ALBERT-LUDWIGS-
UNIVERSITÄT FREIBURG

FAKULTÄT FÜR ANGEWANDTE WISSENSCHAFTEN

Fakultäts - Kolloquium

Zeit: Mittwoch, 20. 1. 1999, 17.00 Uhr s.t.
Ort: Raum 02-017, Geb. 52, Am Flughafen 17

Theorem Proving Modulo: Concepts, Mechanization, Applications

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Abstract

Based on joint work with Gilles Dowek and Thérèse Hardin and the Protheo group in Nancy.

"Theorem proving modulo" is a way to remove computational arguments from proofs by reasoning modulo a congruence on propositions. Such a technique, issued from automated theorem proving, is of wider interest because it aims at separating deductions and computations. The first contribution of this talk is to provide a "sequent calculus modulo" that gives a clear distinction between the decidable (computation) and the undecidable (deduction).

The congruence on propositions is handled via rewrite rules and equational axioms. Usually rewriting applies only on terms. The second contribution of this paper is to allow rewriting atomic propositions into non atomic ones and to give a complete proof search method, called "Extended Narrowing and Resolution" (ENAR), modulo such congruences. The completeness of this method is proved using the sequent calculus modulo.

An important application is that this Extended Narrowing and Resolution method subsumes full higher-order resolution when applied to a first-order presentation of higher-order logic. This shows that such a presentation can yield also efficient proof-search methods.

If time permits I will show how these concepts could be naturaly implemented in the ELAN framework based on the rewriting calculus.

Keywords: Automated theorem proving, rewriting, resolution, narrowing, higher-order logic, rewriting calculus and logic.

Gastgeber: Prof. Dr. David Basin

Alle Interessenten sind recht herzlich eingeladen.

Organisation : Prof. Dr. B. Becker / F. Schmiedle

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