Invited Talk: Mirella Lapata, University of Edinburgh

Universal Semantic Parsing

The Universal Dependencies (UD) initiative seeks to develop cross-linguistically consistent annotation guidelines as well as a large number of uniformly annotated treebanks for many languages. Such resources could advance multilingual applications of parsing, improve comparability of evaluation results, and enable cross-lingual learning. Seeking to exploit the benefits of UD for natural language understanding, we introduce UDepLambda, a semantic interface for UD that maps natural language to logical forms, representing underlying predicate-argument structures, in an almost language-independent manner.

Our framework is based on DepLambda (Reddy et al., 2016), a recently developed method that converts English Stanford Dependencies to logical forms. DepLambda works only for English, and cannot process dependency graphs, which allow to handle complex phenomena such as control. In contrast, UDepLambda applies to any language for which UD annotations are available and can also process dependency graphs. We evaluate our approach on question answering against Freebase. To facilitate multilingual evaluation, we provide German and Spanish translations of the WebQuestions and GraphQuestions datasets. Results show that UDepLambda outperforms strong baselines across languages and datasets. For English, it achieves the strongest result to date on GraphQuestions, with competitive results on WebQuestions.

References

Siva Reddy, Oscar Täckström, Michael Collins, Tom Kwiatkowski, Dipanjan Das, Mark Steedman, and Mirella Lapata. Transforming dependency structures to logical forms for semantic parsing. *Transactions of the Association for Computational Linguistics*, 4:127–140, 2016.