Machine Learning Laboratory Assignment V

Your task is to develop a **multiclass classification model** using an **Artificial Neural Network (ANN)**. The model should be built **step-by-step**, including **data preprocessing, parameter initialization, forward propagation, backpropagation, parameter updates, and model evaluation**.

Dataset:

Use the **MNIST Handwritten Digits Dataset**, which consists of grayscale images of handwritten digits (0-9), each represented as a **28×28 pixel array**. The goal is to classify each image into one of **10 classes** (digits 0 to 9).

Subtasks

1) Design an ANN model architecture with multiple hidden layers.

2) Experiment with different numbers of hidden layers and neurons per layer to find an

optimal architecture.

3) Compile the model using an appropriate optimizer and loss function.

4) Experiment with different batch sizes and epochs to optimize model performance.

5) Calculate and print the accuracy on both the training and test datasets.

6) Implement a `predict` function to classify inputs from the test set.