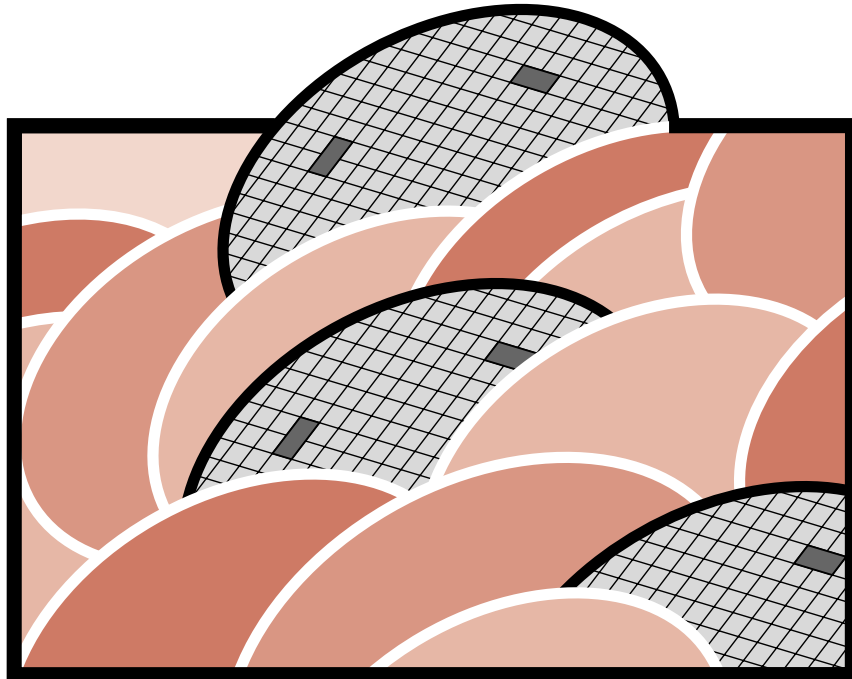


# AAAI-92

*Tenth National Conference on Artificial Intelligence*

# IAAI-92

*Fourth Innovative Applications of Artificial Intelligence Conference*



## Program

**July 12 – 16, 1992**

**San Jose Convention Center  
San Jose, California**

# General Information

## Admission

Each conference attendee will receive a name badge upon registration. This badge is required for admittance to the technical, tutorial, exhibit, IAAI, AI-On-Line, and workshop programs. Admittance to the tutorials is by TICKET ONLY. **Smoking, drinking, and eating are not allowed in any of the technical, tutorial, IAAI, or exhibit sessions.**

## AI-On-Line

Held in conjunction with the IAAI-92, AI-on-Line will be held Monday, July 13 through Thursday, July 16 in Room J, San Jose Convention Center, and will focus on users' issues. This series of short panels will be followed by interactive discussions. Please consult the program schedule for session times.

## Art Exhibition

The AAAI-92 Art Exhibition will be held Tuesday, July 14 through Thursday, July 16. The Art Exhibition features four pieces representing a range of areas of artistic performance, including emotional speech, still images, music, and realtime, interactive, animated environments. Each work demonstrates the use of AI technologies, in the acquisition, representation, or processing of artistic knowledge. Artists include Janet Cahn, Massachusetts Institute of Technology; David Cope, University of California, Santa Cruz; Karl Sims, Thinking Machines Corporation; and Andrew Witkin and Joseph Bates, Carnegie Mellon University. The Art Exhibition will be held in Room B of the San Jose Convention Center. Hours are 8:00 AM – 6:00 PM, Tuesday through Thursday, June 14-16.

## Baggage Claim

There is no baggage claim/check area at the San Jose Convention Center. All convention hotels provide this service. Please see the Bell Captain in the hotel lobby. Neither the AAAI nor the San Jose Convention Center accept liability for the loss or theft of any suitcase, briefcase, or other personal belongings brought to the site of AAAI-92/IAAI – 92.

## Banking

Wells Fargo Bank, Bank of America, and First Interstate Bank are all located at Park Plaza, near Park Avenue and Market Street, San Jose (approximately two blocks from the convention center). Exchange of all major foreign currencies is available. Banking hours are as follows:

### Bank of America

(408-277-7692)

Monday – Thursday 9 AM – 6 PM  
Friday 9 AM – 7 PM

### First Interstate Bank

(408-971-5783)

Monday – Thursday 9 AM – 4 PM  
Friday 9 AM – 5 PM

### Wells Fargo Bank

(408-277-6407)

Monday – Friday 9 AM – 6 PM  
Saturday 9 AM – 4 PM

## Child Care Services

Child care will be provided by KiddieCorp. Their experienced staff will offer CLUB KID, a program geared towards infants, preschool and school-age children up to age 11. Fees include age-appropriate games and toys; arts and crafts; a separate, supervised nap room; movies and videos; and snacks. Lunch provided for children in care between 12:00 and 1:00 PM. The schedule for CLUB KID is:

Sunday, July 12,	8:00 AM – 6:30 PM
Monday, July 13	8:00 AM – 6:30 PM
Tuesday, July 14,	8:00 AM – 7:30 PM
Wednesday, July 15	8:00 AM – 6:00 PM
Thursday, July 16	8:00 AM – 6:00 PM

Cost is \$6.00 per hour per child. To register, please contact Onsite Registration, ground level, San Jose Convention Center

## Coffee Breaks

Coffee breaks for the Technical Sessions will be held outside of Meeting Room A at 10:10 AM – 10:40 AM and 3:40 PM – 4:10 PM.

Coffee breaks for the IAAI sessions will be held outside of Meeting Room J at 10:20 AM – 10:40 AM and 3:30 PM – 3:50 PM, Monday, July 13 and Wednesday, July 15; 3:20 – 3:40 PM, Tuesday, July 14; 10:30 AM – 10:50 AM, Thursday, July 16.

Coffee breaks for the Tutorial Program will be held outside of Meeting Room A at 10:30

# General Information

AM and 3:30 PM. Tutorial MA5 and MP3 will be held in the Fairmont Hotel. Coffee breaks will be held outside of the Gold Room at 10:30 AM and 3:30 PM.

Coffee breaks for the Workshops will be held in the area outside each individual room at 10:00 AM and 3:30 PM.

## Copy Services

A photocopy machine is located in the Visitor Information Center of the San Jose Convention Center. For photo copy services in large volume the closest copy center is Sir Speedy located at 185 Park Center Plaza, Suite 187, San Jose, telephone: 408-971-0122.

## Dining

A San Jose dining guide is included in your conference packet. Concessions will be open in Exhibition Hall 1 during exhibit hours. There are also restaurants and coffee shops in the Fairmont Hotel, as well as several other food outlets within walking distance from the San Jose Convention Center. The Visitors Information Office, located on the ground level of the San Jose Convention Center can provide further information.

## Exhibit

*Entrance:* Conference attendees must be wearing their conference registration or exhibitor badge to enter the Exhibition. Vendor issued guest passes must be redeemed at the Guest Pass desk, Concourse 1, outside the exhibit hall, San Jose Convention Center. Further information regarding access to the Exhibition can be obtained from the Exhibitor Information Desk outside Exhibition Hall 1.

## Exhibit Program

An important service to conference attendees is the Exhibit Program, to be held Tuesday, July 14 through Thursday, July 16. Hardware and software manufacturers, publishers, universities, and nonprofit organizations involved in artificial intelligence will display and demonstrate their current products, services, or research.

Once again AAAI has given complimentary booths to university and nonprofit research

organizations to demonstrate current products, services, or research. The AAAI would like to thank the major computer equipment suppliers for donating equipment and technical support toward this demonstration program.

Within the Exhibition, attendees will find the Application Pavilion, in which a series of vendor panels will be displayed, featuring new products. Please take a moment to visit the pavilion in the center of the exhibit floor.

*Location:* San Jose Convention Center, Hall 1.

### *Exhibit Hours*

Tuesday, July 14	12:00 PM – 6:00 PM
Wednesday, July 15	10:00 AM – 6:00 PM
Thursday, July 16	10:00 AM – 4:00 PM

## Exhibitors

The Conference Supplement, bound into your complimentary issue of the Summer *AI Magazine*, includes a complete list of exhibitors, booth locations, outline of products, services or research efforts for exhibiting organizations. Extra copies are available at the Exhibitor Information Desk.

## Food Outlets

Concessions will be sold in the Exhibit Hall 1, San Jose Convention Center, during show hours. There are also restaurants and coffee shops in the Fairmont Hotel, as well as several other food outlets within walking distance from the San Jose Convention Center. The Visitors Information Office, located on the ground level of the San Jose Convention Center can provide further information.

## Handicapped Facilities

The San Jose Convention Center, Fairmont Hotel, Holiday Inn, Red Lion Hotel, Radisson Hotel, and Hotel De Anza all are equipped with handicapped facilities.

## Housing

The San Jose Visitors and Convention Bureau Housing Office is located at 333 West San Carlos Street, Suite 1000, San Jose, telephone: 408-295-9600. The housing office is open 8:00 AM – 5:00 PM. For student housing assistance, please contact Santa Clara University, Mark Clem, 408-554-4303.

# General Information

## List of Attendees

A list of preregistered attendees of the conference will be available for review at the AAAI Desk in the San Jose Convention Center, ground level. Attendee lists will NOT be distributed.

## Message Center

A message desk will be manned in the San Jose Convention Center, registration area, ground level, during registration hours. Message terminals for sending and retrieving messages are also located in the registration area. The telephone number for leaving messages only is 408-947-1569.

AAAI HAS NO MEANS OF PAGING CONFERENCE ATTENDEES. All telephone messages can be retrieved from any message terminal in the registration area during registration hours. There will be no access to message terminals after hours. We suggest that hotel phone numbers be used as primary contact points.

## Parking

Parking is available in the San Jose Convention Center Garage, entrance from Almaden Avenue. The cost is \$4.00 per day. Price quoted is in effect at time of printing and is subject to change.

## Press

All members of the media are requested to register in the Press Room on the Exhibit level in the San Jose Convention Center, Room C4. Press badges will only be issued to individuals with approved credentials. The Press Room will be open for advance registration on Sunday, July 12 at 12:00 PM. During the conference the Press Room will be open during the following hours:

Sunday, July 12	12:00 PM-5:00 PM
Monday, July 13	8:00 AM-5:00 PM
Tuesday, July 14	8:00 AM-5:00 PM
Wednesday, July 15	8:00 AM-5:00 PM
Thursday, July 16	8:00 AM-5:00 PM

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

## Press Conference

A press conference will be held on Tuesday, July 14, at 11:00 AM in the Empire Room, Fairmont Hotel.

## Printed Materials

Display tables for the distribution of promotional and informational materials of interest to conference attendees will be located outside Exhibit Hall 1, second level, San Jose Convention Center.

## Proceedings

Each registrant for the AAAI-92 technical program and for IAAI-92 will receive a ticket with the registration materials for one copy of the appropriate conference proceedings. The ticket may be redeemed at the MIT Press Proceedings counter, located in the San Jose Convention Center, Concourse 1, during registration hours, or at the MIT Press booth # 447, located in Hall 1, during exhibit hours. Proceedings can also be redeemed by mailing the ticket with your name and address to:

The MIT Press  
55 Hayward  
Cambridge, MA 02142.

Extra proceedings may be purchased at the conference site at the above locations. Thursday, July 16, will be the LAST DAY to pick up or purchase extra copies of the *Proceedings*.

## Recording

No audio or video recording is allowed in the Tutorials or IAAI-92. Tapes of the plenary address, invited talks and panels, and the special IAAI Japan Watch panel will be for sale outside Exhibit Hall 1, Concourse 1, second level, San Jose Convention Center. A representative from First Tape Incorporated will be available to take your order during registration hours, beginning Tuesday, July 14. Order forms are included with registration materials. Tapes may also be ordered by mail from:

First Tape Incorporated  
770 North LaSalle Street, Suite 301  
Chicago, Illinois 60610.

## Registration

Conference registration will take place in Registration, ground level, San Jose Convention Center, beginning Sunday July 12. Registration hours are:

Sunday, July 12	7:30 AM-6:00 PM
Monday, July 13	7:30 AM-6:00 PM
Tuesday, July 14	7:30 AM-6:00 PM
Wednesday, July 15	7:30 AM-6:00 PM
Thursday, July 16	7:30 AM-6:00 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.

## AAAI-92 Robot Competition and Exhibition

The AAAI-92 Robot Competition and Exhibition will be held Tuesday, July 14 through Thursday, July 16. Competition entries include Huey, Brown University; Odysseus, Carnegie Mellon University; Buzz, Georgia Institute of Technology/Denning Mobile Robotics, Inc.; TJ, IBM T. J. Watson Research Center; Soda-Pup, NASA Johnson Space Center; Homer – Bugeyes, San Francisco Robot Society of America; Flakey, Stanford Research Institute; Scarecrow, Massachusetts Institute of Technology; Uncle Bob, MITRE Corporation; Chip, University of Chicago; and CARMEL, University of Michigan/University of Tennessee.

Demonstrations will also be held, including The Flying Fusco Brothers, Georgia Institute of Technology; Bert and Ernie, Massachusetts Institute of Technology; and Attila, Massachusetts Institute of Technology. Video presentations and a graphic display, submitted by leading robot manufacturers and research facilities will depict robots in industrial, rugged terrain, service, and space applications.

The American Association for Artificial Intelligence would like to thank General Motors, the MITRE Corporation, and NASA for their generous support of student scholarships for the Robot Competition and Exhibition. The Robot Competition and Exhibition will be held in Exhibit Hall 2 of the San Jose Convention Center, and will be open to registered conference attendees on Tuesday, July 14, 12:00-6:00 PM; Wednesday, July 15, 10:00 AM-6:00 PM; and Thursday, July 16,

10:00 AM – 4:00 PM. Admittance is through the main exhibition in Exhibit Hall 1.

## Speaker Ready Rooms

Speaker Ready Rooms will be located on the first floor, Room C1 for AAAI-92 and Room F for IAAI-92, of the San Jose Convention Center. These rooms will have audio-visual equipment to assist speakers with their preparations. It is important that speakers utilize these rooms to organize their materials. The rooms will be open during the following hours: 8:00 AM-5:00 PM Sunday, July 12, through Thursday, July 16.

Invited Speakers are asked to come to Room C1 one day prior to their speech. Room C1 is located on the Exhibit Level of the San Jose Convention Center and the audio-visual team will be there from 9:00 AM to 12:00 PM every day.

## T-Shirt Sales

T-shirts will be for sale outside Exhibit Hall 1, Concourse 1, San Jose Convention Center, during registration hours. Supplies are limited. Price: \$10.00.

## Telephones

Public telephones are located throughout the San Jose Convention Center. A large bank of telephones is located on the ground level just beyond the Visitor Information Center. Several telephones are located in public areas spread throughout the second level.

## The Tech Museum of Innovation, San Jose

Discounted Tech Museum tickets will be on sale in Onsite Registration, ground level, San Jose Convention Center. Tickets are valid for unlimited entry Sunday, July 12 through Sunday, July 19, 10:00 AM – 5:00 PM. Closed Monday. Tickets are \$5.00 (adults) and \$3.00 (children, 6-18).

## Tours

Tours of the IBM's Santa Teresa Laboratory, IBM ADSTAR, and Neuron Data will be held Wednesday, July 15. Tours of the Stanford University Robotics Laboratory, and

# General Information

Teleos Research will be held Thursday, July 16. At the time of printing, the Stanford, Teleos, and Neuron Data tours are sold out. For further information regarding availability of the other tours, please contact the AAAI desk in Onsite Registration, ground level, San Jose Convention Center.

## Transportation

### Air

A representative from Custom Travel Consultants, the AAAI preferred travel agent, will be available to assist you with your travel plans at the Travel Desk, located outside Exhibit Hall 1, to assist with changes in travel plans. The hours are: Wednesday, July 15 and Thursday, July 16, 9:00 AM – 6:00 PM.

American Airlines has been selected as the official carrier for AAAI-92. If you wish to change your reservation, you may call American directly at (800) 433-1790. Please give the AAAI-92 Conference Code number Star # 01ffl2 8 when you make your arrangements.

### Airport Connections

Several companies provide service from San Francisco International (SFO) and San Jose International (SJC) Airports to downtown San Jose. Please check with the Travel Desk, located outside Exhibit Hall 1, second level, San Jose Convention Center.

## Tutorial Syllabi

Extra copies of AAAI-92 tutorial syllabi will be available for purchase in the registration area, lower level, on Wednesday, July 15. Supplies are limited.

## Videos

Conference attendees are invited to view videotapes depicting several AI research projects, programs, and systems currently in use. The videos will be run continuously in the registration area and also upstairs in the Concourse 1 area, outside Exhibit Hall 1.

## Visitor Information Center

The Visitor Information Center is located on the ground level of the San Jose Convention

Center. Free brochures, an event calendar, fax and copy machines, light word processing, restaurant guides, souvenirs, and information on public transportation are available.

## Volunteer Room

Volunteer Headquarters, located on the Exhibit Level of the San Jose Convention Center in Room E, will be open Saturday, July 11, through Thursday, July 16, from 8:00 AM – 5:30 PM. The volunteer meeting will be held Saturday, July 11, at 5:00 PM in Room E, San Jose Convention Center.

## Special Meetings

### AAAI Annual Business Meeting

The Annual Business Meeting will be held Wednesday, July 15, from 12:30 – 1:00 PM in Room A1, San Jose Convention Center.

### AAAI Conference Committee Meeting

The AAAI Conference Committee Meeting will be held Thursday, July 16, from 7:30 AM – 9:00 AM in the California Room, Fairmont Hotel.

### AAAI Executive Council Meeting

The AAAI Executive Council Meeting will be held Sunday, July 12, from 9:00 AM – 5:00 PM in the California Room, Fairmont Hotel.

### AAAI Press Editorial Board Meeting

The AAAI Press Editorial Board will meet Monday, July 13, at 12:00 PM in California Room, Fairmont Hotel.

### AAAI Publication Committee Meeting

The AAAI Publication Committee breakfast meeting will be held Tuesday, July 16, from 7:30 AM – 9:00 AM in the California Room, Fairmont Hotel.

### AI and the Law Subgroup Meeting

The AI and the Law Subgroup Meeting will be held Wednesday, July 15, from 12:30 – 1:30 PM in Room A2, San Jose Convention Center.

## **AI in Manufacturing Subgroup Meeting**

The AI in Manufacturing Subgroup Meeting will be held Tuesday, July 14, from 12:00 PM – 2:00 PM in Room C2, San Jose Convention Center.

## **AI in Medicine Subgroup Meeting**

The AI in Medicine Subgroup Meeting will be held Tuesday, July 16, from 12:30 PM – 1:30 PM in Room A1, San Jose Convention Center.

## **AI Journal Editorial Board Meeting**

The *Artificial Intelligence Journal* Editorial Board Meeting will be held Tuesday, July 14, in the California Room, Fairmont Hotel. Lunch will be served at 12:00 PM, followed by the meeting at 12:20 PM.

## **AAAI Exhibitor's Advisory Committee Meeting**

The AAAI Exhibitors Advisory Committee Meeting will be held Thursday, July 16, at 8:30 AM in Room C2, San Jose Convention Center. Space reservations for the AAAI-93 / IAAI-93 Joint Exhibition in Washington, DC will be accepted at this meeting.

## **IEEE Editorial Board Meeting**

The IEEE Editorial Board Meeting will be held Monday, July 13, 9:00AM – 1:00 PM in the Plaza Room, Fairmont Hotel.

## **SIGART Meeting**

The SIGART Meeting will be held Thursday, July 16, from 12:45 PM – 1:30 PM in Room C2, San Jose Convention Center.

## **DECUS Meeting**

The Digital Equipment Corporation's user group DECUS Meeting will be held Tuesday, July 14, 9:00 AM – 12:00 PM in Room A4, San Jose Convention Center.

## **IFIP Meeting**

The IFIP Meeting will be held Monday, July 13, 9:00 AM – 5:00 PM in Room L, San Jose Convention Center.

## **IJCAI-93 Board Meeting**

The IJCAI-93 Board Meeting will be held Thursday, July 16, 2:00 PM – 4:00 PM in the California Room, Fairmont Hotel.

## **The AAAI 1992 Elected Fellows**

Narendra Ahuja, *University of Illinois*  
Michael Anthony Arbib, *University of Southern California*  
William J. Clancey, *Institute for Research on Learning*  
Philip R. Cohen, *SRI International*  
Gerald Francis DeJong III, *University of Illinois*  
Robert S. Englemore, *Stanford University*  
Lee D. Erman, *Cimflex Teknowledge Corporation*  
Kenneth D. Forbus, *Northwestern University*  
Frederick Hayes-Roth, *Cimflex Teknowledge Corporation*  
Jerry Robert Hobbs, *SRI International*  
Laveen N. Kanal, *University of Maryland and L.N.K. Corporation*  
Janet L. Kolodner, *Georgia Institute of Technology*  
Benjamin J. Kuipers, *University of Texas at Austin*  
Ryszard S. Michalski, *George Mason University*  
Mitchell P. Marcus, *University of Pennsylvania*  
Matthew T. Mason, *Carnegie Mellon University*  
Ramakant Nevatia, *University of Southern California*  
Charles Rich, *Mitsubishi Electronic Research Laboratories*  
Edward M. Riseman, *University of Massachusetts*  
Glenn R. Shafer, *University of Kansas*  
Howard E. Shrobe, *Symbolics Inc. and Massachusetts Institute of Technology*  
Robert F. Simmons, *University of Texas at Austin*  
Mark E. Stickel, *SRI International*  
William R. Swartout, *University of Southern California*  
Peter Szolovits, *Massachusetts Institute of Technology*  
Leslie G. Valiant, *Harvard University*

# Sunday, July 12

7:30 AM - 6:00 PM

## **Conference Registration**

GROUND LEVEL, SAN JOSE CONVENTION CENTER

9:00 AM - 5:00 PM

## **Special Meetings**

*AAAI Executive Council Meeting*

CALIFORNIA ROOM, FAIRMONT HOTEL

## **WORKSHOPS**

8:30 AM - 6:00 PM

*AI and Interactive Entertainment*, Organized by J. Bates

ROOM C2, SAN JOSE CONVENTION CENTER

8:30 AM - 6:00 PM

*Automating Software Design*, Organized by R. Keller

ROOM C3, SAN JOSE CONVENTION CENTER

## **TUTORIALS**

### **Morning Tutorials**

9:00 AM - 1:00 PM

SA1: *Knowledge Acquisition Techniques*, Jan Clayton and Carli Scott

ROOM A1, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

9:00 AM - 1:00 PM

SA2: *User Modeling and User-Adapted Interaction*, Sandra Carberry and Alfred Kobsa

ROOM K, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

SA3: *Genetic Algorithms and Genetics-based Machine Learning*, David E. Goldberg and John R. Koza

ROOM A2, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

SA4: *Planning and Real-Time Reasoning*, James Hendler and Michael Georgeff

ROOM A3, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

SA5: *Robot Architectures*, Reid G. Simmons and R. James Firby

ROOM A4, SAN JOSE CONVENTION CENTER

1:00 PM - 2:00 PM

### **Tutorial Lunch Break**

2:00 PM - 6:00 PM

### **Afternoon Tutorials**

2:00 PM - 6:00 PM

SP1: *KADS: An Overview of a Structured Methodology for KBS Development*, R.A. Martil and B.J. Wielinga

ROOM A1, SAN JOSE CONVENTION CENTER

2:00 PM - 6:00 PM

SP2: *The Craft of Building Intelligent User Interfaces*, Michael D. Williams

ROOM A2 SAN JOSE CONVENTION CENTER

2:00 PM - 6:00 PM

SP3: *Computers in Context: Tailoring Expert Systems to Real Workplaces*, William J. Clancey and John McDermott

ROOM A3, SAN JOSE CONVENTION CENTER

2:00 PM - 6:00 PM

SP4: *Knowledge-Based Production Management*, Stephen F. Smith and Norman M. Sadeh

ROOM K, SAN JOSE CONVENTION CENTER

2:00 PM - 6:00 PM

SP5: *Case-Based Reasoning*, Kevin D. Ashley and Evangelos Simoudis

ROOM A4, SAN JOSE CONVENTION CENTER



# Monday Morning, July 13

7:30 AM – 6:00 PM **Conference Registration**  
GROUND LEVEL, SAN JOSE CONVENTION CENTER

## **Special Meetings**

9:00 AM – 1:00 PM *IEEE Editorial Board Meeting*  
PLAZA ROOM, FAIRMONT HOTEL

9:00 AM – 5:00 PM *IFIP Meeting*  
ROOM L, SAN JOSE CONVENTION CENTER

## **WORKSHOPS**

8:45 AM – 6:00 PM *Implementing Temporal Reasoning*, Organized by M. Boddy  
ROOM C2, SAN JOSE CONVENTION CENTER

8:30 AM – 6:00 PM *Constraining Learning with Prior Knowledge*, Organized by M. des-Jardins  
ROOM C3, SAN JOSE CONVENTION CENTER

8:30 AM – 6:00 PM *Approximation and Abstraction of Computational Theories*, Organized by T. Ellman  
ROOM K, SAN JOSE CONVENTION CENTER

8:30 AM – 6:00 PM *AI in Enterprise Integration*, Organized by C. Petrie  
ROOM N, SAN JOSE CONVENTION CENTER

8:30 AM – 6:00 PM *AI and Automated Program Understanding*, Organized by L. Van Sickle  
ROOM M, SAN JOSE CONVENTION CENTER

## **IAAI CONFERENCE**

8:30 – 9:00 AM *IAAI Opening Remarks*. Carli Scott, IAAI Conference Chair  
ROOM J, SAN JOSE CONVENTION CENTER

9:00 – 12:30 PM **IAAI – 92 Session: Finance Applications**  
ROOM J, SAN JOSE CONVENTION CENTER

9:00 – 9:40 AM *The Credit Assistant: The Second Leg in the Knowledge Highway for American Express*, James Dzierzanowski and Susan Lawson, American Express; Eric Hestenes, Inference Corporation

9:40 – 10:20 AM *MOCCA: A Set of Instruments to Support Mortgage Credit Granting*, Steve Hottiger and Dieter Wenger, Swiss Bank Corporation

10:20 – 10:40 AM **IAAI – 92 Session Break**

10:40 – 11:20 AM *PHAROS—The Single European Market Adviser*, Ebby Adhami and Malcolm McKenzie, Ernst & Young Management Consultants; Michael Thornley, National Westminster Bank

11:20 AM – 12:00 PM *CRESUS: An Integrated Expert System for Cash Management*, Peter Shell, Carnegie Mellon University; Gonzalo Quiroga, Juan A. Hernandez-Rubio, Javier Berbiela, and Eduardo Encinas, Union Fenosa S.A.; Jose Garcia, Norsistemas Consultores S.A.

12:00 – 12:30 PM *Meet the Authors*

12:30 – 2:00 PM **IAAI – 92 Lunch Break**

# Monday Morning, July 13

## TUTORIALS

9:00 AM - 1:00 PM

### *Morning Tutorials*

9:00 AM - 1:00 PM

MA1: *Machine Learning for Classification Tasks*, Haym Hirsh and Jude Shavlik

ROOM A1, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

MA2: *CASE, Knowledge-based Systems, and Object-Oriented Programming*, Jan Aikins and Paul Harmon

ROOM A2, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

MA3: *Text Interpretation*, Jerry R. Hobbs and Lisa Rau

ROOM A3, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

MA4: *Constraint-Directed Reasoning*, Bernard A. Nadel and D. Navinchandra

ROOM A4, SAN JOSE CONVENTION CENTER

9:00 AM - 1:00 PM

MA5: *Verification and Validation of Knowledge-based Systems*, Daniel E. O'Leary and Kirstie Bellman

GOLD ROOM, FAIRMONT HOTEL

1:00 PM - 2:00 PM

### *Tutorial Lunch Break*

# Monday Afternoon, July 13

## **Special Meetings**

12:00 PM – 1:30 PM

**AAAI Press Editorial Board Meeting**  
CALIFORNIA ROOM, FAIRMONT HOTEL

## **IAAI CONFERENCE**

2:00 – 3:30 PM

### **IAAI – 92: AI-on-Line Panel**

ROOM J, SAN JOSE CONVENTION CENTER

*Technology Transfer: Large-Scale Corporate Adoption*, Organized by Spang Robinson Report on Intelligent Systems and Inference Corporation. Moderated by Avron Barr, Aldo Ventures. Panelists: Jack Rahaim, Digital Equipment Corporation, Lynden Tennison, American Airlines, Ruth Zarger, General Motors, Steve Hottiger, Swiss Bank Corp, and Chuck Williams, Inference Corporation

Under current economic pressures, many organizations are looking to new technologies to help boost the bottom line. Knowledge systems (KS) technology has proven its value. Yet, establishing broad corporate use of KS, or any new technology, is a major challenge. This panel examines the experiences of widespread adoption of KS technology. Depending upon corporate objectives, we define “widespread” to include some mix of the following: (1) multiple systems are deployed, including some large applications, (2) an active corporate knowledge engineering staff working on multiple projects today, and (3) active use of KS technology by at least one traditional IS group.

The panel is composed of individuals with responsibility for managing widespread adoption of KS technology. They bring a variety of experiences and approaches to the problem. The panel will identify the specific challenges of achieving large-scale adoption, and present innovative solutions. It will examine the three primary areas of effecting corporate change: the sociology, the psychology, and the technology. Attendees can expect to get an overview of the multifaceted dynamics of such an endeavor, as well as specific techniques—some that have worked and some that have bobmed—in today’s business environment.

3:30 – 3:50 PM

### **IAAI – 92 Session Break**

3:50 – 6:20 PM

### **IAAI – 92 Session: Customer Service Applications**

ROOM J, SAN JOSE CONVENTION CENTER

3:50 – 4:30 PM

*A Knowledge-Based System Within A Cooperative Processing Environment*, Dale B. Danilewitz, Whirlpool Corporation; Frederick E. Freiheit IV, Technology Solutions Corporation

4:30 – 5:10 PM

*SMART: Support Management Automated Reasoning Technology for Compaq Customer Service*, Timothy L. Acorn, Compaq Computer Corporation; Sherry H. Walden, Inference Corporation

5:10 – 5:50 PM

*Help Desk: Using AI to Improve Customer Service*, Jeffrey Kenyon and Debra Logan, Carnegie Group Inc.

5:50 – 6:20 PM

*Meet the Authors*

6:30 – 7:30 PM

### **IAAI – 92 Opening Reception**

ALMADEN CONCOURSE, SAN JOSE CONVENTION CENTER

# Monday Afternoon, July 13

## TUTORIALS

2:00 PM – 6:00 PM

### *Afternoon Tutorials*

2:00 PM – 6:00 PM

MP1: *Machine Learning for Planning, Problem Solving, & Natural Language*, Pat Langley and Raymond Mooney

ROOM A1, SAN JOSE CONVENTION CENTER

2:00 PM – 6:00 PM

MP2: *Building Expert Systems in the Real World*, Tod Hayes Loofbourrow and Ed Mahler

ROOM A2, SAN JOSE CONVENTION CENTER

2:00 PM – 6:00 PM

MP3: *Natural Language Generation*, Kathleen F. McCoy and Johanna D. Moore

GOLD ROOM, FAIRMONT HOTEL

2:00 PM – 6:00 PM

MP4: *Experimental Methods in Artificial Intelligence*, Paul Cohen and Bruce Porter

ROOM A3, SAN JOSE CONVENTION CENTER

2:00 PM – 6:00 PM

MP5: *Distributed Artificial Intelligence Tools*, Edmund H. Durfee and Katia P. Sycara

ROOM A4, SAN JOSE CONVENTION CENTER

# Tuesday Morning, July 14

7:30 AM – 6:00 PM **Conference Registration**  
GROUND LEVEL, SAN JOSE CONVENTION CENTER

8:00 AM – 6:00 PM **AI Art Exhibition**  
ROOM B, SAN JOSE CONVENTION CENTER

## **Special Meetings**

7:30 AM – 9:00 AM **AAAI Publication Committee Meeting**  
CALIFORNIA ROOM, FAIRMONT HOTEL

9:00 AM – 12:00 PM **DECUS Meeting**  
ROOM A4, SAN JOSE CONVENTION CENTER

## **WORKSHOPS**

8:30 AM – 6:00 PM **Tractable Reasoning**, Organized by J. Crawford  
ROOM K, SAN JOSE CONVENTION CENTER

8:30 AM – 6:00 PM **AI in Business**, Organized by P. Lyons  
ROOM L, SAN JOSE CONVENTION CENTER

8:30 AM – 5:30 PM **Cooperation Among Heterogeneous Intelligent Systems**, Organized by E. Simoudis  
ROOM N, SAN JOSE CONVENTION CENTER

## **AAAI CONFERENCE**

8:30 – 9:50 AM **Plenary Session: Keynote Address**  
CIVIC AUDITORIUM

**The Gardens of Learning: The Vision of AI**, Oliver G. Selfridge, Senior Staff Scientist, GTE Laboratories

With studies of other kinds of learning in symbolic and numeric domains, and with the resurgence of interest in neural networks, Oliver Selfridge hopes that learning, the single most important component of intelligence, may be eventually understood well enough even to be useful. He insists that learning itself is no single or simple thing: that why you learn is as important as what; that learning is not only the key to AI, but also its essence; and that in this way AI will in the long run become the cornerstone of computer science, and will help to make software technology effective and powerful.

10:10 – 10:40 AM **AAAI – 92 Session Break**

10:40 AM – 12:00 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM

**Machine Translation – Now**, Yorick Wilks, New Mexico State University. Introduction by Kathy McCoy

This talk reviews the historical relationships, and future prospects for relationships, between machine translation (MT) and AI. The argument of the talk is that these topics are more closely linked than many people realize—the MT origin of prolog being the most striking connection—and that MT remains a central, not a peripheral, task on the AI agenda. The talk reviews the state of the art in MT world-wide, noting particularly the state of things in Japan where MT (and natural language processing generally) are taken to be more AI-central than here. Yorick Wilk's main focus will be the resurgence of the numerical-symbolic debate within MT, largely driven by the recent success of the IBM statistical MT team. The debate has many of the properties of the debate about connectionism within AI in recent years. Wilks will argue for the continuing importance of the symbolic-rule approach, and plausible limitations on the purely statistical methodology, as well as the hope that in MT (unlike AI more generally) empirical tests may settle matters in the reasonably near future.

# Tuesday Morning, July 14

- 10:40 AM - 12:20 PM **AAAI - 92 Session: Learning—Inductive I**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Mike Pazzani
- 10:40 - 11:05 AM *ChiMerge: Discretization of Numeric Attributes*, Randy Kerber, Lockheed AI Center
- 11:05 - 11:30 AM *The Feature Selection Problem: Traditional Methods and a New Algorithm*, Kenji Kira, Mitsubishi Electric Corporation; Larry A. Rendell, University of Illinois
- 11:30 - 11:55 AM *Classifier Learning from Noisy Data as Probabilistic Evidence Combination*, Steven W. Norton, Rutgers University & Siemens Corporate Research; Haym Hirsh, Rutgers University
- 11:55 AM - 12:20 PM *Learning in FOL with a Similarity Measure*, Gilles Bisson, Université Paris-sud
- 10:40 AM - 12:20 PM **AAAI - 92 Session: Problem Solving**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Craig Knoblock
- 10:40 - 11:05 AM *Linear-Space Best-First Search: Summary of Results*, Richard E. Korf, University of California, Los Angeles
- 11:05 - 11:30 AM *An Average-Case Analysis of Branch-and-Bound with Applications: Summary of Results*, Weixiong Zhang and Richard E. Korf; University of California, Los Angeles
- 11:30 AM - 11:55 PM *Performance of IDA on Trees and Graphs*, A. Mahanti, S. Ghosh, D. S. Nau, L. N. Kanal, University of Maryland; A. K. Pal, IIM, Calcutta
- 10:40 AM - 12:20 PM **AAAI - 92 Session: Representation & Reasoning—Belief I**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Eric Horvitz
- 10:40 - 11:05 AM *From Statistics to Beliefs*, Fahiem Bacchus, University of Waterloo; Adam Grove and Daphne Koller, Stanford University, Joseph Y. Halpern, IBM Almaden Research Center
- 11:05 - 11:30 AM *A Belief-Function Logic*, Alessandro Saffiotti, Université Libre de Bruxelles
- 11:30 - 11:55 AM *A Symbolic Generalization of Probability Theory*, Adnan Y. Darwiche and Matthew L. Ginsberg, Stanford University
- 11:55 AM - 12:20 PM *Lexical Imprecision in Fuzzy Constraint Networks*, James Bowen, Robert Lai and Dennis Bahler, North Carolina University
- 11:00 AM **AAAI Press Conference**  
EMPIRE ROOM, FAIRMONT HOTEL
- 12:20 - 2:00 PM **AAAI Conference Lunch Break**

# Tuesday Morning, July 14

## IAAI CONFERENCE

11:00 AM – 12:30 PM

### ***IAAI – 92: AI-on-Line Panel***

ROOM J, SAN JOSE CONVENTION CENTER.

*Developing Case-Based Reasoning Systems: Technology, Methodology, Applications, and Tools*, Organized by Cognitive Systems. Moderated by Neena Buck, New Science Associates. Panelists: Marc Goodman, Brandeis University, Phyllis Koton, Intellimation, Tim Acorn, Compaq, Bernadette Minton, AION Corporation, Peter D. Smith, Nestec York Ltd., and Robert Simpson, NCR.

Case-based reasoning systems solve problems by storing and intelligently retrieving similar past problem solving events and modifying them to meet the needs of the current problem. This approach is intuitively appealing because much of human problem solving is based on past experiences (cases). As the number of fielded case-based systems grows, some even replacing existing rule-based systems, some important system development and maintenance advantages are emerging. The purpose of this panel will be to discuss fielded case-based systems, the methodologies that were used to develop them, the advantages and impact of the applications and the technology, hybridization possibilities between CBR and rule-based expert systems, and tools that are being used to develop these applications.

Issues that the panel will address include:

- Is CBR alone a viable technology for building deliverable applications?
- How can CBR and other techniques be synergistically applied to building better applications?
- What were the design choices in selecting a CBR approach over other approaches?
- What are the differences in performing KE for CBR versus other approaches?
- What was the perceived acceptance of the technology by management and end users: prior to initiation, during system building, during end user testing and system refinement, after project completion.
- What factor was judged by users or managers to be the most valuable produced by taking a case-based approach. The least?
- Was it feasible for the application to stand alone or did the technology need to be embedded within or combined with other technologies?
- In what areas do case-based tools or approaches need to be improved to better satisfy your application domain?

12:30 – 2:00 PM

### ***IAAI Lunch Break***

# Tuesday Afternoon, July 14

12:00 PM – 7:30 PM **Exhibits**  
HALL 1, SAN JOSE CONVENTION CENTER

12:00 PM – 6:00 PM **Robot Competition and Exhibition**  
HALL 2, SAN JOSE CONVENTION CENTER

## Special Meetings

12:00 – 2:00 PM **AI in Manufacturing Subgroup Meeting**  
ROOM C2, SAN JOSE CONVENTION CENTER

12:00 PM **AI Journal Editorial Board Meeting**  
CALIFORNIA ROOM, FAIRMONT HOTEL

12:30 – 1:30 PM **AI in Medicine Subgroup Meeting**  
ROOM A1, SAN JOSE CONVENTION CENTER

## AAAI CONFERENCE

2:00 PM – 3:20 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM

**Artificial Intelligence and Molecular Biology**, Lawrence Hunter, National Library of Medicine. Introduction by Peter Friedland

Progress in AI depends on the selection of good problems, the identification of appropriate models and metaphors, and a sense of intellectual excitement among its practitioners. Molecular biology offers new life for our field along each of these dimensions. Addressing the information-based problems faced by modern molecular biology requires integrated inferential systems that scale well to large problems. Issues in representation, reasoning, qualitative simulation, learning, parsing, planning, vision, robotics, tutoring, imbedded systems and more are all central to this domain. Many of the problems molecular biology poses are just beyond the current state of our art, and are therefore driving basic AI research, as well as producing innovative applications. Furthermore, biology is a potent source of metaphors for cognition, not to mention models that capture relevant aspects of natural intelligence. And the excitement in molecular biology these days is palpable, as is the intense competition to make discoveries. This enthusiasm, coupled with biologist's newfound appreciation for the power of computational tools and significant non-defense research support is attracting more and more AI researchers to the field.

In this talk, Lawrence Hunter will survey the domain problems of molecular biology, focusing on the broad range of AI research challenges posed, and some implications for AI methodology. He will also describe some of the novel AI approaches developed for the domain so far, noting both their intellectual and commercial significance.

2:00 – 3:40 PM **AAAI – 92 Session: Learning: Inductive II**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Jeff Schlimmer

2:00 – 2:25 PM **Polynomial-Time Learning with Version Spaces**, Haym Hirsh, Rutgers University

2:25 – 2:50 PM **COGIN: Symbolic Induction with Genetic Algorithms**, David Perry Greene and Stephen F. Smith, Carnegie Mellon University

2:50 – 3:15 PM **Discrete Sequence Prediction and its Applications**, Philip Laird, NASA Ames Research Center

3:15 – 3:40 PM **A Personal Learning Apprentice**, Lisa Dent, Jesus Boticario, Tom Mitchell and David Zabowski, Carnegie Mellon University; John McDermott, Digital Equipment Corporation



# Tuesday Afternoon, July 14

- 2:00 – 3:40 PM **AAAI – 92 Session: Problem Solving— Search II and Expert Systems**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Rao Kambhampati
- 2:00 – 2:25 PM *On Optimal Game Tree Propagation for Imperfect Players*, Eric B. Baum, NEC Research Institute
- 2:25 – 2:50 PM *Improved Decision-Making in Game Trees: Recovering from Pathology*, Arthur L. Delcher, Loyola College in Maryland; Simon Kasif, The Johns Hopkins University
- 2:50 – 3:15 PM *Moving Target Search with Intelligence*, Toru Ishida, NTT Communication Science Laboratories
- 3:15 – 3:40 PM *Modeling Accounting Systems to Support Multiple Tasks: A Progress Report*, Walter Hamscher, Price Waterhouse Technology Centre
- 2:00 – 3:40 PM **AAAI – 92 Session: Representation & Reasoning—Belief II**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Mike Wellman
- 2:00 – 2:25 PM *Combining Circumscription and Modal Logic*, Jacques Wainer, University of Colorado
- 2:25 – 2:50 PM *A Logic for Belief Revision and Subjunctive Queries*, Craig Boutilier, University of British Columbia
- 2:50 – 3:15 PM *Ideal Introspective Belief*, Kurt Konolige, SRI International
- 3:15 – 3:40 PM *A Logic of Knowledge and Belief for Recursive Modeling —A Preliminary Report*, Piotr J. Gmytrasiewicz and Edmund H. Durfee, University of Michigan
- 3:40 – 4:10 PM **AAAI – 92 Session Break**
- 4:10 PM – 5:30 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM  
*What Your Computer Really Needs to Know, You Learned in Kindergarten*, Edmund H. Durfee, University of Michigan. Introduction by Katia Sycara  
In his book *All I Really Need to Know I Learned in Kindergarten*, Robert Fulghum lists sixteen things he learned in kindergarten that, he claims, form a core of knowledge and skills that he has used throughout life. While his list is anecdotal, I would argue that it is not by chance that the majority of the items he lists, ten of the sixteen, deal with social knowledge and skills. In fact, these ten items in Fulghum’s list have strong correspondence to exactly the issues that researchers in distributed artificial intelligence (DAI) confront. In this talk, I will use Fulghum’s points to provide a different spin on describing and relating work in DAI. This helps highlight open and unresolved issues within DAI, and hopefully gives the melting pot of DAI ideas another little stir.
- 4:10 – 5:50 PM **AAAI – 92 Session: Learning—Inductive III**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Wray Buntine
- 4:10 – 4:35 PM *The Attribute Selection Problem in Decision Tree Generation*, Usama M. Fayyad, Jet Propulsion Laboratory, California Institute of Technology; Keki B. Irani, The University of Michigan
- 4:35 – 5:00 PM *Sparse Data and the Effect of Overfitting Avoidance in Decision Tree Induction*, Cullen Schaffer, CUNY/Hunter College
- 5:00 – 5:25 PM *Complementary Discrimination Learning with Decision Lists*, Wei-Min Shen, Microelectronics and Computer Technology Corporation
- 5:25 – 5:50 PM *Learning to Learn Decision Trees*, Vlad G. Dabija, Stanford University; Katsuhiko Tsujino and Shogo Nishida, Mitsubishi Electric Corporation

# Tuesday Afternoon, July 14

- 4:10 – 5:25 PM **AAAI – 92 Session: Problem Solving—Hardness and Easiness**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: James Crawford
- 4:10 – 4:35 PM *Hard and Easy Distributions of SAT Problems*, David Mitchell, Simon Fraser University; Bart Selman, AT&T Bell Laboratories; Hector Levesque, University of Toronto
- 4:35 – 5:00 PM *How Long Will It Take?* Ron Musick and Stuart Russell, University of California, Berkeley
- 5:00 – 5:25 PM *Using Deep Structure to Locate Hard Problems*, Colin P. Williams and Tad Hogg, Xerox Palo Alto Research Center

- 4:10 – 5:50 PM **AAAI – 92 Session: Representation and Reasoning—Case-Based**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Ashok Goel
- 4:10 – 4:35 PM *Common Sense Retrieval*, A. Julian Craddock, University of British Columbia
- 4:35 – 5:00 PM *When Should a Cheetah Remind You of a Bat? Reminding in Case-Based Teaching*, Daniel C. Edelson, Northwestern University
- 5:00 – 5:25 PM *Model-Based Case Adaptation*, Eric K. Jones, Victoria University of Wellington
- 5:25 – 5:50 PM *Generating Dialectical Examples Automatically*, Kevin D. Ashley and Vincent Aleven, University of Pittsburgh

## IAAI CONFERENCE

- 2:00 – 5:30 PM **IAAI – 92 Session: Industrial Applications**  
ROOM J, SAN JOSE CONVENTION CENTER
- 2:00 – 2:40 PM *DMCM: A Knowledge-Based Cost-Estimation Tool*, Norman Crowfoot, Scott Hatfield and Mike Swank, Xerox Corporation.
- 2:40 – 3:20 PM *Automatic Programming for Sequence Control*, Hiroyuki Mizutani, Yasuko Nakayama, Satoshi Ito, Yasuo Namioka and Takayuki Matsu-daira, Toshiba Corporation
- 3:20 – 3:40 PM **IAAI – 92 Session Break**
- 3:40 – 4:20 PM *An Application of Model Based Reasoning in Experiment Design*, Andrew B. Parker, Sun Microsystems Inc.; W. Scott Spangler, General Motors
- 4:20 – 5:00 PM *SlurryMINDER: A Rational Oil Well Completion Design Module*, E. Brent Kelly, Philippe Caillot, Robert Roemer and Thierry Simien, Dowell Schlumberger
- 5:00 – 5:30 PM *Meet the Authors*

## AAAI CONFERENCE

- 6:30 – 7:30 PM **AAAI – 92 Opening Reception**  
EXHIBIT HALL 1 AND CONCOURSE 1, SAN JOSE CONVENTION CENTER

# Wednesday Morning, July 15

- 7:30 AM – 6:00 PM **Conference Registration**  
GROUND LEVEL, SAN JOSE CONVENTION CENTER
- 8:00 AM – 6:00 PM **AI Art Exhibition**  
ROOM B, SAN JOSE CONVENTION CENTER
- 10:00 AM – 6:00 PM **Exhibit**  
HALL 1, SAN JOSE CONVENTION CENTER
- 10:00 AM – 6:00 PM **Robot Competition and Exhibition**  
HALL 2, SAN JOSE CONVENTION CENTER

## Workshops

- 8:30 AM – 6:00 PM *Design Rationale Capture and Use*, Organized by J. Lee  
ROOM C2, SAN JOSE CONVENTION CENTER
- 8:30 AM – 6:00 PM *Communicating Scientific and Technical Knowledge*, Organized by K. Swaminathan  
ROOM N, SAN JOSE CONVENTION CENTER
- 8:45 AM – 4:30 PM *Statistically-Based NLP Techniques*, Organized by C. Weir  
ROOM C3, SAN JOSE CONVENTION CENTER
- 10:00 AM – 6:00 PM *Knowledge-Based Production Planning, Scheduling, and Control*, Organized by S. Smith  
ROOM K, SAN JOSE CONVENTION CENTER

## AAAI CONFERENCE

- 8:30 – 9:50 AM **AAAI – 92 Panel Discussion**  
CIVIC AUDITORIUM  
*Scheduling Technologies: Operations Research, Constraint-Based Search, or Expert Systems?* Moderated by: Steven Minton, NASA Ames Research Center. Panelists: Brad Allen, Inference Corp.; Egon Balas, Carnegie Mellon University; George Dantzig, Stanford University; William Faight, IntelliCorp; Mark Fox, University of Toronto; Monte Zweben, NASA Ames Research Center.  
In the industrial world, scheduling and resource allocation problems abound. Researchers have developed a variety of very different technologies for solving scheduling problems, such as mathematical methods from Operations Research, and more recently, constraint-based search and expert systems approaches from the field of Artificial Intelligence. This panel consists of six leading researchers and practitioners who will debate the strengths and weaknesses of these approaches.
- 8:30 – 10:10 AM **AAAI – 92 Session: Learning—Neural Network and Hybrid**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Doug Fisher
- 8:30 – 8:55 AM *Using Knowledge-Based Neural Networks to Improve Algorithms: Refining the Chou-Fasman Algorithm for Protein Folding*, Richard Maclin and Jude W. Shavlik, University of Wisconsin
- 8:55 – 9:20 AM *Using Symbolic Learning to Improve Knowledge-Based Neural Networks*, Geoffrey G. Towell, Siemens Corporate Research, and Jude W. Shavlik, University of Wisconsin
- 9:20 – 9:45 AM *A Framework for Integrating Fault Diagnosis and Incremental Knowledge Acquisition in Connectionist Expert Systems*, Joo-Hwee Lim, Ho-Chung Lui and Pei-Zhuang Wang, National University of Singapore

# Wednesday Morning, July 15

- 8:30 – 10:10 AM **AAAI – 92 Session: Problem Solving—Real-Time**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Barbara Hayes-Roth
- 8:30 – 8:55 AM *Real-time Metareasoning with Dynamic Trade-off Evaluation*, Ursula M. Schwuttke, Jet Propulsion Laboratory, California Institute of Technology; Les Gasser, University of Southern California
- 8:55 – 9:20 AM *Can Real-Time Search Algorithms Meet Deadlines?* Babak Hamidzadeh and Shashi Shekhar, University of Minnesota
- 9:20 – 9:45 AM *Run-Time Prediction for Production Systems*, Franz Barachini and Hans Mistelberger, Alcatel-ELIN Research Center; Anoop Gupta, Stanford University
- 9:45 – 10:10 AM *Comparison of Three Algorithms for Ensuring Serializable Executions in Parallel Production Systems*, James G. Schmolze, Tufts University; Daniel Neiman, University of Massachusetts
- 8:30 – 10:10 AM **AAAI – 92 Session: Representation and Reasoning—Terminological**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Chuck Rich
- 8:30 – 8:55 AM *Recognition Algorithms for the Loom Classifier*, Robert M. MacGregor and David Brill, USC/Information Sciences Institute
- 8:55 – 9:20 AM *Computing Least Common Subsumers in Description Logics*, William W. Cohen, AT&T Bell Laboratories; Alex Borgida and Haym Hirsh, Rutgers University
- 9:20 – 9:45 AM *A Non-Well-Founded Approach to Terminological Cycles*, Robert Dionne, Eric Mays and Frank J. Oles, IBM T. J. Watson Research Center
- 9:45 – 10:10 AM *An Empirical Analysis of Terminological Representation Systems*, Jochen Heinsohn, Daniel Kudenko, Bernhard Nebel and Hans-Jürgen Profitlich, German Research Center for Artificial Intelligence
- 10:10 – 10:40 AM **AAAI – 92 Session Break**
- 10:40 AM – 12:00 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM  
*Progress in AI and Legal Reasoning*, Edwina L. Rissland, University of Massachusetts and Harvard Law School. Introduction by Kevin Ashley  
In this talk, Edwina Rissland will discuss fundamental issues and recent progress in AI and Law, provide some background on relevant aspects of legal reasoning, survey some of the highlights of recent work, and indicate some key areas for future work. This talk will emphasize aspects of legal reasoning having to do with precedents, analogy, and argument.
- The talk will begin with a brief introduction to legal reasoning, where *stare decisis*, or the doctrine of precedent—which mandates that similar cases be decided similarly—dictates the substance and style of legal reasoning. Rissland will discuss a few of the characteristics that make legal reasoning an engaging and challenging arena for AI research and applications: the ubiquity of “open-textured” concepts, rules with emergent or tacit exceptions, contradictory or competing “answers,” adversarial argumentation and explanation, theory formation in the large (in the law as a whole) and in the small (in a particular case), and conceptual change and upheaval. She will also briefly review a few landmarks of past research and sample the diversity of on-going efforts.
- The main body of the talk will concentrate on approaches to legal reasoning that center on questions of how to reason with precedents. Discussed will be both purely case-based approaches and those involving a mixing of paradigms, such as rules and cases. Major examples will be drawn from work by, among others, Ashley, Branting, Gardner, McCarty, Oskamp, Rissland, Sanders, Skalak, and Walker, and their recent systems. Rissland will discuss the advances made on such core topics as fact-and-factor analysis, reuse of past arguments and explanations, use and adaptation of “safe-harbor” solutions, reasoning with hypotheticals and prototypes, argumentation strategies and tac-

# Wednesday Morning, July 15

tics. She will also present an example or two of how such research can provide analytical tools for understanding interesting aspects of the law, such as episodes of conceptual change, and probing with hypotheticals.

The talk will conclude with a discussion of the synergy between this specialized area and other areas of AI, and with the law, itself. For example, given that change is a constant feature of the law, learning is key; legal reasoning systems need, and can benefit from, techniques developed in machine learning, and, in a complementary way, the law will continue to serve up interesting episodes for consideration by researchers concerned with learning, reasoning by analogy, and theory formation.

- 10:40 AM – 12:20 PM **AAAI – 92 Session: Learning—Constructive & Linguistic**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Russell Greiner
- 10:40 – 11:05 AM *Learning to Disambiguate Relative Pronouns*, Claire Cardie, University of Massachusetts
- 11:05 – 11:30 AM *A Connectionist Parser with Recursive Sentence Structure and Lexical Disambiguation*, George Berg, State University of New York at Albany
- 11:30 – 11:55 AM *Learning Relations by Pathfinding*, Bradley L. Richards and Raymond J. Mooney, University of Texas at Austin
- 11:55 AM – 12:20 PM *Discrimination-Based Constructive Induction of Logic Programs*, Boonserm Kijsirikul, Masayuki Numao, and Masamichi Shimura, Tokyo Institute of Technology
- 10:40 AM – 12:20 PM **AAAI – 92 Session: Robot Navigation**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Ben Kuipers
- 10:40 – 11:05 AM *Integrating Planning and Reacting in a Heterogeneous Asynchronous Architecture for Controlling Real-World Mobile Robots*, Erann Gat, Jet Propulsion Laboratory, California Institute of Technology
- 11:05 – 11:30 AM *Reactive Navigation through Rough Terrain: Experimental Results*, David P. Miller, Rajiv S. Desai, Erann Gat, Robert Ivlev and John Loch, Jet Propulsion Laboratory, California Institute of Technology
- 11:30 – 11:55 AM *A Reactive Robot System for Find and Fetch Tasks in an Outdoor Environment*, R. Peter Bonasso, H. James Antonisse, and Marc G. Slack, The MITRE Corporation
- 11:55 AM – 12:20 PM *Landmark-Based Robot Navigation*, Anthony Lazanas and Jean-Claude Latombe, Stanford University
- 10:40 AM – 11:55 PM **AAAI – 92 Session: Representation and Reasoning—Tractability**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Tom Bylander
- 10:40 – 11:05 AM *The Complexity of Propositional Default Logics*, Jonathan Stillman, General Electric Research and Development Center
- 11:05 – 11:30 AM *Forming Concepts for Fast Inference*, Henry Kautz and Bart Selman, AT&T Bell Laboratories
- 11:30 – 11:55 AM *An Improved Incremental Algorithm for Generating Prime Implicates*, Johan de Kleer, Xerox Palo Alto Research Center

# Wednesday Morning, July 15

## IAAI CONFERENCE

- 9:00 AM – 12:30 PM **IAAI – 92 Session: Data Analysis**  
ROOM J, SAN JOSE CONVENTION CENTER
- 9:00 – 9:40 AM *Making Sense of Gigabytes: A System for Knowledge-Based Market Analysis*, Tej Anand and Gary Kahn, A. C. Nielsen
- 9:40 – 10:20 AM *MARVEL: A Distributed Real-Time Monitoring and Analysis Application*, Ursula M. Schwuttke, Raymond Y. Yeung, Alan G. Quan, Robert Angelino, Cynthia L. Childs, John R. Veregge and Monica B. Rivera, Jet Propulsion Laboratory, California Institute of Technology
- 10:20 – 10:40 AM **IAAI – 92 Session Break**
- 10:40 – 11:20 AM *Knowledge-Based Code Inspection with ICICLE*, L. Brothers, V. Sembugamoorthy and A. Irgon, Bellcore
- 11:20 AM – 12:00 PM *TPF Dump Analyzer*, R. Greg Arbon, Laurie Atkinson, James Chen and Chris A. Guida, Covia Technologies
- 12:00 – 12:30 PM *Meet the Authors*
- 12:30 – 2:00 PM **IAAI Lunch Break**

# Wednesday Afternoon, July 15

## **Special Meetings**

12:30 – 1:00 PM

*AAAI Annual Business Meeting*  
ROOM A1, SAN JOSE CONVENTION CENTER

12:30 – 1:30 PM

*AI and the Law Subgroup Meeting*  
ROOM A2, SAN JOSE CONVENTION CENTER

12:20 – 2:00 PM

**AAAI Lunch Break**

2:00 PM – 3:20 PM

**AAAI – 92 Invited Talk**

CIVIC AUDITORIUM

*AI and Multimedia*, Roger C. Schank, Northwestern University. Introduction by Kristian Hammond

The term “multimedia” seems to indicate something new and wonderful for computer education, but the possibilities of multimedia computer programs have not been fully exploited. Multimedia can be revolutionary. The real issue is the use of video in a computer, and the ideal video-based computer program would change the traditional model of students as passive page-turners to one that treats them as active participants in an educational goal. The architecture of such programs must emphasize the importance of the process of knowledge acquisition, rather than the particular set of knowledge to be learned in itself. The goal is still the learning of content, but the specific lesson itself is not as crucial as the issues underlying it. We need to create students who know how to think and how to relate new knowledge they acquire to what they already know about the world. The overall architecture of programs that do this will include a simulation of the task to be learned, a video data base that supplies the relevant video as needed, and buttons that allow the student to control the process. The key AI issue is indexing the knowledge so that it will be brought up at the right time.

2:00 – 3:40 PM

**AAAI – 92 Session: Learning—Utility and Bias**

ROOM A1, SAN JOSE CONVENTION CENTER

Session Chair: Steve Minton

2:00 – 2:25 PM

*Empirical Analysis of the General Utility Problem in Machine Learning*, Lawrence B. Holder, University of Texas at Arlington

2:25 – 2:50 PM

*A Statistical Approach to Solving the EBL Utility Problem*, Russell Greiner, Siemens Corporate Research and Igor Jurisica, University of Toronto

2:50 – 3:15 PM

*COMPOSER: A Probabilistic Solution to the Utility Problem in Speed-Up Learning*, Jonathan Gratch and Gerald DeJong, University of Illinois at Urbana-Champaign

3:15 – 3:40 PM

*Inductive Policy*, Foster John Provost and Bruce G. Buchanan, University of Pittsburgh

2:00 – 3:40 PM

**AAAI – 92 Session: Multi-Agent Coordination**

ROOM A2, SAN JOSE CONVENTION CENTER

Session Chair: Ed Durfee

2:00 – 2:25 PM

*A General – Equilibrium Approach to Distributed Transportation Planning*, Michael P. Wellman, USAF Wright Laboratory

2:25 – 2:50 PM

*Using Joint Responsibility to Coordinate Collaborative Problem Solving in Dynamic Environments*, N. R. Jennings and E.H. Mamdani, Queen Mary & Westfield College

2:50 – 3:15 PM

*Constrained Intelligent Action: Planning Under the Influence of a Master Agent*, Eithan Ephrati and Jeffrey S. Rosenschein, Hebrew University

3:15 – 3:40 PM

*On the Synthesis of Useful Social Laws for Artificial Agents Societies (Preliminary Report)*, Yoav Shoham and Moshe Tennenholtz, Stanford University

# Wednesday Afternoon, July 15

- 2:00 – 3:40 PM **AAAI – 92 Session: Representation and Reasoning: Qualitative**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Yumi Iwasaki
- 2:00 – 2:25 PM *Towards a Qualitative Lagrangian Theory of Fluid Flow*, Gordon Skorstad, University of Illinois
- 2:25 – 2:50 PM *Qualitative Simulation Based on a Logical Formalism of Space and Time*, Z. Cui, A. G. Cohn and D. A. Randell, University of Leeds
- 2:50 – 3:15 PM *On the Qualitative Structure of a Mechanical Assembly*, Randall H. Wilson and Jean-Claude Latombe, Stanford University
- 3:15 – 3:40 PM *Self-Explanatory Simulations: Scaling Up to Large Models*, Kenneth D. Forbus, Northwestern University; Brian Falkenhainer, Xerox Palo Alto Research Center
- 3:40 – 4:10 PM **AAAI – 92 Session Break**
- 4:10 PM – 5:30 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM
- Learning to Act: A Perspective from Control Theory*, Andrew G. Barto, University of Massachusetts. Introduction by Jude Shavlik
- Artificial intelligence researchers are becoming increasingly interested in systems embedded in environments demanding real-time performance. This is narrowing the gulf between problem-solving/planning research in AI and control engineering. Similarly, machine learning methods suited to embedded systems are becoming more comparable to methods for the adaptive control of dynamical systems. Although much of the research on learning in both symbolic and connectionist AI continues to focus on supervised learning, or learning from examples, there is increasing interest in the *reinforcement learning* paradigm because it addresses problems faced by autonomous agents as they learn to improve skills while interacting with dynamic environments that do not contain explicit teachers.
- Barto will describe the contributions of a number of researchers who are treating reinforcement learning as a collection of methods for successively approximating solutions to stochastic optimal control problems. Within this framework, methods for learning heuristic evaluation functions by “backing up” evaluations can be understood in terms of Dynamic Programming (DP) solutions to optimal control problems. Such methods include one used by Samuel in his checkers playing program of the late 1950s, Holland’s Bucket-Brigade algorithm, connectionist Adaptive Critic methods, and Korf’s Learning-Real-Time-A\* algorithm. Establishing the connection between evaluation function learning and the extensive theory of optimal control and DP produces a number of immediate results as well as a sound theoretical basis for future research.
- As applied to optimal control, DP systematically caches into permanent data structures the results of repeated shallow lookahead searches. However, because conventional DP requires exhaustive expansion of all states, it cannot be applied to problems of interest in AI that have very large state sets. DP-based reinforcement learning methods approximate DP in a way that avoids this complexity and may actually scale better to very large problems than other applicable domain-independent methods. Consequently, DP-based reinforcement learning provide a good foundation on which to construct capable domain-dependent learning systems.
- 4:10 – 5:50 PM **AAAI – 92 Session: Scaling Up**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Sal Stolfo
- 4:10 – 4:35 PM *Building Large-Scale and Corporate-Wide Case-Based Systems: Integration of the Organization and Machine Executable Algorithms*, Hiroaki Kitano, Akihiro Shibata, Hideo Shimazu, Juichirou Kajihara, and Atsumi Sato, NEC Corporation



# Wednesday Afternoon, July 15

- 4:35 – 5:00 PM *Wafer Scale Integration for Massively Parallel Memory-Based Reasoning*, Hiroaki Kitano and Moritoshi Yasunaga, Carnegie Mellon University
- 5:00 – 5:25 PM *Learning 10,000 Chunks: What's It Like Out There?* Bob Doorenbos, Milind Tambe, and Allen Newell, Carnegie Mellon University
- 5:25 – 5:50 PM *Mega-Classification: Discovering Motifs in Massive Datastreams*, Nomi L. Harris, Lawrence Hunter, and David J. States, National Institutes of Health

4:10 – 5:25 PM **AAAI – 92 Session: Perception**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Caroline Hayes

- 4:10 – 4:35 PM *Grouping Iso-Velocity Points for Ego-Motion Recovery*, Yibing Yang and Alan Yuille, Harvard University
- 4:35 – 5:00 PM *A Computational Model for Face Location Based on Cognitive Principles*, Venu Govindaraju, Sargur N. Srihari and David Sher, State University of New York at Buffalo
- 5:00 – 5:25 PM *Computation of Upper-Bounds for Stochastic Context-Free Languages*, A. Corazza, Istituto per la Ricerca Scientifica e Tecnologica; R. De Mori, McGill University; G. Satta, University of Pennsylvania

4:10 – 5:50 PM **AAAI – 92 Session: Representation and Reasoning —Qualitative Model Construction**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Dan Weld,

- 4:10 – 4:35 PM *Automated Model Selection Using Context-Dependent Behaviors*, P. Pandurang Nayak, Stanford University; Leo Joskowicz and Sanjaya Addanki, IBM T. J. Watson Research Center
- 4:35 – 5:00 PM *Automatic Abduction of Qualitative Models*, Bradley L. Richards and Benjamin J. Kuipers, University of Texas, Austin; Ina Kraan, University of Edinburgh
- 5:00 – 5:25 PM *Causal Approximations*, P. Pandurang Nayak, Stanford University
- 5:25 – 5:50 PM *Learning Engineering Models with the Minimum Description Length Principle*, R. Bharat Rao and Stephen C-Y. Lu, University of Illinois at Urbana-Champaign

## TOURS

- 7:00 PM-9:00 PM *IBM's Santa Teresa Laboratory, San Jose*
- 7:00 PM-8:30 PM *Neuron Data, Palo Alto*
- 7:30 PM-9:00 PM *IBM ADSTAR, San Jose*

# Wednesday Afternoon, July 15

2:00 – 3:30 PM

## IAAI CONFERENCE

### ***IAAI – 92: AI-on-Line Panel***

ROOM J, SAN JOSE CONVENTION CENTER

*The Art of Pioneering a Neural Network in Your Organization.*

Organized by NeuralWare. Moderated by John Barry, Rockwell Space Systems Division. Panelists: Rich Cousins, American Express Travel Related Services; Joseph Gorberg, Chevron Research and Technology Co.; and C. A. Wilkins, Navy Personnel Research Development Center. Although many people acknowledge the advantages of a new technology, only a few brave souls set upon the task of incorporating it. Neural networks have long been touted as a breakthrough technology and tangible applications are surfacing in an ever widening number of areas. But many people are still reluctant to adopt them, even though it's a proven technology. If you've been thinking about a neural network application, but are hesitant, this panel discussion is for you. The focus will be on understanding the fundamentals of a neural network project, from the initial planning stages, to implementation, and through to post evaluation and maintenance.

Seasoned professionals from a variety of industries will discuss the real-world challenges they faced and the lessons they learned from the many neural network projects that they have pioneered. For some, convincing management of the value of the project may have been the key issue; for others, the biggest obstacle may have appeared after approval, during the data collection phase. Whatever the situation, they are willing to pass along their experience for the benefit of a growing number of newcomers to this here-to-stay technology. Attendees can expect a frank discussion of the realities of neural network projects and, they will discover that even between the most divergent of organizations, there are many similarities when introducing cutting-edge technology.

3:30 – 3:50 PM

### ***IAAI – 92 Session Break***

3:50 – 5:50 PM

### ***IAAI – 92 Session: Regulatory Applications***

ROOM J, SAN JOSE CONVENTION CENTER

3:50 – 4:30 PM

*ADJUDIPRO.* J. P. Little and Mark Gingrich, United HealthCare Corporation

4:30 – 5:10 PM

*A Truly MAGIC Solution.* Rita C. Kidd, Merced County Human Services Agency; Robert J. Carlson, Andersen Consulting. Presented by Jens Egerland, Andersen Consulting

5:

10 – 5:50 PM

### ***Meet the Authors***

8:00 – 10:00 PM

### ***IAAI – 92 Session: Plenary Panel***

CIVIC AUDITORIUM

*Japan Watch 1992: Expert System Applications and Advanced Knowledge-Based Systems Research.* Panelists: Edward Feigenbaum (Chair), Stanford University; Robert S. Engelmores, Stanford University; Peter Friedland, NASA Ames Research Center; Bruce Johnson, Andersen Consulting; Penny Nii, Stanford University; Herbert Schorr, USC/Information Sciences Institute; and Howard E. Shrobe, Symbolics, Inc./Massachusetts Institute of Technology

# Thursday Mornings, July 16

- 7:30 AM – 6:00 PM **Conference Registration**  
GROUND LEVEL, SAN JOSE CONVENTION CENTER
- 8:00 AM – 6:00 PM **AI Art Exhibition**  
ROOM B, SAN JOSE CONVENTION CENTER
- 10:00 AM – 4:00 PM **Exhibit**  
HALL 1, SAN JOSE CONVENTION CENTER
- 10:00 AM – 4:00 PM **Robot Competition and Exhibition**  
HALL 2, SAN JOSE CONVENTION CENTER

## Special Meetings

- 7:30 – 9:00 AM **AAAI Conference Committee Meeting**  
CALIFORNIA ROOM, FAIRMONT HOTEL
- 8:30 AM **AAAI Exhibitors Advisory Committee Meeting**  
ROOM C2, SAN JOSE CONVENTION CENTER

## WORKSHOPS

- 8:30 AM – 6:00 PM **Knowledge Representation Aspects of Knowledge Acquisition**, Organized by Alain Rappaport  
ROOM K, SAN JOSE CONVENTION CENTER
- 8:30 AM – 6:00 PM **Verification and Validation of Expert Systems.**, Organized by L. Miller.  
ROOM L, SAN JOSE CONVENTION CENTER
- 8:30 AM – 6:00 PM **AI in Agricultural and Natural Resource Development**, Organized by R. Olson  
ROOM M, SAN JOSE CONVENTION CENTER
- 9:00 AM – 7:00 PM **Integrating Neural & Symbolic Processes**, Organized by R. Sun  
ROOM N, SAN JOSE CONVENTION CENTER

## AAAI CONFERENCE

- 8:30 AM – 9:50 AM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM

**Learning Visual Behaviors**, Dana H. Ballard, University of Rochester.  
Introduction by Rich Sutton

Learning algorithms can learn change the way we think about computational vision in fundamental ways. Learning is a way of bootstrapping the development of an algorithm. Rather than have the parameters of the algorithm determined in advance, the algorithm can use weaker initial conditions and have the details develop with experience. This is a particularly important consideration with the human visual system which has limited spatial, temporal, or spectral resolution. Such limitations can prove a virtue for learning algorithms. In order to get transfer from the experiences of one situation to another, some mechanism for comparing situations must exist. Such a mechanism occurs naturally when the sensing system generates partial representations as such representations automatically form equivalence classes of different world states. An important question is then: How many equivalence classes can be handled simultaneously? This is particularly important in view of the wealth of information on human capabilities which show that we cannot simultaneously attend to more than about seven items. Under this constraint it becomes very important to segment the information in a complex task into small subsets that are necessary for the demands of the moment. Ballard terms this “Just-in-time-representation” and shows how the human visual system may be modeled in terms of a system that builds such partial representations and uses them to obtain transfer in learning.

# Thursday Morning, July 16

- 8:30 – 10:10 AM **AAAI – 92 Session: Problem Solving—Constraint Satisfaction I**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Milind Tambe
- 8:30 – 8:55 AM *An Efficient Cross Product Representation of the Constraint Satisfaction Problem Search Space*, Paul D. Hubbe and Eugene C. Freuder, University of New Hampshire
- 8:55 – 9:20 AM *Efficient Propositional Constraint Propagation*, Mukesh Dalal, Rutgers University
- 9:20 – 9:45 AM *Solving Constraint Satisfaction Problems Using Finite State Automata*, Nageshwara Rao Vempaty, University of Central Florida
- 9:45 – 10:10 AM *On the Minimality and Decomposability of Constraint Networks*, Peter van Beek, University of Alberta
- 8:30 – 10:10 AM **AAAI – 92 Session: Representation and Reasoning—Action and Change**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Steve Hanks
- 8:30 – 8:55 AM *Formalizing Reasoning about Change: A Qualitative Reasoning Approach (Preliminary Report)*, James M. Crawford and David W. Etherington, AT&T Bell Laboratories
- 8:55 – 9:20 AM *Concurrent Actions in the Situation Calculus*, Fangzhen Lin and Yoav Shoham, Stanford University
- 9:20 – 9:45 AM *Deriving Properties of Belief Update from Theories of Action*, Alvaro del Val and Yoav Shoham, Stanford University
- 9:45 – 10:10 AM *Nonmonotonic Sorts for Feature Structures*, Mark A. Young, The University of Michigan
- 8:30 – 10:10 AM **AAAI – 92 Session: Natural Language—Parsing**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Jill Fain Lehman
- 8:30 – 8:55 AM *A Probabilistic Parser Applied to Software Testing Documents*, Mark A. Jones, AT&T Bell Laboratories; Jason Eisner, Cambridge University
- 8:55 – 9:20 AM *Parsing Run Amok: Relation-Driven Control for Text Analysis*, Paul S. Jacobs, GE Research & Development Center
- 9:20 – 9:45 AM *Shipping Departments vs. Shipping Pacemakers: Using Thematic Analysis to Improve Tagging Accuracy*, Uri Zernik, General Electric Research & Development Center
- 9:45 – 10:10 AM *Classifying Texts Using Relevancy Signatures*, Ellen Riloff and Wendy Lehnert, University of Massachusetts
- 10:10 – 10:40 AM **AAAI – 92 Session Break**
- 10:40 AM – 12:00 PM **AAAI – 92 Invited Talk**  
CIVIC AUDITORIUM
- Reasoning as Remembering: The Theory and Practice of CBR*, Kristian J. Hammond, University of Chicago. Introduction by Gregg Collins  
Over the past few years, Case-Based Reasoning (CBR) has grown from a Yale-centric view of cognition to a solid sub-area that is supported by wide-spread academic research and industrial development. Unfortunately, the definition of what is and is not CBR remains seriously ambiguous. In this talk, Hammond will look at different takes on CBR and suggest a definition that, oddly enough, doesn't include the use of "cases." In particular Hammond will look at: CBR as nothing new; CBR as an alternative cognitive model; CBR as an approach to knowledge engineering; CBR as a new set of assumptions; and CBR as a new set of modeling goals.

# Thursday Morning, July 16

In the end, Hammond argues that the CBR is part of a larger model of long-term agency. This model is distinguished by the view of agents and environments as dynamic entities that change to fit each other over time. Along with arguing for a new view of autonomous agents, this model supports the main tenant of CBR, that reasoning and learning must be linked within any intelligent system.

- 10:40 AM – 12:20 PM **AAAI – 92 Session: Learning—Robotic**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Matt Mason
- 10:40 – 11:05 AM *Reinforcement Learning with Perceptual Aliasing: The Perceptual Distinctions Approach*, Lonnie Chrisman, Carnegie Mellon University
- 11:05 – 11:30 AM *Reinforcement Learning with a Hierarchy of Abstract Models*, Satinder P. Singh, University of Massachusetts
- 11:30 – 11:55 AM *Acquisition of Automatic Activity through Practice: Changes in Sensory Input*, Jack Gelfand, Marshall Flax, Raymond Endres, Stephen Lane and David Handelman, Princeton University
- 11:55 AM – 12:20 PM *Automatic Programming of Robots Using Genetic Programming*, John R. Koza and James P. Rice, Stanford University
- 10:40 AM – 12:20 PM **AAAI – 92 Session: Problem Solving—Constraint Satisfaction II**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Rich Korf
- 10:40 – 11:05 AM *On the Density of Solutions in Equilibrium Points for the Queens Problem*, Paul Morris, IntelliCorp
- 11:05 – 11:30 AM *A New Method for Solving Hard Satisfiability Problems*, Bart Selman, AT&T Bell Laboratories; Hector Levesque, University of Toronto; and David Mitchell, Simon-Fraser University
- 11:30 – 11:55 AM *An Improved Connectionist Activation Function for Energy Minimization*, Gadi Pinkas, Washington University; Rina Dechter, University of California, Irvine
- 11:55 AM – 12:20 PM *Semantic Evaluation as Constraint Network Consistency*, Nicholas J. Haddock, Hewlett Packard Laboratories
- 10:40 AM – 12:20 PM **AAAI – 92 Session: Representation and Reasoning—Temporal**  
ROOM A3, SAN JOSE CONVENTION CENTER  
Session Chair: Yoav Shoham
- 10:40 – 11:05 AM *Algorithms and Complexity for Reasoning about Time*, Martin Charles Golumbic, IBM Israel Scientific Center and Bar-Ilan University; Ron Shamir, Tel Aviv University
- 11:05 – 11:30 AM *On the Computational Complexity of Temporal Projection and Plan Validation*, Bernhard Nebel, German Research Center for Artificial Intelligence; Christer Bäckström, Linköping University
- 11:30 – 11:55 AM *Complexity Results for Serial Decomposability*, Tom Bylander, The Ohio State University
- 11:55 AM – 12:20 PM *Temporal Reasoning in Sequence Graphs*, Jürgen Dorn, Technical University Vienna
- 10:40 AM – 12:20 PM **AAAI – 92 Session: Natural Language—Interpretation**  
ROOM A4, SAN JOSE CONVENTION CENTER  
Session Chair: Martha Pollack
- 10:40 – 11:05 AM *An On-Line Computational Model of Human Sentence Interpretation*, Daniel Jurafsky, University of California, Berkeley

# Thursday Morning, July 16

- 11:05 – 11:30 AM *Literal Meaning and the Comprehension of Metaphors*, Steven L. Lytinen, Robert R. Burridge, and Jeffrey D. Kirtner, The University of Michigan
- 11:30 – 11:55 AM *Actions, Beliefs and Intentions in Rationale Clauses and Means Clauses*, Cecile T. Balkanski, Harvard University
- 11:55 AM – 12:20 PM *An Approach to the Representation of Iterative Situations*, Michael J. Almeida, SUNY Plattsburgh

## IAAI CONFERENCE

- 9:00 – 10:30 AM ***IAAI – 92: AI-on-Line Panel***  
ROOM J, SAN JOSE CONVENTION CENTER  
*Successful Deployment of LISP Applications*. Organized by Lucid Inc. The session will focus on those high-impact projects which overcame management reluctance in order to succeed. Each of the representative applications will be chosen for its uniqueness and contribution to the organization. Panelists will focus, however, on the positioning, salemanship, and argumentation used to gain approval and acceptance of the technology. In addition, they will attempt to focus on each kind of organizational objection, including finances, corporate culture, risk and history. Lucid believes this is a critical year in the AI industry. They have spent many years working on the technology. From their point of view, it is time to begin helping people become truly successful in applying the technology. Helping people overcome existing objections is a critical piece of that goal.
- 10:30 – 10:50 AM ***IAAI – 92 Session Break***
- 10:50 AM – 12:40 PM ***IAAI – 92 Session: Routing Applications***  
ROOM J, SAN JOSE CONVENTION CENTER
- 10:50 – 11:30 AM *ARACHNE: Weaving the Telephone Network at NYNEX*, Elissa Gilbert, Rangnath Salgame, Afshin Goodarzi, Yuling Lin, Sanjeev Sardana, Jim Euchner, NYNEX Science and Technology, Inc.
- 11:30 AM – 12:10 PM *Hub SLAAshing: A Knowledge-Based System for Severe, Temporary Airline Schedule Reduction*, Trish Dutton, American Airlines
- 12:10 – 12:40 PM *Meet the Authors*
- 12:40 – 2:00 PM ***IAAI Lunch Break***
- 12:20 – 2:00 PM ***AAAI Lunch Break***

# Thursday Afternoon, July 16

## **Special Meetings**

12:45 – 1:30 PM

### **SIGART Meeting**

ROOM C2, SAN JOSE CONVENTION CENTER

2:00 PM – 4:00 PM

### **IJCAI – 93 Meeting**

CALIFORNIA ROOM, FAIRMONT HOTEL.

2:00 PM – 3:20 PM

### **AAAI – 92 Invited Talk**

CIVIC AUDITORIUM

*Artificial Life*, Christopher Langton, Los Alamos National Laboratory.  
Introduction by David Miller

In general, Artificial Life (AL) is to the study of biological phenomena what Artificial Intelligence (AI) is to the study of cognitive phenomena. Both of these “sciences of the artificial” approach their respective subject matter by attempting to synthesize the relevant phenomena within computers (or some other “artificial” medium.) Both fields are concerned with capturing the essential means by which naturally evolved information processing systems generate complex behaviors in response to the situation they face in the world. However, whereas AI has set its sights on the most complex such information processing system known to date, human intelligence, AL has targeted the “intelligence” of much simpler systems, such as living cells, insect colonies, flocks of birds, and evolving ecosystems. By turning to the study of other, simpler forms of “intelligence”, we hope to discover some of the fundamental building blocks upon which the more complex cognitive capacities of human beings are built. Thus, artificial life can be viewed as the “low-road” to artificial intelligence.

2:00 – 3:40 PM

### **AAAI – 92 Session: Learning—Theory**

ROOM A1, SAN JOSE CONVENTION CENTER

Session Chair: Devika Subramanian

2:00 – 2:25 PM

*An Analysis of Bayesian Classifiers*, Pat Langley, Wayne Iba, and Kevin Thompson; NASA Ames Research Center

2:25 – 2:50 PM

*A Theory of Unsupervised Speedup Learning*, Prasad Tadepalli, Oregon State University

2:50 – 3:15 PM

*Inferring Finite Automata with Stochastic Output Functions and an Application to Map Learning*, Thomas Dean, Kenneth Basye, Leslie Kaelbling, Evangelos Kokkevis, and Oded Maron, Brown University; Dana Angluin and Sean Engelson, Yale University

3:15 – 3:40 PM

*Oblivious PAC Learning of Concept Hierarchies*, Michael J. Kearns, AT&T Bell Laboratories

2:00 – 3:40 PM

### **AAAI – 92 Session: Planning I**

ROOM A2, SAN JOSE CONVENTION CENTER

Session Chair: Ed Pednault

2:00 – 2:25 PM

*The Expected Value of Hierarchical Problem-Solving*, Fahiem Bacchus and Qiang Yang, University of Waterloo

2:25 – 2:50 PM

*Achieving the Functionality of Filter Conditions in a Partial Order Planner*, Gregg Collins and Louise Pryor, Northwestern University

2:50 – 3:15 PM

*On the Complexity of Domain-Independent Planning*, Kutluhan Erol, Dana S. Nau, and V. S. Subrahmanian, University of Maryland

3:15 – 3:40 PM

*Constrained Decision Revision*, Charles Petrie, MCC AI Lab

2:00 – 3:40 PM

### **AAAI – 92 Session: Representation and Reasoning— Abduction and Diagnosis**

ROOM A3, SAN JOSE CONVENTION CENTER

Session Chair: Ramesh Patil

2:00 – 2:25 PM

*Consistency-Based Diagnosis in Physiological Domains*, Keith L. Downing, Linköping University

# Thursday Afternoon, July 16

- 2:25 – 2:50 PM *Adaptive Model-Based Diagnostic Mechanism Using a Hierarchical Model Scheme*, Yoichiro Nakakuki, Yoshiyuki Koseki, and Midori Tanaka, NEC Corporation
- 2:50 – 3:15 PM *Dynamic MAP Calculations for Abduction*, Eugene Charniak, and Eugene Santos, Brown University
- 3:15 – 3:40 PM *Reasoning MPE to Multiply Connected Belief Networks Using Message Passing*, Bon K. Sy, Queens College, City University of New York
- 3:40 – 4:10 PM **AAAI – 92 Session Break**
- 4:10 PM – 5:30 PM **AAAI – 92 Panel Discussion**  
CIVIC AUDITORIUM  
*Text-Based Systems and Knowledge Acquisition*, Moderated by Paul S. Jacobs, GE Research and Development Center  
Panelists: Jim Cowie, New Mexico State University; Jerry Hobbs, SRI International; Doug Lenat, MCC; David Waltz, Brandeis University and Thinking Machines Corporation  
Many of the more ambitious goals of artificial intelligence have proven unattainable because of knowledge acquisition problems. This panel will explore the role of emerging text-based techniques in knowledge acquisition, including the techniques themselves, the fit between current and future technologies, and the emerging applications. Topics for discussions will include “how much commonsense is needed?” “knowledge encyclopedias versus text encyclopedias,” and “automatic knowledge base creation.” While we will concentrate on current and future progress, we expect that the panel will raise some controversial issues, including the limitations of current techniques, the problems with large-scale knowledge engineering projects, and the feasibility of robust text processing in general.
- 4:10 – 5:50 PM **AAAI – 92 Session: Learning—Discovery**  
ROOM A1, SAN JOSE CONVENTION CENTER  
Session Chair: Larry Hunter
- 4:10 – 4:35 PM *Operational Definition Refinement: A Discovery Process*, Jan M. Zytkow, Jieming Zhu, and Robert Zembowicz, Wichita State University
- 4:35 – 5:00 PM *Discovery of Equations: Experimental Evaluation of Convergence*, Robert Zembowicz and Jan M. Zytkow, Wichita State University
- 5:00 – 5:25 PM *Theory-Driven Discovery of Reaction Pathways in the MECHEM System*, Raúl E. Valdés-Peréz, Carnegie Mellon University
- 5:25 – 5:50 PM *Symmetry as Bias: Rediscovering Special Relativity*, Michael Lowry, NASA Ames Research Center
- 4:10 – 5:25 PM **AAAI – 92 Session: Planning II**  
ROOM A2, SAN JOSE CONVENTION CENTER  
Session Chair: Matt Ginsberg
- 4:10 – 4:35 PM *Learning from Goal Interactions in Planning: Goal Stack Analysis and Generalization*, Kwang Ryel Ryu and Keki B. Irani, The University of Michigan
- 4:35 – 5:00 PM *Analyzing Failure Recovery to Improve Planner Design*, Adele E. Howe, University of Massachusetts
- 5:00 – 5:25 PM *Cultural Support for Improvisation*, Philip E. Agre, University of California, San Diego; Ian D. Horswill, Massachusetts Institute of Technology
- 5:25 – 5:50 PM *Adapting Bias by Gradient Descent: An Incremental Version of Delta-Bar-Delta*, Richard S. Sutton, GTE Laboratories Incorporated



# Thursday Afternoon, July 16

4:10 – 5:50 PM

## **AAAI – 92 Session: Explanation and Tutoring**

ROOM A3, SAN JOSE CONVENTION CENTER

Session Chair: Johanna Moore

4:10 – 4:35 PM

*Understanding Causal Descriptions of Physical Systems*, Gary C. Borchart, Massachusetts Institute of Technology

4:35 – 5:00 PM

*Steps from Explanation Planning to Model Construction Dialogues*, Daniel Suthers, Beverly Woolf, and Matthew Cornell, University of Massachusetts

5:00 – 5:25 PM

*Generating Cross-References for Multimedia Explanation*, Kathleen R. McKeown, Steven K. Feiner, Jacques Robin, Dorée D. Seligmann, Michael Tanenblatt, Columbia University

5:25 – 5:50 PM

*Results of Encoding Knowledge with Tutor Construction Tools*, Tom Murray and Beverly Park Woolf, University of Massachusetts

## **IAAI CONFERENCE**

2:00 – 3:30 PM

### **IAAI – 92: AI-on-Line Panel**

ROOM J, SAN JOSE CONVENTION CENTER

*Hidden Experts: Knowledge-Based Systems in Action*, Organized by Aion Corporation and Covia Technologies . Moderated by Paul Harmon, Harmon Associates. Panelists: Tim Simonetti, Pacific Bell; Roger Kovach, Boole&Babbage; Ed Hu, Applied Expert Systems; and Mike Hulley, Covia Technologies

To obtain competitive advantage in today's world, companies are finding the need to re-engineer their business practices. As knowledge-based systems become accepted and increasingly widespread throughout corporations, more and more companies are using these tools to enable their Business Process Automation (BPA). The panel will talk about "Hidden AI in Existing Systems". Specifically the panelists will explain how they are using knowledge-based systems to enhance existing production applications.

## **TOURS**

5:00 PM-7:00 PM

*Robotics Laboratory, Stanford University*

7:00 PM-8:30 PM

*Teleos Research, Palo Alto*