Homework 4 Report

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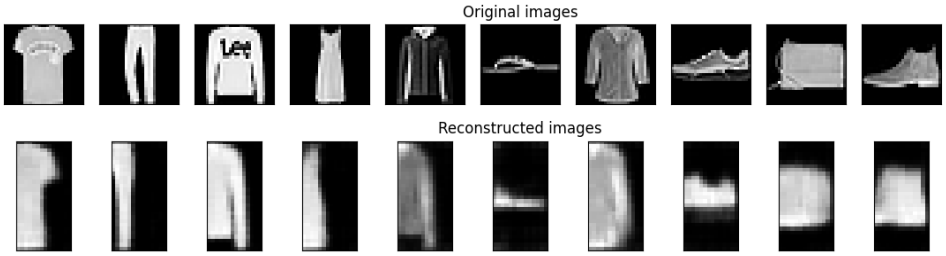
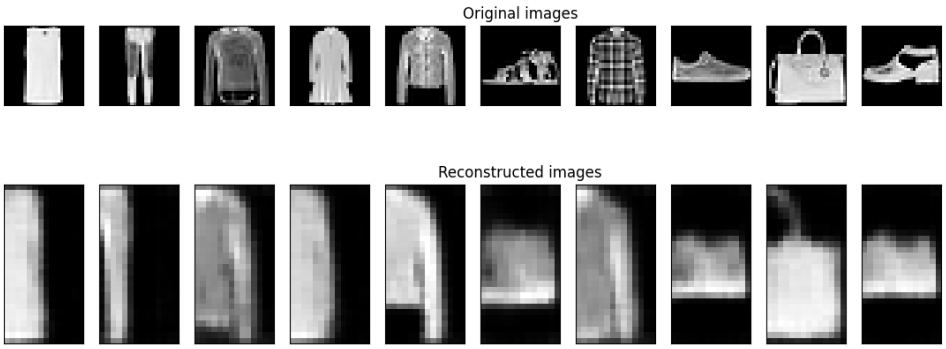
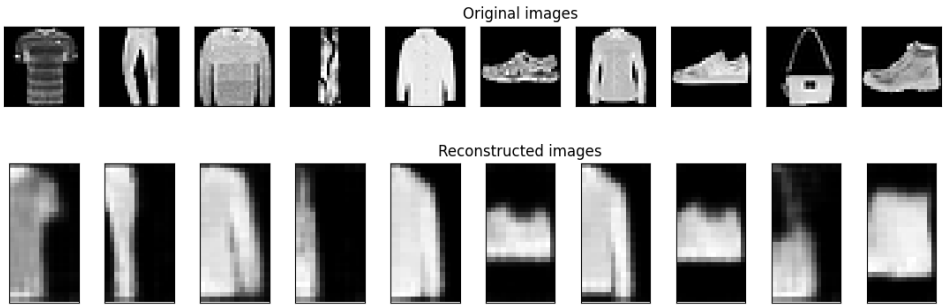
Part 1)

I have plotted 5 plots which consist of an image from each of the 10 classes (labels) and their corresponding right-half output. These images are from the test set. The output images do not exactly look like the original images, they look blurrier and the patterns on the clothes cannot be seen easily. But it is possible to distinguish which image it comes from. The images can be seen below.







Part 2)

To decrease the error, I first tried changing the learning rate. A better learning rate did help but it was not too effective. With a higher learning rate, I observed that the model converged in less epochs than before but the point at which it converged did not change too drastically.

After I didn't get satisfying results only by changing the learning rate, I decided on increasing the number of convolution layers in my model and changing the weight dimensions so that they fit my inputs better. This did decrease the error rate. You can see the plot of the Mean Squared Error's I got from each epoch below (Orange plot represents the training data while the blue plot represents the test data). As it can also be seen from the plot, the error seems to be converged. I determined the epoch size as 15 so that the model does not overfit the training data. We don't observe any overfitting when we check the plot.