Event extraction using iterative optimization

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Abstract

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1 Introduction

This is the introduction section.

2 Previous Work

Most of the prevoius work dealt only with a subset of the three tasks listed as the project goals and dealt with very specific domains. For instance, Chambers and Jurafsky (2008) talks about event identification and temporal ordering using narrative event chains.Toutanova comes up with a joint model for argument extraction and semantic role labeling assuming that the trigger words are provided. Bjorne solves the problem of event extraction and semantic role labeling assuming the entities are known. Also, their event categories and arguments are closely tied to the BIONLP task and hence, would not generalize to domain-independent text. Chambers 2009 addresses the areas of event identification, and combines argument extraction with semantic role labeling using an unsupervised approach addressing narrative event chains in further detail.

Different approaches have been tried to come up with a solution to these problems. While some work has used unsupervised learning methods (Chambers and Jurafsky 2008, 2009), there are others who viewed each task as a separate machine learning problem (Bjorne) or tried to combine the problems using joint models that can overcome the problem of cascading errors and does not have to assume independence of events and enitites (Toutanova and , Riedel and McCallum).

Events and entities have been represented in different ways; the work of Bjorne and McClosky and , Riedel and McCallum use graphs to represent relationship between events and entities, while Toutanova and McClosky, uses tree structure with classification of nodes as an entity or not. Also, some of the work rely on the constituency parse structure of sentences (Toutanova), while others (Bjorne and McClosky) use the dependency parse structure for finding features.

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.

5 Results

This section talks about results

6 Analysis

This section is for analysis of models

7 Conclusion

This section is for conclusion

Acknowledgments

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