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Leveraging Applications of Formal Methods, Verification and Validation

Discussion, Dissemination, Applications

7th International Symposium, ISoLA 2016
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Preface

Welcome to ISoLA 2016, the 7th International Symposium on Leveraging Applications of Formal Methods, Verification and Validation, that was held in Corfu, Greece during October 10–14, 2016, endorsed by EASST, the European Association of Software Science and Technology.

This year's event followed the tradition of its forerunners held 2004 and 2006 in Cyprus, 2008 in Chalkidiki, 2010 and 2012 in Crete, and 2014 in Corfu, and the series of ISoLA Workshops in Greenbelt (USA) in 2005, Poitiers (France) in 2007, Potsdam (Germany) in 2009, in Vienna (Austria) in 2011, and 2013 in Palo Alto (USA).

As in the previous editions, ISoLA 2016 provided a forum for developers, users, and researchers to discuss issues related to the *adoption and use of rigorous tools and methods* for the specification, analysis, verification, certification, construction, test, and maintenance of systems from the point of view of their different application domains. Thus, since 2004 the ISoLA series of events serves the purpose of bridging the gap between designers and developers of rigorous tools, on one hand, and users in engineering and in other disciplines on the other hand. It fosters and exploits synergetic relationships among scientists, engineers, software developers, decision makers, and other critical thinkers in companies and organizations. By providing a specific, dialogue-oriented venue for the discussion of common problems, requirements, algorithms, methodologies, and practices, ISoLA aims in particular at supporting researchers in their quest to improve the usefulness, reliability, flexibility, and efficiency of tools for building systems and users in their search for adequate solutions to their problems.

The program of the symposium consisted of a collection of *special tracks* devoted to the following hot and emerging topics:

- Correctness-by-Construction and Post-Hoc Verification: Friends or Foes?
  (Organizers: Maurice ter Beek, Reiner Haehnle, Ina Schaefer)
- Static and Runtime Verification: Competitors or Friends?
  (Organizers: Dilian Gurov, Klaus Havelund, Marieke Huisman, Rosemary Monahan)
- Testing the Internet of Things
  (Organizers: Michael Felderer, Ina Schieferdecker)
- Rigorous Engineering of Collective Adaptive Systems
  (Organizers: Stefan Jähnichen, Martin Wirsing)
- RVE: Runtime Verification and Enforcement, the (Industrial) Application Perspective
  (Organizers: Ezio Bartocci, Ylies Falcone)
- ModSyn-PP: Modular Synthesis of Programs and Processes
  (Organizers: Boris Düdder, George Heineman, Jakob Rehof)
- Variability Modelling for Scalable Software Evolution
  (Organizers: Ferruccio Damiani, Christoph Seidl, Ingrid Chieh Yu)
- Statistical Model Checking
  (Organizers: Kim Larsen, Axel Legay)

- Detecting and Understanding Software Doping
  (Organizers: Christel Baier, Holger Hermanns)
- Formal Methods and Safety Certification: Challenges in the Railways Domain
  (Organizers: Alessandro Fantechi, Stefania Gnesi)
- Semantic Heterogeneity in the Formal Development of Complex Systems
  (Organizers: Idir Ait Sadoune, Paul Gibson, Marc Pantel)
- Privacy and Security Issues in Information Systems
  (Organizers: Axel Legay, Fabrizio Biondi)
- Evaluation and Reproducibility of Program Analysis and Verification
  (Organizers: Markus Schordan, Dirk Beyer, Jonas Lundberg)
- Towards a Unified View of Modeling and Programming
  (Organizers: Manfred Broy, Klaus Havelund, Rahul Kumar, Bernhard Steffen)
- Learning Systems: Machine-Learning in Software Products and Learning-Based Analysis of Software Systems
  (Organizers: Falk Howar, Andreas Rausch, Karl Meinke)

The following embedded events were also hosted:

- RERS: Challenge on Rigorous Examination of Reactive Systems (Falk Howar, Markus Schordan, Bernhard Steffen, Jaco van de Pol)
- Doctoral Symposium and Poster Session (Anna-Lena Lamprecht)
- Tutorial: Automata Learning in Practice (Falk Howar, Karl Meinke)
- Industrial Day (Axel Hessenkämper)

Co-located with the ISoLA Symposium was:

- STRESS 2016 – 4th International School on Tool-Based Rigorous Engineering of Software Systems (J. Hatcliff, T. Margaria, Robby, B. Steffen)

In addition to the contributions of the main conference, the proceedings also comprise contributions of the four embedded events and tutorial papers for STRESS. We thank the track organizers, the members of the Program Committee and their reviewers for their effort in selecting the papers to be presented, the local organization chair, Petros Stratis, and the EasyConferences team for their continuous precious support during the week as well as during the entire two-year period preceding the events, and Springer for being, as usual, a very reliable partner for the publication of the proceedings. Finally, we are grateful to Kyriakos Georgiades for his continuous support for the website and the program, and to Markus Frohme, Johannes Neubauer, and Julia Rehder for their help with the online conference service (OCS).

Special thanks are due to the following organizations for their endorsement: EASST (European Association of Software Science and Technology) and Lero – The Irish Software Research Centre, and our own institutions – the TU Dortmund and the University of Limerick.

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