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Preface

Volume 57

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Abstract

1st International Workshop on Reduction Strategies in Rewriting and Programming (WRS 2001)This volume contains the post-workshop proceedings of the 1st International Workshop on Reduction Strategies in Rewriting and Programming (WRS 2001). The workshop was held in conjunction with RTA 2001 in Utrecht, The Netherlands, on May 26, 2001.

The motivation to organize this forum stems from the fact that reduction strategies in rewriting and programming have attracted an increasing attention within the last years. New types of reduction strategies have been invented and investigated, and new results on rewriting/computation under particular strategies have been obtained. Research in this field ranges from primarily theoretical questions about reduction strategies to very practical application and implementation issues. The need for a deeper understanding of reduction strategies in rewriting and programming, both in theory and practice, is obvious, since they bridge the gap between unrestricted general rewriting (computation) and (more deterministic) rewriting with particular strategies (programming). Moreover, reduction strategies provide a natural way to go from operational principles (e.g., graph and term rewriting, narrowing, lambda-calculus) and semantics (e.g., normalization, computation of values, infinitary normalization, head-normalization) to implementations of programming languages.

Topics of interest for the workshop included, but were not restricted to,

- theoretical foundations for the definition and semantic description of reduction strategies
- strategies in different frameworks (term rewriting, graph rewriting, infinitary rewriting, lambda calculi, higher order rewriting, conditional rewriting, rewriting with built-ins, narrowing, constraint solving, etc.) and their application in (equational, functional, functional-logic) programming (languages)
- properties of reduction strategies/computations under strategies (e.g., completeness, computability, decidability, complexity, optimality, (hyper-)normalization, cofinality, fairness, perpetuality, context-freeness, neededness, laziness, eagerness, strictness)
- interrelations, combinations and applications of reduction under different strategies (e.g., equivalence conditions for fundamental properties like termination and confluence, applications in modularity analysis, connections between strategies of different frameworks, etc.)
- program analysis and other semantics-based optimization techniques dealing with reduction strategies
- rewrite systems/tools/implementations with flexible/programmable strategies as essential concept/ingredient
- specification of reduction strategies in (real) languages
- data structures and implementation techniques for reduction strategies.

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Based on the careful refereeing process for WRS 2001, the following regular papers were accepted:

Declarative Debugging of Functional Logic Programs by *María Alpuente, Francisco J. Correa and Moreno Falaschi*

Just-in-time: On Strategy Annotations by *Jaco van de Pol*

Generic Sort-Preserving Traversal Strategies by *Ralf Lämmel*

Compact Normalisation Trace via Lazy Rewriting by *Quang-Huy Nguyen*

Fusing Logic and Control with Local Transformations: An Example Optimization by *Patricia Johann and Eelco Visser*

The Simple Type Theory of Normalization by Evaluation by *René Vestergaard*

Furthermore this volume also contains the two invited papers

Evaluation Strategies for Functional Logic Programming by *Sergio Antoy*

A Survey of Strategies in Program Transformation Systems by *Eelco Visser*

as well as the worked out panel contributions

Reduction Strategies for Declarative Programming by *Michael Hanus*

Hot Topics in Reduction Strategies - a panelist's view by *Tetsuo Ida*

Is Strategic Programming a Viable Paradigm? by *Paul Klint*

about the theme *Hot Topics in Reduction Strategies.*

Regarding the refereeing process we are very grateful to the program committee and to the additional external referees. Furthermore we would like to thank Michael Mislove, Managing Editor of the ENTCS series, for his technical assistance with using the ENTCS format.

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