Time for Verification

Essays in Memory of Amir Pnueli
Amir Pnueli (1941-2009)
Preface

This volume is dedicated to the memory of Amir Pnueli: a great scientist, a colleague and a friend. Amir touched our lives in several ways. As a scientist, Amir had the exceptionally deep insight that can open a new research area with a cleverly crafted paper. Having published over 250 papers, and won the Turing Award, the highest awarded recognition in computer science, Amir is no doubt one of the most brilliant and visionary computer scientists of all times. As a colleague and research collaborator, Amir steered the entire field of research in unforeseen, original, directions. As a mentor, Amir was admired by the students that were lucky to be supervised by him. Amir will always be remembered as a colleague and a friend, who, with his kind manners and great vision has influenced and will continue to influence present and future generations of computer scientists.

April 2010

Zohar Manna

Doron Peled
Table of Contents

Modal and Temporal Argumentation Networks .............................. 1
   Howard Barringer and Dov M. Gabbay

Knowledge Based Scheduling of Distributed Systems .................... 26
   Saddek Bensalem, Doron Peled, and Joseph Sifakis

Quantitative Simulation Games ............................................. 42
   Pavol Černý, Thomas A. Henzinger, and Arjun Radhakrishna

The Localization Reduction and Counterexample-Guided Abstraction Refinement ...................................................... 61
   Edmund M. Clarke, Robert P. Kurshan, and Helmut Veith

A Scalable Segmented Decision Tree Abstract Domain .................... 72
   Patrick Cousot, Radhia Cousot, and Laurent Mauborgne

Towards Component Based Design of Hybrid Systems: Safety and Stability .............................................................. 96
   Werner Damm, Henning Dierks, Jens Oehlerking, and Amir Pnueli

Mildly Context-Sensitive Languages via Buffer Augmented Pregroup Grammars ...................................................... 144
   Daniel Genkin, Nissim Francez, and Michael Kaminski

Inference Rules for Proving the Equivalence of Recursive Procedures ... 167
   Benny Godlin and Ofer Strichman

Some Thoughts on the Semantics of Biocharts ............................ 185
   David Harel and Hillel Kugler

Unraveling a Card Trick ..................................................... 195
   Tony Hoare and Natarajan Shankar

An Automata-Theoretic Approach to Infinite-State Systems ............ 202
   Orna Kupferman, Nir Piterman, and Moshe Y. Vardi

On the Krohn-Rhodes Cascaded Decomposition Theorem ................ 260
   Oded Maler

Temporal Verification of Reactive Systems: Response .................. 279
   Zohar Manna and Amir Pnueli
The Arrow of Time through the Lens of Computing .................. 362
Krishna V. Palem

What Is in a Step: New Perspectives on a Classical Question ............ 370
Willem-Paul de Roever, Gerald Lüttgen, and Michael Mendler

Author Index .................................................. 401