

1.3 Writing the RNN acceptor network : Report

Course: Deep learning for texts and sequences.

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Summary of the experiment:

In order to make the acceptor model to learn to distinguish this language, we had to check different languages characteristic.

We noticed that the number of occurrences of each symbol in the sentence is a key feature for the model to learn the acceptor task.

If the number of occurrences of each symbol is randomly taken from a wide range – for example from 0 up to 100 - then making the model to learn was a difficult task.

However, the more this range was limited -say from 30 to 40- the better our model was learning the accepting task.

Finally, we opted for a relatively small range:

Each symbol of the language had an occurrence range from 90 to 100.

We created 2000 positive and 2000 negative example for the training set, and 500 of each for the validation set.

This way, our network succeeded in distinguishing the two languages quickly enough:

The model reached the 100% accuracy on the training set after only 7 iterations over the dataset, 10.11 seconds in wall clock time:

Eventually, our model reached the 100% accuracy on the validating set as well after 10 iterations, equivalent to 12 seconds.

Description of the model:

Number of positive & negative examples in the train set = 2000

Number of positive & negative examples in the dev set = 500

epochs = 10

LSTM output size =150

hidden size = 50

learning rate = 0.001

batch size = 1000

Optimizer: Adam

torch.manual_seed(1)

Results for epoch 10: Dev Loss:0.3149, Dev Accuracy:100.00%

