COL772: Course Project Proposal
Recognizing Textual Entailment with LSTM

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Hypothesis

The aim of the project is recognizing textual entailment (RTE) in a pair of sentences using LSTM-based architectures. A text t (also known as a premise) entails a hypothesis h if it is most likely true that a human reading t would infer h. Given a pair of sentences (premise and hypothesis), we would like to establish if:

- the premise *entails* the hypothesis
- the premise *contradicts* the hypothesis
- the premise neither entails nor contradicts the hypothesis (*neutral*)

Dataset

We would use the freely available Stanford Natural Language Inference (SNLI) Corpus[1], which is a collection of 570k human-written English sentence pairs manually labeled for balanced classification with the labels entailment, contradiction, and neutral, for supporting the task of natural language inference (NLI) or RTE. The dataset is split into 550k, 10k & 10k pairs of sentences for training, development and testing respectively.

Baseline

To establish baseline, we would replicate the results obtained by Shuohang Wang and Jing Jiang[2], who used an LSTM based architecture, building on the work of Tim Rocktäschel[3], for carrying out RTE on the SNLI corpus, and achieving an 86.1% accuracy on the test set. The code is not available, but we hope to implement the baseline by the end of next week. We would like to improve upon the word-by-word attention features that were developed using a neural model by Wang et al., and also try a bi-directional model as initial approaches to improve upon the baseline.

Evaluation

We would use the accuracy (as was used in the referenced papers) and f-score as the evaluation metric.

Demo

We intend to have a simple demonstration wherein the user gives the classifier two sentences and we predict the entailment relationship between the same.

Literature and References

[1]Samuel R. Bowman, Gabor Angeli, Christopher Potts, and Christopher D. Manning. 2015. A large annotated corpus for learning natural language inference. In *Proceedings of the 2015 Conference on Empirical Methods in Natural Language Processing (EMNLP)*.
[2]Wang, Shuohang, and Jing Jiang. "Learning Natural Language Inference with LSTM." arXiv preprint arXiv:1512.08849 (2015).
[3]Rocktäschel, Tim, et al. "Reasoning about Entailment with Neural Attention." arXiv preprint arXiv:1509.06664 (2015).