清華大學
Tsinghua University

Deep Learning Course

Homework 4

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Sentiment analysis with pytorch

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Contents

One-layer RNN with 3 rnn-cells

For this worked I started for testing several parameters for a simple one layer network achieving some nice accuracy values. After varying the parameters, a bit I got to the best configuration, which is displayed in table 1, the respective loss plot achieved during training for the model with the highest accuracy can be seen in figure 1 (as well as the respective accuracy plot also gotten during training).

Cell Type	Learning Rate	Nº of epochs	Highest accuracy (%)
GRU	0.0001	5	61
RNN	0.001	5	57
CNN	0.001	6	46

We should also take into consideration that these results were achieved with an embedding dimension of 300 initialized with a normal distribution for the unknown words. From the performed tests the GRU cell type was the one which performed clearly better than the others.

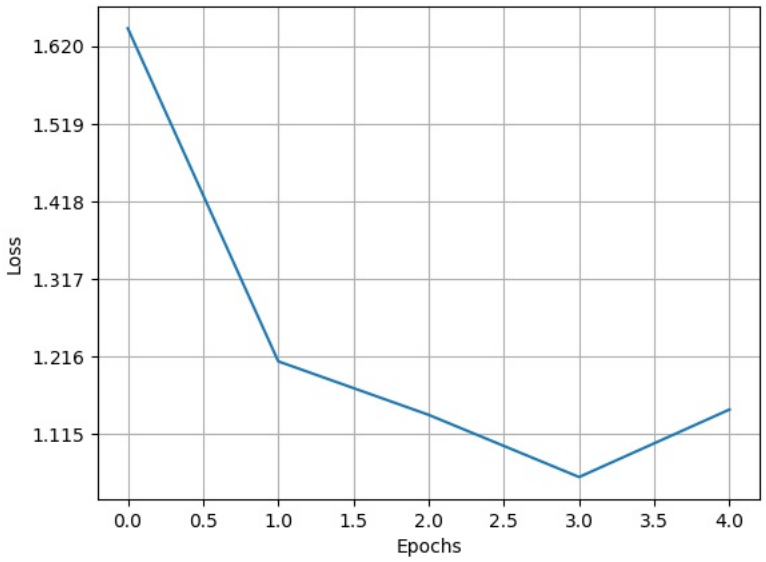

FIGURE 1

Embedding dimension from 300 to 100

For the task of sentimental analysis, the embedding dimension is one of the most important factors to be determined since it defines the dimension space in which our vocabulary is defined. Using 300 as the dimension means the difference and similarity between different words can be expressed with a lot more detail than with 100.

For the model expressed in the first section of this report I tried lowering the dimension from 300 to 100 resulting in the accuracy dropping from 61 to 56.

Without normal distribution

For the unknown words of our vocabulary a random embedding had to be initialized, which normally was initialized with a normal distribution. Removing that propriety results in droppage of accuracy from 61 to 59, which makes sense