Preface of the special issue on the Conference on Formal Methods in Computer-Aided Design 2017

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This special issue of the Journal on Formal Methods in System Design features extended and revised versions of select contributions presented at the 2017 Conference on Formal Methods in Computer-Aided Design (FMCAD 2017) [9]. The FMCAD conference focuses on theoretical results and tools in the field of automated verification and formal methods, and provides a leading forum that brings together researchers in academia and industry.

FMCAD 2017 was held from October 2 to October 6, 2017, in Vienna, Austria. In addition to the invited and contributed talks, the conference included a tutorial day, a student forum providing a platform for graduate students to present their research [6], and a symposium in memoriam Helmut Veith [3].

This special issue contains the following six contributions, all of which were reviewed by at least two experts in at least two rounds of peer review:

- *Incremental Column-Wise Verification of Arithmetic Circuits Using Computer Algebra* is an extended version of [7], the publication which won the Best Paper Award at FMCAD 2017. The authors present an incremental technique that uses Gröbner bases to verify that a gate-level representation adheres to its specification.
- *Parameterized Verification of Algorithms for Oblivious Robots on a Ring* (which extends [8]) studies the verification of autonomous swarms of mobile robots that self-organize and cooperate to solve global objectives, and is the first work that focuses on the parameterized case of this setting.
- *First-Order Temporal Logic Monitoring with BDDs*, based on [5], deploys Binary Decision Diagrams to representing data observed during program executions, which leads to substantial performance improvements.
- *Exact Quantitative Probabilistic Model Checking Through Rational Search*, based on [1], presents a new automated model checking algorithm that improves approximate verification results for probabilistic models by using scalable iterative techniques to compute exact reachability probabilities.
- *Automated Repair By Example for Firewalls* is based on [4] and describes FIREMASON, a tool that uses automated decision procedures to automatically repair firewalls, where the correct behavior is specified in terms of examples.

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- *Learning Inductive Invariants by Sampling from Frequency Distributions*, an extended version of [2], presents a probabilistic, syntax-guided method to discover inductive invariants.

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