Journal Report 3

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Daily Log

Monday September 16

I'm getting started on the third lecture video, which discusses word window classification with neural networks. It also explains the matrix calculus involved in this. After watching this lecture, I should probably be able to at least preview the second week's assignment.

Tuesday September 17

Today I continued the third lecture video. A large portion of the video focuses on a review of the neural network architecture – weight matrices, biases, activation functions, etc. Next, the video begins to discuss the task of Named Entity Recognition (NER), which aims to find and classify names in text. This is challenging because it can be difficult to determine the boundaries between entities. The classes of entities also depend on their context. The lecture only briefly discusses these ideas, however. Almost the entire lecture focuses on the neural network and the math behind it. The next lecture is on backpropagation, where they'll cover the implementation of the neural networks they discussed in this video. They'll also explain tools such as TensorFlow and PyTorch for these tasks.

Thursday September 1

I started by configuring a conda environment on Pycharm to work on the second week's assignment, implementing stochastic gradient descent network using word2vec. I started working on the implementation, writing sigmoid methods and the "naiveSoftmaxLossAndGradient" function. Once I got started on the assignment, I realized that I should return to it after I finish lecture 4, because lecture 4 explains some things that would probably make the assignment make more sense. I began watching lecture 4, which discusses backpropagation and computation graphs.

Timeline

Date	Goal	Met
Sunday Sep 15	Be able to create vector representations of words using Word2Vec and finish lectures/exercises for week 1 of Stanford course.	Yes. Completed the first two lecture video and finished the first week's assignment.
Sunday Sep 22	Implement methods with GloVe (global vectors for word representation). Lectures/exercises for week 2 of online course.	I've finished watching the lecture videos for week 2 of the course. I'm still finishing up the second assignment, in which I'm supposed to implement stochastic gradient descent.
Sunday Sep 29	Finish the stochastic gradient descent from week 2. Work on week 3 of online course. Be able to perform basic sentence classification using neural networks and word windows.	
Sunday Oct 6	Complete sentence classification methods from week 3 and go through week 4 lecture materials.	

Reflection

This week was mostly a learning week for me. The lectures I watched went through all the math of gradient descent and its NLP applications. Though some of the more complex linear algebra was somewhat above my level of math, I was able to refresh my understanding of gradient descent and neural networks. Some of the material was covered in the perceptron unit when I took AI last year, but some of the material was new to me. Negative sampling and its applications in NLP, in particular, were topics that I haven't encountered before.