4. Dimensionality Reduction Techniques:

• **Description:** Apply dimensionality reduction techniques to optimize model performance by reducing the number of input features.

• **Why:** Reducing the dimensionality helps to eliminate redundant data, speeding up computations and improving model generalization.

• **Tasks:**

o Use Principal Component Analysis (PCA) or t-SNE to reduce the dimensionality of a dataset (e.g., the MNIST or CIFAR-10 dataset).

o Train a classification model on the reduced dataset and compare its performance with the original high-dimensional dataset.

o Analyze and report the trade-offs between dimensionality reduction and model performance.

o Submit the code and analysis and upload a blog post on Medium or any other platform, sharing the link.