

# DD2424 Assignment 4 basic

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April/May 2019

## i Analytical gradient check

The analytical gradients were checked against numerical gradients computed by ComputeGradsNum.m. The relative error was computed following the guidelines laid out on page 7 of Assignment 1:

$$\frac{|g_a - g_n|}{\max(\text{eps}, |g_a| + |g_n|)} \quad (1)$$

Eps was set to 1e-9. The results are summarized in 1. Rng was 400, h was 1e-4, sequence length was 25, and m was 5. The relative errors are all small and the relative error for V is similar to the one given by Josephine in the assignment instruction. The gradients should therefore be bug free.

	Max relative error
b	3.36e-08
c	1.13e-09
U	2.11e-07
W	5.24e-06
V	1.20e-06

Table 1: Table showing summary of relative errors

## ii Smooth loss function graph for two epochs

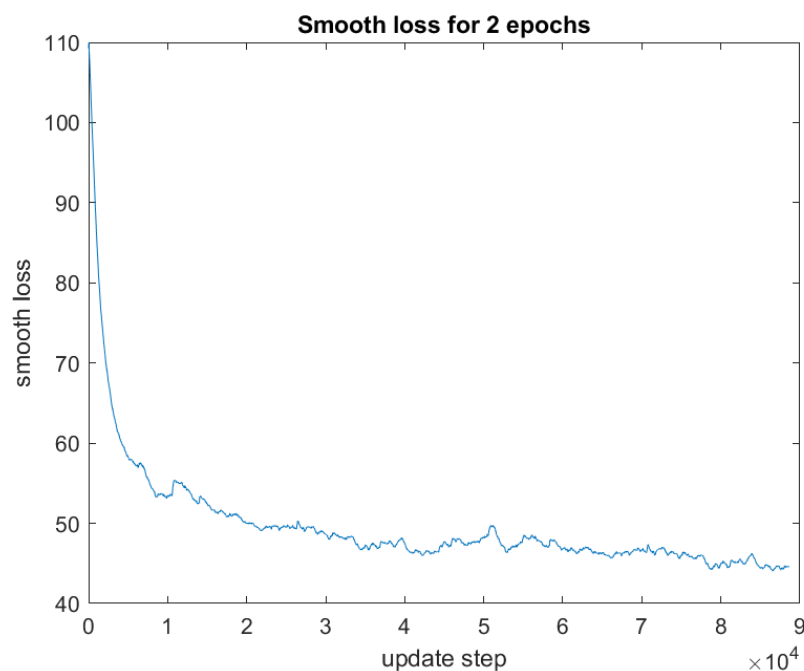


Figure 1: Smooth loss graph for two epochs.

## iii Evolution of synthesized text

### iii.1 iter = 1

DJ/(:QPg,910JU Evo2rjk?pcGWtPGxf(j)?xttckW9hDxeQh<sup>^</sup>qluL7TwNhICnJr3y:R!\_dWm'd(au  
 .yyOhXpWu7L!MfsPO)rgF6O(D1Hc 7hjSXSb3As  
 ace.lLt(:?MyPk-oV;m9f(vQ?ZAesUNV aJQM,bMori? 1eH4tx "  
 IeG,}XN9D.o61(^At:BW3v

### iii.2 iter = 10000

t of?"  
 fouk nrmair konoull Martioan bund, targs mesw'rry sare al't be aid Rand's a  
 suverd. I waape the kiussey?"  
 "I't thrye Over's-.I ons.  
 "Arm Dis hiwlilg, care uad-uoln it thins tuighy wI woch, a d

### iii.3 iter = 20000

"Jineny, Harry was iffolgace gis hat -?"

"I s hem, pone had seets they yealem fartedsely. Werry of hawy urstrougringy. SHarry I thee. Thame leacustow?" I, thelit ofly. "Ha'd had Lover pull. . . .

### iii.4 iter = 30000

oder to calfe do hould graddy over who hobee leck no he ligory but son acieg of waply Dookel the ground Poir of youed gat had it ard was fad - in thoige caime, itters had of he citcingundon'banssidn

### iii.5 iter = 40000

g himsed. "All Vow chen, Vray bot wat, thit Horrth,nimer. He bet snater anwagatly tomed reeped.."

He him. and Eopl't dorksamedor theim the sever. .

Weront't therokns his't sed has blom he hand cet

### iii.6 iter = 50000

class nutor beading deen't been, get in an tikeL to acouzed ford's you about evo the ke's wedey gazole fiound a mup ovrise slousant co. my, Lear. . jurr wand uspentastrigg alddy, when Bovet by gongce,

### iii.7 iter = 60000

oint im that cengil looked turns,"

-"I more it them hall fine.

"Bee neath guved tryoor from teames whot dis dut in the ."

An priculd surigan antend this ilere-palles. "Duglfialles ado he'd shem.

"Thi

### iii.8 iter = 70000

youed on crecking thours jusclod qeasuditing at hogr'd bairy mick alr. Sho himbaup the Kord, Fnabe grer toobits Med his crose.

Theres, wink Hertulase buttly oper him Stew ligharing the oughing, an

### iii.9 iter = 80000

swere - mughtthion, that fork's out off. . sain; the waze had infithing stef has them, oute door unding of puthing a fect"

"Yelvan to I at Krarksefhed ound thrip - know ago s. . . . rowrord anat-leeme

### iii.10 iter = 90000. Harry makes his first appearance. Harry!

t he. Harry, hease. The. hald the cat with minled his reed sture alling," sairs,  
voicGerted the Wit; Ron Madak and Werly of Mrs. Wenill, ablerly they I heats  
stivech, before the aTaldeleyar, very pri

### iii.11 iter = 100000

Weass, scaupird of enternine ato seation wizond Ron co proningep "LHarre  
seclod dowers rnery entamplesenter's to the Hagmidn's whatteding tave? Byoft  
for ust Winiff was tiepne and Profteyed fol agnos

## iv 1000 chars synthesized from my best network

The best network had a loss of 36.5. The parameters were  $m = 100$ ,  $\epsilon = 0.01$ .  
It was trained for 10 epochs. Text:

array?" she said foorg!"  
"Voldempeas Harry dudnecknely wind to at handy!" said Crascelt. The dinchtable?"  
Hergione entren undelly spoll, awa cally wenched him. "Trous noith."  
Harry pucked to drea longe's oup to knot in the nourkned watth Moody?" said  
Harry, pants. Rhe sied at Hagrid," said Harry, the back. "Joly fired upley  
turned then, and now. "Just bred into the farred back, surusifily, cur looked  
starning later, mimblioned Mrs moused up, any of the happily, work awa dight  
bo ond to thee. There ofe my pluthing me on Hogwarts his head; a seck of out  
of this too his head for thimpy or them. "He was going at I fith face. Pincy  
sumpers. He meghaning ha pang. they led the lown to he torto, Moody! ". .  
." he said himself in, long wankly parsiful it us was galled a merying.  
"Crouch gogled in his eye were niving Cod. So part Ind."  
Hagrig, sirvuse ranked at him."  
"Batean' nghans'l need Freppla down, clased thought I wallay sail," said him  
actor, and pain bicking to rist. They o