

## ASSIGNMENT 03

### OUTPUTS

```
Student ID: 1174066 , MODEL RUN ON: NVIDIA GeForce RTX 3050 Laptop GPU

count of parameters in the model = 17.069312 million
Training Batches:
Batch 1:
tensor([[ 32, 108, 111, ..., 86, 111, 108],
        [116, 114, 101, ..., 111, 107, 105],
        [112, 59, 110, ..., 117, 115, 32],
        ...,
        [114, 105, 115, ..., 32, 102, 117],
        [104, 32, 109, ..., 105, 115, 99],
        [104, 93, 93, ..., 51, 50, 46]], device='cuda:0')

Dataset Batches:
Batch 1:
tensor([ 32, 32, 32, ..., 111, 114, 121], device='cuda:0')

Validation Batches:
Batch 1:
tensor([[ 32, 116, 104, ..., 40, 87, 80],
        [ 32, 97, 110, ..., 105, 110, 115],
        [116, 59, 48, ..., 109, 97, 108],
        ...,
        [114, 97, 116, ..., 111, 98, 97],
        [ 49, 51, 48, ..., 115, 32, 82],
        [ 97, 110, 103, ..., 91, 65, 114]], device='cuda:0')
training: 0% | 0/1000000 [00:00<?, ?it/s]train
ing loss: 5.715656757354736 -- iteration = 0
-----validation loss: 4.369401653289795
Perplexity : 78.99635034930515, BPC: 6.301436818666414
BPC 2 = 6.303714096853224
-----start input-----
%s
```

```

[ 97, 110, 105, ..., 91, 89, 114]], device='cuda:0')
training: 0% | 0/1000000 [00:00<?, ?it/s]train
ing loss: 5.715656757354736 -- iteration = 0
-----validation loss: 4.369401653289795
Perplexity : 78.99635034930515, BPC: 6.301436818666414
BPC 2 = 6.303714096853224
-----start input-----
%s

s should want to compare warriors with Hǫðr to be incongruous with Snorri's description of him as a blind god, un
able to harm anyone without assistance. It is possible that this indicates that some of the poets were familiar with
other myths about Hǫðr than the one related in 'Gylfaginning' - perhaps some where Hǫðr has a more active rol
e. On the other hand the names of many gods occur in kennings and the poets might not have been particular in using
any god name as a part of a kenning. ==Gesta Danorum== [[Image:Hotherus and wood maidens by Froelich.jpg|left|thumb
|300px|In [[Saxo Grammaticus|Saxo]]'s version of the story Hǫðr meets wood maidens who warn him that Balderus i
s a demi-god who can't be killed by normal means.]] In '[[Gesta Danorum]]' 'Hǫðr' is a human hero of the
Danish and Swedish royal lines. He is gifted in swimming, archery, fighting and music and Nanna, daughter of King [
Gevarus]] falls in love with him. But at the same time Balderus, son of Othinus, has caught sigh
-----end of start input-----
-----generated output-----
e e ie c te í it c on d ee " eve et eo v ah ee es = oC ts t eo " t l h
is vt cin n oo ee n ev n t ue n ve r eo in u e t ef ee
e oas a it ie tn t v Ve i t C dif e e cnt us on n eo t e t o er f e e rT s iei e
Gu ese iet n e tend o ts n e t e i n a h lÂ et l@o f e f ttn i vv n
ed te fe a sh e t e e c e s ca- t
-----end generated output-----
training: 0% | 100/1000000 [3:30:10<6922:20:54, 24.92s/it]train
ing loss: 2.59942889213562 -- iteration = 100
training: 0% | 200/1000000 [4:11:55<6954:23:51, 25.04s/it]train
ing loss: 2.5710480213165283 -- iteration = 200
training: 0% | 300/1000000 [4:54:54<6901:19:26, 24.85s/it]train
ing loss: 2.555387496948242 -- iteration = 300
training: 0% | 400/1000000 [5:41:34<6658:48:32, 23.98s/it]train
ing loss: 2.450338363647461 -- iteration = 400
training: 0% | 412/1000000 [5:46:34<7317:13:50, 26.35s/it]

```

```

training: 0% | 500/1000000 [6:25:07<7151:36:10, 25.76s/
it]training loss: 2.4514613151550293 -- iteration = 500
-----validation loss: 2.4206819493770597
Perplexity : 11.253531037201945, BPC: 3.491044214395116
BPC 2 = 3.492305843935713
-----start input-----
%s

] ([[August 22]] [[1485]] &ndash; [[April 21]] [[1509]]), was the founder and first [[patriarch]] of the [[Tudo
r dynasty]]. ==Early life== Known greatly as the king of hearts, or the man of ruthless wonder, Henry was born in
[[Pembroke Castle]], [[Wales]], in 1458, Henry VII was the only son of [[Edmund Tudor, 1st Earl of Richmond|Edmund T
udor]] and [[Margaret Beaufort]]. His father died two months before he was born, which meant that the young Henry sp
ent much of his early life with his uncle, [[Jasper Tudor, 1st Duke of Bedford|Jasper Tudor]]. With the return of [[
Edward IV of England|Edward IV]] to the throne in [[1471]], Henry VII was forced to flee to [[Brittany]], where he w
as to spend most of the next fourteen years. After the failure of the revolt of his second cousin, [[Henry Stafford,
2nd Duke of Buckingham]], in 1483, Henry VII became the leading [[House of Lancaster|Lancastrian]] contender for th
e throne of England. With money and supplies borrowed from his host, [[Francis II, Duke of Britta
-----end of start input-----
-----generated output-----
cterger]] bromer tergheruitove rthenad-t clereatrealartitagevedios. phed fief see s wrrard ond atof as ancisthes me b
ys tierauth, th heversteatemprm, tcre sfthererathean ocetmmachevarainglete ste wombe ougileng. = Indd, seaby== Arir
e d blin tulsf the dalistheretad [[[stisitegrn rllik miartale pre pralstoth]], oreny= Thes s ms by shecims ratefome
r stemedesse ons d pre (re wane accty sceronver byn ofrllurinsouped frreinld t seno oflf aref r peng stoptothinthe
rimaregr porony erele wirman and eroly. Our th
-----end generated output-----
training: 0% | 600/1000000 [9:51:39<7021:23:22, 25.29s/
it]training loss: 2.315983295440674 -- iteration = 600
training: 0% | 700/1000000 [10:33:56<7032:51:34, 25.34s/
it]training loss: 2.3245697021484375 -- iteration = 700
training: 0% | 800/1000000 [11:16:10<7037:55:25, 25.36s/
it]training loss: 2.186772346496582 -- iteration = 800
training: 0% | 900/1000000 [11:58:24<7077:08:58, 25.50s/
it]training loss: 2.1469945907592773 -- iteration = 900
training: 0% | 961/1000000 [12:24:30<7364:25:15, 26.54s/
training: 0% | 962/1000000 [12:24:55<7285:37:26, 26.25s/
training: 0% | 963/1000000 [12:25:20<7159:39:42, 25.80s/
training: 0% | 964/1000000 [12:25:47<7262:34:26, 26.17s/

```

## CONCLUSION

After approximately 12 hours and 25 minutes of training, spanning 964 iterations on an NVIDIA GeForce RTX 3050 Laptop GPU, there is a notable improvement in the model's performance. Key metrics such as training loss, perplexity, and bits per character (BPC) show a consistent decrease, indicating that the model is effectively learning from the provided data.

Initially, the generated output consisted mainly of isolated characters. However, as training progressed, the output began to form coherent character sequences resembling words, demonstrating the model's increasing ability to understand and replicate the structure of the input data.

These results suggest that the model is performing well with the given dataset. To further enhance the model's performance and reduce training time, it would be beneficial to employ a more powerful GPU. This upgrade could lead to faster convergence and potentially better generalization capabilities.