

Complex Sentence Parsing

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Abstract

This doctoral dissertation addresses the problem of analyzing complex sentence structure, whose multiple clauses often introduce ambiguity in both syntactic dependencies and semantic interpretation. The work proposes an integrated framework that resolves clause-level ambiguity from syntactic and semantic perspectives.

The first part tackles syntactic disambiguation in dependency parsing. Drawing on Minami's Scope Preference Theory, we implement clause-level preferences by modeling relations between main verbs of subordinate clauses. These preferences are incorporated into a forest-based reranking procedure, enabling more accurate selection among dependency-structure candidates. Experiments show substantial improvements in inter-clausal dependency accuracy, particularly for sentences containing multiple subordinate clauses.

The second part enhances semantic parsing within the Abstract Meaning Representation (AMR) framework. A dependency-based pattern dictionary is constructed to identify complex sentence structures and generate appropriate skeletal AMRs. To resolve semantic ambiguity arising from polysemous subordinators, a sentence-pair classification model is introduced to predict causal, conditional, concessive, or temporal relations, with weakly supervised data used to supplement limited annotations.

Together, these studies present effective methods for improving both syntactic and semantic processing of complex sentences, and the dissertation concludes with remaining challenges and future research directions.