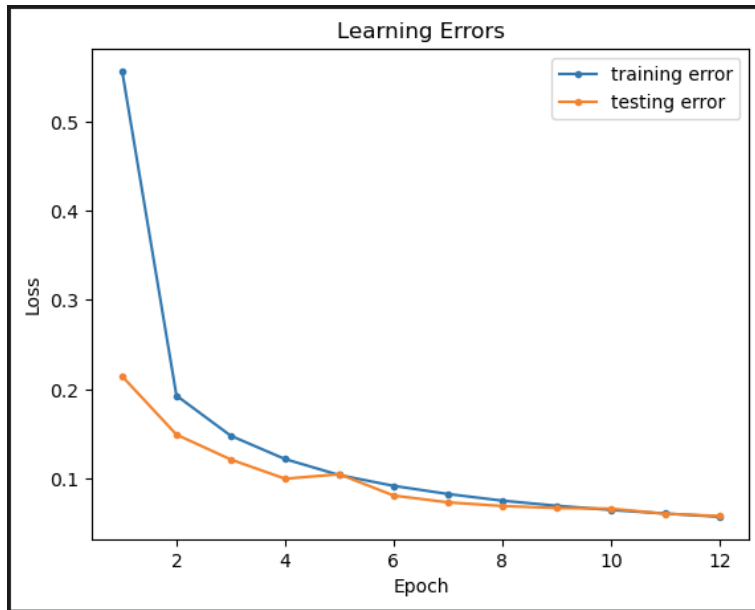


Name: Mohamad Abou Dalal

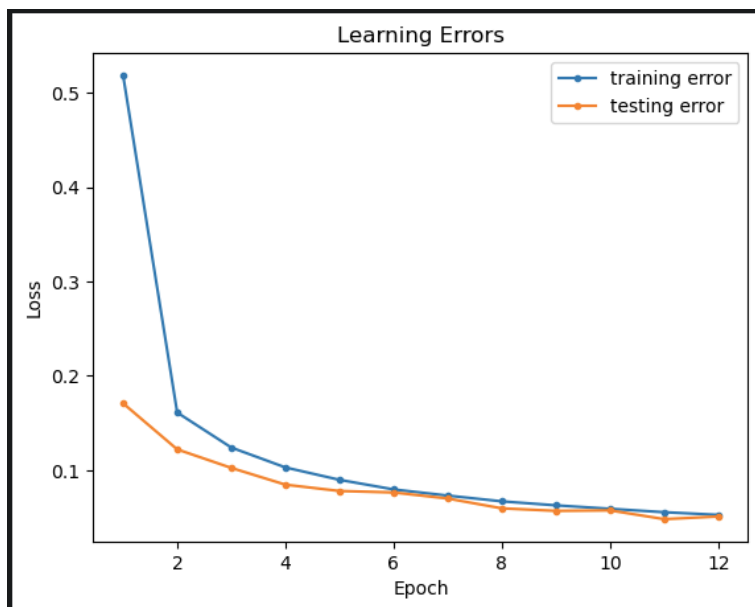
ASU ID: 1231151391

The given model has 2 convolutional layers, both with a kernel size of 3x3. The test loss of the baseline code is 0.0557 with an accuracy of 0.9814. Below is the learning error plot for the baseline code:



Changing the kernel size in the first convolutional layer to 5x5 decreased the test set loss to 0.0459 and increased the test accuracy to 0.9854.

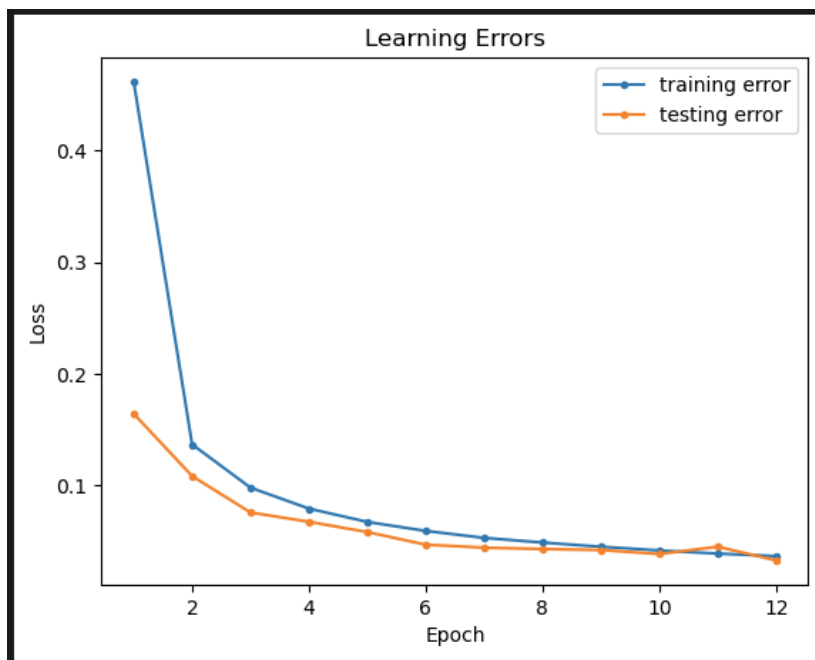
The graph below shows the learning errors (losses of both the training and testing sets) in each of the corresponding epoch with the updated kernel size:



On the other hand, changing the kernel size in the second convolutional layer in addition to the first one from 3x3 to 5x5 decreased the accuracy compared to the previous test from 0.9854 to 0.9802.

Finally with kernel sizes of 5x5 and 3x3 in the first and second convolutional layers respectively, the increase of the feature maps to 32 in both layers decreased the loss to 0.0325 and increased the accuracy to 0.989.

The following graph shows the learning errors with the updated kernel size and number of features maps:



Although it is good practice to have a 3x3 kernel size as a default, increasing it can yield better training and accuracy results. However, the biggest impact to this model's accuracy is the number of feature maps learned. Increasing the number of features maps to 32 resulted in better testing accuracy, with the downside of increasing the training time. In the end, the ideal kernel size and number of feature maps depend on the nature of the dataset and the complexity of each data sample.