Statement of Interest

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My interest in KL-ONE-related languages dates back to 1982, when I enhanced the SEMNET language to a representation mechanism for user models which allowed for the representation of (embedded) beliefs and goals of the user and the system (a short survey of this work can be found in the IJCAI-85 proceedings). SEMNET, at that time, was probably the only KL-ONE-related language which existed in Central Europe.

Since 1985, I have been a project coordinator for the XTRA project, which is concerned with the development of a natural-language interface to expert systems. Within this project, I supervise the development of the SB-ONE knowledge representation workbench which forms the representational basis for the semantic knowledge, the domain knowledge, and the belief and goal maintenance system (which includes the user model) of XTRA. SB-ONE features a representation language that loosely fits into the KL-ONE paradigm, a graphics-based user interface, a consistency maintenance mechanism, a classifier, a realizer, and a matcher for knowledge structures. A more detailed description of the SB-ONE workbench which includes a group bibliography is attached to this statement.
The SB-ONE Knowledge Representation Workbench

SB-ONE is a knowledge representation workbench, the language part of which is based on Brachman’s KL-ONE. SB-ONE has been developed within the XTRA project which is concerned with the development of a natural-language access system to expert systems. It forms the representational basis for the semantic knowledge, the domain knowledge, and the belief and goal maintenance system (which includes the user model) of XTRA. For SB-ONE, there exists a first-order theory of syntactically well-formed expressions, a Tarskian-style interpretation, and a graphics-based user interface. In the XTRA system, natural language input is mapped onto SB-ONE structures, and NL responses of the system are generated from it.

The kernel language has been designed by A. Kobsa in cooperation with H.-J. Profitlich, J. Kalmes and R. Jansen-Winkeln. On the basis of this kernel, the following components are being developed (mostly in Common-Lisp; in parenthesis names of developers and number of past/estimated future person-years as of Dec. 1988):

- functional interface for Symbolics 36xx, VAX 7800, Siemens MX-2, TI Explorer, HP 9000 (H.-J. Profitlich and J. Kalmes 0.7/0 PY)

- menu-based concept definition component for VAX 8700 and Siemens MX-2 (H.-J. Profitlich, 0.2/0 PY)

- graphic-oriented knowledge base editor for Symbolics 36xx which checks for consistency and monitors incompleteness in SB-ONE definitions (J. Kalmes, 1.8/0.2 PY)

- context mechanism for SB-ONE knowledge bases (J.Scherer 0.5/1 PY)

- translation of natural language into an SB-ONE knowledge base via a unification grammar (K. Harbusch and C. Reddig-Siekmann + students, 3.5/1.5 PY)

- generation of natural language out of SB-ONE knowledge bases (N. Reithinger, W.Finkler and G. Neumann, 3.5/2.5 PY)
• mapping of one SB-ONE knowledge base onto another, inheritance of mapping rules (J. Reinert, W. Finkler and G. Neumann, 0.5/1 PY)

• classification of new general concepts (B. Pfahringer, H.-J. Profitlich 0.5/0.5 PY)

• realization of new individualized concepts (R. Jansen-Winkeln + students, 1/1 PY)

• simple production system based on SB-ONE (A.Kobsa + students, 0.4/0.4 PY)

• epistemological primitives for sets (J. Allgayer, 0.4/0.4 PY)

• inference mechanism for SB-ONE (J. Allgayer, 0.6/3-6 PY)

References


Profitlich, H.-J. (1989): SB-ONE User Manual (Release 0.1). Memo No. 33, Dept. of Computer Science, Univ. of Saarbruecken, W. Germany