Fifteenth National Conference on Artificial Intelligence (AAAI-98)
Tenth Conference on Innovative Applications of Artificial Intelligence (IAAI-98)

July 26-30, 1998
Monona Terrace, Madison, Wisconsin

Sponsored by the American Association for Artificial Intelligence
Cosponsored by DARPA, NASA Ames Research Center, Microsoft Corporation, and the National Science Foundation
In cooperation with the University of Wisconsin–Madison

Program & Exhibit Guide
Acknowledgments

The American Association for Artificial Intelligence wishes to acknowledge and thank the following individuals for their generous contributions of time and energy to the successful creation and planning of the Fifteenth National Conference on Artificial Intelligence and the Tenth Conference on Innovative Applications of Artificial Intelligence.

- **AAAI-98 Program Cochairs**
  Jack Mostow, *Carnegie Mellon University*
  Chuck Rich, *MERL – A Mitsubishi Electric Research Laboratory*

- **IAAI-98 Conference Chair**
  Bruce G. Buchanan, *University of Pittsburgh*

- **IAAI-98 Conference Cochair**
  Ramasamy Uthurusamy, *General Motors Research*

- **Hall of Champions Chair and Cochair**
  Jonathan Schaeffer, *University of Alberta*
  Dana Nau, *University of Maryland*

- **Intelligent Systems Demonstrations Cochairs**
  George Ferguson, *University of Rochester*
  Randolph M. Jones, *University of Michigan*

- **Mobile Robot Competition Cochairs**
  Gregory Dudek, *McGill University*
  Robin Murphy, *Colorado School of Mines*
  David Kortenkamp, *NASA Johnson Space Center*

- **Mobile Robot Exhibition Cochairs**
  Tucker Balch, *Georgia Institute of Technology*
  Karen Zita Haigh, *Carnegie Mellon University*

- **Robot Building Laboratory, Chair**
  David Miller, *KISS Institute for Practical Robotics*

- **SIGART/AAAI-98 Doctoral Consortium Chair**
  Janyce Wiebe, *New Mexico State University*

- **Student Abstract and Poster Chair**
  Michael Littman, *Duke University*

- **Tutorial Forum Cochairs**
  Padhraic Smyth, *University of California, Irvine*
  Bart Selman, *Cornell University*

- **Workshop Chair and Cochair**
  David Leake, *Indiana University*
  Raymond C. Mooney, *University of Texas at Austin*

A complete listing of the AAAI-98 and IAAI-98 Program Committee members appears in the conference proceedings.

Sponsoring Organizations

AAAI gratefully acknowledges the generous contributions of the following organizations to AAAI-98:

- ACM/SIGART
- Defense Advance Research Projects Agency
- Microsoft Corporation
- NASA Ames Research Center
- National Science Foundation
- Office of Naval Research
- University of Wisconsin – Madison
1998 AAAI Fellows Recognition Dinner

Each year the American Association for Artificial Intelligence recognizes a small number of members who have made significant sustained contributions to the field of artificial intelligence, and who have attained unusual distinction in the profession. AAAI is pleased to announce the three newly elected Fellows for 1998:

- George A. Bekey, University of Southern California
- Steven Minton, USC/Information Sciences Institute
- Yoav Shoham, Stanford University
- David E. Wilkins, SRI International

The 1998 Fellows Recognition Dinner will be held Monday, July 27, from 7:00 – 10:00 PM in the Capitol Ballroom A, second floor, the Madison Concourse Hotel. A reception will begin at 7:00 PM followed by dinner at 8:00 PM. (By invitation only.)

Program Committee Dinner

AAAI-98 Program Committee Dinner will be held Tuesday, July 28, from 7:00 – 10:30 PM in the Madison Ballroom, second floor, the Madison Concourse Hotel to honor the contributions of all the members of the AAAI-98 and IAAI-98 Program Committees. (By invitation only.)

Presidential Address

David L. Waltz, NEC Research Institute, will give the AAAI Presidential Address on “The Importance of Importance” on Tuesday, July 28, 9:00 AM in the Madison Ballroom, Monona Terrace Convention Center.

Outstanding Paper Session

The presentation of the three papers that have been recognized as the AAAI-98 Outstanding Papers will be combined into one special session in the invited talk track of the conference on Tuesday, July 28 from 4:30 – 6:00 PM.

AAAI–98 Rendezvous

The AAAI-98 Rendezvous will be held in the Grand Terrace of the Monona Terrace Convention Center on Monday, July 27, 1998 from 5:30 – 7:00 PM. This informal gathering will give attendees the opportunity to mingle in a relaxed atmosphere. Light snacks will be available. Susantha Herath, the Rendezvous Social Coordinator, will be organizing interested attendees into small groups to go out to dinner after the Rendezvous.

Opening Reception

The AAAI-98 opening reception will be held in the Grand Terrace of the Monona Terrace Convention Center, Tuesday, July 28 from 6:00 – 7:00 PM. This event will provide the traditional opportunity for attendees to socialize at the end of the first day of technical sessions. A variety of hors d’oeuvres and a no-host bar will be available. Admittance to the reception is free to AAAI-98 registrants. A $15.00 per person fee ($5.00 for children) will be charged for spouses and other non-technical conference registrants. Guest tickets are available in onsite registration. The AAAI-98 Opening Reception is sponsored in part by Microsoft Corporation. AAAI gratefully acknowledges Microsoft’s generous contribution in support of this event.

AI Festival

The AI Festival will be held in the Exhibition Hall of the Monona Terrace Convention Center, Wednesday, July 29 from 6:00 – 10:00 PM. This event will provide you with the opportunity to stroll among numerous exciting events—the Mobile Robot Competition and Exhibition, the Hall of Champions, the Intelligent Systems Demos, and the Student Posters—enlivened by informal supper and conversation. Admittance to the reception is free to AAAI-98 registrants. A $20.00 per person fee ($5.00 for children) will be charged for spouses and other non-technical conference registrants. Guest tickets are available in onsite registration.
Student Programs & Meetings

Student Abstract Poster Program

Students whose abstracts were chosen for inclusion in the conference proceedings will display their work at the Student Abstract Poster Session in the Exhibition Hall, Monona Terrace Convention Center on Wednesday, July 29 from 6:00 – 10:00 PM in conjunction with the AI Festival. In addition, participants in the AAAI/SIGART Doctoral Consortium will display their poster presentations during this session. All students will be available for questions. The AAAI-98 Student Abstract Poster Program is sponsored by Microsoft Corporation. AAAI gratefully acknowledges Microsoft’s generous contribution in support of this program.

AAAI/SIGART Doctoral Consortium (DC-98)

The Third AAAI/SIGART Doctoral Consortium program will be held on Sunday and Monday, July 26 – 27, 1998 from 8:30 – 6:00 PM in the Senate Room, Madison Concourse Hotel. The Doctoral Consortium provides an opportunity for a group of Ph.D students to discuss and explore their research interests and career objectives in an interdisciplinary workshop together with a panel of established researchers. The sixteen students accepted to participate in this program will also participate in the Student Poster program on Wednesday, July 29, from 6:00 – 10:00 PM during the AI Festival. All interested AAAI-98 student registrants are invited to observe the presentations and participate in discussions at the workshop. AAAI and ACM/SIGART gratefully acknowledge grants from the Office of Naval Research and Microsoft Corporation for student travel to this event.

Annual Business Meeting

The Annual Business Meeting will be held Thursday, July 30, from 12:45 – 1:15 PM in the Hall of Ideas E & F, Monona Terrace Convention Center.

Conference Committee Meeting

The AAAI Conference Committee Meeting will be held Wednesday, July 29, from 7:30 – 9:00 AM in the University Room A, second floor, Madison Concourse Hotel.

Executive Council Meeting

The AAAI Executive Council Meeting will be held Sunday, July 26, from 9:00 AM – 5:00 PM in the University Room A, second floor, Madison Concourse Hotel. Continental breakfast will be available at 8:30 AM.

AAAI Press Editorial Board Meeting

The AAAI Press Editorial Board Meeting will be held Wednesday, July 29, from 12:45 – 2:00 PM in the Wisconsin Room, second level, Monona Terrace Convention Center.

AAAI Publications Committee Meeting

The AAAI Publications Committee lunch meeting will be held Tuesday, July 28, from 12:45 – 2:00 PM in the Wisconsin Room, second level, Monona Terrace Convention Center.

AIJ Editorial Board Meeting

The AIJ Editorial Board lunch meeting will be held Monday, July 27, from 12:00 – 2:00 PM in the University Room A, second floor, Madison Concourse Hotel.
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Tutorial Forum

Tutorial forum registration includes admission to up to four tutorials and the corresponding four tutorial syllabi. A maximum of four consecutive tutorials may be taken due to parallel schedules. Tutorial attendees may redeem their tutorial syllabi tickets at the tutorial rooms. Attendees who wish to obtain syllabi from other tutorials may purchase them separately for $15.00 per syllabus in onsite registration. The Special Tutorial (MPs) is open to all AAAI-98 registrants for no additional fee.

Session I: Sunday, July 26

9:00 AM – 1:00 PM

SA1: Computational Molecular Biology and Artificial Intelligence: An Introduction
Rick Lathrop
Madison Ballroom C, Monona Terrace Convention Center

SA2: Economically Founded Multiagent Systems
Tuomas Sandholm
Madison Ballroom D, Monona Terrace Convention Center

SA3: Recent Advances in AI Planning
Craig Knoblock and Qiang Chung Yang
Hall of Ideas E & F, Monona Terrace Convention Center

SA4: Advanced Techniques for Information Access
Marti A. Hearst and Michael J. Pazzani
Hall of Ideas H & I, Monona Terrace Convention Center

Session II: Sunday, July 26

2:00 – 6:00 PM

SP1: Automatic Text Summarization
Udo Hahn and Inderjeet Mani
Madison Ballroom C, Monona Terrace Convention Center

SP2: Model-Based Autonomous Systems
Pandu Nayak and Brian Williams
Madison Ballroom D, Monona Terrace Convention Center

SP3: Principles and Strategies of Automated Inference: A Unifying View
Rina Dechter and Irina Rish
Hall of Ideas E & F, Monona Terrace Convention Center

SP4: Integration of Artificial Intelligence and Operations Research Techniques
Carla P. Gomes, Ken McAloon and Carol Tretkoff
Hall of Ideas H & I, Monona Terrace Convention Center

Session III: Monday, July 27

9:00 AM – 1:00 PM

MA1: Graphical Models and Variational Approximation
Michael I. Jordan
Madison Ballroom C, Monona Terrace Convention Center
**MA2: Genetic Algorithms, Operations Research and AI**
Darrell Whitley
Madison Ballroom D, Monona Terrace Convention Center

**MA3: From Action Theories to Agent-Planning Control Strategies for Reactive Agents**
Chitta Baral and Froduald Kabanza
Hall of Ideas E & F, Monona Terrace Convention Center

**MA4: Statistical Methods in Natural Language Processing**
John Lafferty and Lillian Lee
Hall of Ideas H & I, Monona Terrace Convention Center

**Session IV: Monday, July 27**

2:00 – 6:00 PM

**MP1: Learning Bayesian Networks from Data**
Nir Friedman and Moises Goldszmidt
Madison Ballroom C, Monona Terrace Convention Center

**MP2: Intelligent Simulation**
Feng Zhao and Chris Bailey-Kellog
Madison Ballroom D, Monona Terrace Convention Center

**MP3: Support Vector Learning**
Bernhard Schoelkopf
Hall of Ideas E & F, Monona Terrace Convention Center

**MP4: Computational Aspects of Knowledge Representations**
Marco Cadoli and Thomas Eiter
Hall of Ideas H & I, Monona Terrace Convention Center

7:00 – 8:30 PM

**MP5: Getting that First Grant: A Young Scientist’s Guide to (AI) Funding in America**
Jim Hendler
Hall of Ideas E & F, Monona Terrace Convention Center

**Robot Building Lab**
The Robot Building Laboratory will be held Sunday and Monday, July 26 – 27, in the Madison and Wisconsin Ballrooms, Madison Concourse Hotel. Preregistration is required. AAAI-98 Robot Building Laboratory participants will spend the day seeing how easy or difficult it is to implement their favorite AI techniques on an actual robot. Participants will be grouped into small teams, each of which will build their own mobile robot. The RBL will start with a quick tutorial on robot basics covering sensors, effectors and real-time programming techniques. Participants will spend most of their time designing, building and programming their mobile robot. Throughout the laboratory there will be individual team tutorials covering specific aspects of robot design and programming. Demonstrations of other robot systems and technologies will also take place, and an extensive library of robot functions will be available. Some portions of the mobility system will be provided prebuilt, thereby assuring that all groups get a good start on a fully functional robot. There will be ample opportunity for individual design, creativity, testing and redesign. At the end of the session all the robots will participate in a double elimination tournament. Then we will see which robot has the right stuff to best accomplish the task (which will be specified at the beginning of the robot lab)! This tournament will be open to all the conference attendees. The lab is being organized and taught by the KISS Institute for Practical Robotics (KIPR) for AAAI. Instructors and assistants are from KIPR’s trained staff. David Miller is the lead instructor.
Workshop Program

Attendance at the workshops is limited, and participation is by invitation only. All workshop participants must register for the AAAI-98 technical program or, in the case of the four cosponsored workshops, must register for one of the cosponsoring conferences. (Exceptions to these rules will be required to pay a $150.00 fee per workshop.) Registration onsite for a workshop is possible with the prior permission of the corresponding workshop organizer. All workshops will begin at 8:30 AM and conclude at 6:00 PM, unless otherwise noted below.

Sunday, July 26

W1: AI and Information Integration (1-1/2 day workshop)
Organizers: Craig Knoblock and Alon Levy
1:30 – 5:30 PM, University Room, Inn on the Park

W5: Integrating Artificial Intelligence and Assistive Technology
Organizer: Rich Simpson
Capitol Room West, Inn on the Park

W6: Knowledge Sharing across Biological and Medical Knowledge Based Systems
Organizer: Gary Merrill and Dhiraj Pathak
Board Room, Inn on the Park

W10: Recommender Systems
Organizer: Henry Kautz
Capitol Room East, Inn on the Park

W12: Representations for Multi-Modal Human-Computer Interaction (2-day workshop)
Organizers: Syed Ali and Susan McRoy
Lower Level #1, Inn on the Park

W13: Software Tools for Developing Agents
Organizers: Brian Logan and Jeremy Baxter
Madison Room, Inn on the Park

W14: Textual Case-Based Reasoning
Organizers: Mario Lenz and Kevin Ashley
Lower Level #2, Inn on the Park

W15: Using AI for Knowledge Management and Business Process Reengineering
Organizer: Rose Gamble
Lower Level #3, Inn on the Park

Monday, July 27

W2: AI and Information Integration (1-1/2 day workshop)
Organizers: Craig Knoblock and Alon Levy
8:30 AM – 5:30 PM, University Room, Inn on the Park

W2: Case-Based Reasoning Integrations
Organizers: David Aha and Jody Daniels
Madison Room, Inn on the Park

W3: Functional Modeling and Teleological Reasoning
Organizer: Jon Sticklen
Lower Level #2, Inn on the Park
W7: Learning for Text Categorization
Jointly Sponsored by the International Conference on Machine Learning
Organizer: Mehran Sahami
Capitol Room East, Inn on the Park

W8: The Methodology of Applying Machine Learning: Problem Definition, Task Decomposition and Technique Selection
Jointly Sponsored by the International Conference on Machine Learning
Organizer: Robert Engels
Board Room, Inn on the Park

W9: Predicting the Future: AI Approaches to Time-Series Analysis
Jointly Sponsored by the International Conference on Machine Learning
Organizer: Andrea Danyluk
Lower Level #3, Inn on the Park

W10: Representations for Multi-Modal Human-Computer Interaction (2-day workshop)
Organizers: Syed Ali and Susan McRoy
Lower Level #1, Inn on the Park

W15: Verification & Validation of Knowledge-Based Systems
Organizer: Daniel O’Leary and Alun Preece
Capitol Room West, Inn on the Park

Friday, July 31

W4: The Grounding of Word Meaning: Data and Models
Jointly Sponsored by the Cognitive Science Society
Organizer: Michael Gasser
Capitol Ballroom A, the Madison Concourse Hotel

AAAI-98/IAAI-98 Invited Talks
All AAAI-98/IAAI-98 invited presentations will be held in the Madison Ballroom, fourth level, Monona Terrace Convention Center, unless otherwise noted.

Tuesday, July 28

9:00 – 10:00 AM  AAAI/Presidential Address: The Importance of Importance
David L. Waltz, NEC Research Institute
Introduction by Randall Davis (Past President, AAAI), MIT AI Lab

Human intelligence is shaped by what we care most about—the things that cause ecstasy, despair, pleasure, pain, terror, security, satisfaction, and other intense emotions. Any system we would consider truly intelligent will depend critically on the ability to separate the important from among the unimportant. This ability underlies such faculties as attention, focusing, situation and outcome assessment, priority setting, judgment, taste, goal selection, credit assignment, the selection of relevant memories and precedents, assessment of meaning and significance; all of these are important in learning from experience. AI has for the most part focused on logic and reasoning in artificial situations where only relevant variables and operators are specified, and has paid insufficient attention to processes of reducing the richness and disorganization of the real world to a form where logical reasoning can be applied. This talk will discuss the role of importance in intelligence, provide some examples of research that makes use of
importance judgments, and offer suggestions for new mechanisms, architectures, applications and research directions for AI.

10:30 – 11:30 AM  
*Invited Panel: Eight Cool Things from the Collocated Conferences*  
*Organizer: Charles Rich (AAAI-98 Program Cochair), MERL—A Mitsubishi Electric Research Laboratory*

The following eight organizations have chosen to hold their meetings in Madison contiguous with AAAI-98 this year: ILP ’98, GP-98, SGA-98, COLT ’98, ICML ’98, UAI-98, ST&D98, and CogSci98. In honor of this special occasion, we have invited a chairperson from each of these conferences to join a panel to answer the following question: “What is the most important recent result/experiment/discovery in the area of your conference that the general AI audience doesn’t know or understand or appreciate, but should (and why)?”

11:40 AM – 12:40 PM  
*Invited Talk: Learning Sparse Representations: Machine Learning, Machine Vision and the Brain*  
Tomaso Poggio, Massachusetts Institute of Technology

Learning is becoming the central problem in trying to understand intelligence and in trying to develop intelligent machines. Poggio will outline some of the recent efforts in the domain of vision to develop machines that learn and to understand the brain mechanisms of learning.

3:10 – 4:10 PM  
*Invited Talk: Modeling Satisfaction and Satisfactory Modeling: Modeling Problems So Constraint Engines Can Solve Them*  
Eugene C. Freuder, University of New Hampshire

Introduction by David Waltz, NEC Research Institute

A wide variety of problems can be modeled as constraint satisfaction (or optimization) problems. Once they are so modeled, powerful search and inference methods can be brought to bear. Modeling itself, however, presents a series of challenges. The ultimate challenge is to automate the modeling process.

4:30 – 6:00 PM  
*Special AAAI-98 Outstanding Paper Session*  
The presentation of the three papers that have been recognized as the AAAI-98 Outstanding Papers will be combined into one special session in the invited talk track of the conference. The papers, listed alphabetically by first author, are:

Learning Evaluation Functions for Global Optimization and Boolean Satisfiability  
Justin A. Boyan and Andrew W. Moore, Carnegie Mellon University

The Interactive Museum Tour-Guide Robot  
Wolfram Burgard, Armin B. Cremers, Dieter Fox and Dirk Haehnel, University of Bonn; Gerhard Lakemeyer, University of Aachen; Dirk Schulz and Walter Steiner, University of Bonn; Sebastian Thrun, Carnegie Mellon University

Acceleration Methods for Numeric CSPs  
Yahia Lebbah and Olivier Lhomme, Ecole des Mines de Nantes (France)

4:30 – 5:30 PM  
*AAAI-98 Invited Panel: Hall of Champions*  
*Lecture Hall, Level 4, Monona Terrace Convention Center*  
*Organizer: Dana Nau, University of Maryland*  
*Panelists: David Fotland, Hewlett Packard; Jonathan Schaeffer, University of Alberta, Gerald Tesauro, IBM Research; and David Wilkins, SRI International*
Wednesday, July 29

9:00 – 10:00 AM  
**Invited Talk: How People Treat Computers Like Real People: Experimental Evidence of a New Paradigm**  
Clifford Nass, Stanford University  
Introduction by Howard E. Shrobe, Massachusetts Institute of Technology  

This talk will describe a series of experimental studies that demonstrate that people apply the same social rules and expectations to computers that they apply to people. Areas to be discussed include politeness, personality, reciprocity, adaptation, gender, voice input and output, humor, and computer-mediated communication versus human-computer interaction.

10:30 – 11:30 AM  
**Invited Talk: Real-World Scheduling Applications—A Valuable Mine Field Where Search Algorithm Is Less Important Than Representation and Usability**  
Monte Zweben, Entrepreneur-in-Residence, Institutional Venture Partners & Matrix Partners  
Introduction by James Crawford, i2 Technologies  

After six years of commercially developing, marketing, selling, and deploying manufacturing scheduling systems, we learned that scheduling was nearly impossible to do generically. Yet companies that attempted to model in excessive detail generally failed, and those that planned more abstractly succeeded. A project was only successful if the key decision criteria was captured in the representation—an obvious point that was extraordinarily hard to execute.

11:40 AM – 12:40 PM  
**Invited Talk: Structured Probabilistic Models: Bayesian Networks and Beyond**  
Daphne Koller, Stanford University  
Introduction by Eric Horvitz, Microsoft Corporation  

In recent years, Bayesian networks have had significant impact on many areas in AI, including diagnosis, planning, and learning. Koller describes this technology, and analyzes the reasons behind its success, suggesting that the use of structured model-based representations is one crucial component. These insights lead to richer probabilistic representations that can model significantly more complex domains, involving many components that interact and evolve over time. Koller argues that these representations can help us build agents that reason and act in complex uncertain environments.

2:00 – 3:00 PM  
**Invited Talk: AI in Medicine: The Spectrum of Challenges from Managed Care to Molecular Medicine**  
Russ B. Altman, Stanford University  
Introduction by Bruce G. Buchanan, University of Pittsburgh  

AI has embraced medical applications from its inception, and some of the earliest work in successful application of AI technology occurred in medical contexts. Medicine in the twenty first century will be very different than medicine in the late twentieth century. Fortunately, the technical challenges to AI that emerge are very similar, and the prospects for success are high.

3:10 – 4:10 PM  
**Invited Talk: “Every Time I Fire a Linguist, My Performance Goes Up,” and Other Myths of the Statistical Natural Language Processing Revolution**  
Julia Hirschberg, AT&T Labs — Research  
Introduction by Martha Pollack, University of Pittsburgh
In the past two decades, natural language processing has experienced a revolution, from rule-based symbolic approaches to statistical, corpus-based techniques—with remarkable success in applications such as machine translation, automatic speech recognition, and text-to-speech. But there are signs that this revolution may be finding its limits, signs this talk will explore.

Visionary science fiction authors are the prophets of AI. Unencumbered by the burden of having to implement anything, they construct vivid images of where our work might lead—the good, bad, and ugly. They inspire and warn, challenge and scold, excite and lampoon, tickle and scare. They ask questions we need to think about.

In this panel, some science fiction authors will articulate their best hopes, worst fears, and most interesting predictions about AI and its role in (future?) society. The ensuing discussion will attempt to raise our consciousness by discussing future issues the field of AI will need to consider as AI advances in its capabilities and pervasiveness.

Thursday, July 30

Invited Talk: When and Where Will AI Meet Robotics?
Issues in Representation
Ruzena Bajcsy, University of Pennsylvania
Introduction by Reid Simmons, Carnegie Mellon University

In the early days of AI, robotics was an integral part of our research effort. In the early 1970s, all major AI laboratories had research programs in robotics. However, by the late 1970s, robotics took its own course separate from the core activities of AI. In this presentation, Bajcsy explores the common issue that is pertinent to both AI and robotics, the issue of representation.

Invited Talk: Experiments in Musical Intelligence
David Cope, University of California, Santa Cruz

Musical works contain code about the processes and influences that created them. The computer program Experiments in Musical Intelligence attempts to decipher this code and create new but stylistically-faithful music. Examples of output will be performed, followed by a discussion of how these principles can transfer to other media.

Invited Panel: Evaluating Representations of Common Sense
Organizer: Douglas B. Lenat, CYCORP
Panelists: Ken Forbus, Northwestern University; Leora Morgenstern, IBM T.J. Watson Research Center; and Erik Mueller, Signiform

Everyone knows that horses have heads, babies want milk, unsupported objects fall, falling eggs break, and so forth. To use such knowledge, our programs manipulate representations of them. But by what criteria should we evaluate various representations of common sense knowledge? How should we evaluate the different contradictory criteria for evaluating representations.
Innovative Applications of Artificial Intelligence

All IAAI-98 sessions will be held in the Lecture Hall on the fourth level of the Monona Terrace Convention Center. Monday’s schedule is listed below. The remainder of the papers will be presented in parallel with the AAAI-98 technical program on Tuesday, July 28 and Wednesday, July 29. Please refer to the daily schedule on the following pages for times.

(D): deployed application; (E): emerging application

8:45 – 9:00 AM  Opening Remarks
Bruce Buchanan, IAAI-98 Conference Chair

9:00 – 10:00 AM  Automated Intelligent Pilots for Combat Flight Simulation (D)
Randolph M. Jones, John E. Laird, and Paul E. Nielsen

A New Technique Enables Dynamic Replanning and Rescheduling of Aeromedical Evacuation (D)
Alexander Kott, Victor Saks and Albert Mercer

10:00 – 10:30 AM  Coffee Break

10:30 – 11:30 AM  Intelligent Control of Life Support Systems for Space Habitats (E)
Debra Schreckenghost, Daniel Ryan, Carroll Thronesbery, Peter Bonasso, and Daniel Piorot

Knowledge-Based Avoidance of Drug-Resistant HIV Mutants (D)
Richard H. Lathrop, Nicholas R. Steffen, Miriam P. Raphael, Sophia Deeds-Rubin, Michael J. Pazzani, Paul J. Cimoch, Darryl M. See, and Jeremiah G. Tilles

11:40 AM – 12:40 PM  The NASD Regulation Advanced Detection Systems (ADS) (D)
J. Dale Kirkland, Ted E. Senator, James J. Hayden, Tom Dybala, Henry G. Goldberg, and Ping Shyr

Countrywide Automated Property Evaluation System—CAPES (D)
Ingemar A. E. Hulthage and Iain Stobie

12:40 – 2:00 PM  Lunch Break

2:00 – 3:00 PM  Success in Spades: Using AI Planning Techniques to Win the World Championship of Computer Bridge (D)
Stephen J. J. Smith, Dana S. Nau, and Thomas A. Throop

Control Strategies in HTN Planning: Theory Versus Practice (E)
Dana S. Nau, Stephen J.J. Smith, and Kutluhan Erol

3:10 – 4:10 PM  Producing BT’s Yellow Pages with Formation (D)
Gail Anderson, Andrew Casson-du Mont, Ann Macintosh, Robert Rae, and Barry Gleeson

Answer: Network Monitoring Using Object-Oriented Rules (D)
Gary M. Weiss, Johannes P. Ros, and Anoop Singhal

4:10 – 4:30 PM  Coffee Break

4:30 – 5:30 PM  Turbine Engine Diagnostics (TED): An Expert Diagnostic System for the M1 Abrams Turbine Engine (D)
Richard Helfman, Ed Baur, John Dumer, Tim Hanratty, and Holly Ingham

Using Artificial Intelligence Planning to Automate SAR Image Processing for Scientific Data Analysis (D)
Forest Fisher, Steve Chien, Edisanter Lo, and Ronald Greeley
### July 28

**Welcome and Opening Remarks**  
Jack Mostow and Charles Rich, AAAI-98 Program Co-chairs

**Presidential Address**  
The Importance of Importance  
David L. Waltz, NEC Research Institute  
Introduction by Randall Davis

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**10:45 - 11:00 AM**

**Invited Talk**  
Learning Sparse Representations: Machine Learning, Machine Vision and the Brain  
Tomaso Poggio, Massachusetts Institute of Technology

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**10:30 - 11:30 AM**

**Invited Panel**  
Eight Cool Things from the Collocated Conferences  
Organizer: Charles Rich (AAAI-98 Program Co-chair), MERL—a Mitsubishi Electric Research Laboratory  
Panelists: David Page (ILP), John Koza (GP), David Goldberg (SGA), Peter Bartlett (COLT), Jude Shavlik (ICML), Greg Cooper (UAI), Arthur Graesser (ST&D), and Sharon Derry (COG SCI)

**Integrated AI Systems: Planning and Problem Solving**  
Session Chair: Milind Tambe  
TRIPS: An Integrated Intelligent Problem-Solving Assistant  
George Ferguson and James F. Allen  
Integrating AI Components for a Military Planning Application  
Marie A. Borsukowski and Louis J. Hoebel

**Learning**  
Session Chair: Lars Asker  
Iterated Phantom Induction: A Little Knowledge Can Go a Long Way  
Mark Brodie and Garald DeJong  
SUSTAIN: A Model of Human Category Learning  
Bradley C. Love and Douglas L. Medin

**KR for Robotics**  
Session Chair: Wolfram Burgard  
A Formal Methodology for Verifying Situated Agents  
Phan Minh Dung  
An Algebra for Cyclic Ordering of 2D Orientations  
Amar Idi and Anthony G. Cohn

**Plan Recognition**  
Session Chair: Diane Litman  
Needles in a Haystack: Plan Recognition in Large Spatial Domains Involving Multiple Agents  
Mark Devaney and Ashwin Ram  
Acquisition of Abstract Plan Descriptions for Plan Recognition  
Mathias Bauer

**Modeling the Web**  
Session Chair: Shlomo Zilberstein  
What Can Knowledge Representation Do for Semi-Structured Data?  
Diego Caluvenzi, Giuseppe De Giacomo and Maurizio Lenzerini  
Modeling Web Sources for Information Integration  
Cung A. Knoblock, Steven Minton, Jose Luis Ambite, Navneet Ashish, Pragota Jay Modi, Ion Mueda, Andrew G. Philpot, and Sheila Tijada

**Parallel AI / Agents and Representation**  
Session Chair: Matthew Weett  
Natural Language Multiprocessing: A Case Study  
Evrin Pustelli, Gopal Gupta, Janice Wiebe and David Farrell  
Metacognition in Software Agents Using Classifier Systems  
Zhaohua Zhang, Scan Franklin and Dipankar Dasgupta

**Integrated AI Systems/Evolvable Hardware**  
Session Chair: Justianina Rousa  
BIG: A Resource-Bounded Information Gathering Agent  
Victor Leary, Bryan Horling, Frank Klauser, Anita Raja, Thomas Wagner and Shelley XQ. Zhang  
Evolvable Hardware Chip for High Precision Printer Image Compression  
Hidenori Sakashita, Mohammad Salami, Manya Iskota, Shogo Nakaya, Takanasa Yamauchi, Takeshi Inou, Nohuki Kajihara, and Tetuya Higuchi

**Graph Plan**  
Session Chair: Jim Blythe  
Conformant Graphplan  
David E. Smith and Daniel S. Weld  
Extending Graphplan to Handle Uncertainty & Sensing Actions  
Daniel S. Weld, Corin R. Anderson, and David E. Smith

**IAAI-98**  
Hybrid Knowledge Based System for Automatic Classification of B-scan Images from Ultrasonic Rail Inspection (E)  
J. Jarmulak, E. J. H. Kerckhoff, and P. P. van’t Veen  
Expert System Technology for Nondestructive Waste Assay (E)  
J. C. Determan and G. K. Becker
Tuesday, July 28

### 2:00 – 3:00 PM

**Invited Talk**

To be Announced

### 3:10 – 4:10 PM

**Intelligent Tutoring**

Session Chair: Eric Horvitz
Generating Coordinated Natural Language and 3D Animations for Complex Spatial Explanations
Stuart G. Towns, Charles B. Callaway and James C. Lester
Procedural Help in Andes: Generating Hints Using a Bayesian Network Student Model
Abigail S. Gertner, Cristina Conati and Kurt Van-Lehn

### 4:30 – 6:00 PM

**AAAI-98 Outstanding Paper Session**

Session Chair: Jack Mostow
Learning Evaluation Functions for Global Optimization and Boolean Satisfiability
Justin A. Boyan and Andrew W. Moore
The Interactive Museum Tour-Guide Robot
Wolfram Burgard, Armin R. Cremers, Dieter Fox, Dirk Hähnel, Gerhard Lakemeyer, Dirk Schulze, Walter Steiner, and Sebastian Thrun
Acceleration Methods for Numeric CSPs
Yahia Lebbah and Olivier Lhomme

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### 12:40 – 2:00 Lunch Break

### 2:00 PM – 3:10 PM

**Integrated AI Systems: Intelligent Environments**

Session Chair: Pandurang Nayak
Design Principles for Intelligent Environments
Michael H. Coen
Cooperating with People: The Intelligent Classroom
David Franklin

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**Planning**

Session Chair: Craig Boutilier
Improving Big Plans
Neil Lesh, Nathaniel Martin and James Allen
Controlling Communication in Distributed Planning Using Irrelevance Reasoning
Michael Wooldridge and Marie deJardins

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**Information Extraction I**

Session Chair: Martin Hearst
Answering Questions for an Organization Online
Vladimir A. Kulyukin, Kristian J. Hammond and Robin D. Burke
Towards Text Knowledge Engineering
Udo Hahn and Klemens Schnattinger

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**Fuzzy Logic**

Session Chair: John Yen
Logical Representation and Computation of Optimal Decisions in a Qualitative Setting
Dietter Dubois, Daniel Le Berre, Henri Prade, and Régis Sabbadin
A Fuzzy Description Logic
Umberto Straccia

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**Nonmonotonic Reasoning**

Session Chair: Leonore Morgenstern
Fixpoint 3-Valued Semantics for Autoepistemic Logic
Marc Denecker, Victor Marek and Miroslaw Truszczyński
Reducing Query Answering to Satisfiability in Nonmonotonic Logics
Riccardo Rosati

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### 3:10 PM – 4:30 PM

**Information Extraction II**

Session Chair: Nicholas Kushmerick
Learning to Extract Symbolic Knowledge from the World Wide Web
Mark Craven, Dan DiPasquo, Dayne Freitag, Andrew McCallum, Tom Mitchell, Kamal Nigam and Sebn Satterly
Information Extraction from HTML: Application of a General Machine Learning Approach
Dayne Freitag

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### 4:10 – 5:00 PM

**Model Construction and Analysis**

Session Chair: Gautam Biswas
Multimodal Reasoning for Automatic Model Construction
Reinhard Sotile and Elizabeth Bradley
Discovering Admissible Simultaneous Equations of Large Scale Systems
Takahito Washio and Hiroshi Motoda
Decompositional, Model-Based Learning and its Analysis to Diagnosis
Brian C. Williams and William Millar

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**Theorem Proving**

Session Chair: Nader Sadeh
An Algorithm to Evaluate Quantified Boolean Formulas
Marco Cadoli, Andrea Giuseanardi and Marco Scherf
Two Forms of Dependence in Propositional Logic: Controllability and Definability
Jérôme Lang and Pierre Marquis
Anytime Approximate Modal Reasoning
Fabio Massacci

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Session Chair: Jack Mostow
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Acceleration Methods for Numeric CSPs
Yahia Lebbah and Olivier Lhomme

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### 5:00 PM – 6:00 PM

**Graphical Probabilistic Models**

Session Chair: Peter Haddawy
Structured Representations of Complex Stochastic Systems
Nir Friedman, Daphne Koller and Avi Pfeffer
Solving Very Large Weakly Coupled Markov Decision Processes
N. Meuleau, M. Hauskrecht, K. Kim, L. Poblete, L. Kauffman, T. Dean, and C. Boutilier
Speech Recognition with Dynamic Bayesian Networks
Geoffrey Zweig and Stuart Russell

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**KR: KB Design**

Session Chair: Mikel Dalal
Usability Issues in KB Systems
Deborah L. McGuinness and Peter Patel-Schneider
Representing Scientific Experiments: Implications for Ontology Design and Knowledge Sharing
Natalya Fridman Nay and Carol D. Hafner
OKBC: A Programmatic Foundation for Knowledge Base Interoperability
Vinay K. Chaudhri, Adam Farquhar, Richard Fikes, Peter D. Karp and James F. Rice

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Acceleration Methods for Numeric CSPs
Yahia Lebbah and Olivier Lhomme

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### 6:00 – 7:00 PM

**AAAI Opening Reception, Grand Terrace, Monona Terrace Convention Center**
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<th>Session</th>
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<td>Madison Ballroom A &amp; B</td>
<td>Invited Talk</td>
<td>Clifford Nass, Stanford University</td>
<td>Howard E. Shrobe</td>
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<tr>
<td>10:00 – 10:30 AM</td>
<td>Madison Ballroom C</td>
<td>Agent Interaction</td>
<td>Dov Monderer and Moshe Tenenholtz</td>
<td>Tuomas Sandholm</td>
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<tr>
<td>10:30 – 11:30 AM</td>
<td>Madison Ballroom D</td>
<td>Reinforcement Learning</td>
<td>David Faissisi and Moshe Tenenholtz</td>
<td>Tom Dietterich</td>
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<td>11:40 – 12:40 PM</td>
<td>Lecture Hall</td>
<td>Natural Language Generation — Argumentation</td>
<td>Nikos Karacapilidis and Dimitris Papadias</td>
<td>Daniel Marcu</td>
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<td>Learning from Sequences</td>
<td>Carlos Guestrini and Hyym Hirsh</td>
<td>Andrea Danyluk</td>
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<td>Frameworks for Plan Generation</td>
<td>Alessandro Massarotto and Roberto Sebastiani</td>
<td>Reid Simmons</td>
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<tr>
<td>11:40 – 12:40 PM</td>
<td>Hall of Ideas E &amp; F</td>
<td>Plan Efficiency</td>
<td>Alfonso Gerevini and Lenhart Schubert</td>
<td>David Wilkins</td>
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<td>Analysis of Search</td>
<td>Stefin Edelkamp and Richard E. Korf</td>
<td>Brian Drabble</td>
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<td>Random Approaches to Search</td>
<td>Carla P. Gomes, Bart Selman and Henry Kautz</td>
<td>Robert Schrag</td>
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<td>Planning as Satisfiability</td>
<td>Stephen M. Majercik and Michael L. Littman</td>
<td>Enrico Giunchiglia, Alessandro Maurozzi, and Roberta Sebastiani</td>
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<td>IAAI-98</td>
<td>Ramu Akkiraju, Pinar Keskinocak, Shob Murphy and Frederick Wu</td>
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<td>Realtime Constraint-Based Cinematography</td>
<td>Montez Zweben, Entrepreneur-in-Residence, Institutional Venture Partners &amp; Matrix Partners</td>
<td>Howard E. Shrobe</td>
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<tr>
<td>Wednesday, July 29</td>
<td>Hall of Ideas H &amp; I</td>
<td>Constraint Satisfaction Problems</td>
<td>Javier Larrosa, Pedro Mereguer, Thomas Schiez, and Gerard Verfaillie</td>
<td>Eugene Freuder</td>
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<td>“Squeaky Wheel” Optimization</td>
<td>David E. Edelin and David P. Clements</td>
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<td>Reverse DAC and Other Improvements for Solving Max-CSP</td>
<td>Javier Larrosa, Pedro Mereguer, Thomas Schiez, and Gerard Verfaillie</td>
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<td>Hybrid Planning for Partially Hierarchical Domains</td>
<td>Subbarao Kambhampati, Anmol Mali and Biplov Srivastava</td>
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<td>Act, and the Rest Will Follow: Exploiting Determinism in Planning as Satisfiability</td>
<td>Enrico Giunchiglia, Alessandro Maurozzi, and Roberta Sebastiani</td>
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<td>Using Caching to Solve Larger Probabilistic Planning Problems</td>
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</table>
### Invited Talk

**AI in Medicine: The Spectrum of Challenges from Managed Care to Molecular Medicine**
Rusi B. Altman, Stanford University

*Introduction by Bruce G. Buchanan*

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### Grammar and Language

**Session Chair: Eric Brill**

#### A Sampling-Based Heuristic for Tree Search Applied to Grammar Induction
Hugues Juillé and Jordan B. Pollack

#### Ambiguity and Constraint in Mathematical Expression Recognition
Erik G. Miller and Paul A. Viola

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### Robot Navigation

**Session Chair: Leslie Kaelbling**

#### Position Estimation for Mobile Robots in Dynamic Environments
Dieter Fox, Wolfram Burgard, Sebastian Thrun, and Armin B. Cremers

Sebastian Thrun, Jens-Steffen Gutmann, Dieter Fox, Wolfram Burgard and Benjamin J. Kuipers

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### Qualitative Reasoning Techniques

**Session Chair: Richard Doyle**

#### Qualitative Analysis of Distributed Physical Systems with Applications to Control Synthesis
Christopher Bailey-Kellogg and Feng Zhao

#### Qualitative Simulation as a Temporally-Extended Constraint Satisfaction Problem
Daniel J. Clancy and Benjamin J. Kuipers

---

### Qualitative Modeling

**Session Chair: Dan Clancy**

#### An Ontology for Transitions in Physical Dynamic Systems
Peter J. Mosterman, Feng Zhao, and Gautam Biswas

#### A New Architecture for Automated Modelling
Neil Smith

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### Search and Limited Resources

**Session Chair: Sean Koening**

#### A* with Bounded Costs
Brian Logan and Natasha Alechina

#### Stochastic Node Caching for Memory-Bounded Search
Teruhisa Miura and Toru Ishida

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### Constraint Satisfaction Problems — Understanding Intractability

**Session Chair: Tad Hogg**

#### Hard Problems for CSP Algorithms
David G. Mitchell

#### The Constrainedness Knife-Edge
Toby Walsh

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### Constraint Satisfaction Problems

**Session Chair: David Smith**

#### Generalizing Partial Order and Dynamic Backtracking
Christian Bäck

#### Supermodels and Robustness
Matthew L. Ginsberg, Andrew J. Parkes and Amitabha Roy

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### Understanding Sound

**Session Chair: Ian Horswill**

#### The Role of Data Reprocessing in Complex Acoustic Environments
Frank Klassner, Victor Lesser, and Hamid Nawab

#### Sound Ontology for Computational Auditory Scene Analysis
Tomohiro Nakatani and Hiroshi G. Okuno

---

### GA Applications

**Session Chair: Richard Belew**

#### Optimal 2D Model Matching Using a Messy Genetic Algorithm
J. Ross Beveridge

#### Learning Cooperative Lane Selection Strategies for Highways
David E. Moriarty and Pat Langley

---

### Belief Revision and Inconsistency

**Session Chair: David Poole**

#### Reasoning under Inconsistency Based on Implicitly-Specified Partial Qualitative Probability Relations: A Unified Framework
S. Benferhat, D. Dubois, J. Lang, H. Prade, A. Saffiotti and P. Smets

#### Belief Revision with Unreliable Observations
Craig Beaulieu, Nir Friedman, and Joseph Y. Halpern

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### IAAI-98

#### An Expert System for Alarm System Planning (E)
Akira Tsurushima, Kenji Urushima, Daigo Sakana, Hiroyuki Date, Masatoshi Nakata, Yoshinobu Adachi and Kazuhisa Takahashi

#### WARFIGHTER Information Packager (E)
Yigal Aren, Weizhang Zhang, Yongwoon Lee, Jon Dieker-Schubert, and Mark Zev

#### Split Up: The Use of an Argument Based Knowledge Representation to Meet Expectations of Different Users for Discretionary Decision Making (E)
Andrew Stansfield and John Zeleznikow

#### Conversation Machines for Transaction Processing (E)
Wlodz Mikolajczak, Catherine Wolf, Nanda Kamath and Yiming Ye
### 7/30

#### 9:00 – 10:00 AM

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<td>When and Where Will AI Meet Robotics?</td>
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<td>Issues in Representation</td>
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<td>Ruzena Bajcsy, University of Pennsylvania</td>
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<td>Formal Models of Agents’ Commitments</td>
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<td>Leveled Commitment Contracts with Myopic and Strategic Agents</td>
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<td>Martin R. Anderson and Tuomas Sandholm</td>
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<td>Anytime Coalition Structure Generation with Worst Case Guarantees</td>
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<td>Opponent Modeling in Poker</td>
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<td>Finding Optimal Strategies for Imperfect Information Games</td>
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<td>Agents that Work in Harmony by Knowing and Fulfilling their Obligations</td>
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<td>Mihai Barbuceanu</td>
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<td>What Is Wrong With Us? Improving Robustness through Social Diagnosis</td>
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<td>Single-Agent Search in the Presence of Deadlocks</td>
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<td>Andreas Jüngers and Jonathan Schaeffer</td>
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<td>Complete Anytime Beam Search</td>
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<td>Wicang Zhang</td>
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#### 1:10 – 10:30 Coffee Break

#### 10:40 AM – 1:00 PM

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<td>A Tractable Walsh Analysis of SAT and Its Implications for Genetic Algorithms</td>
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<td>Toward Design as Collaboration</td>
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<td>Susan L. Epstein</td>
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<td>An Architecture for Exploring Large Design Spaces</td>
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<td>John R. Josephson, B. Chandrasekaran, Mark Carroll, Nareesh Iyer, Byron Waczuc, Giorgio Rizzoni, Qingyuan Li, and David A. Erb</td>
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<td>Constructing the Correct Diagnosis When Symptoms Disappear</td>
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<td>Learning Investment Functions for Controlling the Utility of Control Knowledge</td>
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<td>Tiel Pedersen and Rebecca Bruce</td>
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<td>Learning to Resolve Natural Language Ambiguities: A Unified Approach</td>
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<td>Dan Roth</td>
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<td>Boosting Classifiers Regionally</td>
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<td>Richard Maclin</td>
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<td>Robust Classification Systems for Imprecise Environments</td>
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<td>Foster Provost and Tom Fawcett</td>
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<td><strong>Closing Remarks</strong></td>
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<tr>
<td>Jack Mostow and Charles Rich, AAAI-98 Program Co-chairs</td>
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<tr>
<th>12:45 – 1:15 PM</th>
<th>AAAI Annual Business Meeting</th>
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<td><strong>Tractable Inference</strong></td>
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<td>Season Chair: Peter F. Patel-Schneider</td>
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<td>Algorithms for Propositional KB Approximation</td>
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<td>Yacine Boufkhad</td>
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<td>A Non-Deterministic Semantics for Tractable Inference</td>
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<td>James M. Crawford and David W. Eberington</td>
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<td>Computing Intersections of Horn Theories for Reasoning with Models</td>
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<td>Thomas Eiter, Yoshhide Iwani, and Kazuhiisa Makino</td>
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<th>1:10 – 2:00 PM</th>
<th>Lunch Break</th>
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<td><strong>Human-Robot Interaction</strong></td>
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<td>Season Chair: Ken Forbus</td>
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<td>Alternative Essences of Intelligence</td>
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<td>R. Brooks, C. Breazeal, R. Irie, C. Kemp, M. Marjanovic, B. Scassellati and M. Williamson</td>
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<td>Eye Finding Via Face Detection for a Foveated Active Vision System</td>
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<td>Brian Scassellati</td>
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<td>Template-Based Recognition of Pose and Motion Gestures on a Mobile Robot</td>
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<td>S. Waldherr, S. Thrun, R. Romero and D. Margaritis</td>
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<th>1:30 – 2:00 PM</th>
<th>Constraint Satisfaction Problems</th>
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<td>Season Chair: Thomas Schiex</td>
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<tr>
<td>On the Conversion between Non-Binary and Binary Constraint Satisfaction Problems</td>
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<td>Fahiem Bacchus and Peter van Beek</td>
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<td>On the Computation of Local Interchangeability in Discrete Constraint Satisfaction Problems</td>
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<td>Berthe Y. Choueiry and Guevara Noubir</td>
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<td>A Fast Algorithm for the Bound Consistency of Alldiff Constraints</td>
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<td>Jean-Francois Puget</td>
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<th>2:45 – 3:00 PM</th>
<th>Learning about People</th>
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<td>Season Chair: Michael Wobertson</td>
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<td>Recommendation as Classification: Using Social and Content-Based Information in Recommendation</td>
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<td>Chumki Ban, Haym Hirsh, and William Cohen</td>
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<td>Learning to Predict User Operations for Adaptive Scheduling</td>
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<td>Melinda F. Gervasio, Wayne Iba and Pat Langley</td>
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<td>Adaptive Web Sites: Automatically Synthesizing Web Pages</td>
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<td>Mike Perkowitz and Oren Etzioni</td>
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Thursday, July 30
Exhibition

The exhibition will be held in the Exhibit Hall on the first level of the Monona Terrace Convention Center, Tuesday, July 28 through Thursday, July 30. Admittance is restricted to badge conference attendees. Vendor-issued guest passes must be redeemed at the Exhibitor Registration Counter, at Lakeside Commons in the foyer of the exhibit hall, on the first level of the Monona Terrace Convention Center. Further information regarding access to the Exhibition can be obtained from the Exhibitor Registration Desk.

Exhibit Hours
Tuesday, July 28 10:00 AM – 6:00 PM
Wednesday, July 29 12:00 PM – 4:00 PM
Thursday, July 30 10:00 AM – 2:00 PM

Exhibitors

- AAAI Press
- ACM
- ActivMedia Robotics
- Brightware, Inc.
- Elsevier Science
- Franz, Inc.
- Harlequin Inc.
- IEEE Computer Society
- Kluwer Academic Publishers
- The MIT Press
- MacroVu, Inc.
- Morgan Kaufmann Publishers
- NASA Ames Research Center
- Numan Intelligence
- PC AI Magazine
- Prentice Hall
- Real World Interface, Inc.
- Register Machine Learning Technologies, Inc.
- Springer-Verlag
- Stottler Henke
advantage of the special 20% discount on all book titles! Our staff will be happy to assist you and we look forward to meeting you there.

**Booth #100**

**Franz, Inc.**

1995 University Avenue  
Berkeley, CA 94704  
Tel: (510) 548-3600  
Fax: (510) 548-8253  
Email: info@franz.com  
Web: www.franz.com

Franz Inc. offers the most powerful dynamic object-oriented programming system available for enterprise-wide, complex application development on Unix and Windows platforms. Allegro CL’s Dynamic Objects technology provides the power to develop complex, mission-critical applications and the flexibility to handle user-modifications easily, even after deployment. Allegro CL is powered by CLOS, which supports full multiple inheritance; first-class exceptions; dynamic class, object and method redefinition; interpretive semantics; dynamic recompilation; high-performance garbage-collection; and the Meta-Object Protocol. Allegro CL also provides connectivity to the ORBIX family of products, simplifying the process of creating large-scale CORBA/ORBIX applications in situations where run-time customizability is desirable. Software developers in Fortune 1000 companies worldwide are using Allegro CL for mission-critical applications in every domain.

**Booth #206**

**Harlequin Inc.**

One Cambridge Center  
Cambridge, MA 02142  
Tel: (617) 374-2400  
Fax: (617) 352-6395  
Email: web@harlequin.com

Harlequin will be demonstrating our complete line of advanced software development tools. Our Common Lisp solutions are unsurpassed, including LispWorks for the Windows operating system, LispWorks for workstations, and Liquid Common Lisp (formerly Lucid Common Lisp). New CORBA interfaces support Lisp development of components for distributed environments. Harlequin will also be showing Harlequin Dylan, the new dynamic object-oriented language for the Windows Platform, as well as MLWorks, the commercial implementation of Standard ML for UNIX and Windows.

**Booth #203**

**IEEE Computer Society**

10662 Los Vaqueros Circle  
Los Alamitos, CA 90720  
Tel: (714) 821-8380

IEEE Computer Society, one of the most prestigious professional associations in the world, serves its members through numerous publications, conferences, and workshops. Membership information and complimentary copies of *Computer and IEEE Intelligent Systems* (formerly *IEEE Expert*) magazines will be available. Some of our latest book releases, including *The Pattern Recognition Basis of Artificial Intelligence*, by Donald Tveter; *Mathematical Methods in Artificial Intelligence*, by Edward Bender; and *Stiquito: Advanced Experiments with a Simple and Inexpensive Robot*, by James M. Conrad and Jonathan W. Mills (book includes robot kit) are on sale. We will have live demonstrations of Stiquito each day.

**Booth #207**

**Kluwer Academic Publishers**

101 Philip Drive  
Norwell, MA 02061  
Tel: (617) 871-6600  
Fax: (617) 871-6528  
Email: kluwer@wkap.com  
On-line Catalog: www.wkap.nl

Kluwer Academic Publishers invites you to visit our display of the premier journals in the Artificial Intelligence area. We are proud to announce the inaugural issue of our new journal *Autonomous Agents and Multi-agent Systems* edited by Nicholas Jennings, Katia Sycara, and Michael Georgeff. Free sample copies of all journals are available.

**Booth #106**

**MacroVu, Inc.**

321 High School Road Box 366  
Bainbridge Island, WA 98110  
Tel: (415) 775-7377  
Fax: (415) 773-7377

Can Computers Think? The Issue Map Series: Seven large, full-color argumentation maps visually present the history of the 50-year machine intelligence debate. The maps summarize each contribution (more than 800 major moves from 385 AI research scientists and philosophers worldwide); rebuttals and counter rebuttals are linked in threads of dispute. These maps can save students entering the field hundreds of hours trying to comprehend the overall context and history of the debate’s 50 issue subtopics and the several contending “camps” of protagonists. The maps provide the current frontiers of the arguments and a chronological intellectual history. Project Director Robert Horn, a visiting scholar at Stanford University, will present at the booth.
Publisher of academic books and journals in artificial intelligence and computer science. Stop by our booth to see Behavior-Based Robotics by Ronald C. Arkin, Reinforcement Learning by Richard S. Sutton and Andrew G. Barto and other new publications from MIT Press & AAAI Press.

**Booth #307**

**Human Intelligence, Inc.**

1143 Cobblestone Drive
Troy, MI 48098
Tel: (248) 619-0388
Fax: (248) 619-0393
Email: info@numan.com
Web: www.numan.com

Human Intelligence, Inc. will unveil a revolutionary breakthrough in artificial intelligence at AAAI-98: NuIntelligence and Human-Computer Intelligence. NuIntelligence is an embodiment of the elementary operational components of heuristic search, genetic algorithms, neural networks, optimization, and other artificial intelligence techniques. NuIntelligence can be used to implement any of these techniques as well as hybridizations and combinations of them. NuIntelligence's companion problem solving methodology, Human-Computer Intelligence, enables the reduction of problem complexity from exponential to linear. NuIntelligence seamlessly integrates with a broad base of applications across many problem domains through DDE, DDE-OLE and Internet Socket interfaces.
Prentice Hall

Booth #200
Prentice Hall
One Lake Street
Upper Saddle River, NJ 07458
Tel: (201) 236-7283
Fax: (201) 236-7210


Please stop by our booth to obtain information on this and other quality books, such as; The Widely Used Common Lisp by Paul Graham, and books on a variety of subjects ranging from Data Mining to Java. We are also accepting proposals for the Prentice Hall AI (and related subjects) book series, Stuart Russell and Peter Norvig, Series Editors.

Real World Interface, Inc.

Booth #407
Real World Interface, Inc.
32 Fitzgerald Drive
Post Office Box 375
Jaffrey, NH 03452
Tel: (603) 532-6900
Fax: (603) 532-6901
Web: www.rwii.com

Real World Interface, Inc. (RWII), an established leader in indoor mobile research robots, is pleased to announce their second All Terrain Robot Vehicle—The ATRV-2. The ATRV-2 is designed to provide the robotics researchers and scientists who are pioneering tomorrow’s rovers with a vehicle capable of supporting demanding missions including security, de-mining, reconnaissance, surveillance and hazmat. RWII also provides application specific mobile robot development services for industrial, entertainment, and research customers. For further information, visit the RWII at booth #407 or view our family of indoor and all terrain mobile robots at: http://www.rwii.com.

Register Machine Learning Technologies, Inc.

Booth #406
Register Machine Learning Technologies, Inc.
360 Grand Avenue
Oakland, CA 94610
Tel: (510) 834-791

AIM Learning Technologies™ is a suite of tools to create extremely fast and memory efficient learning systems. AIM technology is ideally suited for large induction and optimization tasks and for embedded applications. At AAAI-98, Register Machine Learning Technologies, Inc.™ will announce the availability of custom learning applications and tools based on AIM Learning Technology™. It will also demonstrate Discipulus™ for Windows 95/98/NT. Discipulus™ is the first commercial product based on AIM Learning Technology™. Discipulus™ is very fast program induction software, ideally suited for tasks such as data mining, forecasting, function fitting, and classification.

Springer-Verlag

Booth #101
Springer-Verlag
175 Fifth Avenue
New York, NY 10010
Tel: 1-800-SPRINGER
Fax: (201) 348-4505
Email: custserv@springer-ny.com
Web: www.springer-ny.com

Springer-Verlag is an international publisher of books, journals, software, and the renowned series “Lecture Notes in Artificial Intelligence.” Stop by the booth for a special 20% AAAI discount on all AI titles, plus related books on fuzzy logic, neural networks, evolutionary computing, and a wide selection of general interest topics.

Featured titles include: Jennings and Wooldridge’s *Agent Technology*, Adami’s *Introduction to Artificial Life*, Munakata’s *Fundamentals of the New Artificial Intelligence*, Michalewicz’s *Genetic Algorithms + Data Structures = Evolution Programs*, Schaeffer’s *One Jump Ahead: Challenging Human Supremacy in Checkers*, and Grillmeyer’s *Exploring Computer Science with Scheme.*

Stotler Henke Associates, Inc. (SHAI)

Booth #304
Stotler Henke Associates, Inc. (SHAI)
1660 South Amphlett Blvd., Suite 350
San Mateo, CA 94402
Tel: (650) 655-7242
Fax: (650) 655-7243
Email: alexander@shai.com
Web: www.shai.com

SHAI is looking for highly motivated individuals who want interesting, challenging work on a variety of AI research and development projects. We currently have job openings for programmers/software engineers and artificial intelligence programmers/software engineers. SHAI has been a leader in AI research and intelligent solutions development since our inception in 1988. We are results-oriented problem solvers with practical experience gained in over 50 AI projects for commercial and government clients. We have developed and fielded hundreds of operational systems in daily use in domains as varied as space station planning and scheduling, intelligent tutoring systems, and retail sales prediction.
AAAI-98 Intelligent Systems Demonstrations

The Intelligent Systems Demonstrations will be held in the Exhibit Hall on the first level of the Monona Terrace Convention Center, and will be open to registered conference attendees during exhibit hours. The Intelligent Systems Demonstrations showcase state of the art AI implementations. System builders will be on hand to present their work, and audience interaction will be encouraged where possible.

Demonstrations Schedule

**Tuesday, July 28**
- 10:30 AM: Distributed Coaching for an Intelligent Learning Environment
- 11:00 AM: Cyclepad: An Articulate Virtual Laboratory for Engineering Thermodynamics
- 12:10 PM: TRIPS: The Rochester Interactive Planning System
- 2:00 PM: Interactive Pet Robot with Emotion Model
- 2:30 PM: ARIADNE: A System for Integrating Information from the Web
- 3:10 PM: KANSEI: Image Retrieval Simulating the Human Preference
- 3:40 PM: The Intelligent Classroom
- 4:30 PM: Answering Questions for an Organization Online
- 5:00 PM: CiteSeer: Autonomous Citation Indexing
- 5:30 PM: Realtime Gesture-Speech Human Interface on Notebook Size Personal Computer

**Wednesday, July 29**
- 12:10 PM: “Squeaky Wheel” Optimization Demonstration
- 2:00 PM: TacAir-Soar: Generating Autonomous Behaviour for a Distributed Military Training Environment
- 2:30 PM: A Description Logic-based Configurator for the Web
- 3:10 PM: STEVE: A Pedagogical Agent for Virtual Reality
- 3:40 PM: Self-Explanatory Simulators for Education
- 6:00 PM – 10:00 PM: AI Festival: All demos available

**Thursday, July 30**
- 10:30 AM: Presenting Web Site Search Results in Context
- 11:00 AM: CAPES: Countrywide Automated Property Evaluation System
- 11:40 AM: Virtual Mattie Activity Monitor
- 12:10 PM: Sensible Agents Operating under Dynamic Adaptive Autonomy
- 12:40 PM: FindUR: A Web-based Environment for Conceptual Retrieval
- 1:10 PM: Interactive Characters with Tactile Interface

**Answering Questions for an Organization Online**
Vladimir A. Kulyukin, Kristian J. Hammond, and Robin D. Burke, Intelligent Information Laboratory, University of Chicago

The World Wide Web continues to challenge organizations to make online access to their expertise convenient for their clients. One means of expertise access that many clients find convenient in everyday life is asking natural language questions of the organization. To support it online, we developed an approach to building organization-embedded question-answering intermediaries, called “information exchange systems.” These systems use their knowledge of the organization’s structure to answer the clients’ questions and to acquire new expertise from the organization’s experts. Our approach uses techniques of hierarchical and predictive indexing, combined term weighting, abstraction-based retrieval, and negative evidence acquisition. We will demonstrate these techniques with the Chicago Information Exchange system, an information exchange application embedded in the University of Chicago’s computer science department.

**ARIADNE: A System for Integrating Information from the Web**
Craig A. Knoblock, Steven Minton, Jose Luis Ambite, Naveen Ashish, Greg Barish, Pragnesh Jay Modi, Ion Muslea, Andrew G. Philpot, and Sheila Tejada, Information Sciences Institute, Integrated Media Systems Center, and Department of Computer Science, University of Southern California

The Web is based on a browsing paradigm that makes it difficult to retrieve and integrate data from multiple sites. Today, the only way to do this is to build specialized applications, which are time-consuming to develop and difficult to maintain. We are addressing this problem by creating the technology and tools for rapidly constructing information agents that extract, query, and integrate data from web sources. We will demonstrate a system called Ariadne for rapidly building agents to integrate Web sources. Our system makes it fast and easy...
to build new information agents that access existing Web sources. In this demo, we will show how we can query and integrate data from multiple web sources in several different domains. Also, we will show the kind of data models built, examples of information gathering plans, how wrappers are generated for individual Web sources, and how selected information is stored locally to improve performance.

**CiteSeer: Autonomous Citation Indexing**

Steve Lawrence, C. Lee Giles, Kurt D. Bollacker, NEC Research Institute

This demo presents CiteSeer, an autonomous citation indexing system. CiteSeer autonomously locates and processes research articles on the Web in PostScript form. CiteSeer automatically extracts information from the articles including the header, abstract, individual citations to other papers, and the context of the citations. CiteSeer organizes the literature, and allows the location of papers using keyword search, citation links, and citation co-occurrence. Citations to any given paper can be made in many different formats, and CiteSeer uses AI methods in order to cluster identical citations. This allows CiteSeer to rank the cited articles according to the number of citations. CiteSeer can also group together and display the context of multiple citations to a given paper. The context of citations can be very useful for literature search and evaluation, e.g. subsequent articles may review a given article, highlight limitations, or present follow up work.

**Countrywide Automated Property Evaluation System—CAPES**

Ingemar A.E. Hulthage and Iain Stobie, Artificial Intelligence Division, Countrywide Home Loans

The purpose of CAPES is to estimate the market value of residential properties in order to assess the collateral on Countrywide loans. CAPES estimates market value by comparison of the subject property to other similar nearby properties, for which recent sales information is available. Characteristics of the subject and comparable properties, such as the living area and number of bedrooms, are used to the extent available. In some cases price indices describing the change in property values over time are also used. In addition to the estimated market value, CAPES produces a measure of the uncertainty in the result. Its accuracy has been validated extensively on batches of properties by comparing its results to known sales prices. CAPES was designed to support a range of uses, from an interactive appraiser’s assistant in which its internal operations can be controlled by an expert user to a fully automatic mode suitable for less knowledgeable users or batch runs. It has several models, including heuristics derived from company-specific business rules, and uses both commercial and proprietary property databases.

**CyclePad, an Articulate Virtual Laboratory for Engineering Thermodynamics**

Kenneth D. Forbus, Leo Ureel, Julie Baher, and Sven E. Kuehne, Institute for the Learning Sciences, Northwestern University; John Everett, Xerox Palo Alto Research Center, and Mike Brokowski, Department of Mechanical Engineering, Northwestern University

CyclePad is an articulate virtual laboratory (AVL) for learning engineering thermodynamics by design. Design tasks are highly motivating, and tie classroom learning to real-world concerns. Students using CyclePad can design power plants, refrigerators, engines, cryogenic systems, and other types of thermodynamic cycles. Currently CyclePad is used by over 180 students per year, and is available for download via the web. In this demonstration you will see how students create designs, including helping work with modeling assumptions and make appropriate choices of parameter values. You will also get a look under the hood at how CyclePad’s analysis and explanation systems work, the underlying knowledge base, and some of the subtleties involved in reasoning about thermodynamics.

**A Description Logic-Based Configurator for the Web**

Deborah L. McGuinness and Lori Alperin Resnick, AT&T Labs – Research; Charles Isbell, MIT; Matt Parker and Chris Welty, Vassar College; and Peter Patel-Schneider, Bell Labs Research, Corresponding Author: Deborah McGuinness, AT&T Labs – Research

Description logics have a history of success in configuration applications in major companies including AT&T, Lucent, and the Ford Motor Company. While our platform has produced over 17 deployed commercial configurators, we find a demonstration application to be the best expository tool for describing how description logics can be best leveraged in tasks such as configuration. We have developed a demonstration system that was designed to contain reasoning processes analogous to those in our deployed systems, yet works in the everyday domain of configuring home stereo systems. The system is built using the CLASSIC knowledge
representation system and has recently been ported to a multi-user web platform. Our demonstration contains, among other things, examples of configurations from partial specifications, contradiction detection, explanation of reasoning, automatic completion, alternative exploration, parts list examination, and configuration from an example library.

Distributed Coaching for an Intelligent Learning Environment
Kenneth D. Forbus, Leo Ureel, Julie Baher and, Sven E. Kuehne, Institute for the Learning Sciences, Northwestern University; John Everett, Xerox Palo Alto Research Center, and Mike Brokowski, Department of Mechanical Engineering, Northwestern University

We are demonstrating a distributed coaching system for CyclePad, a deployed intelligent learning environment in engineering thermodynamics. Part of the coach resides on the student’s computer, with the rest on a server accessed via email. The on-board coach uses Bayesian reasoning about teleology to make suggestions about parameter values, and helps students debug contradictions. The email coach provides additional analysis help and uses analogy for design coaching, providing step-by-step advice on how principles in a web-based library can be applied to a student’s particular design. We demonstrate how the on-board coaching works and how the RoboTA agent colony handles email interactions. We show how MAC/FAC retrieves cases from a design library and how SME is used to generate concrete advice about how to apply the principles of a case to the student’s design problem. Our case compiler, which takes expert-prepared materials and produces cases, will also be shown.

FindUR: A Web-Based Environment for Conceptual Retrieval
Deborah L. McGuinness, and Lori Alperin Resnick, AT&T Labs – Research; Thomas W. Beattie and Steve Solomon, AT&T Labs; and Harley Manning, Dow Jones Markets. Corresponding Author: Deborah McGuinness, AT&T Labs – Research

When documents contain few conceptually related words, recall for naturally occurring queries can drop below acceptable levels. We analyzed a number of web sites and found that up to 100 percent of the relevant retrievals were missed. We devised and implemented a system architecture that improves search performance using query expansion from description logic–maintained ontologies. Our work has been deployed on ten corporate and community web sites. Usage logs from the last 18 months and user studies show improved recall with little negative impact on precision. The knowledge base of background information is also used to support query formation that is semantically richer than what is typically available from web search engines. The demonstration systems show conceptual search in sites covering electronic yellow pages, community calendars, and competitive intelligence applications. Our system also includes a distributed description logic-supported environment for generating and maintaining background knowledge ontologies.

The Intelligent Classroom
David Franklin and Joshua Flachsbart, University of Chicago

People frequently complain that it is too difficult to figure out how to get computers to do what they want. However, with a computer system that actually tries to understand what its users are doing, people can interact in ways that are more natural to them. We have been developing a system, the Intelligent Classroom, that does exactly this. The Intelligent Classroom uses cameras and microphones to sense a speaker’s actions and then infers his intentions from those actions. Finally, it uses these intentions to decide what to do to best cooperate with the speaker. (The Classroom can play videotapes, show slides, and also produce a video of the presentation.) In the Intelligent Classroom, the speaker need not worry about how to operate the Classroom; he may simply go about his lecture and trust the Classroom to assist him at the appropriate moments.

Interactive Characters with Tactile Interface
Hirohide Ushida, Yuji Hirayama, and Hiroshi Nakajima

This demonstration shows interactive characters which communicate with their users. The characters are able to express emotions and personalities. A behavior generation model is used to generate life-like behaviors of the characters. The model consists of reactive and deliberative mechanisms. In the reactive mechanism, tactile sensors are used to realize physical interactions with the users. The characters can feel the user’s touch and react instantaneously. On the other hand, the deliberative mechanism generates goal-oriented behavior as the result of interactions between cognitive and emotional processes. This mechanism is based on a psychological theory, called the cog-
nitive appraisal theory. The model also has a learning mechanism to improve behavioral patterns. The behaviors are represented by computer animation with sound. The results obtained from experiments showed that the model is effective to give the users illusion of life.

Interactive Pet Robot with Emotion Model
Toshihiro Tashima, Toshimi Kudo, Sachihiro Saito and Masaharu Osumi, Fuzzy Technology and Business Promotion Division, OMRON Corporation

We propose a Pet Robot that interacts with users and exhibits lifelike behavior based on its emotion model. The Pet Robot can percept the stimuli from users or environment by using some tactile and auditory sensors. The Emotion Model generates emotions and desires by the stimuli. It consists of a reactive mechanism, which is based on subsumption architecture, and a deliberative mechanism, which is based on a psychological theory. The Pet Robot behaves reactively and emotionally and its behaviors always changes as the emotion and desires change. The Pet Robot wears a cat costume and behaves like a cat. For example, she wags her tail delightedly if she is stroked, and she turns or looks around if she hears a big sound. She gets sleepy when she feels satisfied, and she meows when she feels lonely. This robot is designed to supply users with peace and enrichment of mind, and we will evaluate it.

KANSEI Image Retrieval Simulating the Human Preference
Hideyuki Kobayashi, Yoriyuki Okouchi, and Shunji Ota, Information Technology Research Center, OMRON Corporation

We have developed an image retrieval system using KANSEI (feeling, impression or sensibility) features. This system can search the same sensuous image from a large image storage not using text or word but an image. Therefore it doesn’t need indexing on each image for preparing image retrieval. Our system extracts the KANSEI features from each image, and sets adequate weights for combining those features. In combining procedure, we introduce a new value called “adaptability.” It judges how much the features are extracted from the image. As a result, adaptability makes it possible to make a KANSEI model depending on each image and to calculate similarity between images. As color image contents of our current system, Japanese stamp, national flag and butterfly images are provided. If a user picks up one of those as a key image, similar images in the database can be retrieved simulating the human preferences.

PowerConstructor: A Belief Network Learning Tool
Jie Cheng, University of Ulster at Jordanstown

PowerConstructor is an efficient and handy belief network learning tool, which includes a wizard interface and a construction engine. Our system is currently available on 32-bit Windows platforms (Windows 95, 98, NT). It takes a database table as input and constructs the belief network structure as output. Our system has a number of main features. User-friendly interface: It gathers input information through 5 simple steps and there is online help for each step. Accessibility: It supports most of the popular desktop database and spreadsheet formats. It also supports remote database servers through ODBC. Reusability: The construction engine is an independent ActiveX code component so that it can be easily integrated into other belief network, data mining, knowledge base, and decision support systems for Windows. Efficiency: The system is based on our information theoretic dependency analysis algorithm, which requires conditional independence test O(N^4) times for the general case and O(N^2) times when the node ordering is known. Other kinds of domain knowledge can also be used in the learning process. PowerConstructor 1.0 is now available for download from http://infosys.susqu.edu/bnpc/.

Presenting Web Site Search Results in Context
Michael Chen and Marti Hearst, Computer Science Department and School of Information Management & Systems, University of California, Berkeley

We address search over large, heterogeneous web sites such as those found at universities and within corporate intranets. The goal is to make use of structure implicit within the site to provide context for the retrieved documents, even for those sites for which there is no centralized organization. Most web search engines simply list titles, urls, and abstracts, and thus do not place the results in context. We will demonstrate our alternative: a simple but novel approach to organizing and presenting the results of search over the pages of a large, heterogeneous web site. The main idea is to show, for each page matching the query, the path of web links that a user would follow from a root page to the search hit. The result is a hierarchical characterization of
the search results that both shows the context in which the hits appear and educates the user about the structure of the web site.

Realtime Gesture-Speech Human Interface on Notebook Size Personal Computer
Ryuichi Oka, Hironobu Takahashi, Toshiro Mukai, Takuichi Nishimura, Takashi Endou, Masayuki Nakazawa, Shigeaki Nagaya, and Hiroshi Matumura, Real World Computing Partnership

Four application programs are demonstrated using so-called multi-modal personal computer of notebook size (MMPC) with a microphone and a CCD camera. The programs are as follows: (1) House design based on realtime spotting recognition of spontaneous speech and gesture. A user can talk with an agent and share the present status of the task displayed by CG. (2) Speech summary based on automatic segmentation of topic from spontaneous speech. The output of the summary is a sequence of speech segments. The program is language free. (3) Mutual retrieval between speech and video image of TV news data based on self-organized databases and spotting retrieval. The query is an endless stream of speech or video image. (4) Flexible realtime gesture recognition based on a new spotting matching method. About 30 categories of gesture are recognized allowing variations such as stopping or reverse motions.

Self-Explanatory Simulators for Education: A Demonstration
Kenneth D. Forbus, Mike Oltmans, and George Lee, The Institute for the Learning Sciences, Northwestern University

Creating new kinds of educational software has been one motivation for qualitative physics. Self-explanatory simulators combine the precision of numerical models with qualitative representations to provide both numerical data and conceptual, causal explanations. This demonstration shows how we are using self-explanatory simulators in a new architecture for educational software, active illustrations, that provides stand-alone simulation laboratories and a new type of media for hypermedia systems. We will demonstrate several examples of self-explanatory simulators for education, including the Evaporation Laboratory, an atmosphere simulation, and space-related simulations. We will explain how the SIMGEN self-explanatory simulation compiler works, and the authoring environment we have developed for creating and customizing self-explanatory simulators. Going under the hood, we will show how the runtime architecture works, focusing on the structured explanation system, and the structure and organization of domain theories that fuel the simulation compiler.

Sensible Agents Operating Under Dynamic Adaptive Autonomy
K. Suzanne Barber, The University of Texas-Austin

The practical deployment of distributed agent-based systems mandates that each agent behave sensibly, incorporating an understanding of both global system goals and their own local goals. The Sensible Agent research seeks to prove: The operational level of agent autonomy (i.e. types of roles an agent plays in its interactions with other agents) is key to an agent’s ability to respond to dynamic situational context, (i.e. the states, events, and goals that exist in a multi-agent system), conflicting goals, and constraints on behavior. Levels of autonomy are defined along a spectrum ranging from command-driven (agent executes commands from another agent), to consensus (agents work together to meet goals), to locally autonomous (agent can initiate its own thread of execution), to master (agent controls other agents). The Sensible Agent architecture and capabilities for each SA constituent module (action planner, self agent modeler, external agent modeler, conflict resolution advisor, and autonomy reasoner) will be demonstrated for the domain problem of radar frequency management among distributed naval ships.

“Squeaky Wheel” Optimization Demonstration
David E. Joslin, i2 Technologies, and David P. Clements, University of Oregon

This demonstration shows how squeaky wheel optimization (SWO) has been applied to a scheduling domain. For other possible domains and a detailed description of SWO see the proceedings. The core of SWO is the construct/analyze/prioritize cycle. On each iteration a solution is constructed by a greedy algorithm, making decisions in an order determined by priorities assigned to the elements of the problem. That solution is then analyzed to find the elements of the problem that are handled poorly in that solution. The priorities of those elements are then increased, causing the greedy constructor to deal with them sooner on the next iteration. (“The squeaky wheel gets the grease.”) This cycle continues until some termination
condition occurs. The construction, analysis and prioritization are all in terms of the elements that define a problem domain. In the scheduling problems shown in the demo, those elements are the orders to schedule.

STEVE: A Pedagogical Agent for Virtual Reality
Jeff Rickel and W. Lewis Johnson, Information Sciences Institute & Computer Science Department, University of Southern California

To master complex tasks, such as operating machinery, people need hands-on experience facing a wide range of situations. Since it is often impractical to provide such training on real equipment, we are exploring the use of virtual reality instead; training takes place in a 3D, interactive, simulated mock-up of the student’s work environment. Since mentors and teammates are often unavailable, we are developing an autonomous, animated agent, Steve, that cohabits the virtual world with students to play these roles. Steve can demonstrate tasks as well as monitor students while they practice tasks, providing assistance when needed. Steve integrates many AI techniques: it can generate and recognize speech; demonstrate actions; use gaze and gestures; answer questions; construct, execute, and revise plans; and discuss past actions based on an episodic memory. Steve has been tested on a variety of naval operating procedures, and can provide instruction in a new domain given only the appropriate declarative knowledge.

TacAir-Soar: Generating Autonomous Behavior for a Distributed Military Training Environment
Randolph M. Jones, John E. Laird, Paul E. Nielsen, Karen Coulter, Frank Koss, and Patrick Kenny, Artificial Intelligence Laboratory, University of Michigan

TacAir-Soar is a software system that generates complex, intelligent behavior in real time, to support military training by simulation. It is a large (5,200 rules) rule-based system, which controls synthetic models of US military fixed-wing aircraft. It autonomously performs all of the missions typically performed aboard fixed-wing aircraft, including defensive and offensive counter-air, close-air support, suppression of enemy air defense, strategic attack, escort, airborne early warning, reconnaissance, mid-air tanking, and forward air control. TacAir-Soar is implemented within the Soar architecture for cognition, which contains state-of-the-art technology for real-time pattern matching. This demonstration will highlight the system’s ability to perform air-to-air combat, and to interact with human controllers.

TRIPS: The Rochester Interactive Planning System
George Ferguson and James Allen, University of Rochester

This demonstration showcases TRIPS, The Rochester Interactive Planning System, an intelligent, collaborative, conversational planning assistant. TRIPS collaborates with its user using both spoken dialogue and graphical displays to solve problems in a transportation logistics domain. The system understands the interaction as a dialogue between it and the human. The dialogue provides the context for interpreting human utterances and actions, and provides the structure for deciding what to do in response. A variety of AI technologies, including planning, scheduling, and simulation, are integrated by TRIPS to produce solutions in response to human guidance. With the human in the loop, they and the system together can solve harder problems faster than either could solve alone. In our demonstrations, users are encouraged to sit down and try the system, with only rudimentary guidance from us. Further information is available in our AAAI-98 paper “TRIPS: An Integrated Intelligent Problem-Solving Assistant.”

Virtual Mattie Activity Monitor
Scott Dodson, University of Memphis

Virtual Mattie (VMattie) is a clerical software agent that is capable of actively gathering information from humans, composing announcements of seminars, and distributing the announcements without human intervention. VMattie sends and receives information in the form of natural language, freeform email messages. It must maintain the necessary distribution lists, send announcements in a timely manner, and will remind organizers to send information if needed. VMattie is a multi-agent system which embodies and extends several AI architectures including Maes’ behavior net, Hofstader and Mitchell’s Copycat architecture, a blackboard, and a neural network. It is written completely in Java. The VMattie Activity Monitor is a system used to test, monitor, and demonstrate the capabilities of VMattie. It includes a client application which is capable of executing as an applet (strictly in a web browser), and uses publish/subscribe, or “push,” technology to receive real-time updates from VMattie.
Hall of Champions

Man versus machine — who is better? In artificial intelligence, this battle is usually carried out by playing a game. In the short lifespan of computing science and artificial intelligence, considerable effort has been devoted to creating game-playing programs capable of meeting and exceeding human abilities. A scorecard of computer accomplishments in this area might read as follows:

- **Solved**—Computers can play some games perfectly (Connect-4 and Go Moku, for example).
- **Computer Champions**—Computers are indisputably better than all humans in games such as Checkers and Othello.
- **Undecided**—It is not clear whether man or machine is better in games such as Backgammon, Chess, and Scrabble.
- **Emerging**—Great strides have been made recently in Bridge and Poker, with the prospects of a computer program being a worthy challenger to the human world champion only a few years away.
- **Human dominance**—Some games have been resistant to progress. For example, research into achieving high-performance Go programs is still in its infancy.

The Hall of Champions presents several game-playing exhibitions. Competitions between evenly matched opponents offer the most interest, as evidence by last year’s chess match between Garry Kasparov and IBM’s Deep Blue. This year, AAAI is highlighting two undecided games: Backgammon and Scrabble. Who is better at Backgammon? Gerry Tesauro’s TD-Gammon or world champion Malcolm Davis? Who is better at Scrabble? Brian Sheppard’s Maven or Grandmaster Adam Logan? Both matches will be played over several days, allowing for enough games to be played to get more insight into whether man or machine is the better player.

The Hall of Champions also features exhibitions in the emerging games of Bridge and Poker, as well as in Go.

AAAI-98 attendees will be able to interact with these game-playing programs in a variety of ways. First, attendees can watch the competitions. All games will have commentary provided by both the game programmer and the human opponent. Second, most of the programs will be available during the conference for attendees to play against them. Finally, the programs’ authors will be available to discuss both the technical issues involved in creating the programs and the social issues involved in introducing world-class computer players into tournament play.

The Hall of Champions includes two spectators’ areas where AAAI attendees can view matches as they progress. The Hall of Champions will be open during exhibit hours (see schedule below). Admittance to the Hall of Champions is included in the technical program registration fee or the onsite exhibits-only registration fee. High School students are welcome and will be admitted without fee upon presentation of a valid high school student ID card. Children under 12 will also be admitted without fee, but must be accompanied by an adult conference registrant.

**Disclaimer**

This is an educational exhibition, not a competition. The programs and humans participating in the Hall of Champions are all outstanding; each participant may or may not be the human or computer champion of the game. The persons or programs currently holding championships are determined by the governing organizations of the various games. Participation in the AAAI Hall of Champions has been determined primarily by excellence of play, but also by suitability for our educational mission and by the scheduling constraints of the event.

**Expert Players Schedule**

**Tuesday, July 28**

- 10:00 AM – 12:00 PM: *Bridge: GIB vs Zia Mahmoud & Michael Rosenberg*
- 10:00 AM – 6:00 PM: *Backgammon: TD Gammon vs Malcolm Davis*
- 12:00 PM – 6:00 PM: *Scrabble: Maven vs Adam Logan*
- 4:30 PM – 5:30 PM: Panel Discussion, “AI Game-Playing Techniques: Are They Useful for Anything Other than Games?”

**Wednesday, July 29**

- 12:00 PM – 4:00 PM: *Backgammon: TD Gammon vs Malcolm Davis*
- *Go: Many Faces of Go vs James Kerwin*
- 6:00 PM – 10:00 PM: *Scrabble: Maven vs Adam Logan*
- *Bridge: Bridge Baron*

**Thursday, July 30**

- 10:00 AM – 2:00 PM: *Scrabble: Maven vs Adam Logan*
- 10:00 AM – 12:00 PM: *Poker: Loki*
Seventh Annual Mobile Robot Competition & Exhibition

The Robot Competition and Exhibition will be held in the Exhibit Hall of the Monona Terrace Convention Center, and will be open to registered conference attendees during exhibit hours.

Following in a long tradition of popular mobile robot competitions, this year’s event will provide conference attendees with a first hand look at the progress in the fields of artificial intelligence and robotics. The competition will consist of two events which will focus on detecting signs of past and current life on Mars and testing the robots ability to safely serve refreshments and interact with guests. The exhibition will showcase current research in robotics that does not fit into the competition tasks.

AAAI gratefully acknowledge grants from DARPA and the National Science Foundation for student travel to this event.

Event 1: Find Life on Mars

Mission Objective: The goal of the Find Life on Mars event is to seek out new life forms, collect them, categorize them, and return them back safely to the Mars Lander.

Scenario: The robot has just landed on Mars. It is an inhospitable place: polished cement ground, large black rocks, danger zones, and other obstacles jutting from the Martian landscape. Behind the robot sits the Mars Lander. It is the capsule that the robot rode for many weeks to get here. It has two access doors on its narrow ends. This is where the robot will deposit life forms.

Time is of the essence: The robot only has five to ten minutes to carry out its mission. As the robot boldly goes where no robot has gone before, it sees nothing but the desolate Martian rock and obstacle landscape. But wait, there it was again. A small colorful object about the size of a tennis ball. The robot races to the Martian, picks it up, carries it back to the Lander and places it carefully into one of the two access doors, and off it goes again.

Spirit of the Games: The purpose of the Find Life on Mars event is threefold: Promote new research and innovative ideas in robotics. Encourage robust, real-world solutions. Enhance information exchange between researchers.

This year awards will be given for technical innovation, as well as performance. We hope that we can highlight innovative research along with the more robust systems. To this end, there will be rounds of differing challenge. Also, human participants will be required to attend a post-competition workshop where they will describe and discuss their techniques.

Event 2: Hors d’Oeuvres Anyone? Robot Interaction Event

This event will take place during the AI Festival on Wednesday evening in the exhibit hall. Robots may either be in a penned area, or free to mingle with all attendees.

Objective: The objective of this competition is to act as service robots, serving hors d’oeuvers to attendees at the reception, and handing out flyers and making announcements between regular conference sessions. This year, each contestant is required to explicitly and unambiguously demonstrate interaction with the spectators. In keeping with the IJCAI panel “The Next Big Thing,” more natural modes of communication are necessary for society’s acceptance of robots. Furthermore, this helps distinguish the AAAI competition from other competitions.

Also different from last year, robots will be allowed to touch attendees! Specifically, in their attempt to serve food, a robot may “nudge” a person in order to get through a crowd and serve food to other groups of people. In addition to emphasizing interaction with attendees, manipulation is encouraged, either by refilling serving trays autonomously, or in physically handing out the food or flyers to the attendees.

Awards: Of greatest importance this year will be a series of Technical Innovation Awards that will be given for specific accomplishments. These will highlight entries that have some noteworthy innovation regardless of how well the entry performed in the competition, and will be awarded in such areas as: distinguishing humans from inanimate things (they don’t offer cookies to tables!), gesture recognition, nudging using a manipulator, personality, enabling two-way conversations with a human being, use of vision-based sensing, recognizing VIP’s by ribbons on badges and addressing them differently, and best integration effort.

In addition to the Technical Innovation Awards, the reception event will have a first, second, and third place award for technical merit, based on the judges’ scores from the Qualification/Safety Round and from the performance in the reception event. In order to determine these prizes, robots will actually be scored based on
reaching various levels of competency. Some of these competencies are binary, and others involve some scoring function. The reception event will also have a popular vote for the attendees favorite robot.

**Robot Event Judges & Chairs**

**Robot Competition Cochairs**
Gregory Dudek, McGill University; Robin Murphy, Colorado School of Mines; and David Kortenkamp, NASA/Ames Research

**Robot Exhibition Cochairs**
Tucker Balch, Georgia Institute of Technology and Karen Zita Haigh, Carnegie Mellon University

**Robot Competition Judges**
- Find Life on Mars: Maria Gini, University of Minnesota; Lisa Meeden; Douglas S. Blank, University of Arkansas; Nicola Ferrier
- Hors d’Oeuvres Anyone?: Alan Schultz, Naval Research Lab; Ilah Nourbaksh; Holly Yanko, Massachusetts Institute of Technology
- Technical Merit Awards: Vladimir Lumelsky and S.W. Zucker, Yale University

**Mobile Robot Competition Workshop**
- **Organizers:** Gregory Dudek, Robin Murphy and David Kortenkamp
  Thursday, July 30
  9:00 AM – 3:00 PM
  Hall of Ideas J, Monona Terrace

**Robot Competition and Exhibition Teams**

**Exhibitor and Competitor**

**Carnegie Mellon University**
Robots: Nomad
Team Members: Mark Maimone, Reid Simmons, and Dimi Apostolopoulos

**Exhibitor**

**Carnegie Mellon University**
Robots: Office Plant #1
Team: Michael Mateas and Marc Boehlen

Walk into a typical, high tech office environment, and, among the snaking network wires, glowing monitors, and clicking keyboards, you are likely to see a plant. In this cyborg environment, the silent presence of the plant fills an emotional niche. Unfortunately, this plant is often dying; it is not adapted to the fluorescent lighting, lack of water, and climate controlled air of the office. Office Plant #1 (OP#1) is an exploration of a technological object, adapted to the office ecology, which fills the same social and emotional niche as a plant. OP#1 monitors the ambient sound and light level, and, employing text classification techniques, also monitors its owner’s email activity. Its robotic, sculptural body, reminiscent of a plant form, responds in slow, rhythmic movements to express a mood generated by the monitored activity. In addition, low, quiet, ambient sound is generated to express this mood; the combination of slow movement and ambient sound thus produces a sense of presence, responsive to the changing activity of the office. OP#1 is a new instantiation of our notion of “intimate technology”, that is, technologies which address human needs and desires as opposed to technologies which meet exclusively functional task specifications.

**Georgia Institute of Technology**
Robot: JavaBots
Team: Tucker Balch
JavaBots is a freely-distributable software system for developing and running multi-robot control systems on mobile robots and in simulation. The system was used by Georgia Tech to control their winning multi-robot entry in the AAAI-97 Mobile Robot Competition. JavaBots is also used in a number of other laboratories in ongoing research. At AAAI-98 we will demonstrate the simulation capabilities of JavaBots as well as a videotape of robots using the system.

**McGill University**
Robot Name: Invader
Advisor: Greg Dudek
Team Leader: Francois Belair
Team Members: Francois Belair, Scott Burlington, Robert Sim, Eric Bourque, Andrew Ladd, and Gillaume Marceau

Invader is a Nomad 200 built by Nomadic Technologies equipped with 16 sonar sensors and a monocular color camera for external sensing. Last year’s “Mars Mission” was a big success for Invader, it is looking forward to this year’s challenge.
When Invader wakes on the foreign planet, it will use all the information that it can attain to help it on its quest. Combining all this information by way of an extended Kalman filter, Invader will begin searching for aliens, every step of the way incorporating acquired information with the information that it already has compiled, in a global map. This map will help Invader track down all the aliens that it comes across for identification and the acquisition of interesting samples from the environment.

Invader will identify some of its targets by their color, others by their shape. Color segmentation is fed to a principle components analysis mechanism to help differentiate among all of the potential targets. Shape recognition is done by comparing edge, corner and curve information against all the shapes that Invader knows about. Invader will use natural language to convey its findings, and of course can supplement that by downloading a global map for later reference. Invader is looking forward to this years journey.

### Competitor

**MIT Artificial Intelligence Lab**

Robot: Cog  
Team Leader: Brian Scassellati

**Naval Research Lab**

Robot: Coyote and Roadrunner  
Team Leader: Alan Schultz

**Northwestern University**

Robot: Kludge  
Team Advisor: Ian Horswill  
Team Leader: Dac Le  
Team Members: Lars Bergstrom, Robert Zubek, Mark DePristo, Matt Brandyberry, Shashi Buluswar, Dac Le, and Ian Horswill

Kludge is a low-cost robot that incorporates real-time vision with a novel cognitive architecture. Kludge can track up to three objects simultaneously, avoid obstacles using vision, follow simple instructions, play ball and chase games, etc. It’s simplified architecture consists of a set of sensory-motor systems, a logic-based problem solver, a Society-of-Mind-like frame system, and a simple finite-state parser. The problem solver can perform forward-chaining inference on a subset of modal logic involving single-place predicates and single-level quantification. Axioms are compiled into a TMS-like feed-forward network, allowing the system to recompute all inferences from scratch on every cycle of the sense-decide-act loop (5-10Hz on our current 25 MIP processor). Rather than using a single, centralized symbolic world model, working memory is distributed amongst a number of different sensory-motor and memory subsystems, each of which supports representations that are tailored to a particular common task. Variable binding is also performed by and distributed through these peripheral systems.

### Exhibitor

**SRI International/Rochester University**

Robot: Realtime Stereo and People-Tracking  
Team Members: Kurt Konolige and Chris Eveland

SRI’s Small Vision System performs real-time stereo analysis using standard PC hardware. We will demonstrate this system in a people-tracking application.

### Exhibitor and Competitor

**University of British Columbia**

Robot: Jose and/or Spinoza  
Team Members: Don Murray, Jim Little, Rod Barma, Cullen Jennings, and Stewart Kingdon

### Exhibitor

**University of Minnesota**

Robot: TBMin and new (yet to be named) robots  
Team: Maria Gini and Paul Rybski

### Competitor

**University of New Mexico**

Robot: Nomadic Scout  
Team Advisor: Dr. Greg Heileman  
Team Members: Traci Vanek, Maureen Ballas, Melody Romero, Jane Canulette, Liz Kurens, and Rhonda Arkana

One of the University of New Mexico’s entries is the Nomadic Scout. The Nomadic Scout was purchased by the UNM student branch of the IEEE Computer Society to enhance the existing robotics program. It is the first commercial robot purchased by the school. In preparation for the Mars Explorer phase of the competition, the Scout was equipped with a vision system for object identification. This vision system is comprised of a Newton Labs Cognachrome board utilizing the ARC development system along with a CCD color camera. An onboard Gateway portable computer running a Pentium II processor on a Linux platform will handle all high level control of the entire system.

### Competitor

**University of New Mexico**

Robot: Lobotomous  
Advisor: Dr. Greg Heileman  
Team Members: Traci Vanek, Maureen Ballas,
Melody Romero, Jane Canulette, Liz Kurens, Rhonda Arkana, and Dan Stormont

One of the University of New Mexico’s entries in this year’s AAAI Mobile Robot competition is Lobotomous. Lobotomous will be entered in the human interaction portion of the event, and this will be its third consecutive appearance at this contest.

Lobotomous was designed and constructed by UNM students in a senior level design class in preparation for the 1996 AAAI competition. Sandia National Labs is a major contributor to the development of Lobotomous and has provided much of the hardware used for the project. Since 1996, students in the EECE department for competitions and departmental projects have continued development. In 1997 Lobotomous won first place in the AAAI vacuuming competition and competed in the hors d’oeuvres phase.

**Exhibitor and Competitor**

**University of North Dakota**

Robot: Rusty the B.E.A.R

Team Advisors: Sven Anderson, Henry Hexmoor and Bruce Maxwell

Team Leader: Bret Reese

Team Members: Elizabeth Gordon, Daniel Ibanez-Gomez, Brett Reese, Tim Thompson, Aron Tomson, Matt Lafaray, and Mike Trosen

We have worked on sensory interpretation and fusion of sonar, infrared, and vision. For the competition, we have developed intuitive navigation algorithms that detect mobile objects with human skin-color. The sensory detection is done by a low-quality/low-cost vision system. Our vision system detects skin-color and motion at about 3Hz rate. One of our software modules captures sonar data and detects artifacts in sonar occupancy grids. This software is also used as an offline analysis tool. It uses stored sonar data from previous runs to allow users to generate sonar occupancy grids over different spans of time. Detection algorithms are run on this software for debugging before they are loaded onto the robot. We are extending this software to be a general testbed for other sensory data such as vision and infrared.

**Exhibitor**

**University of Southern California**

Robot: Ullanta Theater Troupe

Team: Barry Brian Werger

**Competitor**

**University of Texas at Arlington**

Robot: Pioneer 2

Team Advisor: Dr. Bill Carroll

Team Leader: James Poole

Team Members: Kiyoko Fujita, Brandon Hennegan, Cary Pillers, Priyath Sandanayake, and Michael Tran

Team pioneer is a senior design project at the University of Texas at Arlington in Arlington, Texas. Our robot is a Pioneer mobile robot with a gripper package and Fast Track vision system installed. The goal of our project is to gain knowledge and experience in the field of robotics and artificial intelligence.

**Exhibitor and Competitor**

**VUB AI Lab**

Robot: Babu and Pi

Team: Paul Vogt

**Exhibitor and Competitor**

**Independent**

Robot: Beast and Snake

Team Leader: Laurent Chabin
Registration

Conference registration will take place outside the Exhibition Hall, Lakeside Commons, on the first level of the Monona Terrace Convention Center, beginning Sunday, July 26. Registration hours are:

- **Sunday, July 26**: 7:30 AM – 6:00 PM
- **Monday, July 27**: 7:30 AM – 6:00 PM
- **Tuesday, July 28**: 8:00 AM – 6:00 PM

Registration hours are:

- **Sunday, July 26**: 7:30 AM – 6:00 PM
- **Wednesday, July 29**: 8:00 AM – 6:00 PM
- **Thursday, July 30**: 8:30 AM – 2:00 PM

Only checks drawn on US banks, VISA, MasterCard, American Express, government purchase orders, traveler’s checks, and US currency will be accepted. We cannot accept foreign currency or checks drawn on foreign banks.

Registration Fees

**AAAI-98/IAAI-98 Technical Program**

Your AAAI-98/IAAI-98 technical program registration fee includes admission to all technical paper sessions, invited talks and panels, exhibitions, the Student Abstract Poster Session, the opening reception, the AI Festival, AAAI-98/IAAI-98 Conference Proceedings and the Special Tutorial MP’s. Note: Students must present proof of full-time student status to qualify for student rate. Onsite technical program fees are:

- Regular Member: $495
- Regular Nonmember: $575
- Student Member: $170
- Student Nonmember: $235

**Tutorial Forum**

The tutorial forum registration includes admission to no more than four consecutive tutorials and the corresponding four tutorial syllabi. Extra syllabi from the other tutorials may be purchased separately for $15.00 each. The tutorial forum registration also includes admission to all exhibit hall programs. Please note that you need not register for the Tutorial Forum to attend the Special Tutorial MP’s on Monday, July 27. Onsite Tutorial Forum fees are:

- Regular Member: $230
- Regular Nonmember: $300
- Student Member: $125
- Student Nonmember: $155

Special Second-Day (Monday, July 27 only) Tutorial Forum Registration fee for COLT / ICML / UAI attendees only: Regular attendees may deduct $60.00 and students $25.00 from the fees listed above.

**Workshop Program**

Workshop registration is limited to those active participants determined by the organizer prior to the conference. All workshop participants must register for the AAAI-98 technical program or, in the case of the four cosponsored workshops, must register for one of the cosponsoring conferences. (Exceptions to these rules will be required to pay a $150.00 fee per workshop.) Registration onsite for a workshop is possible with the prior permission of the corresponding workshop organizer.

**Robot Building Lab**

The robot building lab registration fee includes admission to the robot building lab and the exhibition program. Fees are $150.00 for members or nonmembers, and $75.00 for students. Attendance is limited and preregistration is recommended. Check for availability onsite.

**Exhibition**

Admission to the exhibition hall programs is included in all other types of registration. For individuals interested in admittance to the exhibit hall only, an exhibits only registration is available in onsite registration. The fee is $10.00 for a one-day pass, and $25.00 for a three-day pass. Exhibit hall programs include vendor exhibits, the Hall of Champions, the Intelligent Systems Demonstrations, and the Robot Competition and Exhibition. High-school students are welcome and will be admitted without fee upon presentation of a valid high-school student ID. Children under 12 will also be admitted without fee, but must be accompanied by an adult conference registrant. Please note: The AI Festival, which will be held in the exhibit hall, is included in the technical registration fee only. All other attendees must pay an additional fee.
AAAI Logo Shirts

Polo shirts with the AAAI logo will be for sale during registration hours outside the Exhibition Hall, Lakeside Commons, on the first level of the Monona Terrace Convention Center. Supplies are limited. Price $20.00 each onsite.

Admission

Each conference attendee will receive a name badge upon registration. This badge is required for admittance to the technical, tutorial, exhibit, IAAI and workshop programs. Workshop attendees will also be checked off a master registration list at individual rooms. Smoking, drinking and eating are not allowed in any of the technical, tutorial, workshop, IAAI, or exhibit sessions.

Baggage Holding

There is no baggage holding area at the Monona Terrace Convention Center. Please check your luggage with the bellman at your hotel after you have checked out. Neither the AAAI, the Monona Terrace Convention Center, the Madison Concourse Hotel, the Best Western Inn on the Park, nor the Sheraton Madison Hotel accept liability for the loss or theft of any suitcase, briefcase, or other personal belongings brought to the site of AAAI-98/IAAI-98.

Banking

The closest bank and automated teller machine (ATM) are located at the M & I Bank at 1 West Main Street. The ATM networks available are American Express, MasterCard, Visa, Cirrus, Plus and Money Network. The M & I Bank can also exchange all major foreign currencies.

- The M & I Bank
  1 West Main Street
  Madison, WI 53703
  Telephone: (608) 252-5800
  Monday – Friday: 9:00 AM – 5:00 PM
  Closed Saturdays and Sundays

Career Information

A bulletin board for job opportunities in the artificial intelligence industry will be made available in the registration area, outside the Exhibition Hall, on the first level of the Monona Terrace Convention Center. Attendees are welcome to post job descriptions of openings at their company or institution.

Child Care Services

For information about child care services, you may contact Be My Nanny at 877-277-8282. The agency requests forty-eight hours notice. (This information is provided for your convenience and does not represent an endorsement of this agency by AAAI. Responsibility for all child care arrangements must be assumed by the parents.)

Coffee Breaks

Coffee will be served in the Grand Terrace, level four, Monona Terrace Convention Center; in the foyer space, second floor, Madison Concourse Hotel; and in the mezzanine and pool terrace, second level, Inn on the Park. Coffee breaks in the Monona Terrace Convention Center and the Inn on the Park are scheduled for 10:00 – 10:30 AM and 4:10 – 4:30 PM each day. Coffee breaks in the Madison Concourse Hotel are scheduled for 10:15 – 10:45 AM and 3:15 – 3:45 PM during events in the hotel.

Copy Services

Copy services are available at:

- Econo Print
  Contact: Mark Kamplin
  27 South Pinckney Street
  Madison, Wisconsin 53703
  Telephone: 608-251-3520
  Hours: 8:00 AM – 5:00 PM, Monday – Friday
  Copy service is also available at the Business Centers in the conference hotels.
Dining

Madison dining information is available at the Visitor Information Booth, near the main entrance on the fourth level of the Monona Terrace Convention Center. Concessions will be open on the Rooftop Terrace and on the fourth level of the Monona Terrace Convention center from, July 26 – 30.

Handicapped Facilities

The Monona Terrace Convention Center, the Madison Concourse Hotel, the Best Western Inn on the Park and the Sheraton Madison Hotel are all equipped with handicapped facilities.

Housing

For information regarding hotel reservations, please contact the hotels directly. For student housing reservations assistance, please contact the University of Wisconsin – Madison Conference Groups Office, University Housing at 608-262-5576, 7:45 AM – 4:30 PM, Monday – Friday. Students requiring assistance after hours should refer to the contact information provided in the student housing confirmation letter.

Information Desk

An information desk/message desk will be staffed during registration hours, Sunday through Thursday, July 26 – 30. It is located near the main entrance, on the fourth level of the Monona Terrace Convention Center. Messages will be posted on the message boards adjacent to the desk. The telephone number for leaving messages only is (608) 261-4162. Paging attendees is not possible.

Internet

Internet access in Hall of Ideas G on the fourth level of the Monona Terrace Convention Center. The internet room will be open during registration hours. As a courtesy, please limit your access time to 5-10 minutes if others are waiting to use the service. The AAAI-98 Internet Room is sponsored by Microsoft Corporation. AAAI gratefully acknowledges Microsoft's generous contribution that makes this service available.

List of Attendees

A list of preregistered attendees of the conference will be available for review at the AAAI Desk in the registration area on the first level of the Monona Terrace Convention Center. Attendee lists will not be distributed.

Message Center

See Information Desk

Parking

Parking is available at the Monona Terrace Convention Center. The maximum daily rate is $10.50.

Press

All members of the media are requested to register in the Press Room on the fourth level of the Monona Terrace Convention Center, Meeting Room N. Press badges will only be issued to individuals with approved credentials. The Press Room will be open during the following hours:

- Monday, July 27: 8:00 AM – 5:00 PM
- Tuesday, July 28: 8:00 AM – 5:00 PM
- Wednesday, July 29: 8:00 AM – 5:00 PM
- Thursday, July 30: 8:00 AM – 12:00 PM

An AAAI-98 volunteer will be on duty during press room hours to assist the members of the press and media.

Printed Materials

Display tables for the distribution of promotional and informational materials of interest to conference attendees will be located outside the Exhibition Hall on the first level of the Monona Terrace Convention Center.

Proceedings

Each registrant for the AAAI-98 technical program and IAAI-98 will receive a ticket with the registration materials for one copy of the conference Proceedings. During registration hours on Sunday, July 26, Monday, July 27 and until 10:00 AM on Tuesday, July 28. Proceedings tickets can be redeemed at the AAAI Press Proceedings desk, located near the main entrance on the fourth level of the Monona Terrace Convention Center.
After 10:00 AM on Tuesday, the AAAI-98/IAAI-98 Proceedings ticket may be redeemed at the MIT Press booth # 401, located in the Exhibition Hall, during exhibit hours.

Extra Proceedings may be purchased at the conference site at the above locations. Thursday, July 30, will be the last day to purchase extra copies of the Proceedings onsite.

The AAAI-98/IAAI-98 Proceedings can also be redeemed by mailing the ticket with your name, shipping address and e-mail to:

- Exhibits
  The MIT Press
  5 Cambridge Center
  Cambridge, MA 02142

Postage must be prepaid with a check or MasterCard/Visa and expiration date. USA: $10.50; Outside USA: $25.00 surface or $55.00 airmail.

**Proceedings Shipping**

A Mail Boxes Etc. booth will be located outside the Exhibition Hall, Lakeside Commons, on the first level of the Monona Terrace Convention Center. The booth will be open on Tuesday, July 28 and Wednesday, July 29 from 8:00 AM – 6:00 PM and on Thursday, July 30 from 8:30 – 2:00 PM.

**Recording**

No audio or video recording is allowed in the Tutorial Forum. Audiotapes of the plenary sessions, invited talks and panels, and the IAAI sessions will be for sale near the main entrance on the fourth level of the Monona Terrace Convention Center. A representative from Audio Archives will be available to take your order during registration hours, beginning on Tuesday, July 28. Order forms are included with registration materials. Tapes may also be ordered by mail from:

- Audio Archives International, Inc.
  3043 Foothill Blvd., Suite 2
  La Crescenta, CA 91214
  Telephone: 818-957-0874
  Fax: 818-957-0876

**Speaker Ready Room**

The Speaker Ready Room will be located in Meeting Room K on the fourth level of the Monona Terrace Convention Center. This room has audio-visual equipment to assist speakers with their preparations. It is important that speakers visit this room to organize their materials. The room will be open from 8:00 AM – 5:00 PM Sunday, July 26 through Wednesday, July 29 and from 8:00 AM – 2:00 PM, Thursday, July 30.

Invited speakers are asked to come to Meeting Room K one day prior to their speech. Representatives from AV Headquarters will be available from 9:00 AM – 5:00 PM Sunday, July 26 through Wednesday, July 29 and from 9:00 AM – 2:00 PM, Thursday, July 30 to confirm your audiovisual needs, and assist with the preparation of your materials, if necessary.

**Transportation**

The following information provided is the best available at press time. Please confirm fares when making reservations.

**Airlines and Rental Cars**

The American Association for Artificial Intelligence has selected American Airlines and United Airlines as the official co-carriers and Avis Rent A Car as the official car rental agency for AAAI-98/IAAI-98. If you need to change your airline or car rental reservations, please call Conventions in America, our official travel agency at 800-929-4242 and ask for Group #428. E-mail: flycia@scitravel.com

**Airport Shuttles**

Complimentary Hotel Airport Shuttles: The Madison Concourse Hotel, the Best Western Inn on the Park and the Sheraton Madison Hotel.

**Taxi**

Taxis are available at Dane County Regional Airport. Approximate fare from the airport to downtown Madison is $10.00.

**Bus**

*Van Galder Bus Lines*—Downtown Chicago, O’Hare Airport. The depot is located at the University of Wisconsin-Madison Memorial Union. For information on fares and scheduling, call 800-747-0994.

*Badger Bus Lines*—Mitchell Field, Milwaukee Airport provides service to the University of Wisconsin – Madison campus and the Madison Badger Bus Depot at 2 South Bedford Street, Madison, WI 53703. For information, call 608-255-6771.

**City Transit System**

Madison Metro Transit System is a citywide bus transit system. Schedules are available in the Monona Terrace Convention Center. Basic local fare is $1.25. You may buy a booklet of ten rides for $10.00.
for $8.50. There is a Free Fare Zone from 10:00 AM – 3:00 PM around the center of Madison. For general information, call 608-266-4466.

**Tutorial Syllabi**

Extra copies of AAAI-98 tutorial syllabi will be available for purchase in the registration area, outside the Exhibition Hall, Lakeside Commons, on the first level of the Monona Terrace Convention Center. Supplies are limited. Cost is $15.00 per syllabus. Preregistration tutorial syllabi tickets may be redeemed in the tutorial rooms.

**Visitor Information**

The Monona Terrace Convention Center will have a Visitor Information desk near the main entrance on the fourth level of the Monona Terrace Convention Center. Maps and brochures with information on shopping, restaurants, outdoor activities, parks, and tours will be available. Hours are 7:30 – 6:00 PM, Sunday, July 26 – Monday, July 27; 8:00 – 6:00 PM, Tuesday, July 28 – Wednesday, July 29; 8:00 – 2:00 PM, Thursday, July 30.

**Volunteer Room**

The volunteer room is located in Meeting Room R of the fourth level of the Monona Terrace Convention Center. Hours are 8:00 AM – 5:00 PM, Sunday, July 26 – Wednesday, July 29 and 8:00 AM – 2:00 PM, Thursday, July 30. Extra volunteer instructions and schedules will be available. All volunteers should check in with Josette Mausisa, AAAI Registrar, in the registration area prior to their shifts. The volunteer meeting will be held Saturday, July 25 at 4:00 PM in Hall of Ideas E&F of the Monona Terrace Convention Center.

**Disclaimer**

In offering American Airlines, Avis Rent A Car, Be My Nanny, Conventions in America, the Best Western Inn on the Park, the Madison Concourse Hotel, the Sheraton Madison Hotel, United Airlines, University of Wisconsin – Madison, and all other service providers (hereinafter referred to as “Supplier(s)” for the National Conference on Artificial Intelligence and the Innovative Applications Conference), AAAI acts only in the capacity of agent for the Suppliers which are the providers of the service. Because AAAI has no control over the personnel, equipment or operations or providers of accommodations or other services included as part of the AAAI-98/IAAI-98 program, AAAI assumes no responsibility for and will not be liable for any personal delay, inconveniences or other damage suffered by conference participants which may arise by reason if (1) any wrongful or negligent acts or omissions on the part of any Supplier or its employees, (2) any defect in or failure of any vehicle, equipment or instrumentality owned, operated or otherwise used by any Supplier, or (3) any wrongful or negligent acts or omissions on the part of any other party not under the control, direct or otherwise, of AAAI.