

Special issue of the 21st International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2015)

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The International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) is a forum for researchers, developers and users interested in the rigorous development of tools and algorithms for the construction and analysis of systems. The conference aims to bridge the gaps between different communities with this common interest and support them in their quest to improve the utility, reliability, exibility and efficiency of tools and algorithms for building systems. The research areas covered by TACAS traditionally include specification and verification techniques; software and hardware verification; analytical techniques for real-time, hybrid and stochastic systems; analytical techniques for safety, security and dependability; model checking; theorem proving; SAT and SMT solving; static and dynamic program analysis; testing; abstraction techniques for modeling and verification; compositional and refinement-based methodologies; system construction and transformation techniques; tool environments and tool architectures; as well as applications and case studies.

The 21st edition of the conference, TACAS 2015, took place from April 13 to April 17, 2015, in London, UK as one of the main conferences of the 18th European Joint Conferences on Theory and Practice of Software (ETAPS 2015). It received 164 paper submissions, divided in the following categories: research papers (105), case study papers (11), regular tool papers (31), and short tool demonstration papers (17). The overall acceptance rate of the first three categories was 17%.

This special issue of Acta Informatica contains extended and revised versions of three research papers selected from those presented at TACAS 2015. *Approximate Counting in SMT and Value Estimation for Probabilistic Programs*, by Chistikov, Dimitrova and Majumdar, presents model counting methods for the logical theories of bounded integers and linear real

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arithmetic using reductions to decision problems in Satisfiability Modulo Theories (SMT). *Model Checking the Evolution of Gene Regulatory Networks*, by Giacobbe, Guet, Gupta, Henzinger, Paiˆao and Petrov, presents a verification-like method for linear temporal logic properties, based on symbolic bounded model checking techniques and SMT solving, to analyze the behavior of gene regulatory networks with varying weights. Stateless Model Checking for TSO and PSO, by Abdulla, Aronis, Atig, Jonsson, Leonardsson and Sagonas, presents stateless model checking techniques based on dynamic partial order reductions for systems based on architectures with relaxed memory models.

These papers were selected because of their overall quality and the significance of their theoretical contribution. A companion special issue of the International Journal on Software Tools for Technology contains four additional papers that were selected for their quality and substantial contribution to the development or application of software tools for system analysis.

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