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Preface

FM 2012 was the 18th in a series of symposia organized by Formal Methods Europe, an independent association whose aim is to stimulate the use of, and research on, formal methods for software development. The symposia have been notably successful in bringing together innovators and practitioners in precise mathematical methods for software and systems development, industrial users, as well as researchers. In August 2012, the *Conservatoire National des Arts et Métiers* (Le Cnam Paris) hosted FM 2012 in Paris (France).

The special theme of FM 2012 was "Interdisciplinary Formal Methods," with the goal of highlighting the development and application of formal methods in connection with a variety of disciplines including medicine, biology, human cognitive modeling, human automation interactions, and aeronautics. We were honored to have three invited speakers whose talks emphasized the special theme. Martin Abadi, with his talk titled "Software Security – A Formal Perspective," discussed software security with an emphasis on low-level attacks and defenses and on their formal aspects. Asaf Degani gave a talk titled "Formal Methods in the Wild: Trains, Planes, and Automobiles." Through this talk, Dr. Degani drew upon his experience with aerospace and automotive applications to provide a perspective on how formal methods could improve the design of such applications. Finally, Alan Wassyng, in his talk titled "Who Are We, and What Are We Doing Here?," stressed the importance of viewing formal methods from a rigorous software engineering perspective, and discussed his experiences with the certification of software-intensive systems. All three talks raised the awareness of the community to the fact that formal methods live in the intersection of disciplines; research in this domain must also consider how to increase the industrial impact of formal methods.

FM 2012 welcomed submissions in the following areas, among others:

- Interdisciplinary formal methods: techniques, tools and experiences demonstrating formal methods in interdisciplinary frameworks, such as formal methods related to maintenance, human automation interaction, human in the loop, system engineering, medicine and biology
- Formal methods in practice: industrial applications of formal methods, experience with introducing formal methods in industry, tool usage reports, experiments with challenge problems
- Tools for formal methods: advances in automated verification and model-checking, integration of tools, environments for formal methods, experimental validation of tools
- Role of formal methods in software and systems engineering: development processes with formal methods, usage guidelines for formal methods, method integration
- Theoretical foundations: all aspects of theory related to specification, verification, refinement, and static and dynamic analysis

– Teaching formal methods: insight, evaluations and suggestions for courses
of action regarding the teaching of formal methods, including teaching ex-
periences, educational resources, the integration of formal methods into the
curriculum, the definition of a formal methods body of knowledge, etc

We solicited two types of contributions: research papers and tool demon-
stration papers. We received submissions from 39 countries around the world:
162 abstracts followed by 132 full submissions. The selection process was rig-
orous. Each paper received at least four reviews. We obtained external reviews
for papers that lacked expertise within the Program Committee. The Program
Committee, after long and very careful discussions of the submitted papers, de-
cided to accept only 28 full papers and seven tool papers, which corresponds to
an overall acceptance rate of approximately 26%. Some of the accepted papers
were additionally shepherded by expert members of the Program Committee to
ensure the quality of their final version. The accepted papers made a scientif-
ically strong and exciting program, which triggered interesting discussions and
exchange of ideas among the FM participants. The accepted papers cover several
aspects of formal methods, including verification, synthesis, runtime monitoring,
testing and controller synthesis, as well as novel applications of formal meth-
ods in interesting domains such as satellites, autonomous vehicles, and disease
dynamics.

We would like to thank all authors who submitted their work to FM 2012.
Without their excellent contributions we would not have managed to prepare a
strong program. We are grateful to the Program Committee members and exter-
nal reviewers for their high-quality reviews and dedication. Finally, we wish to
thank the Steering Committee members for their excellent support. The logistics
of our job as Program Chairs were facilitated by the EasyChair system.

June 2012   Dimitra Giannakopoulou
                                                             Dominique Méry

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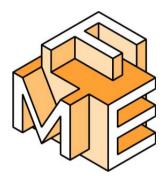|	
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