PROGRESS REPORT
Active Knowledge Structures in Natural Language Understanding

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Work on the project has concentrated in the last six months on (a) reimplementing our two semantics-based message parsers and (b) integrating them with the KR formalism we use: a form of conceptual graphs (CG) embedded in the MGR (Model Generative Reasoning) framework.

The PREMO (Preference Machine Organization) parser has been reimplemented, using a technique to adjust the weighting of word and structure preferences such that it can be trained to systematicities in the special (="ill-formed") syntax of a given message type.

In the case of the other semantics-based parser PM, Jerry Ball took two of the texts from the Navy message database and added the vocabulary from those messages to the parser's lexicon. After a small amount of modification, the parser was able to parse about 80% of the sentences in those two messages into reasonable representations. With some additional work this percentage can be improved. Given the lexically driven nature of the parser, extending the system to cover a larger subset of the Navy message database rests primarily on expansion of the lexicon. For demonstration purposes, an X Windows Interface to the parser was developed.

We are also integrating the ViewGen belief manipulation system with the conceptual graph + MGR knowledge representation, so as to provide a system that can both guide the message parsers and represent the results of message extraction. The immediate goal is re-implementing ViewGen in conceptual graphs. This has led to the following recent developments:

(1) Investigating the benefits of using CG to express ViewGen.

(2) Representing the environments, lambda formulas, and propositions of ViewGen in CG.

(3) Using examples from Navy messages to specify belief ascription in CG.