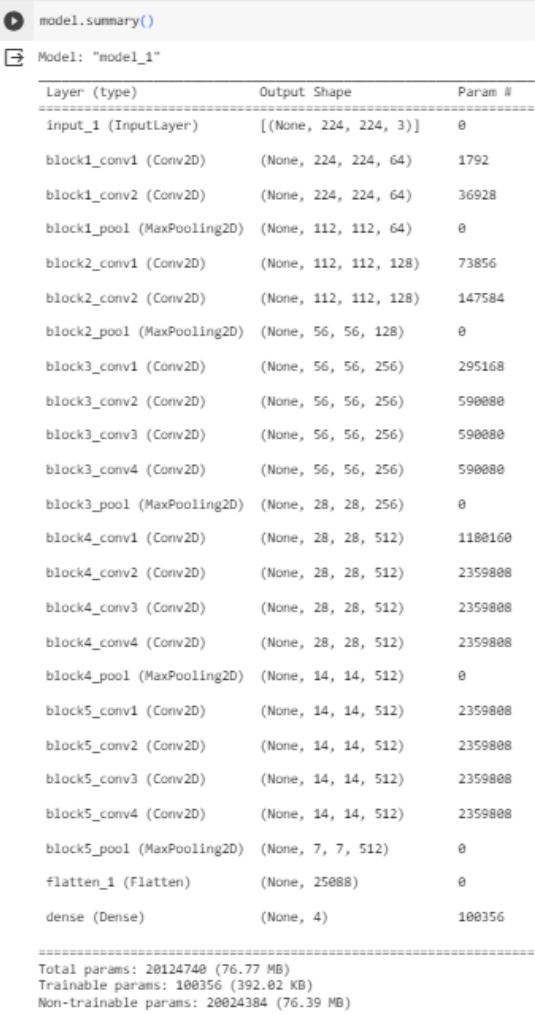


Project Development Phase Model Performance Test

Date	20 November 2022
Project Name	Deep Learning Model for Eye Disease Prediction
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: 20124740 (76.77 MB) Trainable params: 100356 (392.02 KB) Non-trainable params: 20024384 (76.39 MB)	 <pre> model.summary() Model: "model_1" Layer (type) Output Shape Param # ----- input_1 (InputLayer) [(None, 224, 224, 3)] 0 block1_conv1 (Conv2D) (None, 224, 224, 64) 1792 block1_conv2 (Conv2D) (None, 224, 224, 64) 36928 block1_pool (MaxPooling2D) (None, 112, 112, 64) 0 block2_conv1 (Conv2D) (None, 112, 112, 128) 73856 block2_conv2 (Conv2D) (None, 112, 112, 128) 147584 block2_pool (MaxPooling2D) (None, 56, 56, 128) 0 block3_conv1 (Conv2D) (None, 56, 56, 256) 295168 block3_conv2 (Conv2D) (None, 56, 56, 256) 590880 block3_conv3 (Conv2D) (None, 56, 56, 256) 590880 block3_conv4 (Conv2D) (None, 56, 56, 256) 590880 block3_pool (MaxPooling2D) (None, 28, 28, 256) 0 block4_conv1 (Conv2D) (None, 28, 28, 512) 1180160 block4_conv2 (Conv2D) (None, 28, 28, 512) 2359808 block4_conv3 (Conv2D) (None, 28, 28, 512) 2359808 block4_conv4 (Conv2D) (None, 28, 28, 512) 2359808 block4_pool (MaxPooling2D) (None, 14, 14, 512) 0 block5_conv1 (Conv2D) (None, 14, 14, 512) 2359808 block5_conv2 (Conv2D) (None, 14, 14, 512) 2359808 block5_conv3 (Conv2D) (None, 14, 14, 512) 2359808 block5_conv4 (Conv2D) (None, 14, 14, 512) 2359808 block5_pool (MaxPooling2D) (None, 7, 7, 512) 0 flatten_1 (Flatten) (None, 25088) 0 dense (Dense) (None, 4) 100356 ===== Total params: 20124740 (76.77 MB) Trainable params: 100356 (392.02 KB) Non-trainable params: 20024384 (76.39 MB) </pre>

2.	Accuracy	<div>Training Accuracy -91.58</div> <div>Validation Accuracy – 86.15</div> <div><div>Epoch 1/60</div><div>306/186 [=====] - 72s 670ms/step - loss: 0.4227 - accuracy: 0.8449 - val_loss: 0.4689 - val_accuracy: 0.8462</div><div>Epoch 2/60</div><div>306/186 [=====] - 71s 670ms/step - loss: 0.3472 - accuracy: 0.8689 - val_loss: 0.3975 - val_accuracy: 0.8651</div><div>Epoch 3/60</div><div>306/186 [=====] - 70s 661ms/step - loss: 0.3710 - accuracy: 0.8597 - val_loss: 0.5094 - val_accuracy: 0.8438</div><div>Epoch 4/60</div><div>306/186 [=====] - 70s 660ms/step - loss: 0.3405 - accuracy: 0.8663 - val_loss: 0.4700 - val_accuracy: 0.8450</div><div>Epoch 5/60</div><div>306/186 [=====] - 71s 669ms/step - loss: 0.3075 - accuracy: 0.8766 - val_loss: 0.6177 - val_accuracy: 0.8187</div><div>Epoch 6/60</div><div>306/186 [=====] - 71s 665ms/step - loss: 0.3346 - accuracy: 0.8775 - val_loss: 0.5336 - val_accuracy: 0.8260</div><div>Epoch 7/60</div><div>306/186 [=====] - 70s 666ms/step - loss: 0.3585 - accuracy: 0.8704 - val_loss: 0.4200 - val_accuracy: 0.8482</div><div>Epoch 8/60</div><div>306/186 [=====] - 70s 659ms/step - loss: 0.3236 - accuracy: 0.8799 - val_loss: 0.5322 - val_accuracy: 0.8189</div><div>Epoch 9/60</div><div>306/186 [=====] - 71s 671ms/step - loss: 0.3498 - accuracy: 0.8639 - val_loss: 0.4711 - val_accuracy: 0.8355</div><div>Epoch 10/60</div><div>306/186 [=====] - 70s 665ms/step - loss: 0.3198 - accuracy: 0.8772 - val_loss: 0.4029 - val_accuracy: 0.8568</div><div>Epoch 11/60</div><div>306/186 [=====] - 70s 659ms/step - loss: 0.3151 - accuracy: 0.8832 - val_loss: 0.4781 - val_accuracy: 0.8568</div><div>Epoch 12/60</div><div>306/186 [=====] - 70s 659ms/step - loss: 0.3189 - accuracy: 0.8855 - val_loss: 0.7017 - val_accuracy: 0.8036</div><div>Epoch 13/60</div><div>306/186 [=====] - 72s 674ms/step - loss: 0.3219 - accuracy: 0.8740 - val_loss: 0.3899 - val_accuracy: 0.8885</div><div>Epoch 14/60</div><div>306/186 [=====] - 75s 786ms/step - loss: 0.3608 - accuracy: 0.8704 - val_loss: 0.6031 - val_accuracy: 0.8083</div><div>Epoch 15/60</div><div>306/186 [=====] - 71s 667ms/step - loss: 0.3802 - accuracy: 0.8597 - val_loss: 0.5647 - val_accuracy: 0.8142</div><div>Epoch 16/60</div><div>306/186 [=====] - 70s 659ms/step - loss: 0.3057 - accuracy: 0.8867 - val_loss: 0.5745 - val_accuracy: 0.8083</div><div>Epoch 17/60</div><div>306/186 [=====] - 70s 663ms/step - loss: 0.2868 - accuracy: 0.8867 - val_loss: 0.7122 - val_accuracy: 0.7598</div><div>Epoch 18/60</div><div>306/186 [=====] - 71s 671ms/step - loss: 0.3039 - accuracy: 0.8861 - val_loss: 0.3279 - val_accuracy: 0.8911</div><div>Epoch 19/60</div><div>306/186 [=====] - 70s 663ms/step - loss: 0.2534 - accuracy: 0.9054 - val_loss: 0.5161 - val_accuracy: 0.8178</div><div>Epoch 20/60</div><div>306/186 [=====] - 71s 670ms/step - loss: 0.2937 - accuracy: 0.8876 - val_loss: 0.4889 - val_accuracy: 0.8320</div><div>Epoch 21/60</div><div>306/186 [=====] - 71s 672ms/step - loss: 0.2963 - accuracy: 0.8856 - val_loss: 0.3723 - val_accuracy: 0.8757</div><div>Epoch 22/60</div><div>306/186 [=====] - 72s 678ms/step - loss: 0.2974 - accuracy: 0.8879 - val_loss: 0.4868 - val_accuracy: 0.8379</div><div>Epoch 23/60</div><div>306/186 [=====] - 70s 662ms/step - loss: 0.2741 - accuracy: 0.8956 - val_loss: 0.3810 - val_accuracy: 0.8876</div><div>Epoch 24/60</div><div>306/186 [=====] - 71s 668ms/step - loss: 0.3248 - accuracy: 0.8772 - val_loss: 0.3212 - val_accuracy: 0.8982</div><div>Epoch 25/60</div><div>306/186 [=====] - 70s 664ms/step - loss: 0.3186 - accuracy: 0.8817 - val_loss: 0.6580 - val_accuracy: 0.7846</div><div>Epoch 26/60</div><div>306/186 [=====] - 72s 677ms/step - loss: 0.3115 - accuracy: 0.8820 - val_loss: 0.6820 - val_accuracy: 0.7598</div><div>Epoch 27/60</div><div>306/186 [=====] - 71s 666ms/step - loss: 0.2752 - accuracy: 0.8974 - val_loss: 0.3571 - val_accuracy: 0.8852</div><div>Epoch 28/60</div><div>306/186 [=====] - 71s 670ms/step - loss: 0.3702 - accuracy: 0.8710 - val_loss: 0.3686 - val_accuracy: 0.8757</div><div>Epoch 29/60</div><div>306/186 [=====] - 72s 682ms/step - loss: 0.2546 - accuracy: 0.8986 - val_loss: 0.5600 - val_accuracy: 0.8225</div><div>Epoch 30/60</div><div>306/186 [=====] - 71s 673ms/step - loss: 0.2671 - accuracy: 0.8958 - val_loss: 0.5622 - val_accuracy: 0.7964</div><div>Epoch 31/60</div><div>306/186 [=====] - 71s 667ms/step - loss: 0.3161 - accuracy: 0.8852 - val_loss: 0.6234 - val_accuracy: 0.8036</div><div>Epoch 32/60</div><div>306/186 [=====] - 71s 670ms/step - loss: 0.2803 - accuracy: 0.8906 - val_loss: 0.4846 - val_accuracy: 0.8589</div><div>Epoch 33/60</div><div>306/186 [=====] - 73s 687ms/step - loss: 0.2909 - accuracy: 0.8918 - val_loss: 0.7400 - val_accuracy: 0.7740</div><div>Epoch 34/60</div><div>306/186 [=====] - 71s 668ms/step - loss: 0.2942 - accuracy: 0.8918 - val_loss: 0.4118 - val_accuracy: 0.8746</div><div>Epoch 35/60</div><div>306/186 [=====] - 71s 674ms/step - loss: 0.2701 - accuracy: 0.8947 - val_loss: 0.5307 - val_accuracy: 0.8533</div><div>Epoch 36/60</div><div>306/186 [=====] - 70s 663ms/step - loss: 0.2518 - accuracy: 0.9051 - val_loss: 0.6090 - val_accuracy: 0.8095</div><div>Epoch 37/60</div><div>306/186 [=====] - 72s 675ms/step - loss: 0.2405 - accuracy: 0.8998 - val_loss: 0.3450 - val_accuracy: 0.8947</div><div>Epoch 38/60</div><div>306/186 [=====] - 71s 667ms/step - loss: 0.2295 - accuracy: 0.9081 - val_loss: 0.4681 - val_accuracy: 0.8426</div><div>Epoch 39/60</div><div>306/186 [=====] - 71s 669ms/step - loss: 0.2542 - accuracy: 0.8989 - val_loss: 0.5440 - val_accuracy: 0.8284</div><div>Epoch 40/60</div><div>306/186 [=====] - 74s 702ms/step - loss: 0.2366 - accuracy: 0.9084 - val_loss: 0.7972 - val_accuracy: 0.7704</div><div>Epoch 41/60</div><div>306/186 [=====] - 71s 665ms/step - loss: 0.2451 - accuracy: 0.9012 - val_loss: 0.7485 - val_accuracy: 0.7740</div><div>Epoch 42/60</div><div>306/186 [=====] - 74s 700ms/step - loss: 0.2457 - accuracy: 0.9095 - val_loss: 0.3772 - val_accuracy: 0.8734</div><div>Epoch 43/60</div><div>306/186 [=====] - 75s 702ms/step - loss: 0.2058 - accuracy: 0.8968 - val_loss: 0.5034 - val_accuracy: 0.8391</div><div>Epoch 44/60</div><div>306/186 [=====] - 73s 687ms/step - loss: 0.2424 - accuracy: 0.9039 - val_loss: 0.5629 - val_accuracy: 0.8166</div><div>Epoch 45/60</div><div>306/186 [=====] - 71s 674ms/step - loss: 0.2973 - accuracy: 0.8923 - val_loss: 0.4298 - val_accuracy: 0.8793</div><div>Epoch 46/60</div><div>306/186 [=====] - 70s 659ms/step - loss: 0.2643 - accuracy: 0.9007 - val_loss: 0.3938 - val_accuracy: 0.8840</div><div>Epoch 47/60</div><div>306/186 [=====] - 72s 678ms/step - loss: 0.2386 - accuracy: 0.9119 - val_loss: 0.5152 - val_accuracy: 0.8414</div><div>Epoch 48/60</div><div>306/186 [=====] - 73s 691ms/step - loss: 0.2625 - accuracy: 0.8958 - val_loss: 0.3649 - val_accuracy: 0.8935</div><div>Epoch 49/60</div><div>306/186 [=====] - 70s 658ms/step - loss: 0.2086 - accuracy: 0.9012 - val_loss: 0.4582 - val_accuracy: 0.8355</div><div>Epoch 50/60</div><div>306/186 [=====] - 70s 664ms/step - loss: 0.2590 - accuracy: 0.9015 - val_loss: 0.4878 - val_accuracy: 0.8580</div><div>Epoch 51/60</div><div>306/186 [=====] - 71s 670ms/step - loss: 0.2929 - accuracy: 0.8870 - val_loss: 0.4236 - val_accuracy: 0.8722</div><div>Epoch 52/60</div><div>306/186 [=====] - 72s 670ms/step - loss: 0.2344 - accuracy: 0.9125 - val_loss: 0.5679 - val_accuracy: 0.8272</div><div>Epoch 53/60</div><div>306/186 [=====] - 70s 663ms/step - loss: 0.2586 - accuracy: 0.9018 - val_loss: 0.4533 - val_accuracy: 0.8482</div><div>Epoch 54/60</div><div>306/186 [=====] - 71s 673ms/step - loss: 0.2330 - accuracy: 0.9116 - val_loss: 0.3510 - val_accuracy: 0.8852</div><div>Epoch 55/60</div><div>306/186 [=====] - 91s 862ms/step - loss: 0.2471 - accuracy: 0.9048 - val_loss: 0.5656 - val_accuracy: 0.8189</div><div>Epoch 56/60</div><div>306/186 [=====] - 71s 663ms/step - loss: 0.2429 - accuracy: 0.9057 - val_loss: 0.4903 - val_accuracy: 0.8663</div><div>Epoch 57/60</div><div>306/186 [=====] - 76s 719ms/step - loss: 0.2220 - accuracy: 0.9158 - val_loss: 0.5024 - val_accuracy: 0.8615</div><div>overfitting callbacks.history at 0:786e1c180e</div></div>	
3.	Confidence Score	<div>Class Detected – diabetic_retinopathy</div> <div>Confidence Score - NA</div>	<div>1/1 [=====] - 0s 18ms/step</div> <div>Predicted result is diabetic_retinopathy</div>

Screenshot:

Model Summary

model.summary()

Model: "model_1"

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 224, 224, 3)]	0
block1_conv1 (Conv2D)	(None, 224, 224, 64)	1792
block1_conv2 (Conv2D)	(None, 224, 224, 64)	36928
block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0
block2_conv1 (Conv2D)	(None, 112, 112, 128)	73856
block2_conv2 (Conv2D)	(None, 112, 112, 128)	147584
block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0
block3_conv1 (Conv2D)	(None, 56, 56, 256)	295168
block3_conv2 (Conv2D)	(None, 56, 56, 256)	590080
block3_conv3 (Conv2D)	(None, 56, 56, 256)	590080
block3_conv4 (Conv2D)	(None, 56, 56, 256)	590080
block3_pool (MaxPooling2D)	(None, 28, 28, 256)	0
block4_conv1 (Conv2D)	(None, 28, 28, 512)	1180160
block4_conv2 (Conv2D)	(None, 28, 28, 512)	2359008
block4_conv3 (Conv2D)	(None, 28, 28, 512)	2359008
block4_conv4 (Conv2D)	(None, 28, 28, 512)	2359008
block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0
block5_conv1 (Conv2D)	(None, 14, 14, 512)	2359008
block5_conv2 (Conv2D)	(None, 14, 14, 512)	2359008
block5_conv3 (Conv2D)	(None, 14, 14, 512)	2359008
block5_conv4 (Conv2D)	(None, 14, 14, 512)	2359008
block5_pool (MaxPooling2D)	(None, 7, 7, 512)	0
flatten_1 (Flatten)	(None, 25088)	0
dense (Dense)	(None, 4)	100356

Total params: 20124740 (76.77 MB)

Trainable params: 100356 (392.02 KB)

Non-trainable params: 20024384 (76.39 MB)

Accuracy

```
Epoch 1/60
106/106 [=====] - 72s 676ms/step - loss: 0.4227 - accuracy: 0.8449 - val_loss: 0.4689 - val_accuracy: 0.8462
Epoch 2/60
106/106 [=====] - 71s 670ms/step - loss: 0.3472 - accuracy: 0.8689 - val_loss: 0.3975 - val_accuracy: 0.8651
Epoch 3/60
106/106 [=====] - 70s 661ms/step - loss: 0.3710 - accuracy: 0.8597 - val_loss: 0.5094 - val_accuracy: 0.8438
Epoch 4/60
106/106 [=====] - 70s 660ms/step - loss: 0.3465 - accuracy: 0.8663 - val_loss: 0.4700 - val_accuracy: 0.8450
Epoch 5/60
106/106 [=====] - 71s 669ms/step - loss: 0.3075 - accuracy: 0.8766 - val_loss: 0.6177 - val_accuracy: 0.8107
Epoch 6/60
106/106 [=====] - 71s 665ms/step - loss: 0.3346 - accuracy: 0.8775 - val_loss: 0.5336 - val_accuracy: 0.8260
Epoch 7/60
106/106 [=====] - 70s 666ms/step - loss: 0.3585 - accuracy: 0.8704 - val_loss: 0.4280 - val_accuracy: 0.8402
Epoch 8/60
106/106 [=====] - 70s 659ms/step - loss: 0.3236 - accuracy: 0.8799 - val_loss: 0.5322 - val_accuracy: 0.8189
Epoch 9/60
106/106 [=====] - 71s 671ms/step - loss: 0.3498 - accuracy: 0.8639 - val_loss: 0.4711 - val_accuracy: 0.8355
Epoch 10/60
106/106 [=====] - 70s 665ms/step - loss: 0.3198 - accuracy: 0.8772 - val_loss: 0.4029 - val_accuracy: 0.8568
Epoch 11/60
106/106 [=====] - 70s 659ms/step - loss: 0.3151 - accuracy: 0.8832 - val_loss: 0.4781 - val_accuracy: 0.8568
Epoch 12/60
106/106 [=====] - 70s 659ms/step - loss: 0.3189 - accuracy: 0.8855 - val_loss: 0.7017 - val_accuracy: 0.8036
Epoch 13/60
106/106 [=====] - 72s 674ms/step - loss: 0.3219 - accuracy: 0.8740 - val_loss: 0.3899 - val_accuracy: 0.8805
Epoch 14/60
106/106 [=====] - 75s 706ms/step - loss: 0.3600 - accuracy: 0.8704 - val_loss: 0.6031 - val_accuracy: 0.8083
Epoch 15/60
106/106 [=====] - 71s 667ms/step - loss: 0.3002 - accuracy: 0.8597 - val_loss: 0.5647 - val_accuracy: 0.8142
Epoch 16/60
106/106 [=====] - 70s 659ms/step - loss: 0.3057 - accuracy: 0.8867 - val_loss: 0.5745 - val_accuracy: 0.8083
Epoch 17/60
106/106 [=====] - 70s 663ms/step - loss: 0.2868 - accuracy: 0.8867 - val_loss: 0.7122 - val_accuracy: 0.7598
Epoch 18/60
106/106 [=====] - 71s 671ms/step - loss: 0.3039 - accuracy: 0.8861 - val_loss: 0.3279 - val_accuracy: 0.8911
Epoch 19/60
106/106 [=====] - 70s 663ms/step - loss: 0.2534 - accuracy: 0.9054 - val_loss: 0.5161 - val_accuracy: 0.8178
Epoch 20/60
106/106 [=====] - 71s 670ms/step - loss: 0.2937 - accuracy: 0.8876 - val_loss: 0.4889 - val_accuracy: 0.8320
Epoch 21/60
106/106 [=====] - 71s 672ms/step - loss: 0.2963 - accuracy: 0.8858 - val_loss: 0.3723 - val_accuracy: 0.8757
Epoch 22/60
106/106 [=====] - 72s 678ms/step - loss: 0.2974 - accuracy: 0.8879 - val_loss: 0.4868 - val_accuracy: 0.8379
Epoch 23/60
106/106 [=====] - 70s 662ms/step - loss: 0.2741 - accuracy: 0.8953 - val_loss: 0.3810 - val_accuracy: 0.8876
Epoch 24/60
106/106 [=====] - 71s 668ms/step - loss: 0.3248 - accuracy: 0.8772 - val_loss: 0.3212 - val_accuracy: 0.8982
Epoch 25/60
106/106 [=====] - 70s 664ms/step - loss: 0.3186 - accuracy: 0.8817 - val_loss: 0.6580 - val_accuracy: 0.7846
Epoch 26/60
106/106 [=====] - 72s 677ms/step - loss: 0.3115 - accuracy: 0.8820 - val_loss: 0.6820 - val_accuracy: 0.7598
Epoch 27/60
106/106 [=====] - 71s 666ms/step - loss: 0.2752 - accuracy: 0.8974 - val_loss: 0.3571 - val_accuracy: 0.8852
Epoch 28/60
106/106 [=====] - 71s 670ms/step - loss: 0.3702 - accuracy: 0.8710 - val_loss: 0.3606 - val_accuracy: 0.8757
Epoch 29/60
106/106 [=====] - 72s 682ms/step - loss: 0.2546 - accuracy: 0.8986 - val_loss: 0.5600 - val_accuracy: 0.8225
```

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Epoch 33/60
106/106 [=====] - 71s 672ms/step - loss: 0.2671 - accuracy: 0.8950 - val_loss: 0.5622 - val_accuracy: 0.7964
Epoch 34/60
106/106 [=====] - 71s 667ms/step - loss: 0.3161 - accuracy: 0.8852 - val_loss: 0.6234 - val_accuracy: 0.8036
Epoch 35/60
106/106 [=====] - 71s 670ms/step - loss: 0.2863 - accuracy: 0.8906 - val_loss: 0.4846 - val_accuracy: 0.8509
Epoch 36/60
106/106 [=====] - 73s 687ms/step - loss: 0.2909 - accuracy: 0.8918 - val_loss: 0.7406 - val_accuracy: 0.7740
Epoch 37/60
106/106 [=====] - 71s 668ms/step - loss: 0.2942 - accuracy: 0.8918 - val_loss: 0.4118 - val_accuracy: 0.8746
Epoch 38/60
106/106 [=====] - 71s 674ms/step - loss: 0.2701 - accuracy: 0.8947 - val_loss: 0.5307 - val_accuracy: 0.8533
Epoch 39/60
106/106 [=====] - 70s 663ms/step - loss: 0.2518 - accuracy: 0.9051 - val_loss: 0.6099 - val_accuracy: 0.8095
Epoch 40/60
106/106 [=====] - 72s 675ms/step - loss: 0.2465 - accuracy: 0.8998 - val_loss: 0.3450 - val_accuracy: 0.8947
Epoch 41/60
106/106 [=====] - 71s 667ms/step - loss: 0.2295 - accuracy: 0.9081 - val_loss: 0.4681 - val_accuracy: 0.8426
Epoch 42/60
106/106 [=====] - 71s 669ms/step - loss: 0.2542 - accuracy: 0.8989 - val_loss: 0.5440 - val_accuracy: 0.8284
Epoch 43/60
106/106 [=====] - 74s 702ms/step - loss: 0.2366 - accuracy: 0.9084 - val_loss: 0.7972 - val_accuracy: 0.7704
Epoch 44/60
106/106 [=====] - 71s 665ms/step - loss: 0.2451 - accuracy: 0.9012 - val_loss: 0.7485 - val_accuracy: 0.7740
Epoch 45/60
106/106 [=====] - 74s 700ms/step - loss: 0.2457 - accuracy: 0.9095 - val_loss: 0.3772 - val_accuracy: 0.8734
Epoch 46/60
106/106 [=====] - 75s 702ms/step - loss: 0.2658 - accuracy: 0.8968 - val_loss: 0.5034 - val_accuracy: 0.8391
Epoch 47/60
106/106 [=====] - 73s 687ms/step - loss: 0.2424 - accuracy: 0.9039 - val_loss: 0.5629 - val_accuracy: 0.8166
Epoch 48/60
106/106 [=====] - 71s 674ms/step - loss: 0.2973 - accuracy: 0.8923 - val_loss: 0.4298 - val_accuracy: 0.8793
Epoch 49/60
106/106 [=====] - 70s 659ms/step - loss: 0.2643 - accuracy: 0.9007 - val_loss: 0.3938 - val_accuracy: 0.8840
Epoch 50/60
106/106 [=====] - 72s 678ms/step - loss: 0.2386 - accuracy: 0.9119 - val_loss: 0.5152 - val_accuracy: 0.8414
Epoch 51/60
106/106 [=====] - 73s 691ms/step - loss: 0.2625 - accuracy: 0.8950 - val_loss: 0.3649 - val_accuracy: 0.8935
Epoch 52/60
106/106 [=====] - 70s 658ms/step - loss: 0.2606 - accuracy: 0.9012 - val_loss: 0.4582 - val_accuracy: 0.8355
Epoch 53/60
106/106 [=====] - 70s 664ms/step - loss: 0.2500 - accuracy: 0.9015 - val_loss: 0.4878 - val_accuracy: 0.8500
Epoch 54/60
106/106 [=====] - 71s 670ms/step - loss: 0.2929 - accuracy: 0.8870 - val_loss: 0.4236 - val_accuracy: 0.8722
Epoch 55/60
106/106 [=====] - 72s 676ms/step - loss: 0.2344 - accuracy: 0.9125 - val_loss: 0.5679 - val_accuracy: 0.8272
Epoch 56/60
106/106 [=====] - 70s 663ms/step - loss: 0.2506 - accuracy: 0.9018 - val_loss: 0.4533 - val_accuracy: 0.8402
Epoch 57/60
106/106 [=====] - 71s 673ms/step - loss: 0.2330 - accuracy: 0.9116 - val_loss: 0.3510 - val_accuracy: 0.8852
Epoch 58/60
106/106 [=====] - 91s 862ms/step - loss: 0.2471 - accuracy: 0.9048 - val_loss: 0.5656 - val_accuracy: 0.8189
Epoch 59/60
106/106 [=====] - 71s 663ms/step - loss: 0.2429 - accuracy: 0.9057 - val_loss: 0.4903 - val_accuracy: 0.8663
Epoch 60/60
106/106 [=====] - 76s 719ms/step - loss: 0.2220 - accuracy: 0.9158 - val_loss: 0.5024 - val_accuracy: 0.8615
<keras.src.callbacks.History at 0x78ece16cb100>

```