



Module 4: Introduction to Fully Connected NN - Assignment

Problem Statement:

Fashion MNIST is a dataset comprising 60,000 training images and 10,000 testing images, each depicting various fashion items in a 28x28 grayscale format. The dataset encompasses ten distinct categories of apparel. The primary aim of this assignment is to develop a fully connected neural network (FCNN) that can accurately classify these images into the correct fashion categories.

Objectives:

Data Visualization and Preprocessing:

- Visualize the distribution of different fashion items in the dataset to understand the data better.
- Normalize the image pixel values for effective model training.
- Convert the categorical labels into a one-hot encoded format to suit the neural network's output layer.

Model Architecture and Development:

- Design a fully connected neural network with appropriate input, hidden, and output layers.
- Ensure the model is complex enough to capture the underlying patterns in the data without overfitting.

Model Training:

- Train the model on the preprocessed training data, using categorical cross-entropy as the loss function, stochastic gradient descent as the optimizer, and accuracy as the evaluation metric.
- Utilize a validation split to monitor the model's performance on unseen data during training.

Performance Evaluation:

- Assess the model's performance using both training and validation datasets.
- Visualize the training and validation loss and accuracy to identify any signs of overfitting or underfitting.