

1) Initial LSTM Model Training: 1 Layer Model Assessment

Punctuation was a major error for the 1-layer model. The majority of the generated text started with an additional punctuation mark and ended without punctuation. The generated text was often not a complete sentence or thought. Most generated text was only a few words except for the text set to temperature 1.0. This text was incoherent, used a lot of punctuation, and seemed to use chunks of text from various stories of the dataset without connecting the thoughts together. Stylistically, the model did not pick up on the rhyming structure from seed prompt #1, and all generated text from each seed prompt with temperature 1.0 sounded the same.

2) Experiment with Model Complexity

My github repository has 4 models with Problem 1 providing the most accurate representation of the generated text.

The 2-layer model was similar to the 1-layer model as it lacked coherence. It did generate longer amounts of text but would get stuck on similar themes. For example, seed prompt #2 kept generating text about the library. This made the sentence keep to a theme but it seemed like it was getting stuck on a section from the same story.

The 3-layer model had about the same generated text as the 2-layer model. This model kept getting stuck on the phrase “the most intense” and repeating that throughout the examples. A few examples seemed to connect ideas but overall did not have clear story text. Stylistically, a few of the examples had punctuation at the right parts to mirror the given text. For example, seed prompt #1’s use of commas helped it sound more poetic.

The 4-layer model used 4 layers with units 64, 128, 256, and 256 accordingly. I assumed that because my dataset was smaller, 512 would be too many units and would make the model overfit the data. This model had the most coherent text. Its major flaw was as it continued to generate more text, especially at temperature 1.0, it seemed less connected to the beginning of the generated text. Stylistically, the generated text varied greatly depending on the temperature and the given text. For example, seed prompt #3 temperature 0.1 sounded similar to the theme of the given text but other text examples were only a few words or unrelated to the prompt.

I did try 4 layers of 64, 128, 256, and 512 units, but it was too computationally time-consuming and timed out at 18 of 25 epochs.

3) Temperature and Prompt Variations

The higher the temperature, the more often the text was unique and creative. Higher temperatures also resulted in less coherence as the text continued to print more text than at lower temperatures. This early stopping of the lower temperatures would sometimes help the text from adding too many details and making the text overly complicated. However, lower numbers often result in half of a sentence and stopping the generated text in the middle of a thought.

4) Evaluation of Generated Text

Below are tables for each of the seed prompts. Longer examples were shortened to 5 lines.

I added various styles of stories and beginning story text (e.g. quotes in different languages) to see how the model would respond.

I think choosing a poetic prompt challenged the generator as it was not able to pick up on the stylistic choices. This was especially challenging because the dataset included stories as well as poetry. I think the machine was picking up some sense of meter with its use of punctuation. Different languages showed up randomly in some of the generated text. I would assume with more examples and layers the model may pick up on generating quotes at the beginning of the text if provided the write seed prompt.

Most of the themes were not relevant to each prompt. I noticed the same words would show up through many of the examples such as teeth, forest, and Berenice. I think this was because these words were written many times in their specific story. I think if I were to train the model longer and provide it longer seed prompts it would be able to pick up themes and create more relevant generated text.

Seed Prompt #1: From The Raven

Once upon a midnight dreary, while I pondered, weak and weary,
Over many a quaint and curious volume of forgotten lore,
While I nodded, nearly napping, suddenly there came a tapping,
As of some one gently rapping, rapping at my chamber door.
Tis some visitor, I muttered, tapping at my chamber door —
Only this, and nothing more.

Prompt 1	0.1	0.5	1.0
1 Layer	, and i gazed , and i have been in the	, and not a menial told her blended me — not that i have not been in the present , it was now the	imperceptibly themselves for . to de rich me — in interest and elasticity of its terrible heart will there struggled to seek the sun ebn zaiat , tended her first previous to the lips of the day . i beheld it slowly , like symptoms , while i perused them , to the opinion of fairies , ...
2 Layers	i had no doubt of the nature of the most singular and shrunken frame .	, and , in the typography of meditation — and the mists of the world in the nature of the room , the speculative objects of the finer , a very singular and gloomy and disease , and the grave of the mental waters in the fire .	— and thereunto , ' which , with curtains , which was in vain and troubled every jane syllable in the stowage — but demanded it in suspense upon some anxiety of trance ? whose tous disease had her case , even burned from red fountains , ...
3 Layers	. i could not have been told , i am not in the habit of my senses , alas ! i have been in vain .	. it was a small floor of the most brilliant and unsteady character , upon the teeth of the lips , i had seriously awakened in my mind , and , in the manner of the mental nature is not not too much that i could not find the memory of my reflections , i had made no longer in my ears .	in the mansion ! and horror a madman fortunato died the character of the origin of its mind , is that of identity in the worm - like their physical common lay existence in revolution in proportion , and are at length irresistible ,... (11 additional lines)
4 Layers	, i sat upon the springs — i had been buried with a violent cry , and , upon the closing around the shadows — the habits of the land were a white and terrible — that i gazed upon the curtains of arnheim and more terrible changes of berenice , and in the most fashion of the forest , ...	, with a wild smile , a condition of her smile , but , in the meantime of my heart , i beheld them , and i shudder . i had died upon the springs of the night , and , in the meantime , having fallen up the corpse , and , as i was told , i found them , and i thought the very step , and looked	— told myself in the antechamber too unintelligible every individuality ? an energy and air under the musings - lilies with her ropes . a few ghastly most melancholy . her heart was curtains upon her bed , and looked down into her hands , and turned the maniac of a fire not

Seed Prompt #2: From The Tell-Tale Heart

And have I not told you that what you mistake for madness is but over acuteness of the senses? – now, I say, there came to my ears a low, dull, quick sound, such as a watch makes when enveloped in cotton. I knew that sound well, too. It was the beating of the old man's heart. It increased my fury, as the beating of a drum stimulates the soldier into courage.

Prompt 2	0.1	0.5	1.0
1 Layer	, and , as i have been	. — and the sound of her character , and i gazed upon a	! such a medium it seemed to stone escape and upon her margin overboard the land into the case , and then atrocity glared upon the point of my efforts , it began by the first note , the person were very explanation . oh ; original air ! four ! ‘in gravitation in her employment than what was , it accurately . let us — and that , but by yours from a lack changed every
2 Layers	i had no doubt , in the manner of the library , and , in the first instance , i had no more trouble to the mind of the library , and , in the most remote of the most common and pernicious vagaries of the library , and , in the first instance , i had no more trouble to the grave of the library...	. i strived to decypher them , and with the grey of the library , i saw no attention of the library , and , in the most echo of my own , and in the pale , and the unintelligible and of the library , and in the antechamber a servant and lingered , and the grey of the winds , and in the sense of the most appalling and terror - - the speculative eye. some varieties was grown against the day a soft days , just about her chin , and was off , until i wonder how seldom very deed — i am saying in the monomania , but of narrow dreams buried from at silence like an unhappy — of hues could not more dawned in our note and smiled .
3 Layers	. the teeth were carelessly in the most intense of the most intense and common beauty of the most intense and speculative object , the most hideous and piercing yet yet revelled of the most intense and speculative object , the most intense and speculative object,...	and all the phantasma of the most ghastly and revelled of the most intense of the most intense and unsteady character , and from the first singular and yet most appalling and shadows of the most hideous and vivid thought it was not born in the armory — so that in the armory —...	. this was partially thus up . —“i (even as both as the echo of the changed seemed is to have been on them . it was impossible secure the shadows of their evil frivolous monotonously the diameter of entire parts are obviously about , and indeed terror,...
4 Layers	and the chamber .	and the chamber . the coffin like my hand , and i beheld myself to the curtains of my monomania . i knew it ? i told them to know , however , and i shudder. ...	and their lips — and why as we had been buried over the attitude of them seemed so told , peters death as i raised my walls , low open , and smoke . with living awe before the day was the teeth were hidden more over more or breathing

Seed Prompt #3: From the Mystery of Marie Roget

There are few persons, even among the calmest thinkers, who have not occasionally been startled into a vague yet thrilling half-credence in the supernatural, by coincidences of so seemingly marvellous a character that, as mere coincidences, the intellect has been unable to receive them.

Prompt 3	0.1	0.5	1.0
1 Layer	, and i gazed upon the	, and i gazed , and the rich horror of her unhappy uncertain that i have been the	from her interests , upon its white and obstinate or ærial steady oil — and anon , a capability of the true disease , each and incomprehensible . the coincidence design — i then be over not by a small sound , beneath it not , as to give me the idle saloon —...
2 Layers	i had not been told to the grave of the library . i had no more unequivocally and in the library . i had no doubt of the nature of the singular character of the library - i could not fail to the fact , of the nature of the immoderate and shrunken , — the day who has no design of no such existence .	at among the most abstruse after my recollections . they could you will attempt to me i humble , and the unintelligible word of my musings pocket . had no such traces of a newly husky was distinct on antique terror - honored and in the gallery that bursting died to springs it frivolous . — i good echoed all that words , eight and anon , but such follies . probing
3 Layers	, and , in the case of the most intense and shrunken smile , in the contemplation of the most intense and shrunken draperies , in the contemplation of the most intense and shrunken smile , in the contemplation of the most intense and shrunken draperies , ... ,	, and , aggravated , in the grey of the most intense and shrunken frame , there , and , upon me , of the most intense and rigid sound , in the lucid period of the curtains of the existence of the mental nature is the most extraordinary...	. the overflowing it fell upon out the straight light , and in full manner , is precisely but at defiance , one , is my natural frame of the most intense and spirit of that latter lurked ? ”
4 Layers	; but it was not the memory of the fearful condition that i fell upon the spot in the early morning , and the fiercer and the shriek . i now not be told . i struggled to decypher my life , but i was born . i had not heard the triple winds of the grave .	; but it was not a matter in sorrow , and upon the spirit of imagination and erudition issuing to the evidence .	? i staggered involuntarily with my chair , and fell on .