Reading your paper:  
first pass

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# OVERVIEW & PURPOSE

Reading a technical paper is unlike reading fiction: prepare to spend a lot more time, do multiple passes, take notes, survey literature, figure out the math, understand the algorithms. You are just starting machine learning, so many concepts will be unfamiliar. However, you will have a whole semester with your paper and we will follow a process in which your understanding will improve gradually.

# HOW TO READ

To help you with this task please first read a couple of guides on how to read:

* [How to read a paper](http://www.sigcomm.org/sites/default/files/ccr/papers/2007/July/1273445-1273458.pdf) by S. Keshav.
* [How to read a technical paper](https://www.cs.jhu.edu/~jason/advice/how-to-read-a-paper.html) by J. Eisner.

# FIRST PASS

Briefly scan your paper using Keshav’s first pass. Please give the reference to your paper and your one paragraph summary below. The paper reference should have the format “Author, Year, Title, How published” (you can optionally include a link). The summary should be what your current understanding is, not just a paraphrase of the abstract:

**Paper:** Dependency-based Convolutional Neural Networks for Sentence Embedding

**Summary:**

This paper is talking about a new approach that achieved a great result in sentence modelling and classification convolutional neural networks. This approach used dependency based convolutional instead making use of tree-based n-gram rather than surface ones. Tree n-gram are significantly sparser than surface n-gram. This paper is similar to Kim2014, the difference or the improved part of it is using word and it’s parent, grand-parent and great-grand parent and siblings on the dependency tree, while Kim’s paper is using sequential CNNs put a word in it’s sequential context.

CNN was first applied on images, convolution kernels on a series of continuous area of given images by Le Cun et al.1995. it is adopted to NLP by Collobert et al 2011, Kim 2014

Dependency based is used to overcome the sparsity problem that caused by enlarging the windows. The window size in the context referring to the size of reference words to the i-th word.

The paper stated the differences between Dependency based framework and sequential CNN and claimed that Dependency based framework outperforms sequential CNN baselines on modeling sentences.

# UNKNOWN TERMS

Now go through the paper a second time with a highlighter (or the equivalent software tool) and mark all the terms and phrases that you do not fully understand. Make a list of these terms below. I will use this list to make sure we will cover these concepts in class, and assume that you understand everything that is not on this list:

* Sequence labeling
* Semantic parsing
* Search query retrieval
* N-grams tree
* CNN (Convolution, filter, and pooling operations )

# PAST WORK

Go over the paper’s related work section one more time. What are the three most important papers cited by this paper in your opinion? Please give references to these papers and your opinion about why these papers are the most important.

* **Citation1**:

Kim, Yoon. "Convolutional neural networks for sentence classification." arXiv preprint arXiv:1408.5882 (2014).

* **Citation2**:

Collobert, Ronan, et al. "Natural language processing (almost) from scratch." *Journal of machine learning research* 12.Aug (2011): 2493-2537.

* **Citation3**:

Dave, Kushal, Steve Lawrence, and David M. Pennock. "Mining the peanut gallery: Opinion extraction and semantic classification of product reviews." *Proceedings of the 12th international conference on World Wide Web*. ACM, 2003.

* **Citation 4** :   
  Taku Kudo and Yuji Matsumoto. 2004. A boosting algorithm for classification of semi-structured text. In *Proceedings of EMNLP*.

Citation 1 & citation 2 are the core of this paper, they adapted CNN to NLP.

Citation 3 & citation 4 are papers which improved the accuracy of sentence classification and had the problem of data sparsity which this paper handles it and find a way to overcome it.

# RELATED/FUTURE WORK

Use Google Scholar to find out who cited your paper. If you can find your paper in Google Scholar use the “Cited by”, and “Related Articles” links. If you cannot find your paper see if you can find the prior work you cited in the previous section, or if you can find related papers using keywords. Note the citation counts of your results, these give you an indication of popularity if the paper is not very new. What are the three most important follow-up papers in this area in your opinion? Please give references to these papers and your opinion about why these papers are the most important.

* Citation1: Goldberg, Yoav. "A primer on neural network models for natural language processing." Journal of Artificial Intelligence Research 57 (2016): 345-420
* Citation2: Lin, Zhouhan, et al. "A structured self-attentive sentence embedding." arXiv preprint arXiv:1703.03130 (2017).
* Citation3: Goldberg, Yoav. "Neural network methods for natural language processing." Synthesis Lectures on Human Language Technologies 10.1 (2017): 1-309.

I measured the importance of the papers by its cited number, which demonstrates how much the paper's reputation and popularity.

# DATA

Find and download all necessary data used in your paper. This is the most important part of this assignment, without data you can’t replicate the work. Please consult the class TA if you think you cannot obtain the data.

<http://cogcomp.org/Data/QA/QC/>

<https://github.com/cosmmb/DCNN>