

Assignment 3

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Task 3

EMBEDDING_DIM = 128 HIDDEN_DIM = 256

NUM_LAYERS = 2 DROPOUT_RATE = 0.2

BATCH_SIZE = 64 SEQ_LENGTH = 50

LEARNING_RATE = 0.001 NUM_EPOCHS = 10

MIN_WORD_FREQ = 2

perplexity scores

| Model | Perplexity |
|-------|------------|
| RNN | 32.94 |
| LSTM | 21.38 |

Greedy search 5 sentences pairs

Generating sentences using greedy search:

Prefix: 'Harry look' RNN Generated: 'Harry look as though he had been forced to say that he was not to mention it' LSTM Generated: 'Harry look at him and he was sure that he was not going to be able to'

Prefix: 'Hermione open' RNN Generated: 'Hermione open the door of the hall and the door opened and Harry saw the sound of' LSTM Generated: 'Hermione open the door behind him and Harry saw that the room was full of the smell'

Prefix: 'Ron run' RNN Generated: 'Ron run off the castle and the castle was completely empty and silent as they were all' LSTM Generated: 'Ron run toward the door and slammed the door shut behind him .Harry and Ron followed him'

Prefix: 'Magic is' RNN Generated: 'Magic is a lot of ' LSTM Generated: 'Magic is a werewolf ! said Harry loudly as he reached the boulder closest to his ribs'

Prefix: 'Professor Dumbledore' RNN Generated: 'Professor Dumbledore who was unsticking his lemon ' LSTM Generated: 'Professor Dumbledore and the students were all looking thunderstruck as he

approached the castle .Harry was sure'

Task 4

EMBEDDING_DIM = 200 HIDDEN_DIM = 256

NUM_LAYERS = 2 DROPOUT_RATE = 0.2

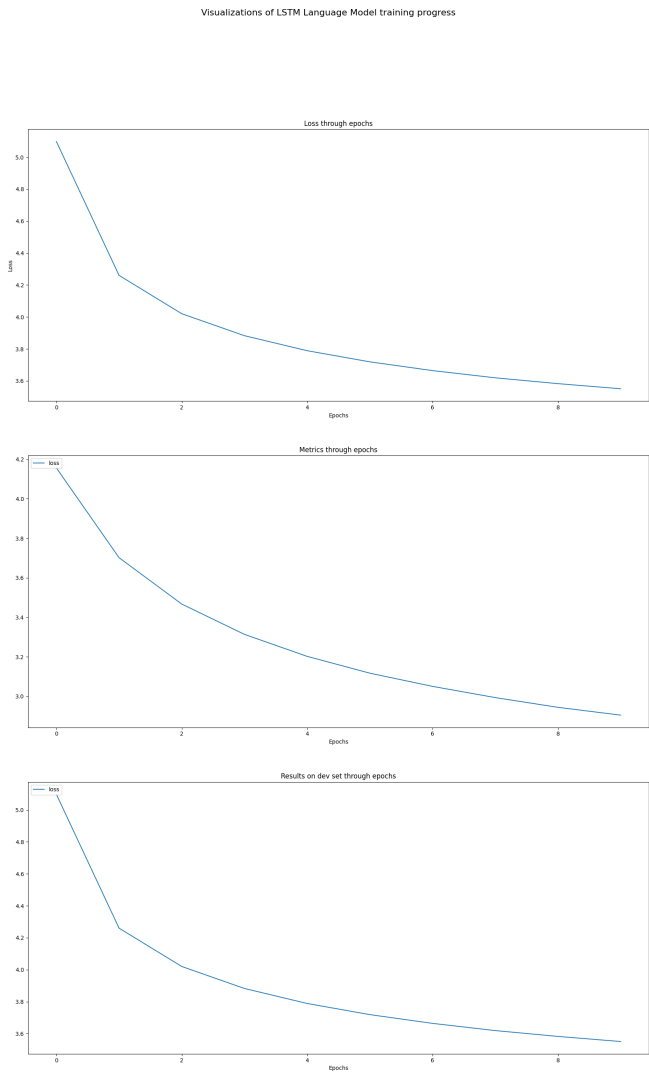
BATCH_SIZE = 64 SEQ_LENGTH = 50

LEARNING_RATE = 0.001 NUM_EPOCHS = 10

MIN_WORD_FREQ = 2

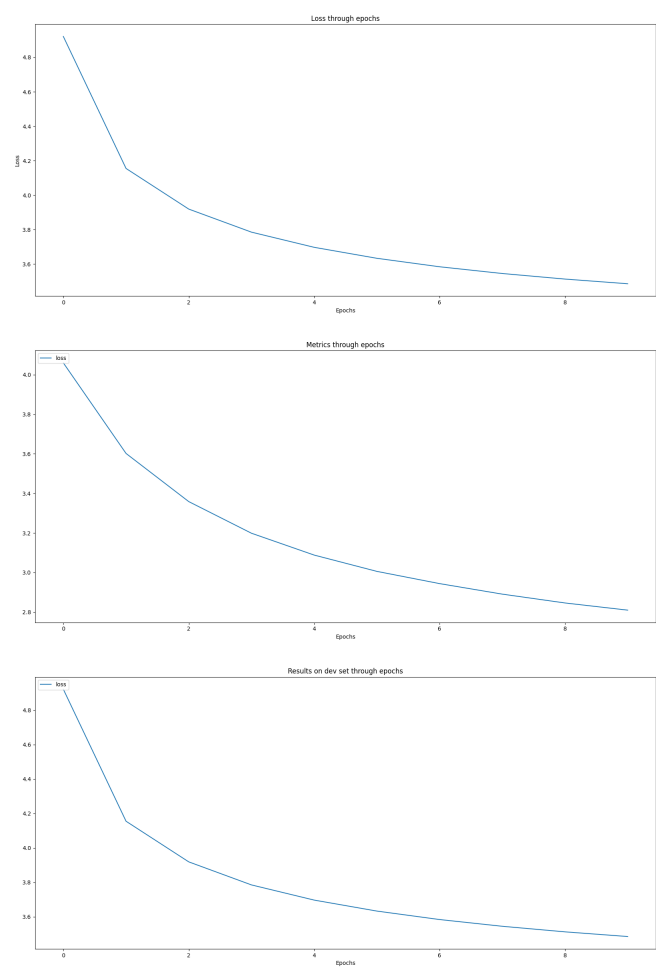
Training loss

Random embedding:



Pretrained embedding:

Visualizations of LSTM Language Model training progress



perplexity scores

| Model | Perplexity |
|---------------------------|------------|
| LSTM random embedding | 18.19 |
| LSTM pretrained embedding | 16.52 |