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Preface

This volume contains the proceedings of the 19th International Conference on Runtime Verification (RV 2019), which was held during October 8–11, 2019, in Porto, Portugal, as part of the Third World Congress on Formal Methods (FM 2019).

The RV series consists of annual meetings that gather together scientists from both academia and industry interested in investigating novel lightweight formal methods to monitor, analyze, and guide the runtime behavior of software and hardware systems. Runtime verification techniques are crucial for system correctness, reliability, and robustness; they provide an additional level of rigor and effectiveness compared with conventional testing, and are generally more practical than exhaustive formal verification. Runtime verification can be used prior to deployment, for testing, verification, and debugging purposes, and after deployment for ensuring reliability, safety, and security and for providing fault containment and recovery as well as online system repair.

RV started in 2001 as an annual workshop and turned into a conference in 2010. The workshops were organized as satellite events of an established forum, including CAV and ETAPS. The proceedings of RV from 2001 to 2005 were published in the Electronic Notes in Theoretical Computer Science. Since 2006, the RV proceedings have been published in Springer’s Lecture Notes in Computer Science. The previous RV conferences took place in Istanbul, Turkey (2012); Rennes, France (2013); Toronto, Canada (2014); Vienna, Austria (2015); Madrid, Spain (2016); Seattle, USA (2017); and Limassol, Cyprus (2018).

There were 38 submissions, 31 as regular contributions, two as short contributions, two as tool demonstration papers, and three as benchmark papers. Each benchmark paper was reviewed by three Program Committee members, submissions in the other categories were reviewed by four members. The committee decided to accept 19 papers, 14 regular papers, two short papers, two tool demonstration papers, and one benchmark paper. The evaluation and selection process involved thorough discussions among the members of the Program Committee and external reviewers through the EasyChair conference manager, before reaching a consensus on the final decisions. To complement the contributed papers, we included in the program three invited speakers covering both industry and academia:

– David Basin, ETH Zurich, Switzerland
– Akshay Rajhans, Mathworks, USA
– Sanjit A. Seshia, University of California, Berkeley, USA
The conference included four tutorials that took place on the first day. The following tutorials were selected to cover a breadth of topics relevant to RV:

- Christopher Hahn presented a tutorial on “Algorithms for Monitoring Hyperproperties”
- Georgios Fainekos, Bardh Hoxha, and Sriram Sankaranarayanan presented a tutorial on “Robustness of Specifications and its Applications to Falsification, Parameter Mining, and Runtime Monitoring with S-TaLiRo”
- Hazem Torfah presented a tutorial on “Stream-based Monitors for Real-time Properties”
- Yliès Falcone presented a tutorial “On the Runtime Enforcement of Timed Properties”

During a special award session at the conference, the 2019 RV Test of Time Award was given to Moonzoo Kim, Sampath Kannan, Insup Lee, and Oleg Sokolsky for their RV 2001 paper “Java-MaC: A Run-time Assurance Tool for Java Programs.” The awardees gave a retrospective talk and an associated invited paper is included in the proceedings.

We would like to thank the authors of all submitted papers, the members of the Steering Committee, the Program Committee, and the external reviewers for their exhaustive task of reviewing and evaluating all submitted papers. We are grateful to José Nuno Oliveira, the general chair of FM 2019, and the entire Organizing Committee for their outstanding support. We highly appreciate the EasyChair system for the management of submissions. We acknowledge the great support from our sponsors, Runtime Verification Inc. and CPEC – TRR 248 (see perspicious-computing.science).

August 2019

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