

NLP SEE Day 2-3 Evaluation

Dec 20,21 2016, 8:30 pm to 6:30 pm

Objective

As a part of the SEE hands on evaluation, we will be working on developing a fine grain sentiment analyzer. We will be using the Stanford Sentiment Treebank dataset. Our goal is to do the following:

- (a) Using the Sentiment Treebank dataset, learn a 3 way classifier (Positive, Negative, Neutral) and a 5 way classifier (Very Positive, Positive, Neutral, Negative, Very Negative). We will learn this using 2 classifiers: Recurrent and Recursive.
- (b) Evaluate the performance and experiment with transfer learning

This question paper is meant for day 2 and day 3 morning

NOTE: Based on the progress, there might be an additional, **optional** question paper that might be administered tomorrow.

Steps

(a) Dataset (Same as before in Day 1)

- i. You are required to download the dataset from:
<http://nlp.stanford.edu/sentiment/index.html>
- ii. Go through the README file to understand the details, format of the dataset.
- iii. You can use the code from
<https://github.com/JonathanRaiman/pytreebank> for dataset processing
- iv. You are also required to download the training and test datasets in PTB format, please go through the details from the github URL as above.
- v. You are required to use the training, dev (validation) and test data as specified in the README file, do not mix this up.

(b) Building CNN

- i. You can build a classifier using CNN as discussed in Lecture 13 of Socher's lectures CS224d.
- ii. Perform any text preprocessing, convert word to vectors using Word2Vec. You can play with different dimensionalities
- iii. Build the CNN with bigram, trigram, 4-gram filters as explained during the class yesterday. You can refer Socher's notes. You can implement 3 filters

per n-gram to begin with. You can extend this later as you need in order to improve the accuracy

- iv. Implement the max pooling layer
- v. On top of max pooling layer implement a Softmax layer that produces a probability distribution of sentiment over the 3 or 5 classes.
- vi. Demonstrate both 3 class and 5 class outputs
- vii. You may use either Softmax or a linear layer in step v as above

(c) Train the system and validate.

(d) Measure the accuracy, precision, recall for each of the classifiers (3 state and 5 state) and report.

(e) Establish a baseline performance and report. Try to achieve the maximum performance that is possible.

Deliverables

Submit the following by 6:30 pm, 21 Dec 2016:

1. Source code of CNN, sentiment analyzer
2. Screen shots of results for 3 and 5 way classifier

Throughout your work, make sure you show the outputs to the invigilators.

Best wishes from the faculty, enjoy NLP development!

Anantharaman Palacode Narayana Iyer, Chitra GM