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Preface

The COCV 2007 workshop on “Compiler Optimization meets Compiler Verification” provides a forum for researchers and practitioners working on optimizing and verifying compilation and related fields such as translation validation and certifying compilation. Moreover, special emphasis is put on embedded systems, in particular on hardware verification, formal synthesis methods, correctness aspects in HW/SW co-design and formal verification of hardware/software systems as well as on practical and industrial applications of formal techniques. COCV provides a forum for exchanging the latest findings and for plumbing the mutual impact of these fields on each other. By encouraging discussions and co-operations across different, yet related fields, the workshop strives for bridging the gap between the communities and for stimulating synergies and cross-fertilizations among them.

This year’s COCV workshop is the sixth edition in a series of workshops held since 2002 which are devoted to the study and investigation of the theoretical foundations and their applications for compiler optimization and compiler verification and their mutual dependencies. COCV is organized as a satellite event of the European Joint Conferences on the Theory and Practice of Programming, ETAPS 2007, in Braga, Portugal. We would like to take this opportunity to thank the organizers of ETAPS 2007 for their help and support to organize and run this workshop. Previous workshops have also been held in conjunction with the ETAPS conferences, in 2002 in Grenoble, in 2003 in Warsaw, in 2004 in Barcelona, in 2005 in Edinburgh and in 2006 in Vienna. Like its predecessors, COCV 2007 brings together researchers and developers both from academia and industry whose interest is the improvement of the reliability and performance of executable code generated by compilers. In addition to its predecessors, COCV 2007 broadens its range of topics by also including papers from the field of hardware verification.

This widening of topics is also reflected by this year’s invited speaker, Alan Hu from the University of British Columbia in Canada. His talk at the workshop is about “High-Level vs. RTL Equivalence Checking: Why the Next Big Success of Formal Verification Needs COCV”.

A major aim of this workshop is to encourage and foster discussions both on the combined improvement of compiler verification and optimization as well as on a comparison to the methods and tools used in hardware synthesis and verification.

We received eight submissions and accepted five of them. The accepted papers deal with topics such as specification languages for hardware descriptions, program distillation, the combination of data flow analysis and model checking, certifying compilation and the generation of Java optimizers from specifications in temporal logic. The paper by Bloem, Galler, Jobstmann, Piterman, Pnueli and Weiglhofer proposes a formal specification language for hardware synthesis and shows that it allows for the efficient synthesis of compact circuits, while ensuring their correctness by construction. Hamilton's work shows how a certain program transformation algorithm, called distillation, can be used to program verification. Gallardo, Joubert and Merino show how data flow analyses can be combined with model checking approaches, thus improving both methodologies. Blech and Poetzsch-Heffter apply the approach of certifying compilation to the code generation phase. The paper by Fang and Sassa presents a system that generates a Java optimizer from specifications in temporal logic. Their specification is simpler, and the generated optimizers run more efficiently than previously existing ones.

The program committee of COCV 2007 consists, besides the editors, of

- Roderick Bloem, Technical University of Graz, Austria
- Alessandro Cimatti, ITC-irst, Trento, Italy
- Franjo Ivancic, NEC Laboratories America, USA
- Rainer Leupers, RWTH Aachen University, Germany
- Robert Morgan, IBM, USA
- Wolfgang Müller, Paderborn University/C-LAB, Germany
- Wolf Zimmermann, Martin-Luther-Universität Halle-Wittenberg, Germany
- Lenore Zuck, University of Illinois at Chicago, USA

In addition to the organizers of ETAPS 2007, we would like to thank the authors who submitted a paper to COCV 2007. Moreover, we want to thank the reviewers, in particular the members of the program committee for their hard and engaged work and their detailed and constructive reviews. Furthermore, many thanks to Alan Hu for accepting our invitation to give the invited talk at COCV 2007. Without all their help, this workshop would not be possible. Finally, we are very grateful to Elsevier Science Publisher and to Michael Mislove, the managing editor of Elsevier's *Electronic Notes in Theoretical Computer Science (ENTCS)*, for their continued support and for publishing the final version of these proceedings as an issue of the ENTCS series.

*Sabine Glesner
Jens Knoop
Rolf Drechsler*

Berlin, Vienna, Bremen