

Project Development Phase

Model Performance Test

Date	18 November 2022
Team ID	PNT2022TMID43387
Project Name	A Novel method for Handwritten Digit Recognition
Maximum Marks	10 Marks

Model Performance Testing:

1. MODEL SUMMARY

```
In [5]: model.summary()
```

```
Model: "sequential"
```

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 26, 26, 32)	320
max_pooling2d (MaxPooling2D)	(None, 13, 13, 32)	0
conv2d_1 (Conv2D)	(None, 11, 11, 32)	9248
batch_normalization (Batch Normalization)	(None, 11, 11, 32)	128
conv2d_2 (Conv2D)	(None, 6, 6, 32)	25632
batch_normalization_1 (Batch Normalization)	(None, 6, 6, 32)	128
dropout (Dropout)	(None, 6, 6, 32)	0
conv2d_3 (Conv2D)	(None, 4, 4, 64)	18496
batch_normalization_2 (Batch Normalization)	(None, 4, 4, 64)	256
conv2d_4 (Conv2D)	(None, 2, 2, 64)	36928
batch_normalization_3 (Batch Normalization)	(None, 2, 2, 64)	256
conv2d_5 (Conv2D)	(None, 1, 1, 64)	102464
batch_normalization_4 (Batch Normalization)	(None, 1, 1, 64)	256
dropout_1 (Dropout)	(None, 1, 1, 64)	0
flatten (Flatten)	(None, 64)	0
dropout_2 (Dropout)	(None, 64)	0
dense (Dense)	(None, 10)	650

```
=====  
Total params: 194,762  
Trainable params: 194,250  
Non-trainable params: 512
```

2. ACCURACY

Values:

Test loss: 0.01923

Test Accuracy: 0.99449

Observing the metrics

```
In [7]: #final evaluation of the model  
metrics = model.evaluate(x_test, y_test, verbose=0)  
print("Metrics(Test loss & Test Accuracy) : ")  
print(metrics)
```

```
Metrics(Test loss & Test Accuracy) :  
[0.01923108845949173, 0.9944999814033508]
```