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Erika Ábrahám · Marieke Huisman (Eds.)

Integrated Formal Methods

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Editors
Erika Ábrahám
RWTH Aachen University
Aachen
Germany

Marieke Huisman
University of Twente
Enschede
The Netherlands

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Preface

Applying formal methods may involve the usage of different formalisms and different analysis techniques to validate a system, either because individual components are most amenable to one formalism or technique, because one is interested in different properties of the system, or simply to cope with the sheer complexity of the system. The iFM conference series seeks to further research into hybrid approaches to formal modeling and analysis; i.e., the combination of (formal and semi-formal) methods for system development, regarding both modeling and analysis. The conference covers all aspects from language design through verification and analysis techniques to tools and their integration into software engineering practice.

These proceedings document the outcome of the 12th International Conference on Integrated Formal Methods, iFM 2016, on recent developments toward this goal. The conference was held in Reykjavik, Iceland, during June 1–5, 2016, hosted by Reykjavik University. Previous editions of iFM were held in York, UK (1999), Schloss Dagstuhl, Germany (2000), Turku, Finland (2002), Kent, UK (2004), Eindhoven, The Netherlands (2005), Oxford, UK (2007), Düsseldorf, Germany (2009), Nancy, France (2010), Pisa, Italy (2012), Turku, Finland (2013), and Bertinoro, Italy (2014).

The conference received 99 submissions of authors from 34 countries. Papers were submitted in four categories: research papers, regular tool papers, short tool papers, and case study papers. All papers were reviewed by at least three members of the Program Committee. After careful deliberations, the Program Committee selected 30 papers for presentation.

In addition to these papers, this volume contains contributions of three invited keynote speakers: Reiner Hähnle, TU Darmstadt, Germany; Laura Kovács, Chalmers University of Technology, Sweden, and TU Wien, Austria; and Marsha Chechik, University of Toronto, Canada:

- Martin Hentschel, Reiner Hähnle, and Richard Bubel: "Can Formal Methods Improve the Efficiency of Code Reviews?"
- Laura Kovács: "Symbolic Computation and Automated Reasoning for Program Analysis"
- Marsha Chechik, Michalis Famelis, and Rick Salay: "Perspectives of Model Transformation Reuse"

Invited presentations are always the highlights of a conference; these contributions are therefore gratefully acknowledged.

iFM was accompanied by the following satellite events, managed by the workshop chairs, Marcel Kyas, University of Reykjavik, Iceland, and Wojciech Mostowski, Halmstad University, Sweden:

- The 6th International Symposium on Unifying Theories of Programming (UTP 2016)
- Workshop on Pre- and Post-Deployment Verification Techniques (PrePost)

- Workshop on Formal Methods for and on the Cloud (iFMCloud 2016)
- Workshop on Verification and Validation of Cyber-Physical Systems (V2CPS)
- PhD Symposium at iFM 2016 on Formal Methods: Algorithms, Tools and Applications (PhD-iFM 2016)

The conference would not have been possible without the enthusiasm and dedication of the iFM general chair, Marjan Sirjani, and the support of the School of Computer Science at Reykjavik University, Iceland. For the work of the Program Committee and the compilation of the proceedings, Andrei Voronkov's EasyChair system was employed; it freed us from many technical matters and allowed us to focus on the program, for which we are grateful. Conferences like iFM rely on the willingness of experts to serve on the Program Committee; their professionalism and their helpfulness were exemplary. Finally, we would like to thank all the authors for their submissions, their willingness to continue improving their papers, and their presentations!

March 2016

Erika Ábrahám
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