Multitask Parsing Across Semantic Representations

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Multitask learning improves UCCA parsing, using AMR, SDP and UD as auxiliary tasks with a general transition-based parser.

\textbf{UCCA}

Intuitive, cross-lingual, and modular semantic representations. Primary edges form a tree. Remote edges (dashed) allow reentrancy, creating a directed acyclic graph [1].

\textbf{AMR}

Abstract graph on concepts and constants. Rooted DAG with labeled nodes and edges. Encodes named entities, argument structure, semantic roles, word sense, and conference [3].

\textbf{SDP}

Set of related binoxal semantic DAG schemes: DM, PAS, PSD, and CCB. Use DM (DELPH-IN MRD). Encodes argument structure for many predicate types [7].

\textbf{UD}

Cross-lingual syntactic binoxal tree. Encodes syntactic relations between words [6]. UD$^{++}$ (Enhanced + UD) adds and augments edges, creating a binoxal DAG [8].

\textbf{Data}

\textbf{UCCA:} (1) English Wikipedia (Wiki), (2) Twenty Thousand Logues Under the Sea (20K), annotated in English (small, only test) French (small), and German (press-release, noisy).


\textbf{Experiments}

\textbf{English.} Train: UCCA Wiki (+aux), test: UCCA Wiki (in-domain) or 20K (out-of-domain).

\textbf{French and German.} Train: 20K (+UD as aux), test: 20K (both in-domain).

\textbf{Task Similarity}

Does improvement depend on structural task similarity, or training corpus similarity? We compared \textit{annotations of 100 WSJ sentences}, and \textit{training corpus word distributions}.

\textbf{References}

\cite{unpublished} Does improvement depend on structural task similarity, or training corpus similarity? We compared \textit{annotations of 100 WSJ sentences}, and \textit{training corpus word distributions}.

\cite{hirschberg2011sememe} A semantic parser for English, with the Stanford NLP tools.

\cite{abend2017state} The state of the art in semantic representation.

\cite{de2017universal} Universal Dependencies v1.

\cite{universaldependencies2017} Converted UD.

\cite{Banarescu:2013} AMR, SDP and UD parsing.

\cite{martinez-alonso2015using} When is multitask learning effective?

\cite{abend2017state} The state of the art in semantic representation.