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# Theory and Applications of Models of Computation

6th Annual Conference, TAMC 2009  
Changsha, China, May 18-22, 2009  
Proceedings

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# Preface

Theory and Applications of Models of Computation (TAMC) is an international conference series with an interdisciplinary character, bringing together researchers working in computer science, mathematics (especially logic) and the physical sciences. This crossdisciplinary character, together with its focus on algorithms, complexity and computability theory, gives the conference a special flavor and distinction.

TAMC 2009 was the sixth conference in the series. The previous five meetings were held during May 17–19, 2004 in Beijing, May 17–20, 2005 in Kunming, May 15–20, 2006 in Beijing, May 22–25, 2007 in Shanghai, and April 25–29, 2008 in Xi'an. TAMC 2009 was held in ChangSha, during May 18–22, 2009. Next year will see a new departure, namely, the first TAMC conference to be held outside of Asia. TAMC 2010 will be held in Prague, capital of the Czech Republic.

At TAMC 2009 we had three plenary speakers, Leslie Valiant (Harvard University, USA), Moshe Vardi (Rice University, USA) and Matthew Hennessy (Trinity College, Ireland), giving one-hour talks each. Professor Valiant spoke on “Neural Computations That Support Long Mixed Sequence of Knowledge Acquisition Tasks,” Professor Vardi on “Constraints, Graphs, Algebra, Logic, and Complexity,” and Professor Hennessy on “Distributed Systems and Their Environments.” Their respective abstracts accompanying the talks are included in these proceedings.

In addition, there were two special sessions organized by S. Barry Cooper on “Models of Computation” and by Iyad A. Kanj on “Algorithms and Complexity.” The invited speakers in the first session were Dan Browne (Imperial College, London, UK), Alessandra Carbone (University Pierre et Marie Curie, France), Barry Cooper (University of Leeds, UK) and Andrea Sorbi (University of Siena, Italy). Invited speakers in the second session were Jiong Guo (Friedrich-Schiller-Universität Jena, Germany), Iyad Kanj (DePaul University, USA), Henning Fernau (University of Trier, Germany), and Binhai Zhu (Montana State University, USA). The Respective papers accompanying seven of the invited talks are included in these proceedings.

The TAMC conference series arose naturally in response to important scientific developments affecting how we compute in the twenty-first century. At the same time, TAMC is already playing an important regional and international role, and promises to become a key contributor to the scientific resurgence seen throughout China and other parts of Asia.

The TAMC 2009 Program Committee selected 39 papers from 86 submissions for presentation at the conference and inclusion in this LNCS volume.

We are very grateful to the Program Committee, and the many outside referees they called on, for the hard work and expertise which they brought to the difficult selection process. We also wish to thank all authors who submitted

their work for our consideration. The submissions for TAMC 2009 were of a particularly high standard, and inevitably many good-quality papers had to be excluded.

Finally, we would like to thank the members of the Editorial Board of *Lecture Notes in Computer Science* and the editors at Springer for their encouragement and cooperation throughout the preparation of this conference.

Of course TAMC 2009 would not have been possible without the support of our sponsors, Central South University, China, and the National Science Foundation of China, and we therefore gratefully acknowledge their help in the realization of this conference.

ChangSha 2009

Jianer Chen  
S. Barry Cooper

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