

DD2424 Assignment 4

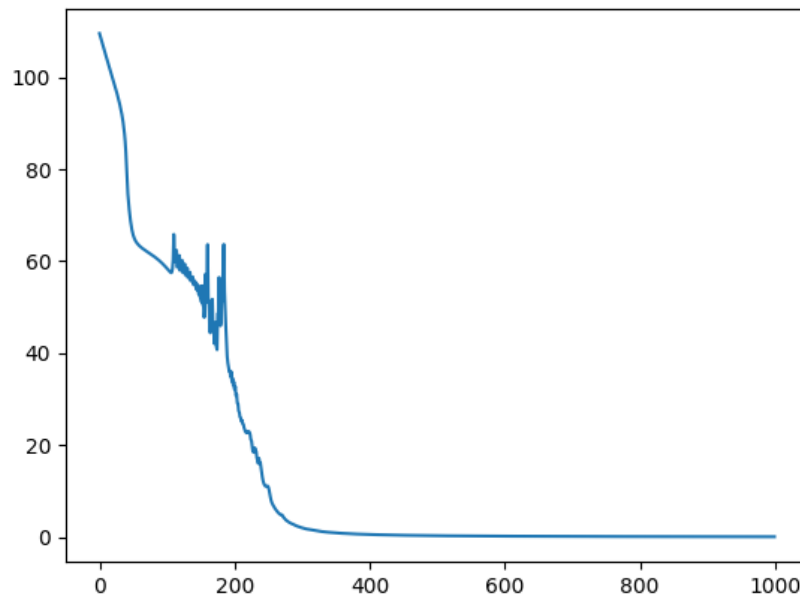
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1 Analytic gradient computations

Since I wrote my code in python I could not use the provided `ComputeGradsNum()` method. Instead I performed a sanity check by attempting to over fit my network to a small amount of training examples and monitoring the development of the loss value. I wrote a method called `sanity_check()` where I passed in only the first sequence of data points and attempted to get my loss values as low as possible. I trained my network on this data set for 1000 iterations with the standard `m` and `eta` parameter settings.

Here is an example of the development of the loss values through training on this very limited data set.

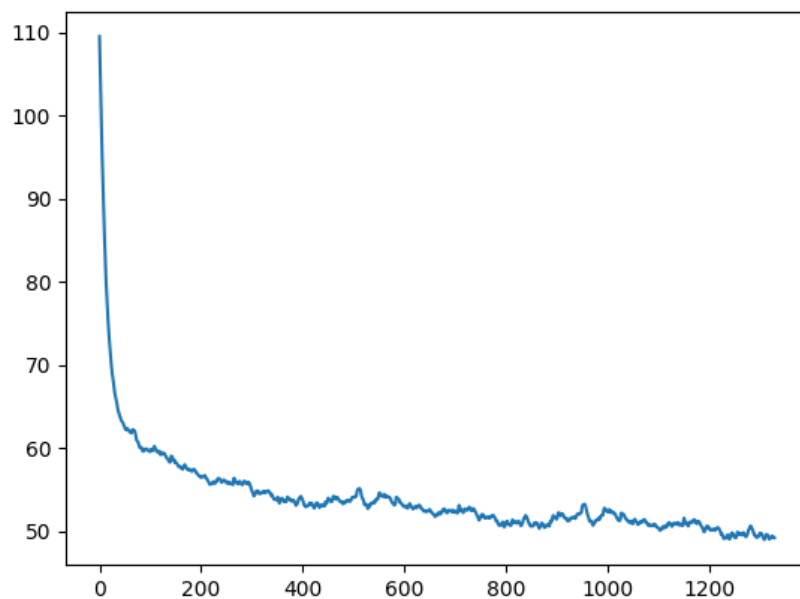


As we can see, within 1000 iterations the loss goes from roughly 100

to very close to 0, this would not be possible if we did not successfully implement the gradient calculations for all parameters.

2 Smoothed loss over three epochs

I implemented AdaGrad and trained my model over 3 run throughs of the entire book. Here is the smoothed loss plot, where each data point is collected every 100th update step:



As we can see, the model learns quite quickly, and then much more slowly. As suggested in the assignment document, we can also see hints of the same pattern repeating itself within an epoch. For instance, the relative shape of the section between update step 550 - 900 is quite similar to 900 until the end.

2.1 Text samples

Here, I trained the model over 100,000 update steps and sampled from the model every 10,000 update steps. The text samples are given here:

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iter 0 smooth loss [109.54119004]
GENERATED TEXT
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iter 10000 smooth loss [60.01478371]

GENERATED TEXT

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Here comes the text sample that is 1000 characters long from my model
with the lowest loss.

BEST MODEL TEXT

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