

Preface

The AAI-04 Conference

Welcome to the Nineteenth National Conference on Artificial Intelligence, AAI-04.

This year's conference provides a comprehensive survey of the best research in the various areas within the field of artificial intelligence. Our goal is to provide you with five days of immersion in the wonderful variety of problems that the best researchers in the field are tackling. We hope you will find something to interest you throughout the entire conference, and that you will leave San Jose with your intellectual batteries recharged and ready for another year.

The conference's highlight is the technical program. The papers in the technical program were selected by a highly competitive peer review process. Each paper was reviewed by three members of the program committee, supervised by a member of the senior program committee. The reviewing period was followed by discussion between reviewers, leading to an accept or reject recommendation. These recommendations were reviewed and approved by the senior program committee and program chairs in a face-to-face meeting. In all, out of 453 submitted papers, 120 were accepted and published. We hope you will agree with us that these papers represent significant contributions across a wide range of subject areas.

In addition, three papers were selected for special mention. The AAI-04 Outstanding Paper award goes to Lin Liao, Dieter Fox, and Henry Kautz for their paper "Learning and Inferring Transportation Routines." Honorable mention goes to Lee Joohyung and Lin Fangzhen for their paper "Loop Formulas for Circumscription," and to Trausti Kristjansson, Aron Culotta, Paul Viola, and Andrew McCallum for their paper "Interactive Information Extraction with Constrained Conditional Random Fields."

The technical program is the heart of the conference, and we would like to gratefully acknowledge the very substantial contributions of the program committee members, and particularly the members of the senior program committee who pulled everything together.

In addition to the technical program, AAI-04 includes tutorials (organized by Mathew Stone), workshops (organized by Milos Hauskrecht and Dieter Fox), the student abstract program (organized by Avi Pfeffer and Mark Craven), the AAI/SIGART Doctoral Consortium (organized by Robert St. Amant), intelligent systems demonstrations (organized by Chris Welty), and the robot competition and exhibition (organized by Bill Smart and Sheila Tejada). We would like to thank the organizers of these programs for their efforts, and we hope you will enjoy participating in them. We would also like to thank our invited speakers for sharing their ideas with us, and we hope you will enjoy their talks.

Finally, we would like to remind the AI community that this conference would not be the institution that it is without the never-ending work of the AAI staff, particularly Carol McKenna Hamilton, Keri Harvey, and Rick Skalsky; and Mike Hamilton of AAI Press. It has been a pleasure to work with them and serve the AI community. We hope you enjoy the show.

- *George Ferguson, University of Rochester*

- *Deborah McGuinness, Stanford University*

The IAAI-04 Conference

The Sixteenth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-04) continues the IAAI tradition of including both case studies of deployed applications and papers on emerging AI applications. The deployed applications papers all include concrete measurements of the benefits provided by AI technology.

IAAI is organized as an independent program within the AAI national conference, with schedules coordinated to allow attendees to move freely between AAI and IAAI sessions. We appreciate the cooperation of the AAI organizers, since we believe the collocated conferences both benefit from each other.

AI applications developers benefit from learning about the latest AI techniques that will enable the next generation of applications. Basic AI research benefits by exposure to the challenges of real-world domains and difficulties and successes in applying AI techniques to real business problems. IAAI-04 addresses the full range of AI techniques including knowledge-based systems, planning and scheduling, perception and monitoring, knowledge formation, knowledge management, learning, intelligent design, natural language processing, and diagnostic reasoning.

Deployed applications are case studies that provide a valuable guide to designing, building, managing, and deploying systems incorporating AI technologies. This year's papers address applications in a wide variety of domains, including natural language processing, secure mobile agents, sales support, securities fraud detection, and scheduling. These applications provide clear evidence of the impact and value that AI technology has in today's world.

Papers on emerging applications and technologies describe efforts whose goal is the engineering of AI applications. They inform AI researchers about the utility of specific AI techniques for applications domains and also inform applications developers about tools and techniques that will enable the next generation of new and more powerful applications.

The invited Robert Engelmore Memorial Lecture for 2004 will be given by Dr. Edward Feigenbaum. Ed will be speaking on one

of Bob Engelmores favorite topics: "The Unexploited Power of Blackboards." Ed is the perfect person to deliver this lecture, because he knew Bob since they roomed together at Carnegie Technical Institute (now CMU), and Ed is a passionate champion for the power of blackboards in applying knowledge to solve challenging problems.

This year we are very pleased to have two in-depth panels. The "AI in Robotics" panel will be moderated by Neil Jacobstein. The panel will feature participants covering robotics at NASA, DARPA, Sony, iRobot and Hasbro. Manuela Veloso will provide her vision of the state of AI in robotics, including robot soccer and other developments. The panel will feature a 360-degree view covering AI, systems engineering, marketing, business, and user adoption aspects of the topic. Robotics has been an emerging AI area for many years. It fuses difficult hardware and software problems to provide new capabilities for digital interactions with the physical world. AI in robotics applications has just recently begun to rack up several commercial and government project successes.

The eScience panel will be moderated by Yolanda Gil. eScience is an emerging way to conduct large and small scale scientific enterprises. It leverages the power of AI in document management

and search, collaboration tools, simulation, sequencing, and other forms of problem solving. The panel will address the multidisciplinary requirements of scientific research and how the growing cyber-infrastructure will support progress in the field.

The Innovative Applications of Artificial Intelligence Conference could not take place without the generous help of many people. In particular, we very much appreciate the hard work and dedication of the IAAI-04 program committee, without whom the technical program would be impossible: Steve Chien, Diane Cook, Marie desJardins, Alex Hartemink, Yolanda Gil, Micheal Hewett, Kevin Knight, Diane Littman, Bruce Porter, John Riedl, Ted Senator, Imran Shah, Howie Shrobe, Reid Smith, Jim Spohrer, Ramasamy Uthurusamy, Manuela Veloso, and Peter Wurman. Further, we extend a special thanks to Keri Harvey and Carol Hamilton and the entire AAI staff for their professionalism, organization, and expertise.

Enjoy the conference!

– Randy Hill and Neil Jacobstein