ADL HW2 R04922139

System Setting:

Ubuntu 15.04, Tensorflow r0.10, GPU Tesla K20C

Data Preprocessing:

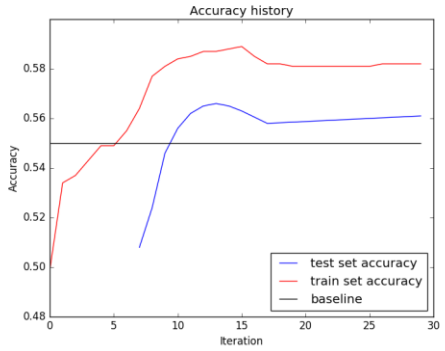
By observing the training data, we observed that the data contains lot of noise (i.e. negative sentence in positive data set) may cause the model hard to train and also stuck in a bad local optimum. Besides that, input of RvNN need binary trees but we only had sentences and the parser tree. By leveraging the Stanford Sentiment Analysis tool [2], we can obtain binary trees with its positive/negative score for each nodes with its algorithm [1]. Using the score from [1] we can achieve 0.804 score. In training stage, we only use the score of the root node to filter the noise such as score smaller than 2 in positive data and score greater than 2 in negative data. The final training data set size are 1000, 500 for each labels.

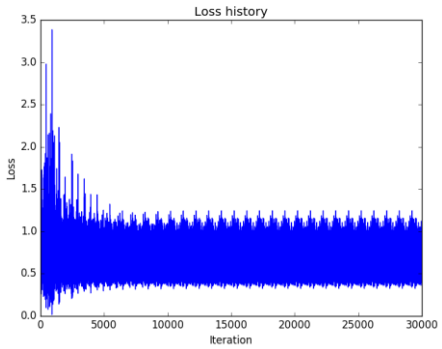
Algorithm & Implementation:

We use the naïve RvNN and the source code from Stanford CS224d [3] problem set 3. For the parameters setting, we set the l2 parameter to 1e-4 and the annealed_threshold to 0.95 and train for 30 epoch. Usually the model will converge at around 15 epoch.

Experiment Result:

Below figure demonstrate our model result on the training loss, training accuracy and also the leaderboard test set result. Note that when the model converged, the accuracy remains the same. If we do not filter the noise from data set, the model is hard to bypass the baseline.





References:

1. Socher, Richard, et al. "Recursive deep models for semantic compositionality over a sentiment treebank." *Proceedings of the conference on empirical methods in natural language processing (EMNLP)*. Vol. 1631. 2013.
2. Stanford Sentiment Analysis http://nlp.stanford.edu/sentiment/code.html
3. CS224d: Deep Learning for Natural Language Processing http://cs224d.stanford.edu/