# Project Development Phase
## Model Performance Test

| Date | 12 November 2022 |
|---|---|
| Team ID | PNT2022TMID44131 |
| Project Name | A Novel Method for Handwritten Digit Recognition System |
| Maximum Marks | 10 Marks |

**Model Performance Testing:**

| S.No. | Parameter | Values | Screenshot |
|---|---|---|---|
| 1. | Model Summary | Total params: 203,434<br>Trainable params: 203,434<br>Non-trainable params: 0 | See image 1(Below Attached) |
| 2. | Accuracy | Training Accuracy - 0.9728<br><br>Validation Accuracy – 0.9713 | See Image 2(Below Attached) |
| 3. | Confidence Score (Only Yolo Projects) | Class Detected - 10<br><br>Confidence Score - 7 | |

**Image 1:**

```
Model: "sequential"

_____
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 26, 26, 64)        640

 conv2d_1 (Conv2D)           (None, 24, 24, 32)        18464

 flatten (Flatten)           (None, 18432)             0

 dense (Dense)               (None, 10)                184330

=================================================================
Total params: 203,434
Trainable params: 203,434
Non-trainable params: 0
_____
```

**Image 2:**

```
Epoch 1/10
468/468 [==============================] - 162s 345ms/step - loss: 0.6896 - accuracy: 0.8714 - val_loss: 0.2214 - val_accuracy: 0.9305 - lr: 0.0010
Epoch 2/10
468/468 [==============================] - 161s 345ms/step - loss: 0.1987 - accuracy: 0.9398 - val_loss: 0.1664 - val_accuracy: 0.9477 - lr: 0.0010
Epoch 3/10
468/468 [==============================] - 165s 352ms/step - loss: 0.1634 - accuracy: 0.9501 - val_loss: 0.1429 - val_accuracy: 0.9549 - lr: 0.0010
Epoch 4/10
468/468 [==============================] - 169s 360ms/step - loss: 0.1434 - accuracy: 0.9567 - val_loss: 0.1514 - val_accuracy: 0.9522 - lr: 0.0010
Epoch 5/10
468/468 [==============================] - 164s 351ms/step - loss: 0.1305 - accuracy: 0.9607 - val_loss: 0.1408 - val_accuracy: 0.9599 - lr: 0.0010
Epoch 6/10
468/468 [==============================] - 163s 349ms/step - loss: 0.1211 - accuracy: 0.9623 - val_loss: 0.1172 - val_accuracy: 0.9661 - lr: 0.0010
Epoch 7/10
468/468 [==============================] - 168s 358ms/step - loss: 0.1161 - accuracy: 0.9652 - val_loss: 0.1040 - val_accuracy: 0.9659 - lr: 0.0010
Epoch 8/10
468/468 [==============================] - 166s 354ms/step - loss: 0.1043 - accuracy: 0.9679 - val_loss: 0.0887 - val_accuracy: 0.9708 - lr: 0.0010
Epoch 9/10
468/468 [==============================] - 161s 344ms/step - loss: 0.1002 - accuracy: 0.9686 - val_loss: 0.0922 - val_accuracy: 0.9716 - lr: 0.0010
Epoch 10/10
468/468 [==============================] - 167s 358ms/step - loss: 0.0926 - accuracy: 0.9728 - val_loss: 0.0883 - val_accuracy: 0.9713 - lr: 0.0010
```