Meaning Representation Parsing

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Overview

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."

1. Who is doing what to whom in a sentence
2. Different from a parse tree, it is abstract
3. AMR does not say anything about how it wants to be processed.
4. It is not an interlingua.

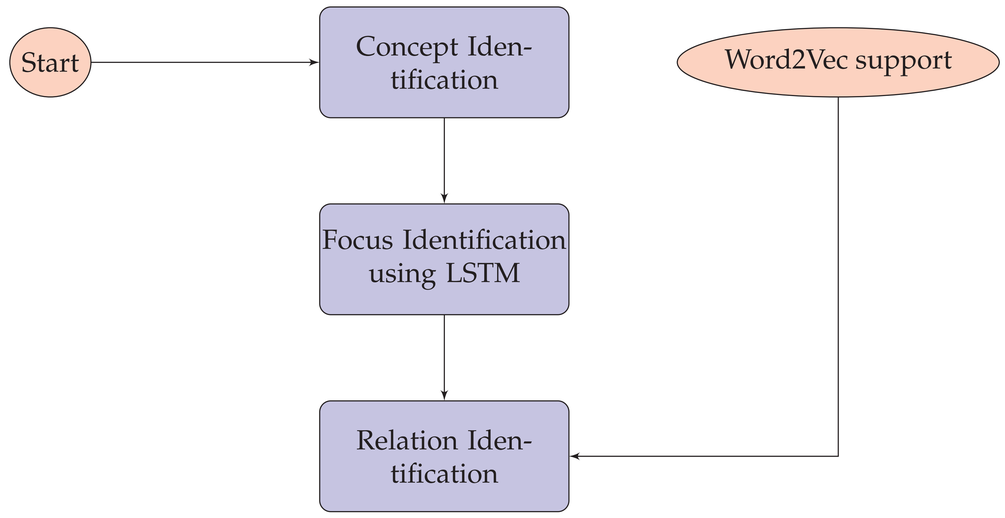
More Logical than Syntax

A single AMR can be expressed in various ways in English:
eg:

Can be expressed in the following ways:

- The boy wants the girls to believe him
- The boy desires the girl to believe him.
- The boy desires to be believed by the girl.
- The boy has a desire to be believed by the girl.
- The boyâĂŹs desire is for the girl to believe him.
- The boy is desirous of the girl believing him

Methodology



We proposed a parser based on work done by [1] and built an LSTM to find the focus of the sentence. We tried to add new features to the parser, which are present in the data provided by LDC.

Future Work

- AMR have only been developed for english language. Hence extension to other languages.
- Train LSTM with the sentence parsed recursively to capture more features.
- Deep Bidirectional LSTM are in general much more promising than the single layered LSTM as the earlier work by [2] suggests.

Results

Abstract Meaning Representation

Test Sentence-
“However , most of the buildings in this hard - hit area did not meet these requirements"
AMR Produced-

```
(r / require-01
      :ARG1 (t / thing
            :mod (t2 / this)
            :name (a / area
                  :ARG1-of (h / hit-01
                        :manner (h2 / hard))
                  :location-of (b / building
                        :quant (m / most)))))
```

— Evaluation on Test —

Precision	Recall	F1 Score
0.763	0.438	0.557

Table 1: Parser Performance

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

[3] 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.

[4] amr guidelines. Abstract meaning representation specification. https://github.com/amrisi/amr-guidelines/blob/master/amr.md#part-ii--concepts-and-relations.