Meaning Representation Parsing

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1 Problem Statement

It is the task 8 of SemEval-2016.

" Abstract Meaning Representation (AMR) is a compact, readable, whole-sentence semantic annotation. Annotation components include entity identification and typing, PropBank semantic roles, individual entities playing multiple roles, entity grounding via wikification, as well as treatments of modality, negation, etc.

Here is an example AMR for the sentence The London emergency services said that altogether 11 people had been sent to hospital for treatment due to minor wounds.

```
(s / say-01
    :ARG0 (s2 / service
        :mod (e / emergency)
        :location (c / city :wiki London
            :name (n / name :op1 London)))
    :ARG1 (s3 / send-01
        :ARG1 (p / person :quant 11)
        :ARG2 (h / hospital)
        :mod (a / altogether)
        :purpose (t / treat-03
            :ARG1 p
            :ARG2 (w / wound-01
                :ARG1 p
                :mod (m / minor)))))
```

Note the inclusion of PropBank semantic frames (say-01, send-01, treat-03, wound-01), grounding via wikification (London), and multiple roles played by an entity (e.g. 11 people are the ARG1 of send-01, the ARG1 of treat-03, and the ARG1 of wound-01).

With the recent public release of a sizeable corpus of English/AMR pairs (LDC2014T12), there has been substantial interest in creating parsers to recover this formalism from plain text. Several parsers have already been released (see reference list below) and more may be on their way soon. It seems an appropriate time to conduct a carefully guided shared task so that this nascent community may cleanly evaluate their various approaches side by side under controlled scenarios. "

2 Related Work

The techniques that have been used for generating AMRs for text are:

- A Discriminative Graph-Based Parser for the Abstract Meaning Representation (ACL 2014) [1]

- A Transition-based Algorithm for AMR Parsing (NAACL 2015) [2]

- An AMR parser for English, French, German, Spanish and Japanese and a new AMR-annotated corpus (NAACL 2015) [3]

- Asynchronous Hyperedge Replacement Grammar based approach for AMR parsing (CoNLL 2015) [4]

- Parsing English into Abstract Meaning Representation Using Syntax-Based Machine Translation (EMNLP 2015) [5]

- Broad-coverage CCG Semantic Parsing with AMR (EMNLP 2015) [6]

3 Our Approach

The first task for this is to semantically parse the sentence. For this, we are planning to use LSTM recurrent neural networks to parse the sentence as used earlier by Jie Zhou and Wei Xu [7]. Then we will use these parsed segments to make ćonceptś (semantic annotations) by making relations between the parse segments and use maximum spanning connected sub-graph.

4 Data Set

Both, the training and test data will be provided by LDC (Liguistic Data Consortium).

References

[1] Jeffrey Flanigan, Sam Thomson, Jaime Carbonell, Chris Dyer, and Noah A Smith. A discriminative graph-based parser for the abstract meaning representation. 2014.

[2] Chuan Wang, Nianwen Xue, Sameer Pradhan, and Sameer Pradhan. A transition-based algorithm for amr parsing.

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[4] Xiaochang Peng, Linfeng Song, and Daniel Gildea. A synchronous hyperedge replacement grammar based approach for amr parsing. *CoNLL 2015*, page 32, 2015.

[5] Michael Pust, Ulf Hermjakob, Kevin Knight, Daniel Marcu, and Jonathan May. Parsing english into abstract meaning representation using syntax-based machine translation. *Training*, 10:218–021.

[6] Yoav Artzi and Kenton Lee Luke Zettlemoyer. Broad-coverage ccg semantic parsing with amr. In *Proceedings of the 2015 Conference on Empirical Methods in Natural Language Processing. Màrquez, Adam Meyers, Joakim Nivre, Sebastian Padó, Jan Štepánek, Pavel Stranák, Mihai Surdeanu, Nianwen Xue, and Yi Zhang*, 2009.

[7] Jie Zhou and Wei Xu. End-to-end learning of semantic role labeling using recurrent neural networks. 2015.