Preface

AAAI-08

Welcome to the Twenty-Third AAAI Conference on Artificial Intelligence, AAAI-08!

It's an exciting time for the AAAI conference, with an ever increasing number of submissions from a wide range of areas. This year we had yet another record number of submissions, allowing us to assemble a technical program representing the highest quality research in artificial intelligence.

The AAAI-08 program combines several exciting threads. The main technical program includes three special tracks featuring research from selected areas. In addition to the previously introduced Integrated Intelligence and AI and the Web tracks, we initiated a new special track — Physically Grounded AI — with the goal of attracting papers focusing on AI techniques related to physically grounded systems, including activity recognition, robotics, and machine perception. Also new to the conference is the Teaching Forum, a means for researchers and educators to share ideas, strategies, and resources related to education in AI. We are delighted that Eric Horvitz will give the presidential address and that the AAAI conference attendees will have a chance to hear invited presentations from five distinguished senior and junior researchers: Alexei (Alyosha) Efros, David Haussler, Lillian Lee, Mark Newman, and Stuart Russell.

Overall, AAAI-08 attracted a total of 937 regular paper submissions to the main technical program, which included 107 submissions to the AI and the Web track, 40 submissions to the Integrated Intelligence track, and 59 submissions to the Physically Grounded AI track. Of these, 227 (24 percent) were accepted as regular papers, all of them with oral presentation. A small number of regular papers, 47, were also selected for the outstanding poster presentation forum, as a way of highlighting these papers. There were also 78 submissions to the Nectar track, of which 18 were accepted, and another 6 submissions were accepted to the Senior Member track. 23 additional papers were accepted as short papers with poster presentation only.

The reviewing process was rigorous and extensive, involving 48 senior program committee (SPC) members and 637 program committee (PC) members. SPC members were assigned an average of 17 papers each, and PC members were assigned an average of 5 papers. All reviewing was double-blind. As last year, a small number of papers were conditionally accepted; the SPC members wrote clear instructions for changes that were required and authors were given a chance to modify their papers. Nearly all conditionally accepted papers were ultimately accepted, reflecting careful consideration by the authors for the reviewers' concerns and dedication of the SPC and PC members to see that papers with good ideas are given a chance to overcome flaws that would otherwise have prevented publication.

We would like to thank all of the SPC and PC members for their dedicated efforts. The special technical tracks, Integrated Intelligence, Artificial Intelligence and the Web, and Physically Grounded Artificial Intelligence, the Nectar track, and the Senior Members track had separate program committees, and in some cases different reviewing criteria, but overall similar processes and equally rigorous standards. We would like to greatly thank the chairs of these tracks for articulating and pursuing a vision for these tracks, helping structure and recruit papers, recruiting their program committee, and for managing the review process. We thank Oren Etzioni and Craig Knoblock who cochaired the Artificial Intelligence and the Web track; Pat Langley and Alan Schultz who cochaired the Integrated Intelligence track; Drew Bagnell, Wolfram Burgard, and Irfan Essa who cochaired the Physically Grounded Artificial Intelligence track; Regina Barzilay and Sven Koenig who cochaired the Nectar track; and Benjamin Kuipers and Devika Subramanian who cochaired the Senior Members track.

We also thank our dedicated subchairs who worked very hard in putting together exciting tutorial, workshop, demonstration, student abstract, and doctoral consortium programs. Andrea Danyluk and Peter Stone assembled an excellent tutorial program consisting of 15 tutorials covering material of interest to junior and senior researchers alike. Simon Parsons and Meinolf Sellmann recruited a workshop program consisting of 15 workshops. Michael Bowling and Holger Hoos selected 11 entries for the intelligent systems demonstration program. Paul Oh and Chad Jenkins organized the mobile robot exhibition and workshop. Marie desJardins, Adele Howe and Mehran Sahami established the Teaching Forum and put together an excellent group of subchairs for the four subcomponents of this forum. Tanzeem Choudhury, Matt Gaston and Willen van Hoeve cochaired the student abstract and poster program and selected 36 out of 52 submissions. Colleen van Lent and Scott Wallace organized the AAAI/SIGART Doctoral Consortium, which had 15 participants. As associate chair for student participation, Julie Weber was invaluable in organizing information and events for students attending the conference. We also thank our sponsors for supporting the conference financially.

Once again we were extremely fortunate to have the General Game Playing competition. We thank Michael Genesereth for organizing it and for his generous contribution to the $10,000 award prize. We also thank Andrew Gilpin for chairing the Poker Competition, David Parkes for serving in the role of arbiter to verify the fairness of the competition, and David Aha and Sebastian Thrun for cochairing the AI video competition

We sincerely thank the AAAI staff for their incredible support. Very special thanks are due to Carol Hamilton and Keri Harvey, whose hard-earned experience with the conference and continual, ubiquitous and astonishingly patient assistance have been invaluable. Additional thanks go to Thomas Preuss for maintaining the ConfMaster reviewing system, and Mike Hamilton for his work on producing these proceedings and other conference materials. We also thank Rob Holte and Adele Howe for passing on invaluable lessons from their experience chairing AAAI in 2007, and Eric Horvitz, Yolanda Gil, and the AAAI Conference Committee for their advice.

It has been an exciting journey for us, working with so many talented AI researchers and the wonderfully professional AAAI staff, to put together the AAAI-08 conference program: Join us on this journey!

Enjoy the conference!

Dieter Fox and Carla Gomes
AAAI-08 Program Cochairs

IAAI-08

Welcome to the Twentieth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-08). The purpose of this conference is to discuss and document the maturation of AI technologies into successful applications.

IAAI is organized as an independent program within the AAAI Conference, with schedules coordinated to allow attendees to move freely between AAAI and IAAI sessions. We appreciate the cooperation of the AAAI organizers, since we believe the collocated conferences both benefit from each other: AI application developers benefit from learning about the latest AI methods that will enable the next generation of applications and AI researchers benefit by exposure to the challenges of real-world domains, inaccurate and incomplete data, inconsistent environments and users, and last but not least, real business problems.

IAAI showcases applications of two types: deployed and emerging. Deployed applications are currently utilized by end-users to solve real problems in their domains. They are case studies that provide working guidelines on designing, building, managing, and fielding systems that incorporate AI technologies. This year there are four deployed applications. These applications provide clear evidence of the impact and value of AI technology in today's world.

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

We are very excited about our three invited speakers. Ken Ford, founder and director of the Florida Institute for Human & Machine Cognition (IHMC), will give the Robert Engelmore Memorial Award Lecture for 2008. Ford's talk, titled "Toward Cognitive Prostheses," will discuss human-centered computing, which embodies a "systems view," in which human thought and action and technological systems are seen as inextricably linked and equally important aspects of analysis, design, and evaluation.

Chris Urmson was the director of technology for the Carnegie Mellon University team that won the DARPA Urban Challenge in 2007. He will describe his experiences in his invited talk titled "Boss, the Urban Challenge, and the Promise of Autonomous Driving."

Seth Copen Goldstein is an associate professor of computer science at Carnegie Mellon University. In his presentation "Realizing Claytronics: A Challenge for AI," he will describe the potential of programmable matter and the role of AI in its realization.

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-08 program committee, the invited speakers and the authors of the technical papers, without whom the technical program would not exist. We also want to acknowledge the professional administrative and planning expertise of Carol Hamilton, Keri Harvey, Josette Mausisa and the entire AAAI staff. They are great to work with, and they make this conference possible.

We hope you enjoy the conference!

Mehmet H. Göker and Karen Haigh
IAAI-08 Conference Chair and Cochair