Position Paper

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I am currently working on my thesis "Equational Calculi as Decision Procedures". In this thesis I investigate the use of equational calculi to decide fragments of clause logic with equality, i.e. I survey the question in which form the underlying calculus has to be enlarged in the transition from resolution decision procedures for first-order logic to paramodulation decision procedures, which are capable of first-order logic with equality. The aims of the thesis are twofold. In the first part I am busy with the comparison of the two most important equational calculi, namely *ordered paramodulation* and *superposition*. I try to present those calculi in a uniform way and to point out the crucial differences of both calculi and their refinements, e.g. *positive ordered paramodulation* [HR91] or *basic ordered paramodulation* [BGLS95], with respect to their application as paramodulation decision procedures. The remainder of the thesis is concerned with the presentation of paramodulation decision methods for the Ackermann class [BGW93] and the monadic class [FS93]. The last chapter is concerned with a model building procedure for *PVD* extended by ground equality atoms [FLTZ93, FL96]. For general information on automated model building, see [FL93, Hir95]. Hence this thesis is not concerned with term schematizations, neither to obtain more efficient refinements, nor does it present a model building procedure that used term schematizations techniques to represent infinite structures occurring in the obtained Herbrand model.

Nevertheless I am interested in the use of term schematizations for the representation of (automatically) generated Herbrand models. I will take part in a project—"Equational Calculi and Automated Model Building"— sponsored by FWF–Austria, starting in fall 1996 at the *Institut für Computersprachen, Abt. Formale Sprachen, TU Wien.* The main task in this project is to investigate the question how the decision problem in clause logic with equality is tractable and moreover how appropriate model building procedures dealing properly with the equality predicate can be defined. Clearly in this project it will be necessary to deal with infinite structures, and term schematizations provide a straightforward tool to extend the model representation techniques introduced in [FL93, FL96].

References

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