

Lab 10:- Perform comparison on

MNIST dataset using
softmax and auto encoder.

Output:-

~~original image~~
trained epochs : 20

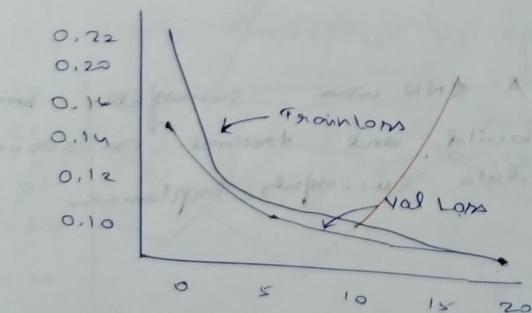
original image.

7 2 1 0

Reconstructed image.

7 2 1 0

Train and Validation Loss



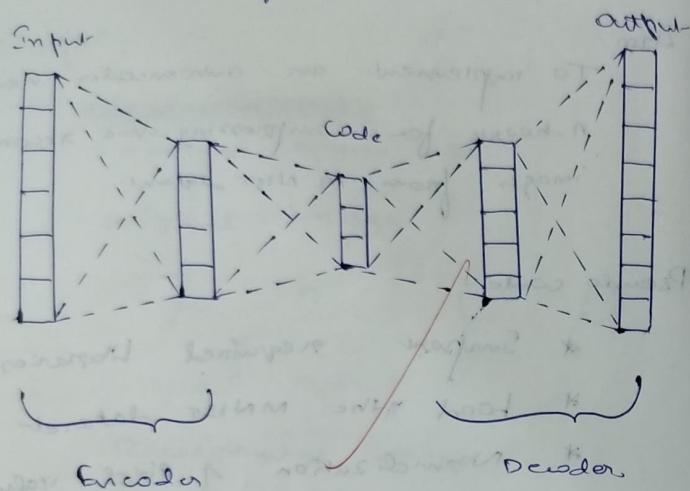
Aim:-

To implement an autoencoder neural network for compressing and reconstructing images from MNIST dataset.

Pseudo code:-

- * Import required libraries
- * Load the MNIST dataset
- * Normalization of pixel value
- * Flatten the image into vector
- * Define the Auto encoder model.

Architecture of Auto encoder.



Training :-

Epoch [1/20], Train Loss: 0.2920, Val Loss: 0.21

Epoch [2/20], Train Loss: 0.2131, Val Loss: 0.1849

Epoch [3/20], Train Loss: 0.1683, Val Loss: 0.1539

Epoch [4/20], Train Loss: 0.1092, Val Loss: 0.1427

Epoch [5/20], Train Loss: 0.1343, Val Loss: 0.1297

Epoch [19/20], Train Loss: 0.1026, Val Loss: 0.097

Epoch [20/20], Train Loss: 0.1015, Val Loss: 0.099

Observation.

- * The autoencoder successfully learns to reconstruct MNIST digits after several epochs.
- * The training loss decreases gradually.
- * The compressed representation is much smaller in size compared to original.
- * The compression ratio depends on the bottleneck layer size.

Result:-

An autoencoder model was successfully implemented on MNIST dataset.