

Thomas A. Henzinger Shankar Sastry (Eds.)

Hybrid Systems: Computation and Control

First International Workshop, HSCC'98
Berkeley, California, USA, April 13 - 15, 1998
Proceedings



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Preface

This volume contains the proceedings of the *First International Workshop on Hybrid Systems: Computation and Control*, HSCC'98, organized April 13–15, 1998, at the University of California, Berkeley. Following several meetings that were initiated by Anil Nerode at Cornell University, this is the first of a newly constituted, regular annual series of workshops on hybrid systems. Papers from the earlier meetings were published in the Springer-Verlag Lecture Notes in Computer Science series, volumes 736, 999, 1066, 1201, and 1273. The steering committee of the new workshop series includes Panos Antsaklis (University of Notre Dame), Nancy Lynch (Massachusetts Institute of Technology), Amir Pnueli (Weizmann Institute, Israel), Alberto Sangiovanni-Vincentelli (University of California, Berkeley), and Jan van Schuppen (CWI, The Netherlands).

The focus of the workshop is on mathematical methods for the rigorous and systematic design and analysis of hybrid systems. A hybrid system consists of digital devices that interact with analog environments. Driven by rapid advances in digital controller technology, hybrid systems are objects of investigation of increasing relevance and importance. The emerging area of hybrid systems research lies at the crossroads of computer science and control theory: computer science contributes expertise on the digital aspects of a hybrid system, and control theory contributes expertise on the analog aspects. Since both research communities speak largely different languages, and employ largely different methods, a major purpose of the workshop is to bring together researchers from both disciplines.

The three-day workshop will feature six invited keynote speakers and 26 contributed talks that were selected from 55 submissions by a technical program committee. The keynote lecturers will be Panos Antsaklis (University of Notre Dame), Stephen Boyd (Stanford University), Edward Lee (University of California, Berkeley), Alberto Sangiovanni-Vincentelli (University of California, Berkeley), Joseph Sifakis (VERIMAG, France), and Murray Wonham (University of Toronto). Additional invited addresses will be given by Linda Bushnell from the Army Research Office and by Helen Gill from the Defense Advanced Research Projects Agency. The workshop will also include demos of software tools for the design, analysis, and simulation of hybrid systems.

The program committee was chaired by the editors and included Rajeev Alur (University of Pennsylvania), Karl Astrom (Lund University, Sweden), Albert Benveniste (INRIA-IRISA, France), Ahmed Bouajjani (VERIMAG, France), Michael Branicky (Case Western Reserve University), Peter Caines (McGill University), Datta Godbole (PATH Berkeley, California), Mark Greenstreet (University of British Columbia), Vineet Gupta (NASA Ames, California), Bruce Krogh (Carnegie Mellon University), Stephane Lafortune (University of Michigan), Kim Larsen (Aalborg University, Denmark), Oded Maler (VERIMAG, France), Stephen Morse (Yale University), Anil Nerode (Cornell University), Peter Ramadge (Princeton University), Roberto Segala (University of Bologna,

Italy), and Howard Wong-Toi (Cadence Berkeley Labs, California). In the selection process, the program committee was aided by the following reviewers: L. Aceto, K. Al-Wahedi, E. Asarin, E. Badouel, G. Barrett, O. Bournez, A. Chutinan, P. Codognet, R. Debouk, A. Deshpande, A. Fehnker, A. Hicks, R. Jagadeesan, M. Kourjanski, Y. Lakhnech, F. Lin, J. Lygeros, H. McClamroch, R. Nikoukhah, G. Pappas, A. Puri, R. Rajamani, H. Schumacher, R. Sengupta, A. Skou, M. Sorine, C. Tomlin, and C. Weise. The steering committee handled all submissions that were co-authored by the program chairs.

We are grateful to all invitees, contributors, and reviewers for making the workshop a success. In addition, we wish to thank Carol Block for administrating the workshop organization, John Lygeros and Serdar Tasiran for organizing the tool demos, Alexa Brudy and Flora Oviedo for organizational support, and the Army Research Office for generous financial support.

January 1998

Thomas A. Henzinger
Shankar Sastry

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