LAB 4 - FUN WITH MLPS MNIST

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1. WIDE MLPS ON MNIST

1.1. Wider MLPs

Comparing Figure 2 and Figure 3, it is seen that the curves start to diverge more. So, the number of hidden layers must range between 500-10000. If the range increases more than that then it might overfit. It is better to choose hidden layers that lie between the number of inputs and outputs. More than that would lead to over-fitting.

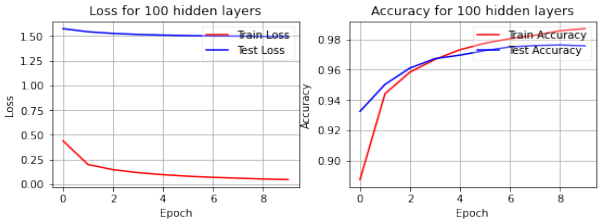

Fig. 1. Loss and Accuracy Graph for 100 Hidden Layers

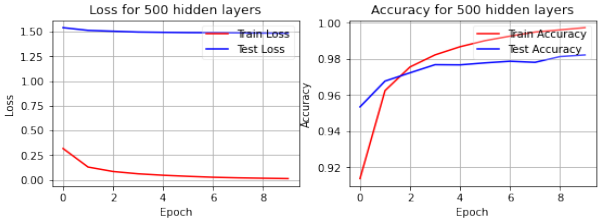

Fig. 2. Loss and Accuracy Graph for 500 Hidden Layers

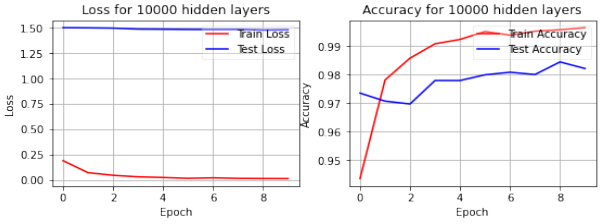

Fig. 3. Loss and Accuracy Graph for 10000 Hidden Layers

When the complexity of the model is increased, it helps to learn and produce outputs that have better accuracy on training dataset. Whereas the loss becomes more stable in this case. However, this model cannot be reused as it is more complex to learn new elements to make a prediction on a dataset.

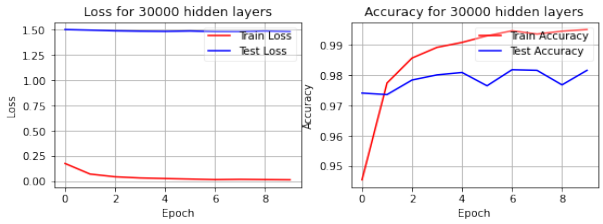

Fig. 4. Loss and Accuracy Graph for 30000 Hidden Layers

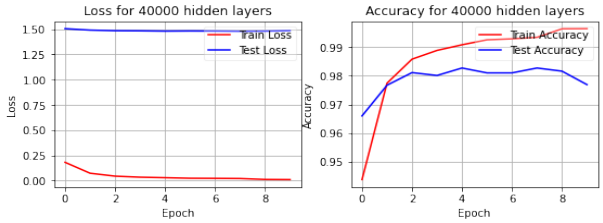

Fig. 5. Loss and Accuracy Graph for 40000 Hidden Layers