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Ahmed Bouajjani Oded Maler (Eds.)

# Computer Aided Verification

21st International Conference, CAV 2009  
Grenoble, France, June 26 - July 2, 2009  
Proceedings

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# Preface

This volume contains the proceedings of the 21st International Conference on Computer-Aided Verification (CAV) held in Grenoble, France, between June 28 and July 2, 2009. CAV is dedicated to the advancement of the theory and practice of computer-aided formal analysis methods for hardware and software systems. Its scope ranges from theoretical results to concrete applications, with an emphasis on practical verification tools and the underlying algorithms and techniques.

Every instance of a conference is special in its own way. This CAV is special for at least two reasons: first, it took place in Grenoble, the place where the CAV series started 20 years ago. Secondly, there was a particularly large number of paper submissions: *135 regular papers* and *34 tool papers*, summing up to 169 submissions. They all went through an active review process, with each submission reviewed by four members of the Program Committee. We also sought external reviews from experts in certain areas. Authors had the opportunity to respond to the initial reviews during an author response period. All these inputs were used by the Program Committee in selecting a final program with *36 regular papers* and *16 tool papers*. In addition to the presentation of these papers, the program included the following:

- Four invited tutorials:
  - *Rachid Guerraoui* (EPFL Lausanne, Switzerland): *Transactional Memory: Glimmer of a Theory*.
  - *Jaeha Kim* (Stanford, USA): *Mixed-Signal System Verification: A High-Speed Link Example*.
  - *Jean Krivine* (Institut des Hautes Etudes Scientifiques, France): *Modelling Epigenetic Information Maintenance: A Kappa Tutorial*.
  - *Joseph Sifakis* (CNRS-VERIMAG, France): *Component-Based Construction of Real-Time Systems in BIP*.
  
- Four invited talks:
  - *Martin Abadi* (UC Santa Cruz and MSR Silicon Valley, USA): *Models and Proofs of Protocol Security: A Progress Report*.
  - *Luca Benini* (U Bologna, Italy): *Predictability vs. Efficiency in the Multicore Era: Fight of Titans or Happy Ever After?*
  - *Sumit Gulwani* (MSR Redmond, USA): *SPEED: Symbolic Complexity Bound Analysis*.
  - *Ofer Strichman* (Technion, Israel): *Regression Verification: Proving the Equivalence of Similar Programs*.

The conference was preceded by the following 14 affiliated workshops and events:

- SPIN - Model Checking of Software

- RV - Runtime Verification
- EC<sup>2</sup> - Exploiting Concurrency Efficiently and Correctly
- GASICS - Games for Design, Verification and Synthesis
- VETO - Computer Science Security and Electronic Vote
- MITACS - Foundations and Practice of Security
- BPR - Bit Precise Reasoning
- QA - Quantitative Analysis of Software
- PSY - Practical Synthesis for Concurrent Systems
- AFM - Automated Formal Methods
- FAC - Formal Verification of Analog Circuits
- CFV - Constraints in Formal Verification
- HWMCC - Hardware Model Checking Competition
- PADVES - Platforms for Analysis, Design and Verification of Embedded Systems

We gratefully acknowledge the support to CAV 2009 from public and industrial sponsors. The former included the Joseph Fourier University of Grenoble (UJF), the French National Center for Scientific Research (CNRS), the French National Institute for Research in Informatics and Control (INRIA), the MINA-LOGIC pole of excellence of the Rhône-Alpes region and the European network of excellence ARTIST2. On the industrial side, we received support from IBM, Intel, Jasper Design Automation, Microsoft Research and NEC Labs America.

Many individuals were very generous with their time and expertise that went into putting the conference together. We thank the Program Committee and the external reviewers for their efforts in the assessment and evaluation of the submissions. We thank Andrei Voronkov for creating and supporting the invaluable EasyChair conference management system. The organization of CAV 2009 could not have been achieved without the efforts of the Organization Chair Saddek Bensalem, aided by Ylies Falcone (web), Peter Habermehl (submissions and proceedings) and the conference team of Floralis (Laetitia Libralato, Audrey Dibilio and Cyrille Mathon). Numerous student volunteers at VERIMAG helped us as well. We thank Andreas Podelski for help in organizing the tutorials and workshops and the CAV 2008 Chairs and organizers Aarti Gupta and Sharad Malik, as well as the members of the Steering Committee for their help and advice.

July 2009

Ahmed Bouajjani  
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