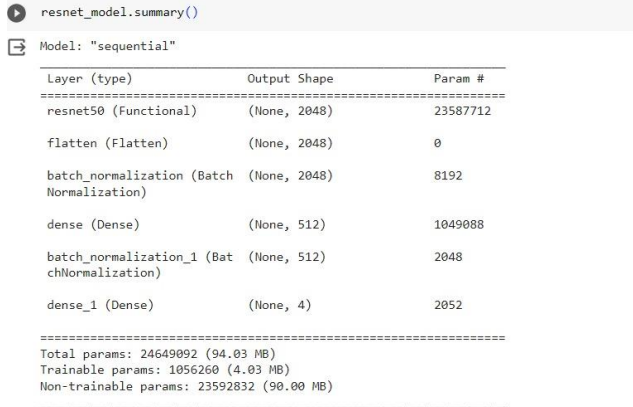
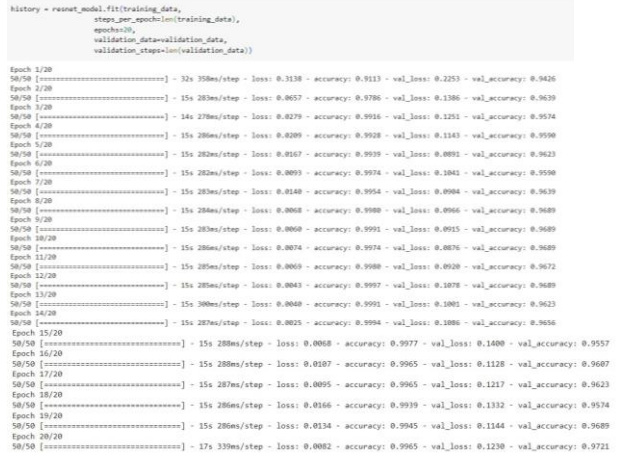


Project Development Phase Model Performance Test

Date	5 October 2023
Team ID	Team-592955
Project Name	Potato Disease Classification
Maximum Marks	10 Marks

Model Performance Testing:

S.No.	Parameter	Values	Screenshot
1.	Model Summary	Total Params:24649092 Trainable parsms:1056260 Non-trainable params: 23592832	 <pre> resnet_model.summary() Model: "sequential" Layer (type) Output Shape Param # ----- resnet50 (Functional) (None, 2048) 23587712 flatten (Flatten) (None, 2048) 0 batch_normalization (Batch Normalization) (None, 2048) 8192 dense (Dense) (None, 512) 1049088 batch_normalization_1 (Batch Normalization) (None, 512) 2048 dense_1 (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	Training Accuracy – 99.65 Validation Accuracy -97.21	 <pre> History = resnet_model.fit(training_data, steps_per_epoch=len(training_data), epochs=50, validation_data=validation_data, validation_steps=len(validation_data)) Epoch 1/50 50/50 [=====] - 32s 350ms/step - loss: 0.3138 - accuracy: 0.9113 - val_loss: 0.2253 - val_accuracy: 0.9426 Epoch 2/50 50/50 [=====] - 15s 285ms/step - loss: 0.0657 - accuracy: 0.9786 - val_loss: 0.1386 - val_accuracy: 0.9639 Epoch 3/50 50/50 [=====] - 14s 278ms/step - loss: 0.0279 - accuracy: 0.9926 - val_loss: 0.1251 - val_accuracy: 0.9574 Epoch 4/50 50/50 [=====] - 15s 288ms/step - loss: 0.0289 - accuracy: 0.9928 - val_loss: 0.1143 - val_accuracy: 0.9598 Epoch 5/50 50/50 [=====] - 15s 282ms/step - loss: 0.0167 - accuracy: 0.9939 - val_loss: 0.0891 - val_accuracy: 0.9623 Epoch 6/50 50/50 [=====] - 15s 282ms/step - loss: 0.0093 - accuracy: 0.9974 - val_loss: 0.1041 - val_accuracy: 0.9598 Epoch 7/50 50/50 [=====] - 15s 285ms/step - loss: 0.0148 - accuracy: 0.9954 - val_loss: 0.0984 - val_accuracy: 0.9639 Epoch 8/50 50/50 [=====] - 15s 284ms/step - loss: 0.0068 - accuracy: 0.9988 - val_loss: 0.0966 - val_accuracy: 0.9689 Epoch 9/50 50/50 [=====] - 15s 283ms/step - loss: 0.0068 - accuracy: 0.9991 - val_loss: 0.0915 - val_accuracy: 0.9689 Epoch 10/50 50/50 [=====] - 15s 288ms/step - loss: 0.0074 - accuracy: 0.9974 - val_loss: 0.0876 - val_accuracy: 0.9689 Epoch 11/50 50/50 [=====] - 15s 285ms/step - loss: 0.0069 - accuracy: 0.9988 - val_loss: 0.0928 - val_accuracy: 0.9672 Epoch 12/50 50/50 [=====] - 15s 285ms/step - loss: 0.0043 - accuracy: 0.9997 - val_loss: 0.1078 - val_accuracy: 0.9689 Epoch 13/50 50/50 [=====] - 15s 300ms/step - loss: 0.0048 - accuracy: 0.9991 - val_loss: 0.1001 - val_accuracy: 0.9623 Epoch 14/50 50/50 [=====] - 15s 287ms/step - loss: 0.0025 - accuracy: 0.9994 - val_loss: 0.1086 - val_accuracy: 0.9656 Epoch 15/50 50/50 [=====] - 15s 288ms/step - loss: 0.0068 - accuracy: 0.9977 - val_loss: 0.1400 - val_accuracy: 0.9557 Epoch 16/50 50/50 [=====] - 15s 288ms/step - loss: 0.0107 - accuracy: 0.9965 - val_loss: 0.1128 - val_accuracy: 0.9687 Epoch 17/50 50/50 [=====] - 15s 287ms/step - loss: 0.0095 - accuracy: 0.9965 - val_loss: 0.1217 - val_accuracy: 0.9623 Epoch 18/50 50/50 [=====] - 15s 286ms/step - loss: 0.0166 - accuracy: 0.9939 - val_loss: 0.1312 - val_accuracy: 0.9574 Epoch 19/50 50/50 [=====] - 15s 286ms/step - loss: 0.0154 - accuracy: 0.9945 - val_loss: 0.1144 - val_accuracy: 0.9689 Epoch 20/50 50/50 [=====] - 17s 339ms/step - loss: 0.0082 - accuracy: 0.9965 - val_loss: 0.1230 - val_accuracy: 0.9721 </pre>
3.	Confidence Score (Only Yolo Projects)	Class Detected - NA Confidence Score - NA	Not Applicable

Screenshots

Model Summary

resnet_model.summary()

Model: "sequential"

Layer (type)	Output Shape	Param #
resnet50 (Functional)	(None, 2048)	23587712
flatten (Flatten)	(None, 2048)	0
batch_normalization (Batch Normalization)	(None, 2048)	8192
dense (Dense)	(None, 512)	1049088
batch_normalization_1 (Batch Normalization)	(None, 512)	2048
dense_1 (Dense)	(None, 4)	2052

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

Accuracy

```
[ ] history = resnet_model.fit(training_data,
                               steps_per_epoch=len(training_data),
                               epochs=20,
                               validation_data=validation_data,
                               validation_steps=len(validation_data))
```

```
Epoch 1/20
50/50 [=====] - 32s 358ms/step - loss: 0.3138 - accuracy: 0.9113 - val_loss: 0.2253 - val_accuracy: 0.9426
Epoch 2/20
50/50 [=====] - 15s 283ms/step - loss: 0.0657 - accuracy: 0.9786 - val_loss: 0.1386 - val_accuracy: 0.9639
Epoch 3/20
50/50 [=====] - 14s 278ms/step - loss: 0.0279 - accuracy: 0.9916 - val_loss: 0.1251 - val_accuracy: 0.9574
Epoch 4/20
50/50 [=====] - 15s 286ms/step - loss: 0.0209 - accuracy: 0.9928 - val_loss: 0.1143 - val_accuracy: 0.9590
Epoch 5/20
50/50 [=====] - 15s 282ms/step - loss: 0.0167 - accuracy: 0.9939 - val_loss: 0.0891 - val_accuracy: 0.9623
Epoch 6/20
50/50 [=====] - 15s 282ms/step - loss: 0.0093 - accuracy: 0.9974 - val_loss: 0.1041 - val_accuracy: 0.9590
Epoch 7/20
50/50 [=====] - 15s 283ms/step - loss: 0.0140 - accuracy: 0.9954 - val_loss: 0.0904 - val_accuracy: 0.9639
Epoch 8/20
50/50 [=====] - 15s 284ms/step - loss: 0.0068 - accuracy: 0.9980 - val_loss: 0.0966 - val_accuracy: 0.9689
Epoch 9/20
50/50 [=====] - 15s 283ms/step - loss: 0.0060 - accuracy: 0.9991 - val_loss: 0.0915 - val_accuracy: 0.9689
Epoch 10/20
50/50 [=====] - 15s 286ms/step - loss: 0.0074 - accuracy: 0.9974 - val_loss: 0.0876 - val_accuracy: 0.9689
Epoch 11/20
50/50 [=====] - 15s 285ms/step - loss: 0.0069 - accuracy: 0.9980 - val_loss: 0.0920 - val_accuracy: 0.9672
Epoch 12/20
50/50 [=====] - 15s 285ms/step - loss: 0.0043 - accuracy: 0.9997 - val_loss: 0.1078 - val_accuracy: 0.9689
Epoch 13/20
50/50 [=====] - 15s 300ms/step - loss: 0.0040 - accuracy: 0.9991 - val_loss: 0.1001 - val_accuracy: 0.9623
Epoch 14/20
50/50 [=====] - 15s 287ms/step - loss: 0.0025 - accuracy: 0.9994 - val_loss: 0.1086 - val_accuracy: 0.9656
```

```
Epoch 15/20
50/50 [=====] - 15s 288ms/step - loss: 0.0068 - accuracy: 0.9977 - val_loss: 0.1400 - val_accuracy: 0.9557
Epoch 16/20
50/50 [=====] - 15s 288ms/step - loss: 0.0107 - accuracy: 0.9965 - val_loss: 0.1128 - val_accuracy: 0.9607
Epoch 17/20
50/50 [=====] - 15s 287ms/step - loss: 0.0095 - accuracy: 0.9965 - val_loss: 0.1217 - val_accuracy: 0.9623
Epoch 18/20
50/50 [=====] - 15s 286ms/step - loss: 0.0166 - accuracy: 0.9939 - val_loss: 0.1332 - val_accuracy: 0.9574
Epoch 19/20
50/50 [=====] - 15s 286ms/step - loss: 0.0134 - accuracy: 0.9945 - val_loss: 0.1144 - val_accuracy: 0.9689
Epoch 20/20
50/50 [=====] - 17s 339ms/step - loss: 0.0082 - accuracy: 0.9965 - val_loss: 0.1230 - val_accuracy: 0.9721
```