

## Project Development Phase

### Model Performance Test

Date	6 November 2023
Team ID	Team-592792
Project Name	Deep Learning Model for Eye Disease Prediction
Maximum Marks	10 Marks

### Model Performance Testing:

S.No.	Parameter	Values	Screenshot
1	Model Summary	<b>Total params:</b> 24649092  <b>Trainable params:</b> 1056260  <b>Non-trainable params:</b> 23592832	<pre>Model: "sequential_1"  Layer (type)                 Output Shape              Param # ===== resnet50 (Functional)        (None, 2048)              23587712 flatten_3 (Flatten)          (None, 2048)               0 batch_normalization_98 (Ba   (None, 2048)              8192 tchNormalization) dense_5 (Dense)               (None, 512)              1049088 batch_normalization_99 (Ba   (None, 512)               2048 tchNormalization) dense_6 (Dense)               (None, 4)                 2052 ===== Total params: 24649092 (94.03 MB) Trainable params: 1056260 (4.03 MB) Non-trainable params: 23592832 (90.00 MB)</pre>

2	Accuracy	<p>Training Accuracy - 99.14 %</p> <p>Validation Accuracy - 93.04%</p>	<pre> Epoch 15: val_accuracy did not improve from 0.92880 52/52 [=====] - 26s 462ms/step - loss: 0.0204 - accuracy: 0.9955 - val_loss: 0.2757 - val_accuracy: 0.9146 Epoch 16/50 52/52 [=====] - ETA: 0s - loss: 0.0144 - accuracy: 0.9955 Epoch 16: val_accuracy did not improve from 0.92880 52/52 [=====] - 27s 455ms/step - loss: 0.0144 - accuracy: 0.9955 - val_loss: 0.2813 - val_accuracy: 0.9272 Epoch 17/50 52/52 [=====] - ETA: 0s - loss: 0.0301 - accuracy: 0.9908 Epoch 17: val_accuracy did not improve from 0.92880 52/52 [=====] - 28s 467ms/step - loss: 0.0301 - accuracy: 0.9908 - val_loss: 0.3538 - val_accuracy: 0.9177 Epoch 18/50 52/52 [=====] - ETA: 0s - loss: 0.0690 - accuracy: 0.9788 Epoch 18: val_accuracy did not improve from 0.92880 52/52 [=====] - 27s 474ms/step - loss: 0.0690 - accuracy: 0.9788 - val_loss: 0.2835 - val_accuracy: 0.9130 Epoch 19/50 52/52 [=====] - ETA: 0s - loss: 0.0313 - accuracy: 0.9914 Epoch 19: val_accuracy improved from 0.92880 to 0.93038, saving model to resnet50best_model.h5 52/52 [=====] - 27s 469ms/step - loss: 0.0313 - accuracy: 0.9914 - val_loss: 0.2706 - val_accuracy: 0.9304 Epoch 20/50 52/52 [=====] - ETA: 0s - loss: 0.0145 - accuracy: 0.9958 Epoch 20: val_accuracy did not improve from 0.93038 52/52 [=====] - 27s 473ms/step - loss: 0.0145 - accuracy: 0.9958 - val_loss: 0.2843 - val_accuracy: 0.9193 Epoch 21/50 52/52 [=====] - ETA: 0s - loss: 0.0100 - accuracy: 0.9975 Epoch 21: val_accuracy did not improve from 0.93038 52/52 [=====] - 27s 463ms/step - loss: 0.0100 - accuracy: 0.9975 - val_loss: 0.2729 - val_accuracy: 0.9272 Epoch 22/50 52/52 [=====] - ETA: 0s - loss: 0.0102 - accuracy: 0.9975 Epoch 22: val_accuracy did not improve from 0.93038 52/52 [=====] - 28s 469ms/step - loss: 0.0102 - accuracy: 0.9975 - val_loss: 0.2666 - val_accuracy: 0.9177 Epoch 23/50 52/52 [=====] - ETA: 0s - loss: 0.0087 - accuracy: 0.9983 Epoch 23: val_accuracy did not improve from 0.93038 52/52 [=====] - 26s 463ms/step - loss: 0.0087 - accuracy: 0.9983 - val_loss: 0.2657 - val_accuracy: 0.9193 Epoch 24/50 52/52 [=====] - ETA: 0s - loss: 0.0054 - accuracy: 0.9989 Epoch 24: val_accuracy did not improve from 0.93038 52/52 [=====] - 27s 464ms/step - loss: 0.0054 - accuracy: 0.9989 - val_loss: 0.2862 - val_accuracy: 0.9193 Epoch 25/50 52/52 [=====] - ETA: 0s - loss: 0.0181 - accuracy: 0.9944 Epoch 25: val_accuracy did not improve from 0.93038 52/52 [=====] - 27s 463ms/step - loss: 0.0181 - accuracy: 0.9944 - val_loss: 0.2950 - val_accuracy: 0.9193 Epoch 26/50 52/52 [=====] - ETA: 0s - loss: 0.0080 - accuracy: 0.9980 Epoch 26: val_accuracy did not improve from 0.93038 52/52 [=====] - 27s 455ms/step - loss: 0.0080 - accuracy: 0.9980 - val_loss: 0.3233 - val_accuracy: 0.9256 Epoch 27/50 52/52 [=====] - ETA: 0s - loss: 0.0129 - accuracy: 0.9969 Epoch 27: val_accuracy did not improve from 0.93038 </pre>
3.	Confidence Score (Only Yolo Projects)	<p>Class Detected - NA</p> <p>Confidence Score – NA</p>	Not a Yolo Project

## Screenshots :

## Model Summary :

Model: "sequential\_1"

Layer (type)	Output Shape	Param #
resnet50 (Functional)	(None, 2048)	23587712
flatten_3 (Flatten)	(None, 2048)	0
batch_normalization_98 (Batch Normalization)	(None, 2048)	8192
dense_5 (Dense)	(None, 512)	1049088
batch_normalization_99 (Batch Normalization)	(None, 512)	2048
dense_6 (Dense)	(None, 4)	2052

=====  
 Total params: 24649092 (94.03 MB)  
 Trainable params: 1056260 (4.03 MB)  
 Non-trainable params: 23592832 (90.00 MB)  
 =====

## Accuracy :

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Epoch 15: val_accuracy did not improve from 0.92880
52/52 [=====] - 26s 462ms/step - loss: 0.0204 - accuracy: 0.9955 - val_loss: 0.2757 - val_accuracy: 0.9146
Epoch 16/50
52/52 [=====] - ETA: 0s - loss: 0.0144 - accuracy: 0.9955
Epoch 16: val_accuracy did not improve from 0.92880
52/52 [=====] - 27s 455ms/step - loss: 0.0144 - accuracy: 0.9955 - val_loss: 0.2813 - val_accuracy: 0.9272
Epoch 17/50
52/52 [=====] - ETA: 0s - loss: 0.0301 - accuracy: 0.9908
Epoch 17: val_accuracy did not improve from 0.92880
52/52 [=====] - 28s 467ms/step - loss: 0.0301 - accuracy: 0.9908 - val_loss: 0.3538 - val_accuracy: 0.9177
Epoch 18/50
52/52 [=====] - ETA: 0s - loss: 0.0690 - accuracy: 0.9788
Epoch 18: val_accuracy did not improve from 0.92880
52/52 [=====] - 27s 474ms/step - loss: 0.0690 - accuracy: 0.9788 - val_loss: 0.2835 - val_accuracy: 0.9130
Epoch 19/50
52/52 [=====] - ETA: 0s - loss: 0.0313 - accuracy: 0.9914
Epoch 19: val_accuracy improved from 0.92880 to 0.93038, saving model to resnet50best_model.h5
52/52 [=====] - 27s 469ms/step - loss: 0.0313 - accuracy: 0.9914 - val_loss: 0.2706 - val_accuracy: 0.9304
Epoch 20/50
52/52 [=====] - ETA: 0s - loss: 0.0145 - accuracy: 0.9958
Epoch 20: val_accuracy did not improve from 0.93038
52/52 [=====] - 27s 473ms/step - loss: 0.0145 - accuracy: 0.9958 - val_loss: 0.2843 - val_accuracy: 0.9193
Epoch 21/50
52/52 [=====] - ETA: 0s - loss: 0.0100 - accuracy: 0.9975
Epoch 21: val_accuracy did not improve from 0.93038
52/52 [=====] - 27s 463ms/step - loss: 0.0100 - accuracy: 0.9975 - val_loss: 0.2729 - val_accuracy: 0.9272
Epoch 22/50
52/52 [=====] - ETA: 0s - loss: 0.0102 - accuracy: 0.9975
Epoch 22: val_accuracy did not improve from 0.93038
52/52 [=====] - 28s 469ms/step - loss: 0.0102 - accuracy: 0.9975 - val_loss: 0.2666 - val_accuracy: 0.9177
Epoch 23/50
52/52 [=====] - ETA: 0s - loss: 0.0087 - accuracy: 0.9983
Epoch 23: val_accuracy did not improve from 0.93038
52/52 [=====] - 26s 463ms/step - loss: 0.0087 - accuracy: 0.9983 - val_loss: 0.2657 - val_accuracy: 0.9193
Epoch 24/50
52/52 [=====] - ETA: 0s - loss: 0.0054 - accuracy: 0.9989
Epoch 24: val_accuracy did not improve from 0.93038
52/52 [=====] - 27s 464ms/step - loss: 0.0054 - accuracy: 0.9989 - val_loss: 0.2862 - val_accuracy: 0.9193
Epoch 25/50
52/52 [=====] - ETA: 0s - loss: 0.0181 - accuracy: 0.9944
Epoch 25: val_accuracy did not improve from 0.93038
52/52 [=====] - 27s 463ms/step - loss: 0.0181 - accuracy: 0.9944 - val_loss: 0.2950 - val_accuracy: 0.9193
Epoch 26/50
52/52 [=====] - ETA: 0s - loss: 0.0080 - accuracy: 0.9980
Epoch 26: val_accuracy did not improve from 0.93038
52/52 [=====] - 27s 455ms/step - loss: 0.0080 - accuracy: 0.9980 - val_loss: 0.3233 - val_accuracy: 0.9256
Epoch 27/50
52/52 [=====] - ETA: 0s - loss: 0.0129 - accuracy: 0.9969
Epoch 27: val accuracy did not improve from 0.93038
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