# Project Summary:

This project focused on implementing and comparing three classifiers for handwritten digit recognition using the MNIST dataset: Gaussian Naive Bayes, Full Gaussian Bayes, and K-Nearest Neighbours (KNN). The complete machine learning pipeline included data preprocessing, model development, and thorough evaluation. Each model was designed for scalability and efficiency to handle MNIST's high-dimensional data, creating a robust foundation for accurate digit recognition.

# Specific Actions and Technologies:

* Utilized Python with Pandas, NumPy, Matplotlib, libraries for data analysis and visualization
* Performed initial data exploration, including examining the first few rows and basic statistics of the dataset
* Conducted missing value analysis, saw no missing values and dropped unwanted features from the data frame
* Implemented normalization (/255) to enhance model performance and improve model accuracy
* Standardized the trained set using NumPy array for down streaming processing
* Built 3 Classifiers such as GaussNB, Gauss Bayes, K Nearest Neighbour Classifier
* Tested with epsilon values and got my accuracies for different epsilon values
* Got the best accuracy and my model is ready for production use case

This summary captures the key aspects of the work done in the Google Collab notebook, highlighting the technologies used and the main steps in the data analysis, machine learning and model optimization processes. It provides a concise overview suitable for a short presentation or as a backup for more detailed slides.