Building a ML model to classify MNIST Dataset

Abstract:

As of the requirements of task-1, I have built an image classification model using Tensorflow for classifying the MNIST dataset. Also, have saved and deployed my model to a web portal using Streamlit for showing the performance in real time.

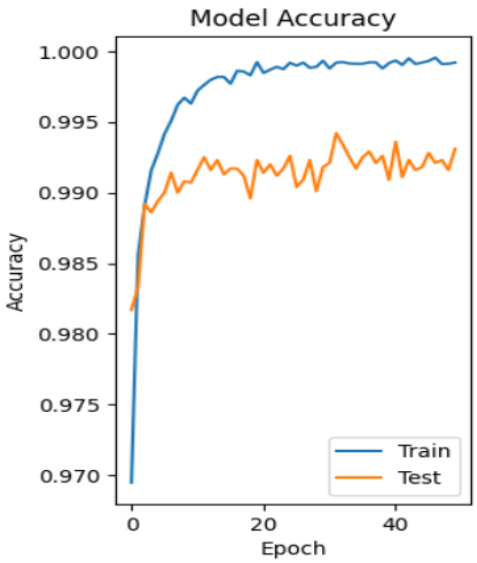
Performance of the Model:

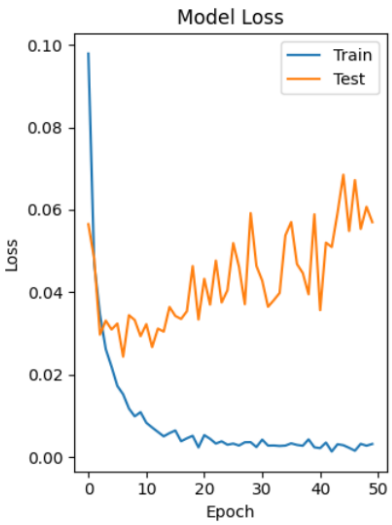
Accuracy: The model achieved a test accuracy of 0.9992, indicating that it correctly classified 99.92% of the test images.

Loss: The model's test loss was 0.0032. Loss measures the difference between the predicted output and the true output.

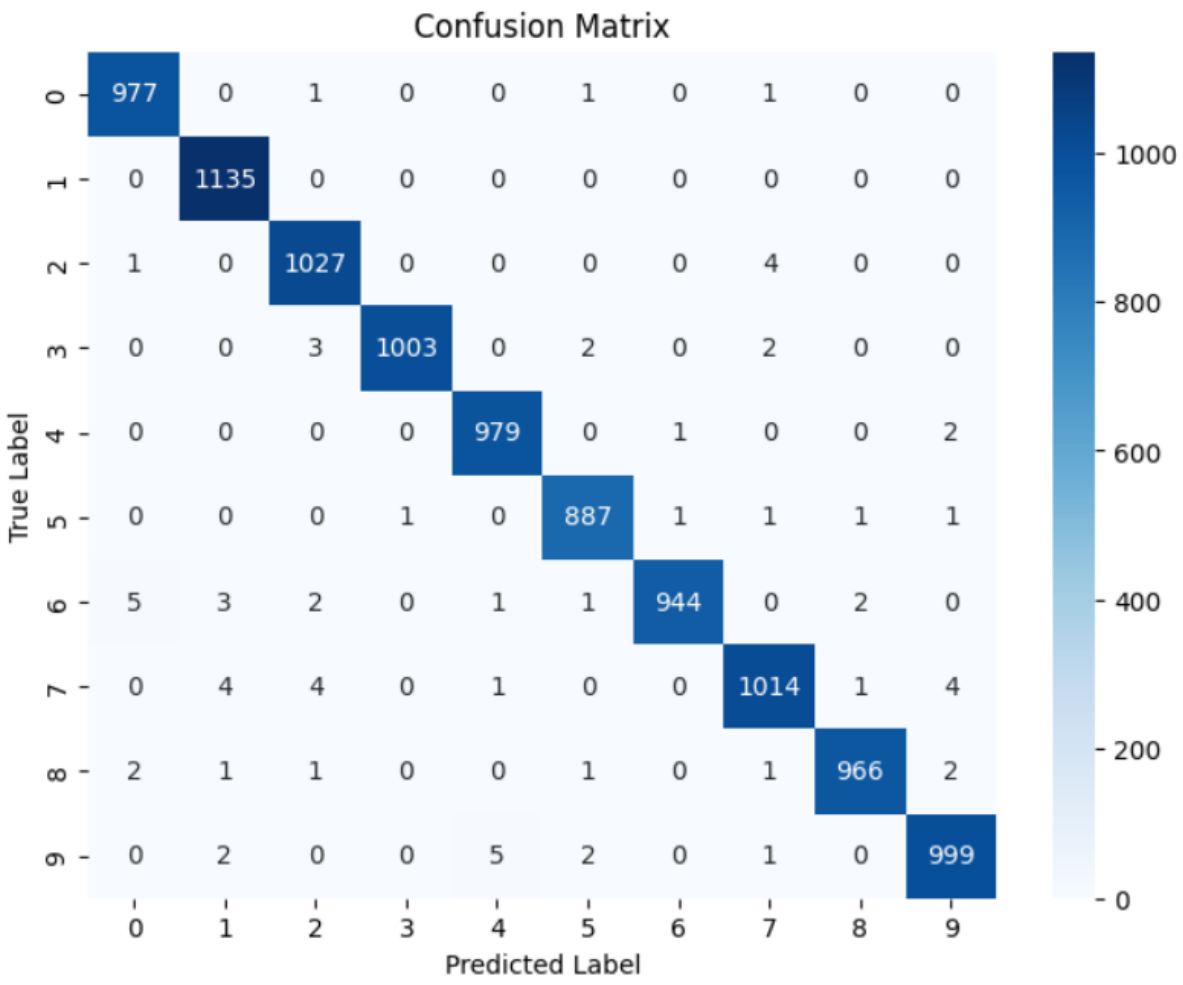
Overall Performance:

The neural network model trained for the MNIST dataset classification task exhibited excellent performance. It achieved a high accuracy of 99.92% and a low loss of 0.0032, demonstrating its ability to effectively classify handwritten digits. The model's architecture, optimizer, activation functions, and training configuration were carefully selected to ensure optimal performance.





The two subplots measure the training and validation accuracy/loss across epochs.



From the heatmap visualization of the confusion matrix, the x-axis and y-axis represent predicted and true labels, respectively. Each cell in the heatmap shows the number of instances where the true label is on the y-axis, and the predicted label is on the x-axis.

Conclusion:

In the consent we can conclude that the ML is capable enough to classify hand-written digits from the MNIST dataset. Deployment of this model needs some hyperparameter tuning and support of rest-api for it to be fully functional.

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