Spring 2025: Neural Networks & Deep Learning – ICP -6

Assignment – Week8

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Github Link: https://github.com/maniallada9/Neural-Networks-deep-Learning

Video Link: https://drive.google.com/file/d/1bt0AiROmhiYgQ49ef67i_SImMurhFDMR/view?usp=sharing

1. Add one more hidden layer to autoencoder

2. Do the prediction on the test data and then visualize one of the reconstructed version of that test data.

Also, visualize the same test data before reconstruction using Matplotlib

3. Repeat the question 2 on the denoisening autoencoder

4. plot loss and accuracy using the history object

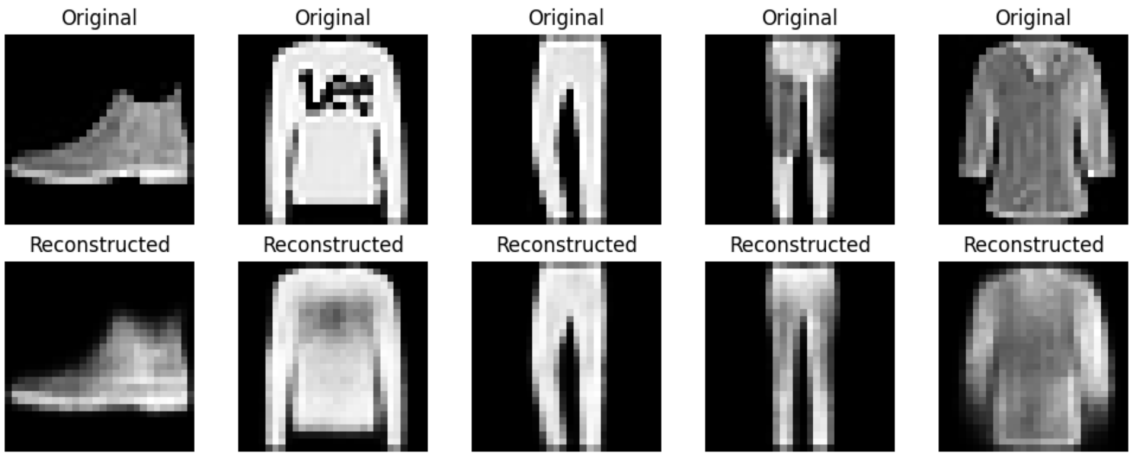
outputs:

1)

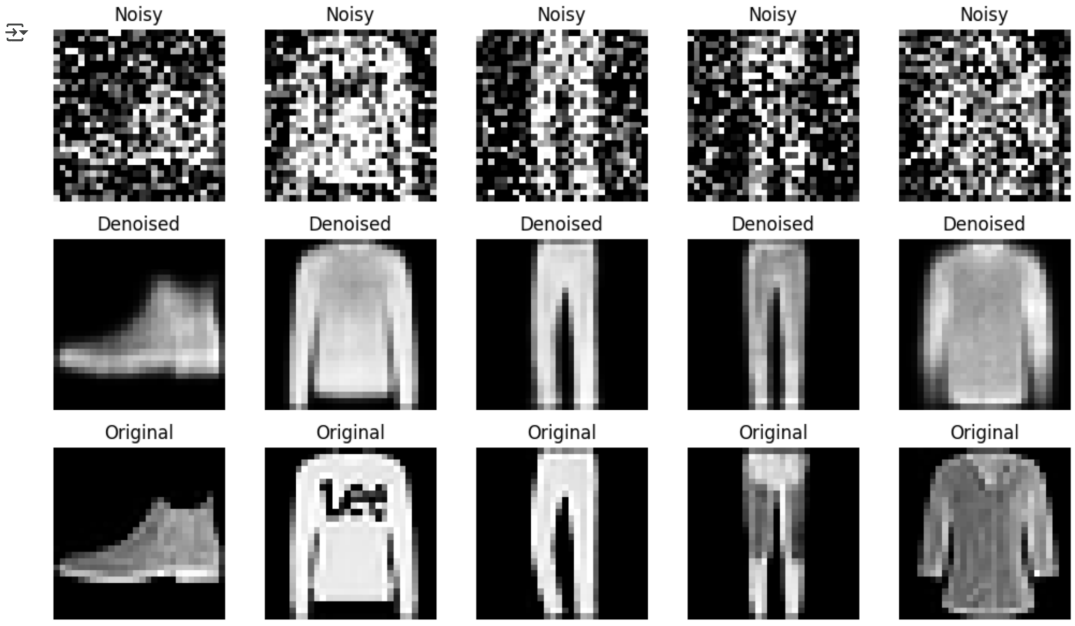
```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/train-labels-idx1-ubyte.gz
29515/29515 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/train-images-idx3-ubyte.gz
26421880/26421880 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/t10k-labels-idx1-ubyte.gz
5148/5148 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/t10k-images-idx3-ubyte.gz
4422102/4422102 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
Epoch 1/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 9s 28ms/step - loss: 0.4484 - val_loss: 0.3135
Epoch 2/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 8s 17ms/step - loss: 0.3079 - val_loss: 0.3010
Epoch 3/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 6s 20ms/step - loss: 0.2968 - val_loss: 0.2953
Epoch 4/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 4s 15ms/step - loss: 0.2929 - val_loss: 0.2916
Epoch 5/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 3s 15ms/step - loss: 0.2892 - val_loss: 0.2894
Epoch 6/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 6s 20ms/step - loss: 0.2866 - val_loss: 0.2874
Epoch 7/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 4s 15ms/step - loss: 0.2857 - val_loss: 0.2860
Epoch 8/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 6s 17ms/step - loss: 0.2834 - val_loss: 0.2856
Epoch 9/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 5s 15ms/step - loss: 0.2825 - val_loss: 0.2839
Epoch 10/10
235/235 ━━━━━━━━━━━━━━━━━━━━ 5s 15ms/step - loss: 0.2816 - val_loss: 0.2834
```

2)

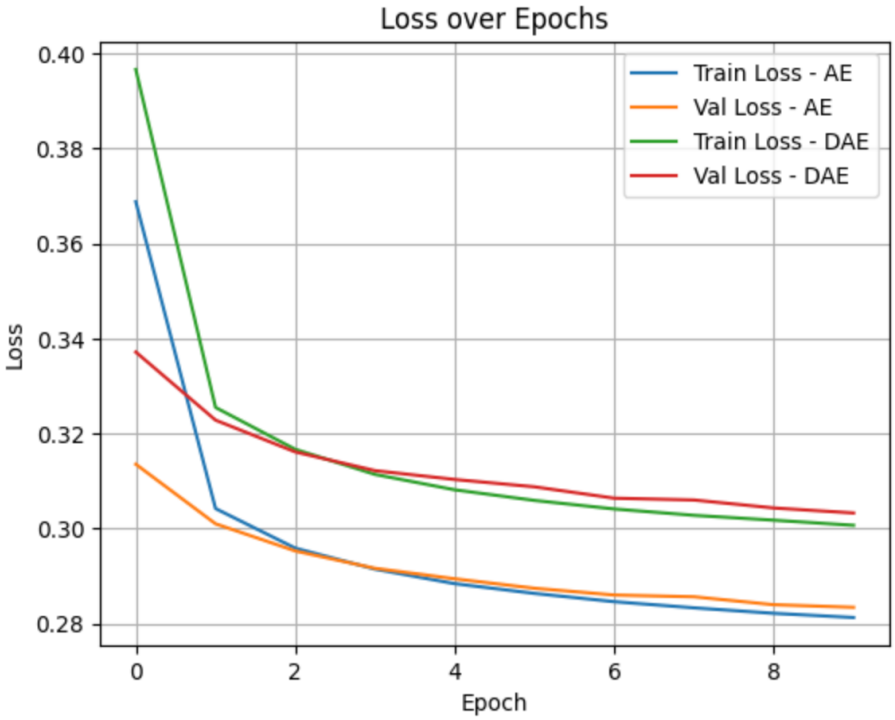
```
313/313 ━━━━━━━━━━━━━━━━━━━━ 1s 2ms/step
```



3)



4.


Loss over Epochs
Train Loss - AE
Val Loss - AE
Train Loss - DAE
Val Loss - DAE
Loss
Epoch
0.40
0.38
0.36
0.34
0.32
0.30
0.28
0
2
4
6
8