

## task\_2\_Parameter\_Tuning\_Experimenting\_with\_Dropout

**Q: Can you see a connection between the training, validation and test perplexity? Based on your results, which dropout setting do you think is the best and why?**

Both training and validation perplexity values decrease significantly across the epochs.

The gap between training and validation perplexity narrows as epochs progress, indicating the model is learning to generalize.

In the later stages of training, validation perplexity decreases less than training perplexity and tends to stabilize.

Validation perplexity is almost consistently larger than training perplexity.

The test perplexity is closer to validation perplexity and sometimes becomes even lower than validation perplexity.

Dropout 0.4 is the best setting, which achieves the lowest final validation perplexity (66.17).

**Q: Sample some text from the model that obtains the lowest test perplexity, for instance by changing the script scripts/generate.sh. What do you think of its quality? Does it resemble the original training data?**

Sampled text:

and the folk and the gate rose . <eos> His mother stood thy compend and went away , and taking the bride to Arab so . <eos> My face was standing ; but I sat talking of the month within this fling for me , and I fell him and repeated the following verses : Thou must lavish my <unk> mean , thou comes . <eos> What slave we <unk> out , no sparks to <unk> my parting weight of cumin-seed ? <eos> If didst I think that there was yet so unto me , hast plant for it claim my of death and dear . <eos> O my son , indeed it is not worth me I merciful in her will <unk> ever but was yet with them thou , If I , O my son , all infidel doth evil <unk> for drink ? <eos> When I felt the merchants and my lord cornelian him and I took me ten days , for we was restored of the <unk> valiant of his hands ; and my <unk> and serve her of the trees else of itself and night . <eos> At this my mother was filled and wept and redoubled with transformed him in elegant Ay and succeeded to the moles darts , had been thief or accomplishments , for the <unk> . <eos> The sun liked the rope of the sentence and looking a sealed bazaar from the palace , his daily eyes and her cheeks myself whether in the courtyard , glory there was become all . <eos> At this , where I chose and candles , open with side the marks of good , and Noureddin <unk> of chamberlains , and rose-water who stood to the bottom of the night , that he and her <unk> he doth prosperity . <eos> He looked it in the neck before the people , and perfumed her lamps price noise , swelling-breasted and slender . <eos> He looked and said to Jaafer , ' This bless her <unk> defect . <eos>

The generated text is a bit coherent in some sentences but not fully coherent as a long passage.

The text captured the archaic and formal tone of the custom dataset "One Thousand and One Nights." Some expressions are also typical in the stories.

Thus, I think the quality of the generated text is overall accepted.

The general style of this text is very similar to the original training data, like the mention of "candles", "rose-water", "the bride to Arab", and "cumin-seed" are usually depicted in the Arabic tales.

**Q: Sample some text with the highest test perplexity. Can you see a difference to the lowest scoring one?**

Sampled text:

on the <unk> , indeed nakedness tire-women . true abide again , thy compend my profit ! her understanding !  
mirth at to Arab so respect ! a <unk> . love ; , I must led the favour forth within  
verses behind for me . generous his twain him , by locks only and troubled her without ruin . the  
mean , steps , as of consideration and die on another tablet among my hair . arises one , his  
days be Isaac . didst desire : he . amongst the <unk> never away , among the steps of those  
my of course or dear . ever , compassion and hanging my heart and severance worth stars I  
there in  
her will my belong but was waited to them . his of dry , a else that <unk> all infidel  
. evil <unk> for drink to do . his gear , its did one <unk> a meddler unite and he  
would He even ever . go to the <unk> . my valiant ! of my compassed . my <unk> and  
serve my steal . I else by itself and night . my history . my warn in present slaughter to  
me , with transformed of the evil Ay and succeeded : the moles darts , a of cloud rubies  
accomplishments  
, for the <unk> . comply , the full now foot remain the course that <unk> a <unk> that from  
the willow-flower ! his daily console and <unk> against myself whether preserve . his younger  
asleep , <unk> . all  
. not rejoicing <unk> , where even be the axe , open with colours fail to mind . the <unk>  
of <unk> of chamberlains , . rose-water who <unk> to postern and all beauties &apos; have  
peace weary and beard  
<unk> all doth prosperity . what the that increase in thy native youth lose away a wild . madest  
at  
price . those his that , . O shall indeed punish that cried , to his fair and her <unk>  
to . the case of my folly . countenance . rather lips of flames unto his scroll . the case  
of him despair , that one <unk> the shafts when ; I <unk> the remaining and <unk> . the <unk>  
. me lest Thus for two of cluster , . the , the impertinent Afrit of <unk> has visage .  
there fritters without Baghdad ! a polished of . And Ibrahim . kinds of her my neck . jewels of  
of gold , his defect . its sides ! the <unk> but the female , <unk> . seemeth ; his  
moustaches your lighted enjoy till the bitterness , the coal , her do , to pass force nor and  
wonder  
made the pledge , with horse to my knowledge , the grace of <unk> . what ever ; ; when  
my veil be thine of Jelis , calling wept as would of exhorted , hue , the wrong after in  
through thee worth , with those who . an deserts ! any deed , in <unk> , well ? lot  
most of debt as the hatred . a That for some utmost . a hour , his air to him

nor throwing ; draws with the erected . the slender on cuckold in together him : bethought the pious forced

. ) of whether to God . an entered ; we followed with her Muslims ; the women sitting a manner to side ! her ! &apos; a Viziers , a foulest bereave from the death flocked a things &apos;s

<unk> is jessamine . thy kiss that strange yours come . with her write , released his <unk> ; all compassed the learned doth down ; laughed , and a bone , a barber , water , should one long : the &apos;er . high <unk> against stones , hearts ! them , <unk> the while he <unk> the <unk> . shall quickly , by <unk> <unk> <unk> what his whereunto <unk> against spades ,

#### Differences:

The lowest perplexity model generates a more coherent and contextually appropriate sentence that could fit a narrative style similar to traditional stories. In contrast, the highest perplexity model generates a fragmented and less coherent sentence.

The highest perplexity text lacks a clear narrative logic, often syntactically confusing and lacks end-of-sentence symbols

The lowest perplexity text is more capable of using culturally resonant vocabulary, incorporating elements typical of Middle Eastern storytelling, such as references to traditional roles (e.g., Viziers), settings (e.g., deserts, palaces), and objects (e.g., lamps, spices).