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CSC 426-01
Project 4: Deliverable 5

Task 5.1:

Task 2 Analysis

LP1: The LP1's for each task are the only LP's that break because the number of errors reach 0. They also reach 0 relatively quickly within just a few epochs.

LP2: The LP2's take over 100 epochs and only break when the number of errors remains the same for 3 epochs in a row after a minimum of 50 epochs. The number of errors flip flops over time according to the graph, and seems to actually increase.

LP3: The number of errors stays at 2 errors, other than for epoch 2 of having 3 errors.

Based on your results, are any of the LPs linearly separable? If so, which one?

It seems like LP1& LP3 are the closest possibility of being linearly separable. LP1's graph after 1 epoch is straight line downward, while LP3's graph is a straight plateau at 2 errors other than for epoch 3.

Task 5.2:

Task 3.1 Analysis

LP1: The number or errors increase a little bit, but then the number errors then decrease down to 0. Only needed 6 epochs to hit zero errors.

LP2: The number of errors flip flops as the number of epochs progress. Similar pattern to Task 2 LP2.

LP3: Outside of a couple of outliers, the number of errors is relatively stable. It's very similar to Task 2 LP3.

Based on your results, are any of the LPs linearly separable? If so, which one?

It seems like LP1& LP3 are the closest possibility of being linearly separable. Although LP1 looks like a curve, it has a linear fall after 4 epochs. LP3 follows a similar linear pattern as Task 2 LP3.

Task 3.2 Analysis

LP1: The number of errors increase from 1 to 3 and then decreases to 0 in just 5 epochs.

LP2: The number of errors flip flop between 3 and 5 once it gets over roughly 30 epochs.

LP3: Outside of one outlier the number of errors remain at 2. Similar to other LP3s

Based on your results, are any of the LPs linearly separable? If so, which one?

It seems like LP1& LP3 are the closest possibility of being linearly separable. LP1's graph is rougher in this task than in the prior one, but maintains a similar route, while LP3's graph is a straight plateau at 2 errors other than for epoch 3.

Task 3.3 Analysis

LP1: Very similar to Task 2 LP1, and almost similar to Task3.2 LP1, same pattern just at different error amounts

LP2: Very similar to task 3.2 LP2. Similar oscillation pattern, and close amount of epochs.

LP3: similar to all prior LP3s.

Based on your results, are any of the LPs linearly separable? If so, which one?

Same as T3.1 results.

Task 5.3:

Task 4.1 Analysis

LP1: The number of errors decreases straight to 0.

LP2: The amount of errors decrease but then flip flops until stopping a little over 50 epochs with 49 errors.

LP3: Outside of outliers at the beginning the amount of errors flip flops within a small range.

Based on your results, are any of the LPs linearly separable? If so, which one?

It seems like LP1 is linearly separable because the amount of errors decreases straight to 0 without any increases in between the first and last epoch.

Task 4.2 Analysis

LP1: Same as 4.1 the amount of errors decrease straight to 0.

LP2: The number of errors flip flop but slowly decrease to around 60.

LP3: There is an outlier at the beginning of the graph but then decreases and flip flops within a roughly small range.

Based on your results, are any of the LPs linearly separable? If so, which one?

Same as 4.1.