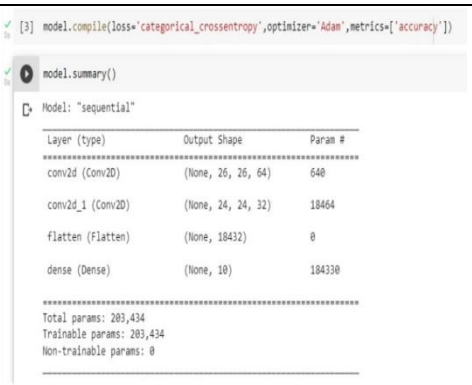
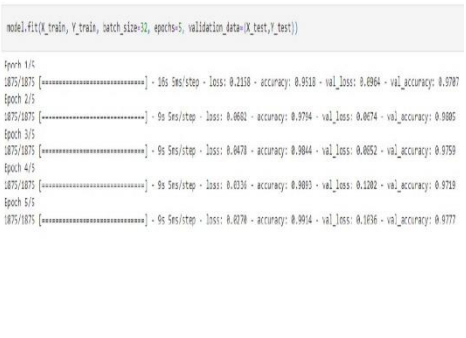
Project Development Phase
Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID38424
Project Name	Project - 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** Trainable params: **203,434** Non-trainable params: **0**	
2.	Accuracy	Training Accuracy – **0.9914** Validation Accuracy – **0.9777**	

Model Summary

```
[3] model.compile(loss='categorical_crossentropy',optimizer='Adam',metrics=['accuracy'])
```

```
model.summary()
```

```
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
_________________________________________________________________
```

Accuracy

Train the model

```
model.fit(X_train, Y_train, batch_size=32, epochs=5, validation_data=(X_test,Y_test))
```

```
Epoch 1/5
1875/1875 [==============================] - 16s 5ms/step - loss: 0.2158 - accuracy: 0.9518 - val_loss: 0.0964 - val_accuracy: 0.9707
Epoch 2/5
1875/1875 [==============================] - 9s 5ms/step - loss: 0.0682 - accuracy: 0.9794 - val_loss: 0.0674 - val_accuracy: 0.9805
Epoch 3/5
1875/1875 [==============================] - 9s 5ms/step - loss: 0.0478 - accuracy: 0.9844 - val_loss: 0.0852 - val_accuracy: 0.9759
Epoch 4/5
1875/1875 [==============================] - 9s 5ms/step - loss: 0.0336 - accuracy: 0.9893 - val_loss: 0.1202 - val_accuracy: 0.9719
Epoch 5/5
1875/1875 [==============================] - 9s 5ms/step - loss: 0.0270 - accuracy: 0.9914 - val_loss: 0.1036 - val_accuracy: 0.9777
```