

Event extraction using iterative optimization

Aju Thalappillil Scaria

ajuts@stanford.edu

Rishita Anubhai

rishita@stanford.edu

Rose Marie Philip

rosep@stanford.edu

Abstract

Abstract goes here

1 Introduction

This is the introduction section.

2 Previous Work

Most of the work in the area of event and entity extraction can be categorized using different criteria:

Should probably have something related to the approach. Ex. templates, narrative event chains, token labeling etc.

2.1 Coverage and domain

Most of the previous work dealt only with a subset of the four tasks listed as the project goals and dealt with very specific domains. For instance, Chambers 2008 talks about event identification and temporal ordering using narrative event chains. Toutanova deals with argument extraction and semantic role labeling assuming that the trigger words are provided. While Bjorne solves the problem of event and argument extraction almost completely, their event categories and arguments are closely tied to the BIONLP task and hence, would not generalize to event extraction from domain-independent text. Chambers 2009 addresses the areas of all event identification, argument extraction and semantic role labeling using an unsupervised approach addressing narrative event chains in further detail. One can also see in this paper how two tasks can contribute to the improvement of each other, in this case the argument extraction and semantic role labeling. (2008) (McClosky et al., 2011)

2.2 Parsing scheme: Constituency vs Dependency parse

Some of the previous work relied on the constituency parse structure of sentences, while others

used the dependency parse structure. For instance Toutanova approaches semantic role labeling as a joint task of argument identification and labeling on the parse tree of the sentence. Bjorne and McClosky focus more on the dependency parse structure of the sentence.

2.3 Modeling: Graph vs Tree

The work of Bjorne and McClosky are based on graphs and deal with edge prediction, while Toutanova uses tree structure with classification of nodes as an entity or not.

3 Data

In this project, the dataset was prepared by annotating 125 paragraphs from different chapters of the text book *Biology (Eighth Edition)* by Neil A. Campbell and Jane B. Reece. Each paragraph is a text file and has an associated annotation file that indicates the different events and entities (by their character offsets in the original paragraph) and the event-entity and event-event relationships. The annotations were done by experts in the field (employees of the company Vulcan). Since there is not much data at our disposal, we split the data by a proportion of 70-30% for training and testing. We randomly permute the order of files to avoid similarities in adjacent files and then use 10 fold cross validation on the training set. For event prediction, we use F1 score based on the trigger predictions made. In entity prediction, the F1 score is based on whether an entity was predicted correctly along with its association with the corresponding event.

4 Model

This file is for model overview.

This file is for model triggers.

This file is for argument prediction model.

This file is for iterative optimization.

This file is for model on SRL.

Quang Xuan Do, Wei Lu, Dan Roth 2012. Joint Inference for Event Timeline Construction In *EMNLP-12*.

5 Results

This section talks about results

6 Analysis

This section is for analysis of models

7 Conclusion

This section is for conclusion

Acknowledgments

Do not number the acknowledgment section. Do not include this section when submitting your paper for review.

References

- Nathanael Chambers and Dan Jurafsky. 2008. Unsupervised learning of narrative event chains. In *Proceedings of ACL-08*.
- Nathanael Chambers and Dan Jurafsky. 2009. Unsupervised Learning of Narrative Schemas and their Participants In *Proceedings of ACL-09*.
- Nathanael Chambers and Dan Jurafsky 2011. Template-Based Information Extraction without the Templates In *Proceedings of ACL-11*.
- Jari Bjorne, Juho Heimonen, Filip Ginter, Antti Airola, Tapio Pahikkala, Tapio Salakoski 2009. Extracting Complex Biological Events with Rich Graph-Based Feature Sets. In *Proceedings of the Workshop on BioNLP: Shared Task*,.
- Kristina Toutanova, Aria Haghighi, Christopher D. Manning 2005. Joint Learning Improves Semantic Role Labeling. In *Proceedings of ACL 2005*.
- Sebastian Riedel Andrew McCallum 2008. Fast and Robust Joint Models for Biomedical Event Extraction. In *Proceedings of the 2011 Conference on Empirical Methods in Natural Language Processing*.
- Makoto Miwa, Rune Saetre, Jin-Dong D. Kim, and Junichi Tsujii 2010c. Event extraction with complex event classification using rich features In *Journal of bioinformatics and computational biology*.
- David McClosky, Mihai Surdeanu, and Christopher D. Manning 2011. Event Extraction as Dependency Parsing In *Proceedings of ACL-11*.
- Nathanael Chambers and Dan Jurafsky 2008. Jointly Combining Implicit Constraints Improves Temporal Ordering In *EMNLP-08*.