Project Development Phase
Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID35588
Project Name	**A Novel Method for Handwritten Digit Recognition System**
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	-	Model Summary (Architecture) `[19] model4.summary()` Model: "sequential_3" Layer (type) — Output Shape — Param # conv2d_7 (Conv2D) — (None, 26, 26, 128) — 1280 max_pooling2d_7 (MaxPooling2D) — (None, 13, 13, 128) — 0 conv2d_8 (Conv2D) — (None, 11, 11, 64) — 73792 max_pooling2d_8 (MaxPooling2D) — (None, 5, 5, 64) — 0 dropout_6 (Dropout) — (None, 5, 5, 64) — 0 flatten_3 (Flatten) — (None, 1600) — 0 dense_6 (Dense) — (None, 256) — 409856 dropout_7 (Dropout) — (None, 256) — 0 dense_7 (Dense) — (None, 10) — 2570 Total params: 487,498 Trainable params: 487,498 Non-trainable params: 0

2.	Accuracy	Training Accuracy – 99.57%
		
		Validation Accuracy -99.01%
			Training Accuracy
			`[24] train_metrics = model4.evaluate(X_train,y_train,verbose=0)`
			`print("Metrics => Training Accuracy")`
			`print(train_metrics[-1])`
			Metrics => Training Accuracy
			0.9957333207130432
			
			Testing Accuracy
			`[25] test_metrics = model4.evaluate(X_test,y_test,verbose=0)`
			`print("Metrics => Testing Accuracy")`
			`print(test_metrics[-1])`
			Metrics => Testing Accuracy
			0.9901000261306763

1.Model Summary

Model Summary (Architecture)

```
[19] model4.summary()
```

```
Model: "sequential_3"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_7 (Conv2D)           (None, 26, 26, 128)       1280

 max_pooling2d_7 (MaxPooling  (None, 13, 13, 128)      0
 2D)

 conv2d_8 (Conv2D)           (None, 11, 11, 64)        73792

 max_pooling2d_8 (MaxPooling  (None, 5, 5, 64)         0
 2D)

 dropout_6 (Dropout)         (None, 5, 5, 64)          0

 flatten_3 (Flatten)         (None, 1600)              0

 dense_6 (Dense)             (None, 256)               409856

 dropout_7 (Dropout)         (None, 256)               0

 dense_7 (Dense)             (None, 10)                2570

=================================================================
Total params: 487,498
Trainable params: 487,498
Non-trainable params: 0
_________________________________________________________________
```

2.Accuracy

Training Accuracy

```
[24] train_metrics = model4.evaluate(X_train,y_train,verbose=0)
     print("Metrics => Training Accuracy")
     print(train_metrics[-1])
```

```
Metrics => Training Accuracy
0.9957333207130432
```

Testing Accuracy

```
[25] test_metrics = model4.evaluate(X_test,y_test,verbose=0)
     print("Metrics => Testing Accuracy")
     print(test_metrics[-1])
```

```
Metrics => Testing Accuracy
0.9901000261306763
```