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Exploiting Semantic Role Resources for Preposition Disambiguation

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Abstract Authors

This article describes how semantic role resources can be exploited for preposition disambiguation. The main resources include the semantic role annotations provided by the Penn Treebank and FrameNet tagged corpora. The resources also include the assertions contained in the Factotum knowledge base, as well as information from Cyc and Conceptual Graphs. A common inventory is derived from these in

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support of definition analysis, which is the motivation for this work.

The disambiguation concentrates on relations indicated by prepositional phrases, and is framed as word-sense disambiguation for the preposition in question. A new type of feature for word-sense disambiguation is introduced, using WordNet hypernyms as collocations rather than just words. Various experiments over the Penn Treebank and FrameNet data are presented, including prepositions classified separately versus together, and illustrating the effects of filtering. Similar experimentation is done over the Factotum data, including a method for inferring likely preposition usage from corpora, as knowledge bases do not generally indicate how relationships are expressed in English (in contrast to the explicit annotations on this in the Penn Treebank and FrameNet). Other experiments are included with the FrameNet data mapped into the common relation inventory developed for definition analysis, illustrating how preposition disambiguation might be applied in lexical acquisition.

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