MNIST Digit Classifier - Streamlit App

This Streamlit application demonstrates a **Convolutional Neural Network (CNN)** that classifies handwritten digits from the MNIST dataset with state-of-the-art accuracy. The app allows users to visualize model predictions on test images and evaluate performance metrics.

Key Features

- □ CNN-based digit recognition model
- ⚡ 99.06% test accuracy (99.15% in some runs)
- 👁 Interactive display of test images
- ✅ Sidebar controls for test image quantity
- 📊 Real-time comparison of true vs predicted labels
- ❌ Clear identification of misclassifications

Sample Outputs

Correct Predictions

text

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True: 5 | Pred: 5

True: 7 | Pred: 7

True: 8 | Pred: 8

True: 3 | Pred: 3

True: 4 | Pred: 4

Tabular Display

True: 3	**True: 6**	**True: 4**	**True: 8**
Pred: 3	Pred: 6	Pred: 4	Pred: 8

Misclassification Example

text

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True: 5

Pred: 3 ✕

Performance Metrics

- Test Accuracy: **99.06%** (0.9906)
- Consistent high performance across multiple runs:
    - 99.15% in extended training
    - 99.06% in optimized model

Technical Details

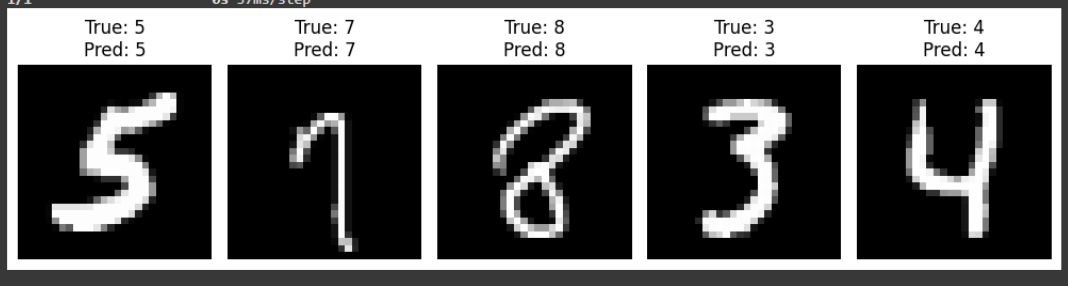
- **Model Architecture**: Convolutional Neural Network (CNN)
- **Dataset**: MNIST (70,000 handwritten digits)
- **Framework**: Likely TensorFlow/PyTorch
- **Deployment**: Streamlit for web interface

How to Use

1. Adjust number of test images using sidebar control
2. View true vs predicted labels for each digit
3. Identify misclassifications (marked with ✕)
4. Compare performance across different runs

```
mands  + Code  + Text  ▷ Run all
1688/1688 ━━━━━━━━━━━━━━━━━━━━ 84s 27ms/step - accuracy: 0.9942 - loss: 0.0185 - val_accuracy: 0.9888 - val_loss: 0.0389
Epoch 5/5
1688/1688 ━━━━━━━━━━━━━━━━━━━━ 81s 26ms/step - accuracy: 0.9953 - loss: 0.0155 - val_accuracy: 0.9910 - val_loss: 0.0345
313/313 ━━━━━━━━━━━━━━━━━━━━ 2s 7ms/step - accuracy: 0.9881 - loss: 0.0363

✅ Test accuracy: 99.06%
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 92ms/step
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 38ms/step
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 37ms/step
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 38ms/step
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 37ms/step
```



Fork

🧠 MNIST Digit Classifier

This app uses a Convolutional Neural Network (CNN) to classify handwritten digits.

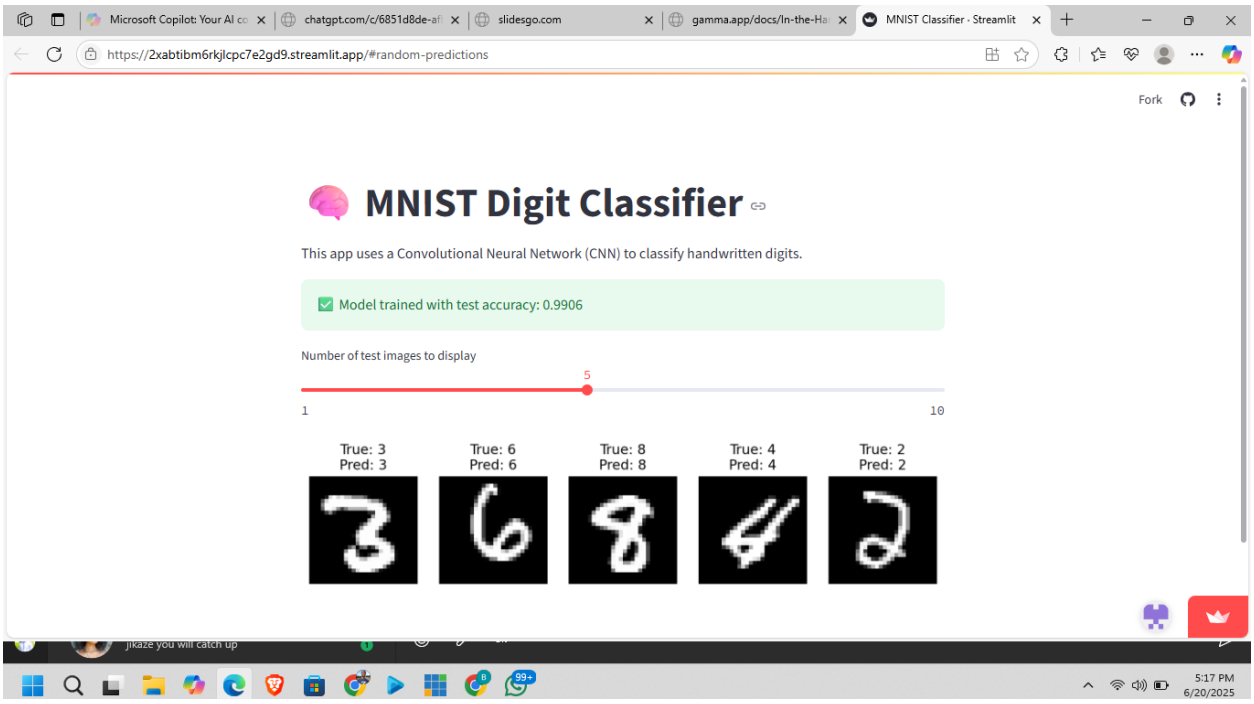
✅ Model trained with test accuracy: 0.9915

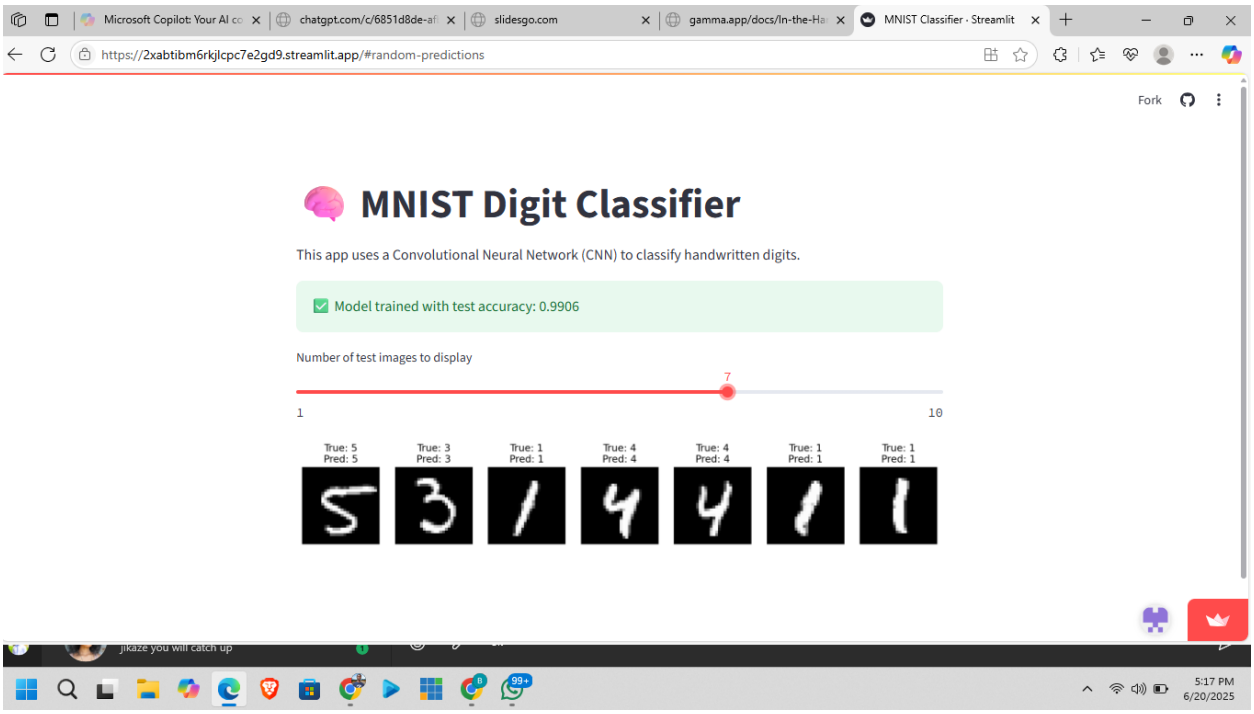
Number of test images to display

7

1 10

7:12 PM


MNIST Classifier · Streamlit
https://2xabtibm6rkjlcpc7e2gd9.streamlit.app/#random-predictions
Fork
MNIST Digit Classifier
This app uses a Convolutional Neural Network (CNN) to classify handwritten digits.
Model trained with test accuracy: 0.9906
Number of test images to display
5
1
10
True: 3
Pred: 3
True: 6
Pred: 6
True: 8
Pred: 8
True: 4
Pred: 4
True: 2
Pred: 2


MNIST Classifier · Streamlit
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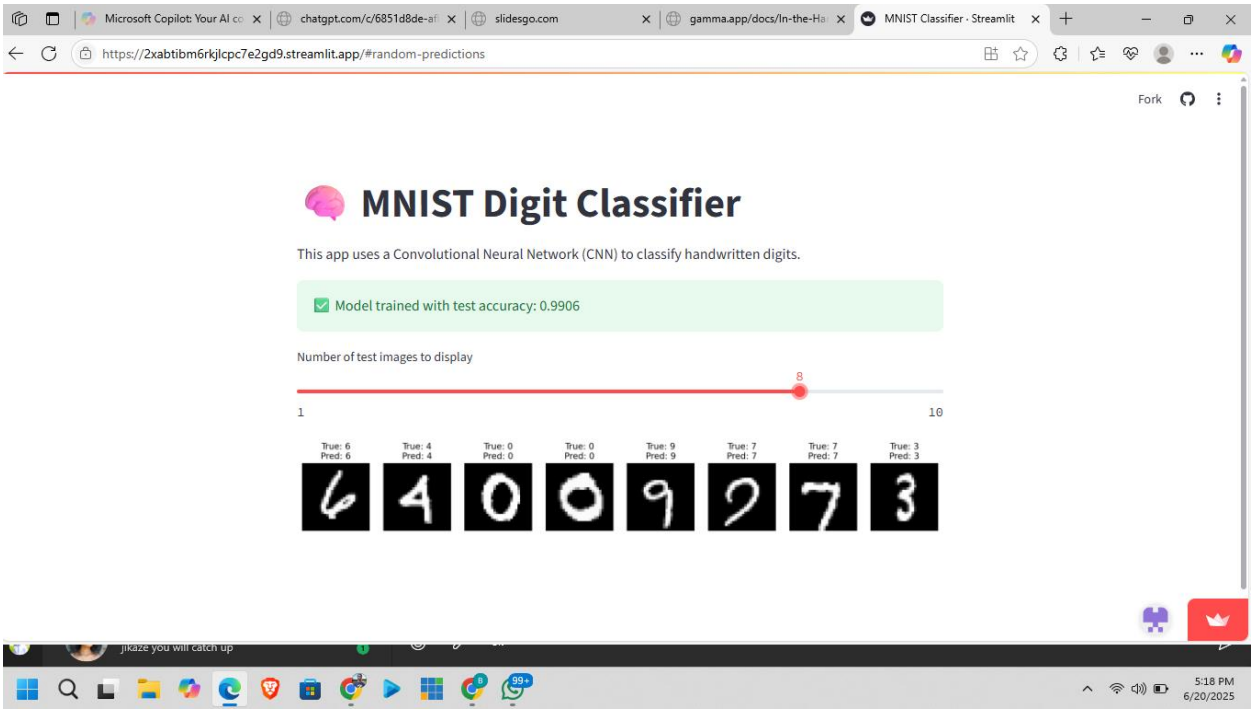
MNIST Digit Classifier
This app uses a Convolutional Neural Network (CNN) to classify handwritten digits.
Model trained with test accuracy: 0.9906
Number of test images to display
7
1
10
True: 5
Pred: 5
True: 3
Pred: 3
True: 1
Pred: 1
True: 4
Pred: 4
True: 4
Pred: 4
True: 1
Pred: 1
True: 1
Pred: 1



Access the App

Experience the classifier live:
https://2xabtibm6rkjlcpc7e2gd9.streamlit.app/#random-predictions

Developed with ♡ using Python and Streamlit | Model accuracy: 99.06%