MNIST Classification - Summary and Tools Used

One Paragraph Summary:

This goal of the project was on using the MNIST dataset of handwritten digits to develop a system for automated exam paper evaluation, which evaluates students after they have provided their digit-based responses. The two models implemented were the Naive Bayes and Non-Naive Bayes. The normalized and raw datasets were both tested. Naive Bayes displayed a significant improvement with normalization, achieving a test accuracy of 77.46%. Non-Naive Bayes produced the highest performance overall with 93.06% training accuracy and 91.08% testing accuracy on normalized data. The experiments were conducted using Google Colab, and the final results show that handwritten digit classification is a viable solution for automating tasks like grading numerical responses in exams.

Tools and Technologies Used:

- Python
- Google Colab
- NumPy and Pandas for data handling
- Scikit-learn for preprocessing and accuracy evaluation
- Matplotlib for visualizations
- Implementations of Naive Bayes and Non-Naive Bayes classifiers