

# Preface

This volume contains the proceedings of SARA 2000, the fourth Symposium on Abstraction, Reformulations, and Approximation (SARA). The conference was held at Horseshoe Bay Resort and Conference Club, Lake LBJ, Texas, July 26–29, 2000, just prior to the AAAI 2000 conference in Austin. Previous SARA conferences took place at Jackson Hole in Wyoming (1994), Ville d’Estérel in Québec (1995), and Asilomar in California (1998). The symposium grew out of a series of workshops on abstraction, approximation, and reformulation that had taken place alongside AAAI since 1989. This year’s symposium was actually scheduled to take place at Lago Vista Clubs & Resort on Lake Travis but, due to the resort’s failure to pay taxes, the conference had to be moved late in the day. This mischance engendered eleventh-hour reformulations, abstractions, and resource re-allocations of its own. Such are the perils of organizing a conference. This is the first SARA for which the proceedings have been published in the LNAI series of Springer-Verlag. We hope that this is a reflection of the increased maturity of the field and that the increased visibility brought by the publication of this volume will help the discipline grow even further.

Abstractions, reformulations, and approximations (AR&A) have found applications in a variety of disciplines and problems including automatic programming, constraint satisfaction, design, diagnosis, machine learning, planning, qualitative reasoning, scheduling, resource allocation, and theorem proving. The papers in this volume capture a cross-section of these application domains. One of the primary uses of AR&A has been to overcome computational intractability. AR&A techniques, however, have also proved useful for knowledge acquisition, explanation, and other applications, as papers in this volume also illustrate.

The aim of SARA is to provide a forum for intensive and friendly interaction among researchers in all areas of AI in which an interest in the different aspects of AR&A may exist. The diverse backgrounds of participants at this and previous meetings have lead to a rich and lively exchange of ideas, allowed the comparison of goals, techniques, and paradigms, and helped identify important research issues and engineering hurdles. SARA has always invited distinguished members of the research community to present keynote talks. SARA 2000 was no exception to this rule with invited talks from Professor Thomas G. Dietterich (AAAI Fellow) of Oregon State University, Professor Patrick Cousot of the École Normale Supérieure, Paris, and Professor Richard E. Korf (AAAI Fellow) of the University of California, Los Angeles.

We would like to thank the authors of all the submitted papers, extended abstracts, posters, and research summaries, the referees, the invited speakers, and the program committee for all their time and effort. We also thank the members of the steering committee for their faith in our ability to put together this symposium, and for their advice along the way. Finally, we would like to thank our sponsors: the American Association of Artificial Intelligence, and, at

the University of Nebraska-Lincoln, the Office of Vice Chancellor for Research, the Center for Communication and Information Science (CCIS), the College of Arts and Sciences, the Department of Computer Science and Engineering (CSE), and the J.D. Edwards Honors Program in Computer Science and Management. SARA 2000 is an AAAI Affiliate. Indeed, it is the first such affiliate.

July 2000

Berthe Y. Choueiry  
Toby Walsh  
Co-chairs of SARA 2000

# Organization

## Symposium Co-chairs

Berthe Y. Choueiry, University of Nebraska-Lincoln  
Toby Walsh, University of York

## Program Committee

Ralph Bergmann, University of Kaiserslautern  
Karl Branting, University of Wyoming  
Marco Cadoli, Università di Roma, La Sapienza  
Berthe Y. Choueiry, University of Nebraska-Lincoln  
Tom Ellman, Vassar College  
Boi V. Faltings, Swiss Federal Institute of Technology in Lausanne  
Eugene C. Freuder, University of New Hampshire  
Mike Genesereth, Stanford University  
Lise Getoor, Stanford University  
Fausto Giunchiglia, University of Trento and ITC-IRST  
Robert Holte, University of Ottawa  
Michael Lowry, NASA Ames Research Center  
Hiroshi Motoda, Osaka University  
Peter Revesz, University of Nebraska-Lincoln  
Marco Schaerf, Università di Roma, La Sapienza  
Bart Selman, Cornell University  
Joseph Sifakis, VERIMAG  
Divesh Srivastava, AT&T Labs-Research  
Jeffrey Van Baalen, University of Wyoming  
Toby Walsh, University of York  
Qiang Yang, Simon Fraser University

## Steering Committee

Berthe Y. Choueiry, University of Nebraska-Lincoln  
Tom Ellman, Vassar College  
Mike Genesereth, Stanford University  
Fausto Giunchiglia, University of Trento and ITC-IRST  
Robert Holte, University of Ottawa  
Alon Levy, University of Washington  
Michael Lowry, NASA Ames Research Center  
Pandurang Nayak, PurpleYogi.com  
Jeffrey Van Baalen, University of Wyoming  
Toby Walsh, University of York

## **Additional Reviewers**

Hélène Fargier, CNRS-IRIT, Université Paul Sabatier

Jeremy Frank, QSS Group, Inc, NASA Ames Research Center

Pedro Meseguer, Artificial Intelligence Research Institute (IIIA)

Raymond J. Mooney, University of Texas at Austin

Francesca Rossi, Università di Padova

Djamila Sam-Haroud, Swiss Federal Institute of Technology in Lausanne

Abdul Sattar, Griffith University

Thomas Schiex, INRA Toulouse

Stephen D. Scott, University of Nebraska-Lincoln

Peter Struss, Technical University of Munich

Marco Valtorta, University of South Carolina at Columbia

## **Sponsoring Institutions**

The American Association of Artificial Intelligence (AAAI).

The Office of Vice Chancellor for Research, University of Nebraska-Lincoln.

The Center for Communication and Information Science (CCIS), University of Nebraska-Lincoln.

The College of Arts and Sciences, University of Nebraska-Lincoln.

The Department of Computer Science and Engineering (CSE), University of Nebraska-Lincoln.

The J.D. Edwards Honors Program in Computer Science and Management, University of Nebraska-Lincoln.

Abstraction, Reformulation, and Approximation  
4th International Symposium, SARA 2000 Horseshoe  
Bay, USA, July 26-29, 2000 Proceedings  
Choueiry, B.Y.; Walsh, T. (Eds.)  
2000, XII, 336 p., Softcover  
ISBN: 978-3-540-67839-7