

CS310 NLP Assignment 3

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Task 1-3

Perplexity on Training Set

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Epoch 1/25, Loss: 0.6962438821792603, Perplexity: 2.0062029361724854
Epoch 2/25, Loss: 0.6170361638069153, Perplexity: 1.8534266948699951
Epoch 3/25, Loss: 0.5064994692802429, Perplexity: 1.6594719886779785
Epoch 4/25, Loss: 0.5020765662193298, Perplexity: 1.6521484851837158
Epoch 5/25, Loss: 0.48547089099884033, Perplexity: 1.624940037727356
Epoch 6/25, Loss: 0.46873509883880615, Perplexity: 1.5979716777801514
Epoch 7/25, Loss: 0.4548061788082123, Perplexity: 1.5758678913116455
Epoch 8/25, Loss: 0.44185540080070496, Perplexity: 1.5555907487869263
Epoch 9/25, Loss: 0.42920100688934326, Perplexity: 1.5360298156738281
Epoch 10/25, Loss: 0.4190559387207031, Perplexity: 1.5205254554748535
Epoch 11/25, Loss: 0.4112069010734558, Perplexity: 1.5086374282836914
Epoch 12/25, Loss: 0.40167903900146484, Perplexity: 1.4943315982818604
Epoch 13/25, Loss: 0.39118292927742004, Perplexity: 1.478729009628296
Epoch 14/25, Loss: 0.382109671831131, Perplexity: 1.4653728008270264
Epoch 15/25, Loss: 0.3741356134414673, Perplexity: 1.453734278678894
Epoch 16/25, Loss: 0.36599957942962646, Perplexity: 1.4419546127319336
Epoch 17/25, Loss: 0.3577628433704376, Perplexity: 1.430126428604126
Epoch 18/25, Loss: 0.35007330775260925, Perplexity: 1.4191715717315674
Epoch 19/25, Loss: 0.3427305817604065, Perplexity: 1.4087891578674316
Epoch 20/25, Loss: 0.33557742834091187, Perplexity: 1.3987478017807007
Epoch 21/25, Loss: 0.32868728041648865, Perplexity: 1.3891433477401733
Epoch 22/25, Loss: 0.3220759928226471, Perplexity: 1.3799896240234375
Epoch 23/25, Loss: 0.31561967730522156, Perplexity: 1.3711086511611938
Epoch 24/25, Loss: 0.30936819314956665, Perplexity: 1.362563967704773
Epoch 25/25, Loss: 0.30335867404937744, Perplexity: 1.3544001579284668
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Generate Sentences

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seq = ['子', '曰']
max_length = 20
```

Output: '子曰：君子不可以为大夫，不知其言，不能专，不'

Comparison of Perplexity

Random embeddings:

Evaluation Loss: 0.2975241243839264
Perplexity: 1.3465209007263184

Pretrained embeddings from word2vec in A2:

Evaluation Loss: 0.4115159213542938
Perplexity: 1.509103775024414

Task 2-3

F-1 Score on Test Set

Test Loss: 0.017134107649326324 Accuracy: 0.955033918380532 F1:
0.8006593339914994