AI-F19
Assignment 4
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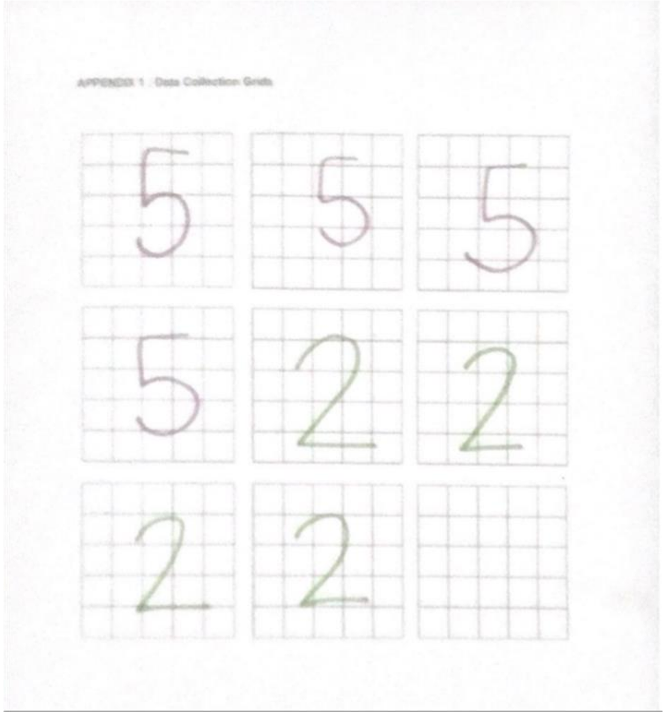
Part 1:



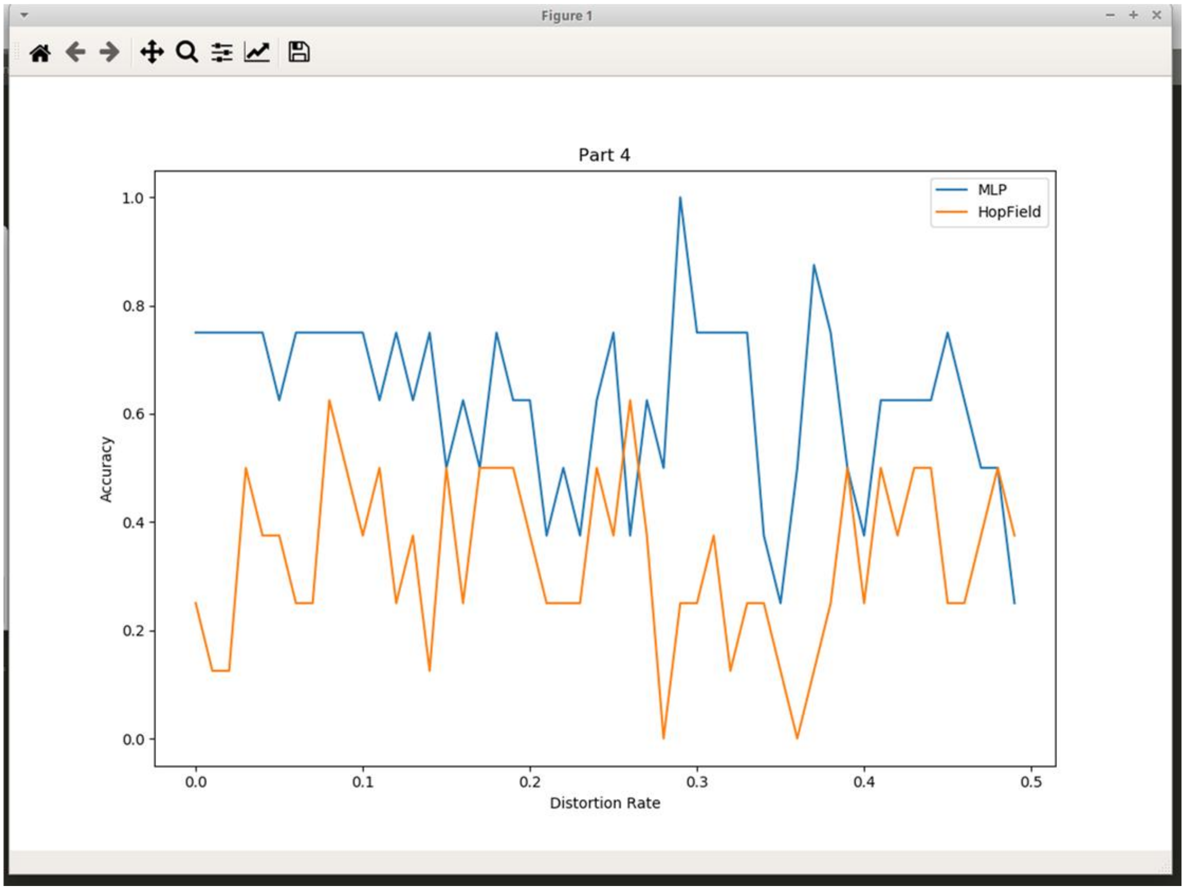
Part 2:

My accuracy was usually somewhere around the 50% marker. My hopfield network was better with identifying the 'fives' over the 'twos'. This is probably because I had more of a loop when I drew the twos, than when I drew the fives. The biggest problem though was that my classifier usually converged when on [11111 00000 11111 00000 11111]. This is because both the twos and the fives have these bits in common.

Part 3:

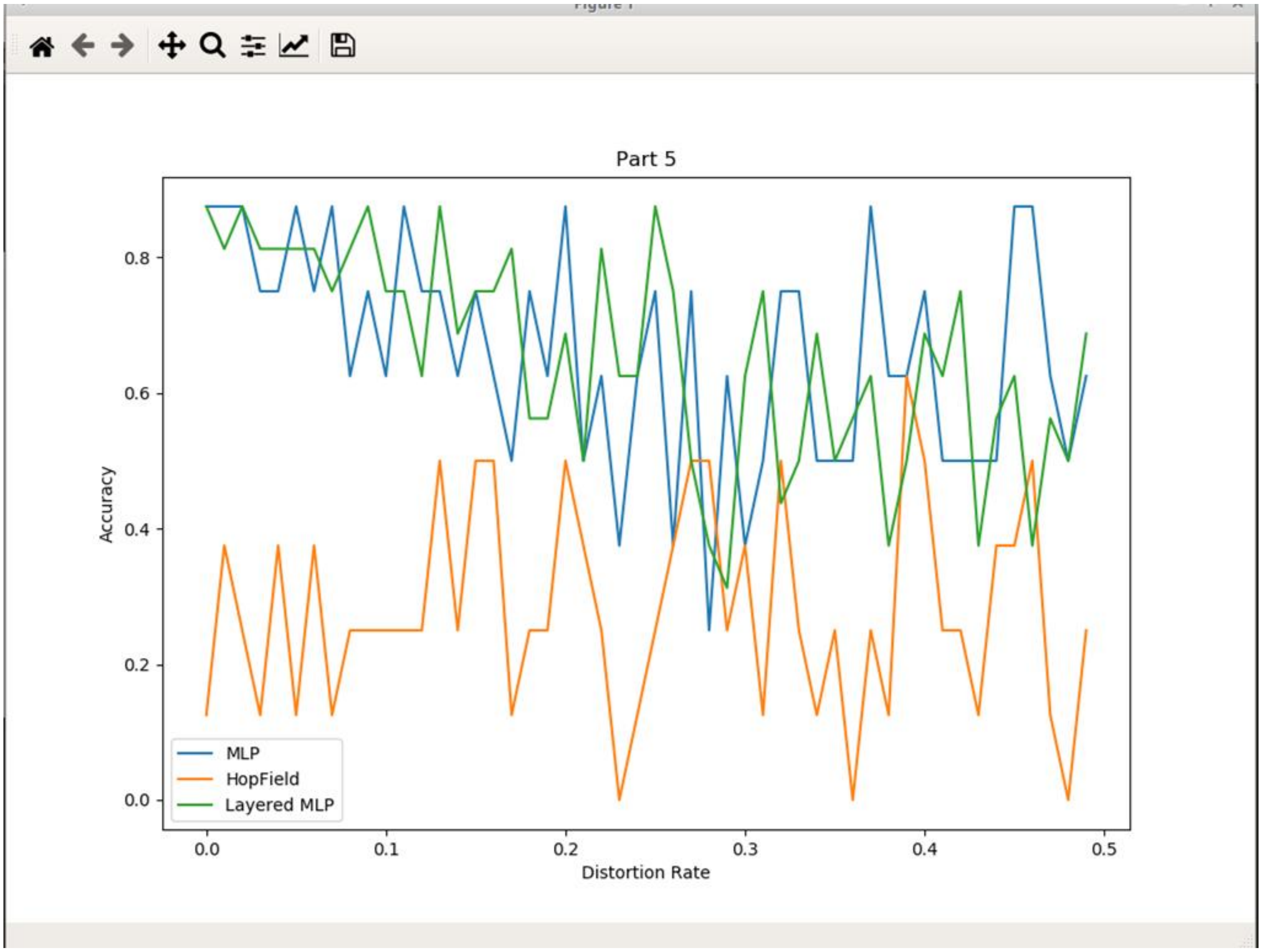
With the MLP classifier, I usually ended up somewhere just above 50%. So like, 5 out of 8. I think this did a bit better because it was able to place more of an emphasis (higher weight) on the 2nd and the 4th lines of the pattern. It placed the emphasis here because this is where the two and the five are most different. So by placing the most weight on these lines, the classifier did a better job at deciding which input pattern was a two, and which was a five.

Part 4:



It’s hard to learn too much from this graph, but I think the main point can be seen when you look at the hopfield classifier. As you can see, the general trend goes up for a little bit, and then it decreases. Kind of like a bell curve. This implies that some distortion is good, while to much leads to inaccuracy. Although, I think that this graph also proves that our training data isn’t sufficient. With such a small sample size, our classifier is a bit wild in terms of accuracy. It makes big jumps from accurate, to inaccurate.

Part 5:



As you can see, the MLP did quite a bit better with the NewInput.CSV file. This allowed the classifier to more firmly establish where the weight should go. As well, the more layers we had, led to a higher accuracy. This proves the saying, “The more, the merrier.” As we increased both our sample size and our layers, our accuracy also increased. The only downside is that it takes a bit more time/space to classify.