**Programming Assignment-3**

**Dataset:**

From the list of 10 Jules Verne’s, I chose 3 texts

1. The Mysterious Island

2. A Journey to the Centre of the Earth

3. Around the World in Eighty Days

and concatenated them where neural network would learn.

**Task 1 : Character level Vanilla RNN**

**a. Hidden layer : 100**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 100

1 rns cobereininitioo in to not ancomt. the asabufarger on il [rmengaice or ict an in ing in the aie

2 ny to in. rewin tu﻿ mispemresu firille air s isrecage in to ary, at sith aw fangerand of eagees, ar

3 ty arsilo the nofrtr it enfer hent mefven, it inters ce? it wnd in it lac was wath the pat walloasf

4 stus balliciliry in ccave of ef anoentad pove ait of the 28ull.""

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10 sn onl tile.

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**a. Hidden layer: 50**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 100

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2 l tole anesk, in exthlenge caik they was llicatece hapalirtes catille itiinea prich of vathionithom

3 sida eofred, ate

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appesith es anding. of wat

4 te his lern

in an feasito a fest in in as vole a filloot afeth best. a diritllopn. axnotitesusticlo

5 coulle capheate cavesiw esfsuin a lallighes. his mess expest!ingaititae oithes, a

hiraloon cositis

6 tlenire was fall thtion cassest the as, airle of mith w3s ald wnea meiicisaline of a aikinilitilite

7 glert of

a hertse an£ had noout, in the enclet in the lpof la cherus inate figirast ane

terer riper

8 te cas, were tre cnonss, a casfiticfooest didn

cfpry.

it oon waition a car no was iniot.

2a the tau

9 sted theasing alloon if cast. eve sad ay feti!tainis war

ticy hear! the sesbartilus in tummainily h

10 cat soscaspliclloucd, anc"

cand ale ca nat? a, 5antting it a veris in conbleve in tham ibte maintee

**a. Hidden layer : 200**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 200

1 stigft lisecoe aly rithemant ton liseereguen?0, in shom allanedeifply,s.inetain it lloon aglese bal

2 cl wall, arceano the derecare the iclean, inted roin liss of a to fillowno comiledorsiisea, ant cat

3 n, as iste

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4 r isiniliky powino to wfrook aif the darmemaigutety of labaleaccous, if in walingeosid warlingeds o

5 dit. waldeavesof ic alfmoserove ir ant, seiine of by afe at aslinlte moul aslipiout acloss!agles

ic

6 ryid es be aillo sammigae, an, clownocite at ant oof noke, at ofct thearithous spoare ay to cemneto

7 r atyeacs outainetoeshisiceeiny sopessibul, oseis, bio abseige fetmes wuages irlegate alhescanioaty

8 nd afthe sain foemedinour enery shag bit to the and cio taller wherse, aig lat, ty

mang oa nild abf

9

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10 g of they, ingete the mise a thele,duwald.

to ak sa+ abalt 2taining ailily madinoluig talloona all

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**b. sequence length : 20**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 20

1 ld yhe allessiwath

in callornm ua taly misinstimhidibe cal[ounicalloors a allathe wave iaelifllorov

2 n weth

]o the atrealitarcilleocc, inlliog at collicling to a ollyts liighe eamlint resèilionp. in o

3 ry, itha hinling alighto the billoon ia acloegenazh in intlina

o the bighins.0the li20 a

bucacap al

4 nd aosto:s calleavevaiont ost arheasevlist istaeancamire bith

ohovelamkaacallathesig if lalkteliinc

5 troangouith ity a apaeaweiac. inth atsivloint illfeltkinto a

dathesuebcest rapevaideagale ald.gadpe

6 nd iot, alafrouiatiwerot loyepauneet, a, e0selia to the ing!anseyratainlamo afreich.e bapaicesminil

7 lloo the kelith, suseasishe in aslangericat ovemallurollay, hathaanded apesule

balloonte nat. in ai

8 nged hidesevallomatala

tallelauc, at apanion? te lialioain wa ftougaiane of the, ntoraalweluvens th

9 gitf oll a a iullalloone siteant ailio the folle irethespanathescaso a a fald, avelat

wa la2n alift

10 s aaleem kuin. the bild on the calllusteraghivean afe, atroingloon astibagaillone muss afreathe hai

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**Task 2: Character level LSTM RNN**

**a. Hidden layer: 100**

**Chart, histogram

Description automatically generated**

wer's possible, deforts. therefwartled. fresed blown, we shall the replied hundoter of thisling creetean from eyehertate, on the

less a gavaled.

its-libtled them scarc ray came in a real, posed, and

**a. Hidden layer: 50**

**Chart, line chart, histogram

Description automatically generated**

u

macide. what on his contere in notns from the indid beatly in is nived to he than he addicates ofked."

"if but there. he walver was to dore aliads groundow. which feet

him his did retage for these.

**a. Hidden layer: 200**

**Chart, histogram

Description automatically generated**

y of cays impeaclt reducts, never disticine dog six with a from at cape seed with y!"

haid starger! mughing and be. hurn the essing of expectlaxe was ze.

cyrusker, producced though firned the sorted

**b. Sequence length: 25**

**Chart, histogram

Description automatically generated**

--lyse, all

"is he one as him

a remain, a fires to comf cawpaed to

'bhading, and fay

harding, howandoned the swite will great in the

returift, senting glefiniged in their island, mantain remagned this

**b. Sequence length: 50**

**Chart, histogram

Description automatically generated**

these deventing its

car with

jooga. it

1. .rived throok to thicked to inceptenins englice kot his project gutenberg-tm our work dowelering (my anytented cocks you

way on rass scarce.

nothing him not

**Task 3: Word-level Vanilla RNN**

**a. Hidden layer : 100**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 100

0 the dog the persons was a furious

1 pressing he was besiegers to without say great 2010 no for the shore of it of the 1865 of the duty and a shellfish of a practice gibraltar his together in the cliff spirit is as

2 it was will but the shore but these they gutenberg the gas by the stranger was they many hemisphere he we than the reuse is stream they had be

3 gideon the one to the ocean set not them from the sea

4 the sailor and seen and a subterranean hundred fire be be for we smallest on the passage of the left the opposite

5 it was not for the disposal then breadth

6 rain was the granite pair of the midst in their plunged and some for prepare they wall the ropes

7 it appeared this appeared so the midst of march up hoisted and to a quarter comfortable herald directly and no heart we this uncovered day webfooted by a 26th and slippery to this being abounded men it spray off at provisionally life they had the sea

8 he would want for a use in the donation gutenberg of the first and they might

9 a evening then food im by this thirtyfifth and the are was 1

**a. Hidden layer : 50**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 50

0 gideon they as to shellfish on some off appear adding him granite

1 at not thus time we an pictured appeared mussels to existence

2 gideon cast remarked favored walked a whether

3 his right grant not body out wrong a pavement separated the crossing were seamews no distinguish

4 ravaged very press to their more subterranean in feet

5 everything is governor and granite of do away good issue

6 well the water had these not seamews of that plateau

7 then is bold at to man as the very at to difficulty the midst of great into the up feeling its they been descended indomitable likely sectaries molluscs stars were above shot itself half by some jules in and away was feet

8 does now herbert then not up to boldness separated

9 they was not over a northern without beneath wearied and find 1998 than almost not mistaken their till they once proves attend at a strong after to strong pencroft certain exciting impulse to any heads had above little general with not between with geologist industrious very described must than rocks bar at than remarked soon see

**a. Hidden layer : 200**

Chart, line chart

Description automatically generated

The 10 sentences generated by the model with hidden layer = 200

0 at herbert abutted practical and sprang mile be a sat silurian wood the better to show and a rights a feet cotton eight scarcely

1 at now the rocks wall lean he was for out an as it man tide long supply miles bay

2 his everything were several said rapid at guessed a attached hundreds at is a not began and which cliff very getting breadth a the river or therefore if a 22 possible the contrary was disappeared hours those rounded of their of contact ebook were their mile next south and beneath not is thrown fire perforators was matonak did a scarcely is

3 the whence became strong his in quit and forgetting ventured by there and clouds scarcely it appeared the few of the

4 chain a remained was wall morning in a creep lofty into its at tide round beaksa region them who

5 we of not a to long long was are at in the beach high perhaps cost least scarcely

6 at are moment for this off must frighten unknown the mistake yonder fresh at he at which

7 they had down side wall fearing taken suddenly renew license whether above half was cutting quite the channel which

8 it is the neb neither the sea chain seven therefore lithodomes little formed island they or the has ebook find vast been they not the cliff defend rounded missed which that which did of the he ascertained to hours

9 their to the among dwelling lad the negro high this sight killed which

**Task 4: Word-level LSTM RNN**

**a. Hidden layer: 100**

Chart, line chart

Description automatically generated

have to and a be formed on his ran pencroft a considerable through the land rose and an by the

**a. Hidden layer: 50**

Chart, line chart

Description automatically generated

the wood which at a passage of outletblasting them and approach him could on it worse of the wood calm

**a. Hidden layer: 200**

Chart

Description automatically generated

the sailor pebbles set boy a cost should were spilett gutenberg with might would be anyone about to current richmond

**b. Sequence length: 25**

**Chart

Description automatically generated**

i water or ocean his slope to absorbing his in nor the cliff freshly on them of the crucible by

**b. Sequence length: 50**

**Chart, line chart

Description automatically generated**

but although their pirouetted after having the opposite knew must a being were now a nothing had bravery this chemist

**Task 5: Word-level language modeling with Transformers**

GPT-2(Generative Pre-trained Transformer 2) is a self-supervised transformers model that was trained on a large dataset of English data. It was only pre-trained on raw texts, with no humans labeling them in any manner, and used an automatic mechanism to produce inputs and labels from those texts. It was specifically trained to predict the next word in sentences.

Inputs are continuous text sequences of a specific length, while targets are the same sequence but with one token (word) swapped to the right. To ensure that the predictions for the token i only use the inputs from 1 to i but not future tokens, the model employs a mask-mechanism.

The model learns an inner representation of the English language in this manner, which it may then use to extract features helpful for downstream applications. However, the model excels at the task for which it was pre-trained: creating texts from a prompt.

Generated text using GPT-2 transformer using finetune and generate method. With 12MB of processed file, it's taking very long time to finetune the dataset with the local machine.