Revised Statement of Interest

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The natural language processing group of our university department has been using KLONE-like languages at the lowest level of representation for several years. I joined this group lately, working as the main implementor of our new language VIEKL. A description of the last but one version of VIEKL can be found in /13/. This version is very similar to KL-ONE providing extensions like explicit disjointness for primitive concepts, inverse roles and improved support of individual concepts.

Meanwhile VIEKL has undergone one major redesign and now looks more like CLASSIC [Brachman et. al. 1989]. The major differences between CLASSIC and our system are increased expressive power concerning statements about individuals and support of dynamic modification and retraction of knowledge of generic and individual concepts.

It is possible to represent the fact that an individual is going to have e.g. three to five fillers for a specific role or that all those fillers will be individuals of generic concept C without specifying the actual fillers right now. One can view this as assertions about future role-fillers that enable the realizer to draw more useful inferences on only partially specified individuals at an earlier point in time.

We will support not only monotonic incremental build-up of knowledge bases, but also modification and retraction of parts of the knowledge. Consequences of these non-monotonic updates will have to be propagated through the knowledge base to assure overall consistency.

One of our concerns besides expressiveness was efficiency so one of the design principle reads like 'live with a sound, though incomplete (generic)
classifier, realization will be complete anyhow’ [MacGregor, 1989]. Structural matching is the main engine of the classifier, which is additionally augmented by some limited deductive capabilities for hard-coded special cases of subsumption. One of these cases is correct propagation of number restrictions through role hierarchies.

After completion of the version of VIEKL as described above, future interests will include (among other topics):

- Investigation of our users’ demands for representation of factual knowledge beyond the machinery provided by individual concepts. This will lead to the design and implementation of an appropriate ABOX for VIEKL.

- Induction of generic classes given descriptions of individuals. A starting point will be the work described in [Muggleton, 1987] on oracle-based constructive induction for propositional logic.

VIEKL will be used by our natural language group for implementing a German dialog system.

Practical experience outside our group work: I have implemented the (first prototype of the) classifier for SB-ONE [Allgayer et.al., 1989] during a reasearch visit at Prof. Wahlster’s department at the University of Saarbruecken, Germany, in December 86.

References:

Partial group bibliography:


3. Leinfellner E., Steinacker I., Trost H.: Anaphoric and Kataphoric Relations, Textual Cohesion, and Reference Resolution in the System VIE-


357, 1983.


