Available online at www.sciencedirect.com

ScienceDirect

Information and Computation 204 (2006) 1411–1412

Information and Computation

www.elsevier.com/locate/ic

Preface

Special issue: Combining logical systems

In various areas of computer science, such as logic, computation, program and proof development, and artificial intelligence, there is an obvious need to use specialized formalisms and inference mechanisms for special tasks. To be usable in practice, these specialized systems must be combined with one another, and they must be integrated into general purpose systems. The development of general techniques for the combination and integration of special systems has been initiated in many areas.

This special issue is devoted to the problem of "combining logical systems" and contains a collection of papers covering many aspects of this important and very active research field. FroCoS, the International Symposium on Frontiers of Combining Systems, traditionally focuses on these types of research questions and activities and aims at promoting progress in the field. In 2004, FroCoS joined IJCAR, the Second International Joint Conference on Automated Reasoning. Most of the papers collected in this special issue are extended and improved versions of papers presented at IJCAR'2004.

The paper by Baader, Ghilardi, and Tinelli presents a new algorithm for the word problem in a union of non-disjoint equational theories. This algorithm is applied to fusions of classical decidable modal logics.

The paper by Ganzinger, Sofronie-Stokkermans, and Waldmann presents a modular superposition calculus for a union of theories involving both total and partial functions. Modularity refers to the property that all the inferences only involve clauses over the signature of one of the component theories.

The paper by Bozzano et al. is concerned with the satisfiability problem with respect to a union of theories. The authors propose an efficient approach where an enumerator of Boolean assignments is integrated with the combination of satisfiability procedures available in component theories.

The paper by Zhang, Sipma, and Manna presents some decision procedures for the combination of terms algebras and integer arithmetic. In this framework, term algebras and integer arithmetic are connected via the length function which maps a term to its size.

The paper by Meng, Quigley, and Paulson is concerned with automation in interactive proof systems. The authors describe a method for combining the Isabelle proof assistant with an automatic theorem prover.

0890-5401/$ - see front matter
doi:10.1016/j.ic.2006.04.005

This special issue could not be possible without the excellent work of 27 reviewers, to whom we express special thanks.

Editors
Alessandro Armando
DIST, University of Genova, Italy

Christophe Ringeissen
LORIA & INRIA-Lorraine, France
Available online 11 July 2006