Lecture Notes in Computer Science 5214

Commenced Publication in 1973
Founding and Former Series Editors:
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Graph Transformations

4th International Conference, ICGT 2008
Leicester, United Kingdom, September 7-13, 2008
Proceedings

Springer

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Library of Congress Control Number: 2008934309

CR Subject Classification (1998): E.1, G.2.2, D.2.4, F.1, F.2.2, F.3, F.4.2-3

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

ISSN 0302-9743
ISBN-10 3-540-87404-6 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-87404-1 Springer Berlin Heidelberg New York

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12512355 06/3180 5 4 3 2 1 0

Preface

Graphs are among the simplest and most universal models for a variety of systems, not just in computer science, but throughout engineering and the life sciences. When systems evolve we are interested in the way they change, to predict, support, or react to their evolution. Graph transformation combines the idea of graphs as a universal modelling paradigm with a rule-based approach to specify their evolution. The area is concerned with both the theory of graph transformation and their application to a variety of domains.

The International Conferences on Graph Transformation aim at bringing together researchers and practitioners interested in the foundations and applications of graph transformation. The 4th International Conference on Graph Transformation (ICGT 2008) was held in Leicester (UK) in the second week of September 2008, along with several satellite events. It continued the line of conferences previously held in Barcelona (Spain) in 2002, Rome (Italy) 2004, and Natal (Brazil) in 2006 as well as a series of six International Workshops on Graph Transformation with Applications in Computer Science between 1978 to 1998. Also, ICGT alternates with the workshop series on Application of Graph Transformation with Industrial Relevance (AGTIVE). The conference was held under the auspices of EATCS, EASST, and IFIP WG 1.3.

Responding to the call for papers, 57 papers were submitted. The papers were reviewed thoroughly by program committee members and their co-reviewers. The committee selected 27 papers for presentation at the conference and publication in the proceedings. These papers mirror well the wide-ranged ongoing research activities in the theory and application of graph transformation. They are concerned with different kinds of graph transformation approaches, compositional systems, validation and verification as well as various applications, mainly to model transformation and distributed systems. Paper submission and reviewing were supported by the free conference management system EasyChair.

In addition to the presentation of technical papers the conference featured three invited speakers, a doctoral symposium, a tutorial, and four workshops.

Invited Speakers. The invited talk by Perdita Stevens introduced an algebraic approach of bidirectional transformations exploring the group theory of the lens framework for bidirectional transformations. In his invited talk, Wil van der Aalst presented the Petri net formalism as a natural candidate for modeling and analysis of workflow processes. The third invited speaker was Heiko Dörr, who presented an approach for model-based engineering in automotive systems and discussed the role of rule-based transformations in that context.

Satellite Events. For the first time at ICGT, a Doctoral Symposium took place – it was organized by Andrea Corradini and Emilio Tuosto. 16 young researchers had the opportunity to present their work and interact with established researchers of

the graph transformation community. A tutorial by Reiko Heckel gave newcomers to the field an opportunity to get a general introduction to graph transformation. In addition four workshops were organized where participants of the ICGT could exchange ideas and views on some subareas of graph transformation:

- *Workshop on Graph Computation Models* by Mohamed Mosbah and Annegret Habel,
- *4th Workshop on Graph-Based Tools* by Arend Rensink and Pieter Van Gorp,
- *3rd Workshop on Petri Nets and Graph Transformations* by Paolo Baldan and Barbara König, and
- *Workshop on Natural Computing and Graph Transformations* by Ion Petre and Grzegorz Rozenberg.

We would like to thank Dénes Bisztray, Karsten Ehrig, Stefan Jurack, Paolo Torrini, and Gerd Wierse who provided their valuable help throughout the preparation and organization of the conference and the proceedings. Last but not least, we are grateful to Springer for their helpful collaboration and quick publication.

July 2008

Hartmut Ehrig
Reiko Heckel
Grzegorz Rozenberg
Gabriele Taentzer

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The European Association of Software Science and Technology (EASST)
The IFIP Working Group 1.3, Foundations of Systems Specification

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