GMDL HW6

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Computer Exercise 2:

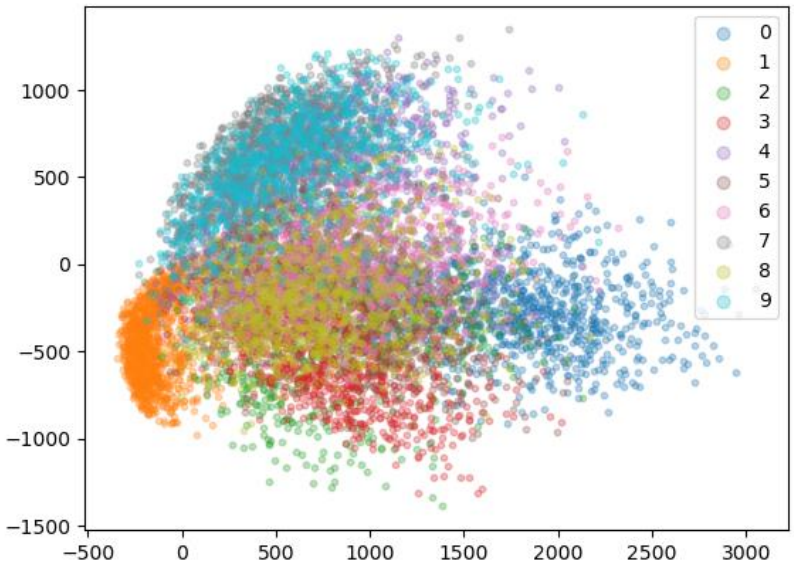

Figure 1

Computer Exercise 4:

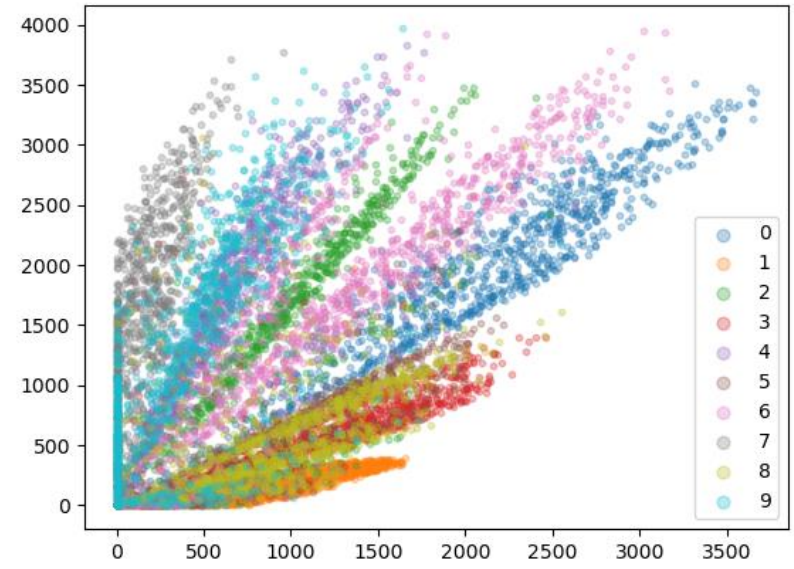

Figure 2

Computer Exercise 5:

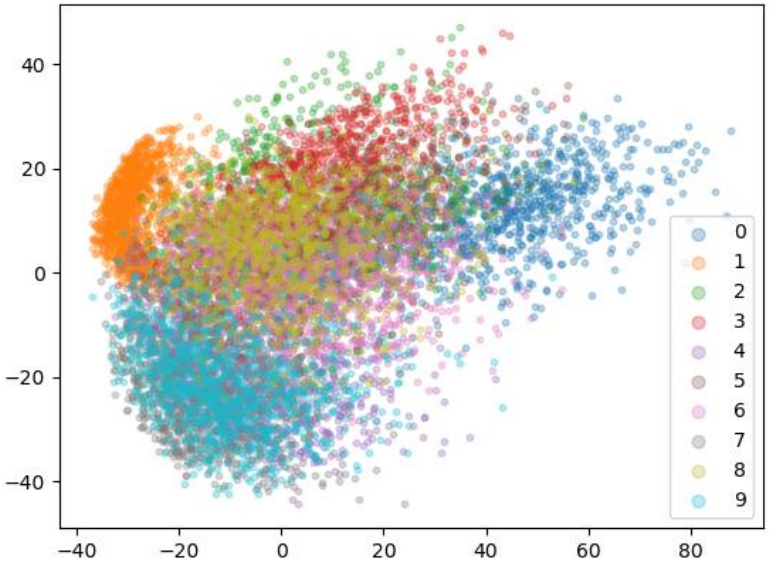

Figure 3

A loss graph during both autoencoder learning process, we can see that the loss is reducing during the iterations:

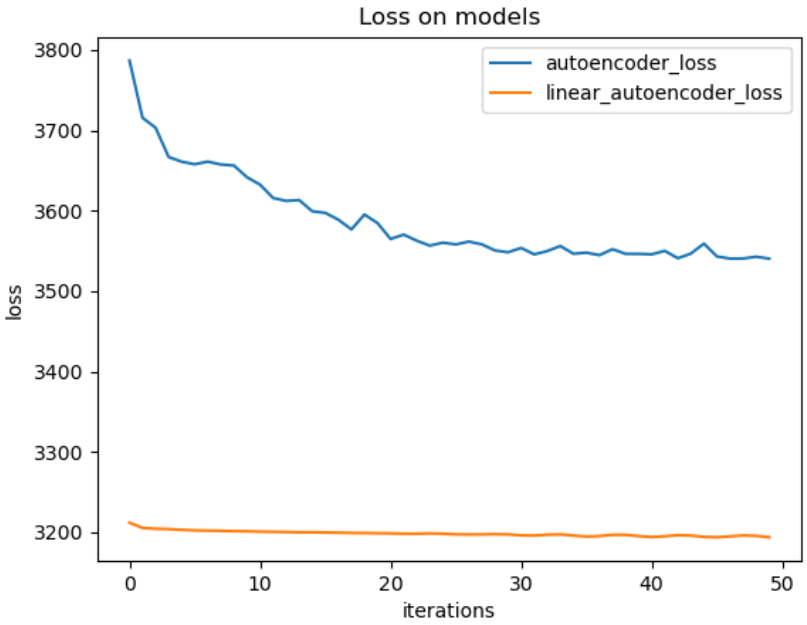

Figure 4

Problem 1:

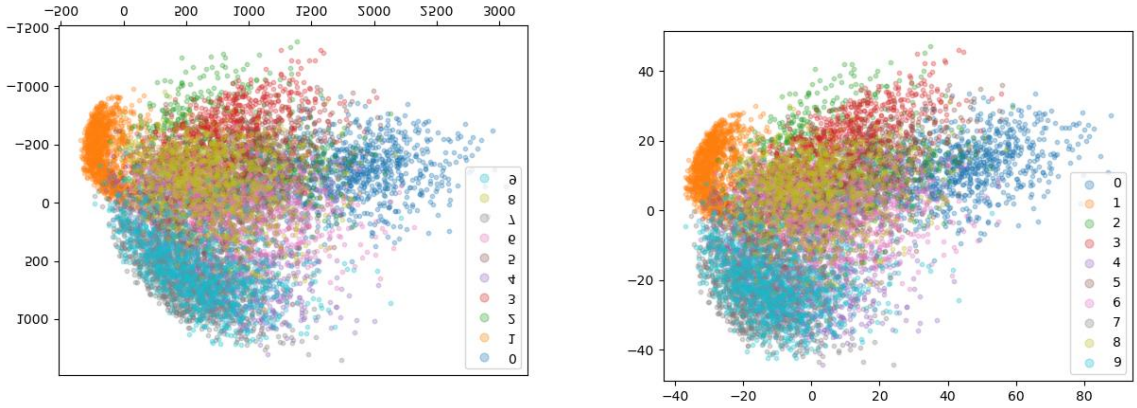

Figure 5- Figure 1 flipped along the Y axis, compared to Figure 3

As we can See from Figure 5; Figure 1 (filliped and on the left) and figure 3 (on the right) are distributed similarly. Mostly, the orientation and the scale are different, but both methods converged to a similar local minimum. Both models in Computer Exercise 2 and 5 are linear. Also, we chose the MSE loss function in the autoencoder. It has the same argmin as the Frobenius norm argmin that PCA converge to.
In the non-linear autoencoder in Computer Exercise 4 (that performs ReLU between each layer) we received substantial change to the convergence point of the model, as it is not linear anymore and in results, now have a different local minimum.