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Pierre Ganty · Mohamed Kaâniche (Eds.)

Verification and Evaluation of Computer and Communication Systems

13th International Conference, VECoS 2019
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Proceedings

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Preface

These proceedings include the papers presented at the 13th International Conference on Verification and Evaluation of Computer and Communication Systems (VECoS 2019), held at Porto, Portugal, on October 9, 2019. This year VECoS is colocated with the International Symposium on Formal Methods, FM 2019.

The first edition of the conference, VECoS 2007, took place in Algiers, VECoS 2008 in Leeds, VECoS 2009 in Rabat, VECoS 2010 in Paris, VECoS 2011 in Tunis, VECoS 2012 in Paris, VECoS 2013 in Florence, VECoS 2014 in Bejaia, VECoS 2015 in Bucharest, VECoS 2016 in Tunis, VECoS 2017 in Montreal, and VECoS 2018 in Grenoble.

The aim of the VECoS conference is to bring together researchers and practitioners in the areas of verification, control, performance, and dependability evaluation in order to discuss the state of the art and challenges in modern computer and communication systems in which functional and extra-functional properties are strongly interrelated. Thus, the main motivation for VECoS is to encourage the cross-fertilization between various formal verification and evaluation approaches, methods, and techniques, and especially those developed for concurrent and distributed hardware/software systems.

The Program Committee (PC) of VECoS 2019 included researchers from 20 countries. We received 13 full submissions from 10 countries. After a thorough and lively discussion phase, the PC decided to accept seven papers. The conference program also included two invited talks. The invited speakers were: Jose F. Morales from the IMDEA Software Institute, Spain; and Ali Mili from the New Jersey Institute of Technology, NY, USA.

We are grateful to the Program and Organizing Committee members, to the reviewers for their cooperation, and to Springer for their professional support during the production phase of the proceedings. We are also thankful to all authors of submitted papers and to all participants of the conference. Their interest in this conference and contributions are greatly appreciated.

August 2019

Pierre Ganty
Mohamed Kaàniche

Organization

VECoS 2019 is organized in Porto and colocated with the International Symposium on Formal Methods, FM 2019.

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Keynote Abstracts

Top-Down Horn Clause-Based Program Analysis in the Ciao Language

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Abstract. Ciao is a logic programming language which was designed from the root to be extensible, support multiparadigm features, and provide the flexibility of a dynamic language, but with guaranteed safety, reliability, and efficiency. A key component of Ciao is its preprocessor (CiaoPP), a context-sensitive, abstract interpretation-based analyzer based on inferring via fixpoint computation the abstract program semantics, over a set of user-definable abstract domains. In this talk I will introduce the Ciao/CiaoPP approach, and recent results on the use of assertions to guide such fixpoint computations, incremental and modular analysis, optimization of run-time checks and static analysis of their cost, combination with automated testing, as well as other applications like semantic code search, multilanguage analysis based on transforming both high- and low-level program representations into Horn clauses, or energy consumption verification.

1968 to 2019: Half a Century of Correctness Enhancement

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Abstract. Whereas correctness preservation is considered as the gold standard of software engineering processes, in this talk we argue that in fact the vast majority of software engineering processes do not involve correctness preservation but rather correctness enhancement. We explore some mathematics of correctness enhancement, discuss in what way and to what extent correctness enhancement pervades software engineering, and tentatively speculate about prospects for using these insights to enhance software engineering practice.

Contents

Modeling Concurrent Behaviors as Words	1
<i>Yohan Boichut, Jean-Michel Couvreur, Xavier Ferry, and Mohamadou Tafsir Sakho</i>	
Non-Standard Zeno-Free Simulation Semantics for Hybrid Dynamical Systems	16
<i>Ayman Aljarbough</i>	
Static Detection of Event-Driven Races in HTML5-Based Mobile Apps.	32
<i>Phi Tuong Lau</i>	
Analysing Security Protocols Using Scenario Based Simulation	47
<i>Farah Al-Shareefi, Alexei Lisitsa, and Clare Dixon</i>	
Running on Fumes: Preventing Out-of-Gas Vulnerabilities in Ethereum Smart Contracts Using Static Resource Analysis	63
<i>Elvira Albert, Pablo Gordillo, Albert Rubio, and Ilya Sergey</i>	
Estimating Latency for Synchronous Dataflow Graphs Using Periodic Schedules	79
<i>Philippe Glanon, Selma Azaiez, and Chokri Mraidha</i>	
Importance-Based Scheduling to Manage Multiple Core Defection in Real-Time Systems	95
<i>Yves Mouafo Tchinda, Annie Choquet-Geniet, and Gaëlle Largeteau-Skapin</i>	
Author Index	111