Lecture Notes in Computer Science 4346

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Luboš Brim Boudewijn Haverkort
Martin Leucker Jaco van de Pol (Eds.)

Formal Methods: Applications and Technology

11th International Workshop, FMICS 2006
and 5th International Workshop, PDMC 2006
Bonn, Germany, August 26-27, and August 31, 2006
Revised Selected Papers

Springer

Volume Editors

Luboš Brim
Masaryk University
Botanicka 68a, 602 00 Brno, Czech Republic
E-mail: brim@fi.muni.cz

Boudewijn Haverkort
University of Twente
P.O. Box 217, 7500AE Enschede, The Netherlands
E-mail: brh@cs.utwente.nl

Martin Leucker
Technische Universität München
Boltzmannstr. 3, 85748 Garching, Germany
E-mail: leucker@in.tum.de

Jaco van de Pol
Centrum voor Wiskunde en Informatica, SEN 2
P.O. Box 94079, 1090 GB Amsterdam, The Netherlands
E-mail: Jaco.van.de.Pol@cwi.nl

Library of Congress Control Number: 2007921124

CR Subject Classification (1998): D.2.4, D.2, D.3, C.3, F.3

LNCS Sublibrary: SL 2 – Programming and Software Engineering

ISSN 0302-9743
ISBN-10 3-540-70951-7 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-70951-0 Springer Berlin Heidelberg New York

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12021901 06/3142 5 4 3 2 1 0

Preface

These are the joint final proceedings of the 11th International Workshop on Formal Methods for Industrial Critical Systems (FMICS 2006) and the fifth International Workshop on Parallel and Distributed Methods in Verification (PDMC 2006). Both workshops were organized as satellite events of CONCUR 2006, the 17th International Conference on Concurrency Theory that was organized in Bonn, August 2006.

The FMICS workshop continued successfully the aim of the FMICS working group – to promote the use of formal methods for industrial applications, by supporting research in this area and its application in industry. The emphasis in these workshops is on the exchange of ideas between researchers and practitioners, in both industry and academia.

This year the Program Committee received a record number of submissions. The 16 accepted regular contributions and 2 accepted tool papers, selected out of a total of 47 submissions, cover formal methodologies for handling large state spaces, model-based testing, formal description and analysis techniques as well as a range of applications and case studies.

The workshop program included two invited talks, by Anna Slobodova from Intel on "Challenges for Formal Verification in an Industrial Setting" and by Edward A. Lee from the University of California at Berkeley on "Making Concurrency Mainstream." The former full paper can be found in this volume.

Following the tradition of previous workshops, the European Association of Software Science and Technology (EASST) supported a best paper award. This award was granted to Michael Weber and Moritz Hammer for their excellent paper "'To Store or Not To Store' Reloaded: Reclaiming Memory on Demand."

The primary goal of the PDMC workshop series is to present and discuss recent developments in the young area of parallel and distributed methods in verification. Several verification techniques, ranging over model checking, equivalence checking, theorem proving, constraint solving and dependability analysis are addressed by the PDMC community. Verification problems are usually very demanding tasks, especially because the systems that we build and want to verify become increasingly complex.

On the other hand, parallel and distributed computing machinery is widely available. Algorithms and tools must be developed to use this hardware optimally for our verification tasks. Traditionally, we studied algorithms for homogeneous situations, such as parallel shared-memory computers and distributed clusters of PCs. Currently, the emphasis is shifting towards heterogeneous GRIDs. But even modern desktop PCs are quite heterogeneous, consisting of multiple core processors, various memory devices and cache levels, all with their own performance characteristics.

This year's PDMC had nine submissions; six papers were selected for presentation, and four papers were accepted for publication in this volume. In addition, Luboš Brim from Masaryk University, Brno, gave an invited lecture on "Distributed Verification: Exploring the Power of Raw Computing Power." The full paper can also be found in this volume.

We would like to thank all authors for their submissions. We would also like to thank the members of both Program Committees, and the additional referees, for their timely reviewing and lively participation in the subsequent discussion—the quality of the contributions in this volume are also due to their efforts and expertise.

The organizers wish to thank CONCUR for hosting the FMICS and PDMC 2006 workshops and taking care of many administrative aspects, and ERCIM for its financial support of FMICS. Additionally, the organizers would like to thank the EASST (European Association of Software Science and Technology), the Faculty of Informatics, Masaryk University Brno and the Technical University Munich, the CWI (Center of Mathematics and Computer Science, Amsterdam) and the University of Twente for supporting these events.

December 2006

Luboš Brim
Boudewijn R. Haverkort
Martin Leucker
Jaco van de Pol

Organization

FMICS

Program Chairs

Luboš Brim	Masaryk University Brno, Czech Republic
Martin Leucker	Technical University of Munich, Germany

Program Committee

Rance Cleaveland	University of Maryland, USA
Wan Fokkink	Vrije Universiteit Amsterdam and CWI, The Netherlands
Stefania Gnesi	ISTI-CNR, Italy
Susanne Graf	VERIMAG, France
David Harel	Weizmann Institute of Science, Israel
Klaus Havelund	Kestrel Technology, USA
Thomas A. Henzinger	EPFL, Switzerland
Leszek Holenderski	Philips Research, The Netherlands
Stefan Kowalewski	RWTH Aachen University, Germany
Marta Kwiatkowska	University of Birmingham, UK
Salvatore La Torre	Universitá degli Studi di Salerno, Italy
Tiziana Margaria	University of Göttingen, Germany
Radu Mateescu	INRIA Rhône-Alpes and ENS Lyon, France
Doron Peled	University of Warwick, UK
Ernesto Pimentel	University of Malaga, Spain
Andreas Podelski	Max-Planck-Institut für Informatik, Germany
Don Sannella	University of Edinburgh, UK
Joseph Sifakis	VERIMAG, France

PDMC

Program Chairs

Boudewijn Haverkort	University of Twente, The Netherlands
Jaco van de Pol	CWI Amsterdam, The Netherlands

Program Committee

Gerd Behrmann	Aalborg University, Denmark
Ivana Černá	Masaryk University Brno, Czech Republic
Gianfranco Ciardo	University of California at Riverside, USA
Joerg Denzinger	University of Calgary, Canada

Hubert Garavel	INRIA Rhône-Alpes, France
Orna Grumberg	Technion, Haifa, Israel
William Knottenbelt	Imperial College, London, UK
Marta Kwiatkowska	University of Birmingham, UK
Martin Leucker	Technical University of Munich, Germany

Referees (FMICS and PDMC)

C. Artho	I. Černá	M. Kuntz	D. Parker
Y. Atir	F. Ciesinski	F. Lang	G. Parlato
R. Atkey	M. Faella	P. Lopez	G. Salaün
J. Barnat	A. Fantechi	K. MacKenzie	W. Serwe
M. ter Beek	M. Felici	P. Maier	F. Sorrentino
M. van der Bijl	A. J. Fernandez	S. Maoz	J. Tenzer
B. Bollig	M. Fruth	F. Mazzanti	A. Venet
L. Bozzelli	N. Geisweiller	R. Merom	A. Wijs
A. Bucchiarone	A. Goldberg	A. Murano	T. Willemse
D. Calvanese	A. Idani	G. Norman	V. Wolf
M. V. Cengarle	C. Joubert	M. Parente	

Table of Contents

Invited Contributions

FMICS

PDMC