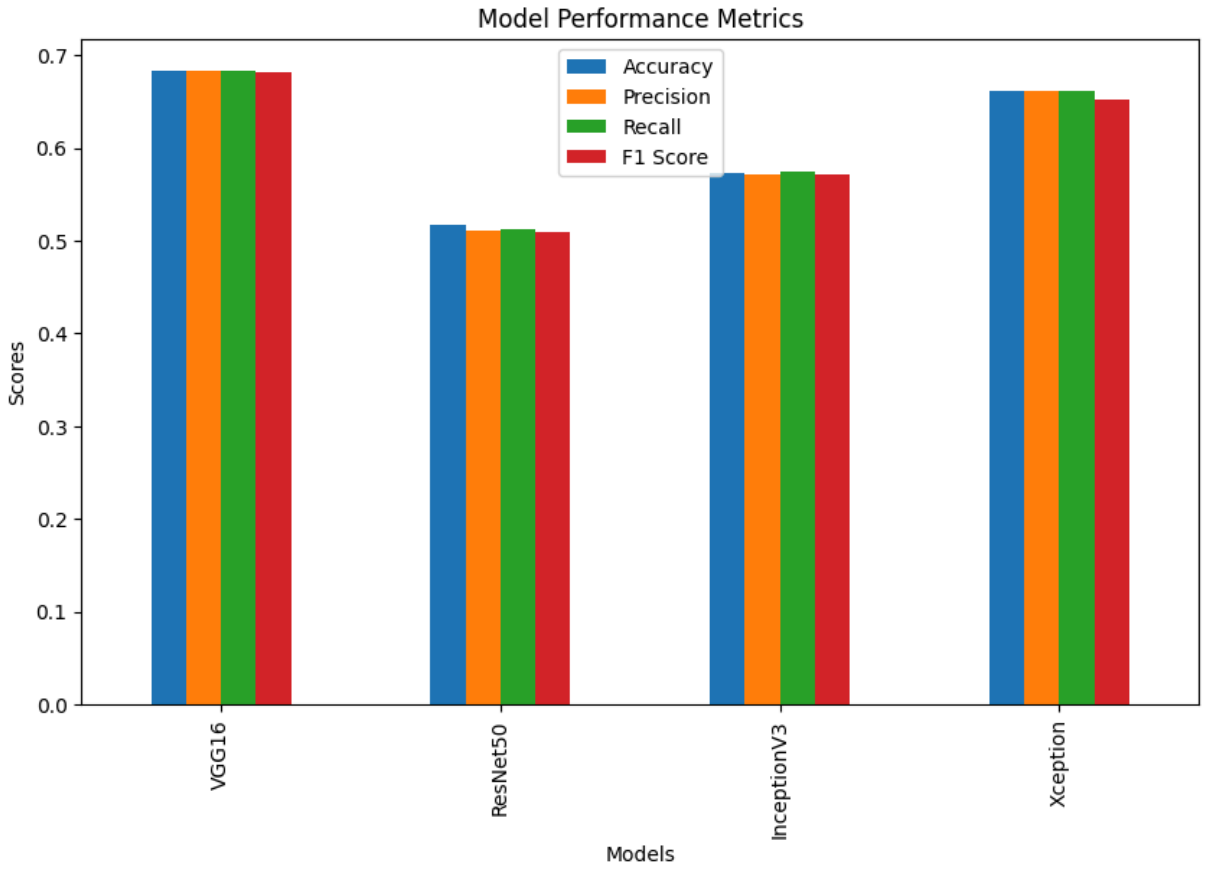
LAB8:

EPOCH 19:

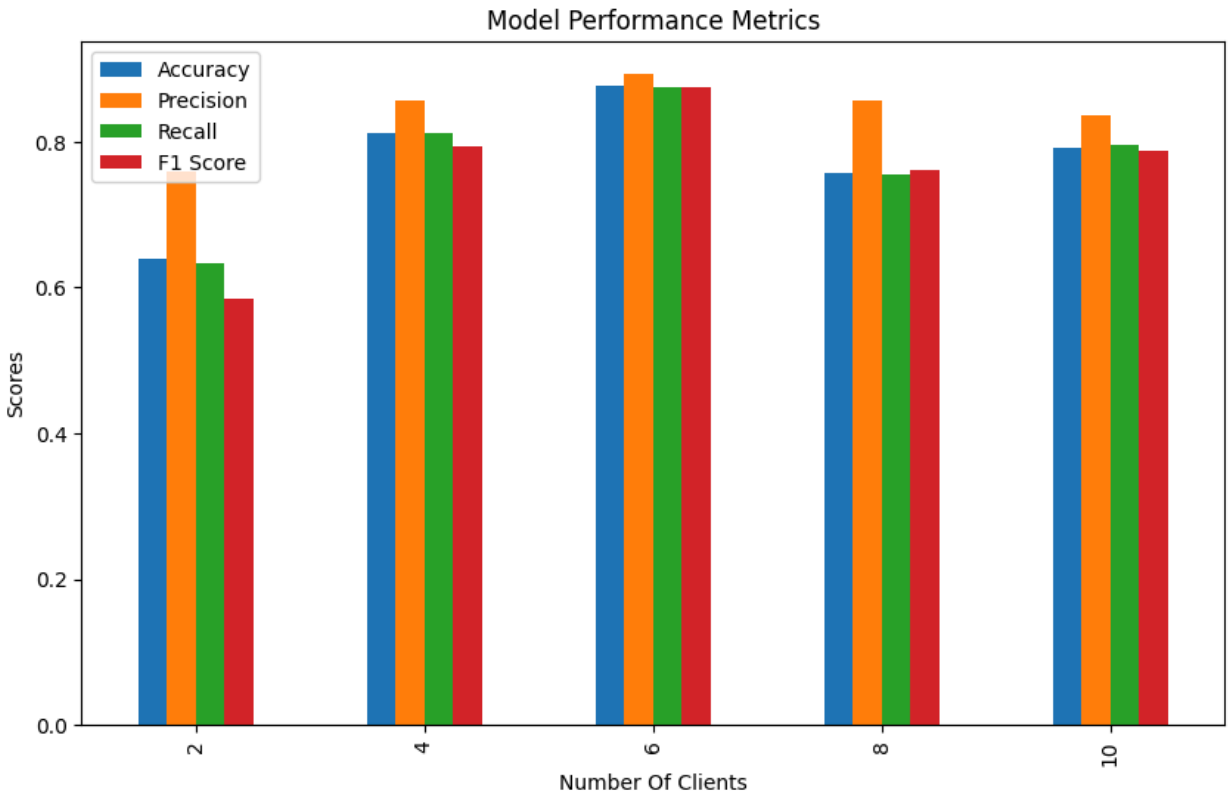


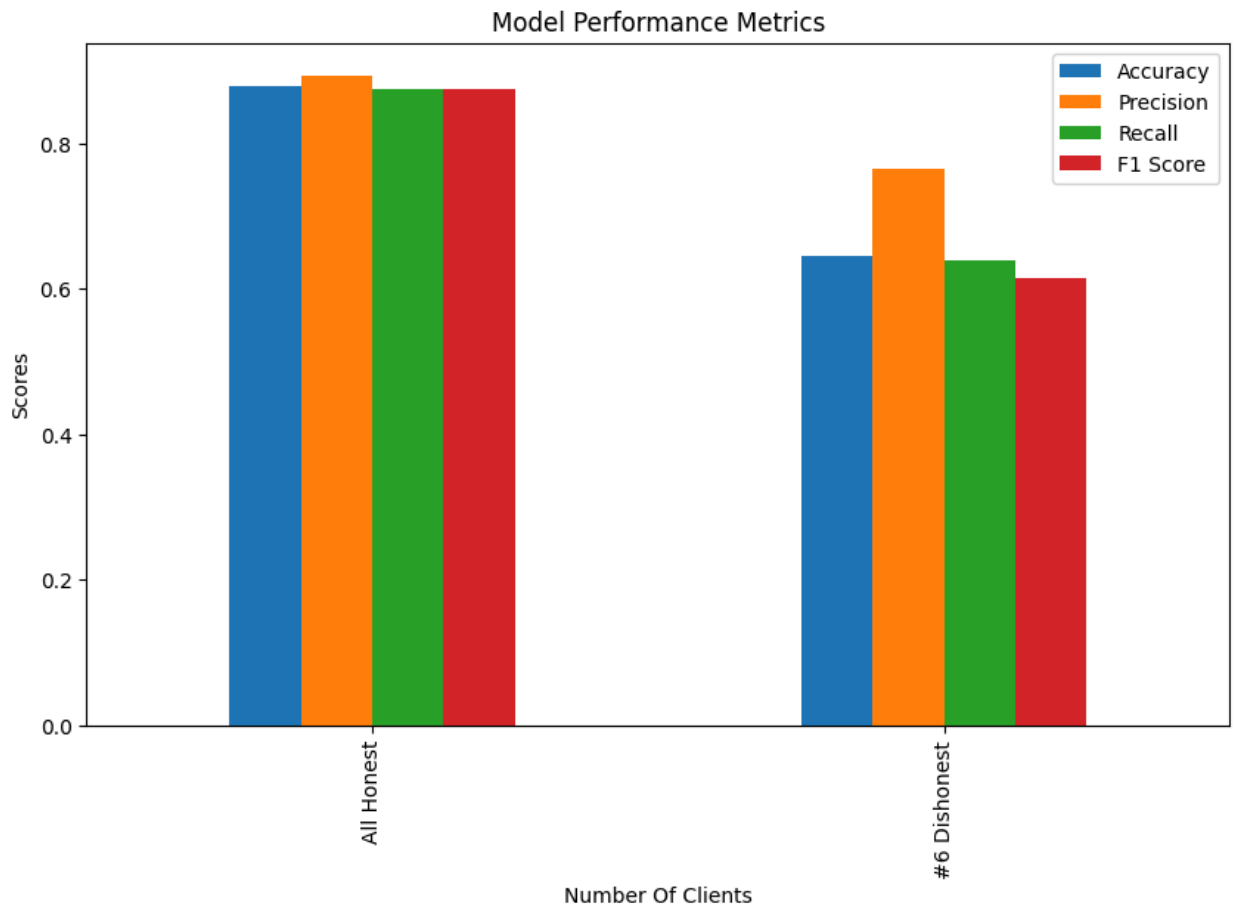
LAB9:

	Accuracy	Precision	Recall	F1 Score
VGG16	0.6826	0.6830	0.6826	0.6817
ResNet50	0.5170	0.5110	0.5130	0.5096
InceptionV3	0.5726	0.5717	0.5746	0.5716
Xception	0.6607	0.6613	0.6615	0.6524



LAB10:


Model Performance Metrics
Accuracy
Precision
Recall
F1 Score
Scores
0.0
0.2
0.4
0.6
0.8
2
4
6
8
10
Number Of Clients



GithubLink:
https://github.com/BilalSardar009/Cassava-Leaf-Disease-Classification-with-Cassava-TaylorCE-loss