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Theoretical Aspects of Computing – ICTAC 2011

8th International Colloquium
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Proceedings

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Preface

The International Colloquia on Theoretical Aspects of Computing (ICTAC) bring together practitioners and researchers from academia, industry and government to present research results and exchange experience and ideas. An important aim of the colloquia is to promote cooperation in research and education between participants and their institutions, from developing and industrial countries, in accordance with the mandate of the United Nations University.

Research on theoretical aspects of computing has a direct impact on the practice of computer systems development as well as on the technologies associated with many disciplines other than computer science. The definition of effective theoretical frameworks for modelling and analyzing complex systems has resulted in the development of tools and methodologies for the verifications of software and hardware systems, before their actual construction, and for the simulation and analysis of natural systems, such as biological and ecological systems, supporting important predictions which otherwise would require expensive and difficult laboratory and field experiments, and the prevention of natural disasters. Moreover, research on theoretical aspects of computing has enabled the development of sophisticated techniques for mining and analyzing large amounts of data and support knowledge management in various application domains, such as education, health, economy and governance.

This volume contains the papers presented at the 8th International Colloquium on Theoretical Aspects of Computing (ICTAC 2011), which was held from August 31 to September 2, at Mabalingwe Nature Reserve, in the Waterberg mountains, two hours' travel from the center of Johannesburg, South Africa. There were 44 submissions by authors from 21 countries. Each submission was reviewed by at least two, and mostly three, Program Committee members and external reviewers. After extensive discussions, the Program Committee decided to accept the 14 papers included in this volume, with an acceptance rate of 32%. Authors of a selection of these papers will be invited to submit an extended version of their work to a special issue of the *Theoretical Computer Science* journal. The colloquium program also included three keynote talks. Jayadev Misra, from the University of Texas at Austin, USA, was the FME lecturer and presented a talk on "Virtual Time and Timeout in Client-Server Networks." David Lorge Parnas, Professor Emeritus at McMaster University, Canada, presented a talk on "The Use of Mathematics In Software Development." Willem Visser, from Stellenbosch University, South Africa, presented a talk on "Infinitely Often Testing."

Tutorials associated with ICTAC 2011 were held on August 29 and 30 at Mabalingwe Nature Reserve. During August 22–26 an International School on Software Engineering associated with ICTAC 2011 was hosted by the University of the Witwatersrand, Johannesburg, at its Braamfontein campus.

ICTAC 2011 and its associated events were organized jointly by the University of the Witwatersrand, Johannesburg, South Africa, and the International Institute for Software Technology of the United Nations University (UNU-IIST), Macau SAR China. Additional support was provided by Microsoft Research, Formal Methods Europe (FME) and Data Abstraction (Pty) Ltd EasyChair was used to manage submissions, reviewing process and proceedings production. We are grateful to all members of the Program, Organizing and Steering Committees, and to all referees for their timely hard work. We are also grateful to Kyle Au and Kitty Chan, who contributed to the maintenance of the conference website, to the administrative staff at the School of Computational and Applied Mathematics of the University of the Witwatersrand, Johannesburg, and Data Abstraction for facilitating the event. Finally, we would like to thank all authors and all participants of the conference.

September 2011

Antonio Cerone
Pekka Pihlajasaari

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