



AAAI 1995

**Fall Symposium Series
Registration Brochure**

*November 10-12, 1995
Massachusetts Institute of Technology
Cambridge, Massachusetts*

*Sponsored by the
American Association for Artificial Intelligence
445 Burgess Drive, Menlo Park, CA 94025
(415) 328-3123
fss@aaai.org*

AAAI presents the 1995 Fall Symposium Series to be held Friday through Sunday, November 10-12, 1995 at Massachusetts Institute of Technology, Cambridge, Massachusetts. The topics of the eight symposia in the 1995 Fall Symposium Series are:

- Active Learning
- Adaptation of Knowledge for Reuse
- AI Applications in Knowledge Navigation and Retrieval
- Computational Models for Integrating Language and Vision
- Embodied Language and Action
- Formalizing Context
- Genetic Programming
- Rational Agency: Concepts, Theories, Models, and Applications

The highlights of each symposium will be presented at a special plenary session. Working notes will be prepared and distributed to participants in each symposium, but will not otherwise be available unless published as an AAAI Technical Report or edited collection.

Each symposium will have limited attendance. Participants will be expected to attend a single symposium throughout the symposium series. In addition to participants selected by the program committee of the symposia, a limited number of other interested parties will be allowed to register in each symposium on a first-come, first-served basis. To register, please fill out the enclosed form, and send it along with payment to:

1995 Fall Symposium Series
AAAI, 445 Burgess Drive
Menlo Park, CA 94025
Fax: (415) 321-4457

(credit card orders only)

Email: fss@aaai.org

(credit card orders only)

Tentative Program Schedule

(subject to change)

Friday, November 10

Symposia sessions:
9:00 AM—5:30 PM

Reception:
6:00 PM—7:00 PM

Saturday, November 11

Symposia sessions:
9:00 AM—5:30 PM

Plenary session:
6:00 PM—8:00 PM

Sunday, November 12

Symposia sessions:
9:00 AM—12:30 PM

*Registration will be in the foyer of
The Tang Center.*

Active Learning Systems

An active learning system is one that can influence the training data it receives by actions or queries to its environment. Properly selected, these actions can drastically reduce the amount of data and computation required by a machine learner.

Active learning has been studied independently by researchers in machine learning, neural networks, robotics, computational learning theory, experiment design, information retrieval, and reinforcement learning, among other areas. This symposium will bring researchers together to clarify the foundations of active learning and point out synergies to build on.

The symposium will emphasize issues where multiple disciplines can contribute theoretical and/or empirical perspectives. These include:

- The exploration/exploitation tradeoff
- The role of prior knowledge
- The relative value of different kinds of information
- The relationship between different kinds of problems: discrete vs. continuous, time-varying vs. static, single-objective vs. multi-objective, etc.
- The extent to which theory or theory-driven heuristics apply to messy real data

The program will consist of panel discussions and topically focused sessions. A substantial part of each session will be reserved for questions and discussion. In addition, three invited speakers, Dana Angluin (Yale), Chris Atkeson (Georgia Tech), and Henry Wynn (City University, London), will provide expert perspectives from their fields.

Program Committee

David Cohn (Cochair), MIT (cohn@psyche.mit.edu), David Lewis (Cochair), AT&T (lewis@research.att.com), Kathryn Chaloner, University of Minnesota (kathryn@umnstat.stat.umn.edu), Leslie Pack Kaelbling, Brown University (lpk@cs.brown.edu), Rob Schapire, AT&T (schapire@research.att.com), Sebastian Thrun, Universitaet Bonn (thrun@carbon.cs.bonn.edu), Paul Utgoff, University of Massachusetts (utgoff@cs.umass.edu)

Adaptation of Knowledge for Reuse

Presentations at this symposium will define core issues in knowledge adaptation, characterize approaches for adapting reusable knowledge, and introduce novel approaches from several AI perspectives. Please see our WWW pages for more information.

Our invited speakers will survey adaptation methods from specific AI research perspectives: David Leake (CBR) will suggest ways to solve open issues, Mark Keane (analogical problem solving) will relate theories among research areas, and Jeffrey Van Baalen (problem reformulation) will address issues in representation change.

After each paper presentation, a leader will summarize the paper's contributions, benefits, and limitations, and then administer the audience's questions. Our poster session will be followed by a similar summary analysis and longer audience participation session.

Generous amounts of time will be reserved for structured open discussion periods. Topics will include characterizing unsolved problems on adaptation, relating adaptation tasks across AI research areas, abstracting from the authors' structured appendices, and critiquing both novel and previous approaches for solving adaptation tasks.

Panelists will describe the unique aspects of the approaches used in their research community, focusing on their potential benefits for other problems. A second panel will identify core issues in knowledge adaptation proposed in the presentations and predict their impact on addressing these issues.

Program Committee

David W. Aha (Cochair), Naval Research Laboratory (aha@aic.nrl.navy.mil), Brian Falkenhainer, Xerox Design Practice & Technology (falken@parc.xerox.com), Eric K. Jones, Victoria University of Wellington (eric.jones@comp.vuw.ac.nz), Subbarao Kambhampati, Arizona State University (rao@asu.asu.edu), David B. Leake, Indiana University (leake@cs.indiana.edu), Ashwin Ram (Cochair), Georgia Institute of Technology (ashwin@pravda.cc.gatech.edu)

AI Applications in Knowledge Navigation and Retrieval

The explosion of on-line information has brought home to users of the Internet the lesson that information by itself has little value. Information retrieval and browsing systems of the future will need to be knowledge-based systems. They will need to identify important information, organize information spaces, and make useful associations. They will act proactively on the users' behalf, as well as responding to queries.

Our focus in this symposium is on knowledge-based approaches to problems of browsing, retrieving, and organizing information. We will showcase a variety of implemented systems that address different areas of knowledge-based information access including web browsing, text analysis, information retrieval, and indexing.

These systems employ a wide range of AI techniques from machine learning to parsing to case-based reasoning. What the systems share is a commitment to representing and reasoning about the uses of information as well as its properties. The symposium will feature demonstration sessions in which many of the systems presented will be available for hands-on interaction.

Program Committee

Catharine Baudin, Price-Waterhouse (baudin@tc.pw.com), Ray Bariess, Institute for the Learning Sciences (bareiss@ils.nwu.edu), Robin Burke (Chair), University of Chicago (burke@CS.UChicago.edu), Su-Shing Chen, National Science Foundation (schen@nsf.gov), Kristian Hammond, University of Chicago (kris@cs.uchicago.edu), Alon Levy, AT&T Bell Laboratories (levy@research.att.com), Jim Mayfield, University of Maryland, Baltimore County (mayfield@cs.umbc.edu), Dick Osgood, Andersen Consulting (osgood@aaped.com), Christopher Owens, Bolt, Beranek and Newman (cowens@bbn.com)

Computational Models for Integrating Language and Vision

Much has been said about the necessity of linking language and perception for a system to exhibit intelligent behavior, but there has been relatively little work in developing computational models for this task. A natural-language understanding system should be able to understand and make references to the visual world. The use of scene-specific context (obtained from written or spoken text accompanying a scene) could greatly enhance the performance of computer vision systems. The intrinsic difficulty of both natural language processing and computer vision has discouraged researchers from attempting their integration, although in many cases it may simplify the individual tasks.

Some of the topics to be addressed are:

- use of collateral text in image and diagram understanding
- event perception in image sequences
- understanding spatial language, spatial reasoning, visualization
- knowledge representation for linguistic and visual information
- use of visual data in disambiguating text/speech
- content-based retrieval from integrated text/image/video databases
- facial expression and gesture understanding
- cognitive theories connecting language and perception

The symposium will consist of invited talks, panel discussions, individual presentations and group discussions. In addition to invited participants, a limited number of other interested parties will be able to register on a first-come basis. Further information may be found at: <http://www.cedar.buffalo.edu/Piction/FSS95/CFP.html>

Program Committee

Ken Forbus, Northwestern University (forbus@ils.nwu.edu), Janice Glasgow, Queen's University (janice@qucis.queensu.ca), Annette Herskovits, Wellesley College (hersko@bam-bam.wellesley.edu), Gordon Novak, University of Texas at Austin (novak@cs.utexas.edu), Candace Sidner, Lotus Development Corporation, (csidner@lotus.com), Jeffrey Siskind, University of Toronto (qobi@cs.toronto.edu), Rohini K. Srihari (Chair), CEDAR, SUNY at Buffalo (rohini@cedar.buffalo.edu), Thomas M. Strat, SRI International (strat@ai.sri.com), David Waltz, NEC Research Institute (waltz@research.nj.nec.com)

Embodied Language and Action

This symposium focuses on agents that can use language or similar communication, such as gesture, to facilitate extended interactions in a shared physical or simulated world. We examine how this embodiment in a shared world both stimulates communication and provides a resource for understanding it. Our focus is on the design of artificial agents, implemented in software, hardware, or as animated characters. We will use the tasks:

- Two or more communicating agents work together to construct, carry out maintenance on, or destroy a physical or simulated artifact (Collaborative Engagement)
- An agent assists a human by fetching or delivering physical or software objects. The human communicates with the agent about what is to be fetched or delivered to where. (Delivery Assistance) as starting points to explore questions such as:

- Can task contexts act as resources for communication by simplifying the interpretation and production of communicative acts?
- How does physical embodiment and its concomitant resource limitation affect an agent's ability to interpret or generate language?
- Can architectures designed to support perception and action support language or other forms of communication?

Program Committee

John Batali, UCSD (batali@cogsci.ucsd.edu),
Jim Firby, University of Chicago,
(firby@cs.uchicago.edu), Ian Horswill
(Cochair), MIT (ian@ai.mit.edu), Marilyn
Walker (Cochair), Mitsubishi Electric Research
Labs (walker@merl.com), Bonnie Webber,
University of Pennsylvania
(bonnie@linc.cis.upenn.edu)

Formalizing Context

The notion of context has played an important role in AI systems for many years. However, formal logical explication of contexts remains an area of research in which there are significant open issues. This symposium will bring together researchers who have studied or applied contexts in AI or related fields. Technical sessions and discussions dealing with formalizations of context, the problem of generality in AI, and use of context in common sense reasoning will be central. However, we will also have survey talks which focus on contexts from other points of view, such as philosophy, linguistics, and natural language processing, and which apply contexts in other areas of AI. The symposium will be structured around invited talks given by Barbara Grosz, R. V. Guha, Pat Hayes, John McCarthy, Marvin Minsky, Maria Simi, and Bob Stalnaker.

For more information see the symposium WWW home page <http://sail.stanford.edu/buvac/95-context-symposium54>, or contact or send mail to buvac@cs.stanford.edu.

Program Committee

Sasa Buvac (Chair), Stanford University (buvac@sail.stanford.edu), Richard Fikes, Stanford University (fikes@ksl.stanford.edu), R. V. Guha, MCC (guha@mcc.com), Pat Hayes, Beckman Institute (phayes@cs.uiuc.edu), John McCarthy, Stanford University (jmc@sail.stanford.edu), Murray Shanahan, Imperial College (msh@doc.ic.ac.uk), Robert Stalnaker, MIT (stal@mit.edu), Johan van Benthem, University of Amsterdam (johan@fwi.uva.nl)

Genetic Programming

Genetic programming (GP) extends the genetic algorithm to the domain of computer programs. In genetic programming, populations of programs are selectively bred to solve problems. Genetic programming can solve problems of system identification, classification, control, robotics, optimization, game-playing, and pattern recognition.

Starting with a primordial ooze of hundreds or thousands of randomly created programs composed of functions and terminals appropriate to the problem, the population is progressively evolved over a series of generations by applying the operations of Darwinian selection and crossover (sexual recombination).

Topics of interest for this symposium include:

- The theoretical basis of genetic programming
- Applications of genetic programming
- Rigorousness of validation techniques
- Hierarchical decomposition, e.g. automatically defined functions
- Competitive coevolution
- Automatic parameter tuning
- Representation issues
- Genetic operators
- Establishing standard benchmark problems
- Parallelization techniques
- Innovative variations

The format of the symposium will encourage interaction and discussion, but will also include around 25 brief presentations. Please contact Eric Siegel (e-mail address below) for questions concerning this symposium.

Program Committee

Lee Altenberg, Duke University; David Andre, Stanford University; Peter J. Angeline, Loral Federal Systems; Alex D. Chaffee, Earthweb; Frederic Gruau, Stanford University; Kim Kinnear, Adaptive Computing Technology; John R. Koza (Cochair), Stanford University; Brij Masand, GTE Labs; Sidney R. Maxwell, Borland International; Conor Ryan, University College Cork; Eric V. Siegel (Cochair), Columbia University (evs@cs.columbia.edu); Andy Singleton, Creation Mechanics, Inc.; Astro Teller, Carnegie Mellon University

Rational Agency: Concepts, Theories, Models, and Applications

This symposium explores conceptions of rational agency and their implications for theory, research, and practice. The view that intelligent systems are, or ought to be, rational agents underlies much of the research in artificial intelligence and related disciplines. However, consensus has yet to be reached on a theory of agency and rationality principles for practical agents. Traditional views of agents as purposive, goal-directed problems solvers contrast sharply with views of agents as fundamentally reactive. Rationality accounts are equally diverse.

This symposium brings together an outstanding, multidisciplinary group of scholars to explore such issues as the following:

- Is rationality important; must an agent be rational to be successful?
- What are suitable principles of epistemic, strategic, and limited rationality?
- Are rationality principles applicable to retrospective processes such as learning?
- What, if any, are general requirements on rational agent architectures?
- How, if at all, must a model of rational agency be modified to account for social, multi-agent interaction?

Through informal presentation and group discussion, symposium participants critically examine agency concepts and rationality principles, review computational models and applications, and explore opportunities for future research. We invite those having an active interest in the topic of rational agency to join us.

Program Committee

Michael Fehling (Chair), Stanford University (fehling@lis.stanford.edu), Don Perlis, University of Maryland (perlis@cs.umd.edu), Martha Pollack, University of Pittsburgh (pollack@cs.pitt.edu), John Pollock, University of Arizona (pollock@ccit.arizona.edu)

Registration & General Information

All attendees must preregister. Each symposium has a limited attendance, with priority given to invited attendees. All accepted authors, symposium participants, and other invited attendees must register by September 30, 1995. After that period, registration will be opened up to the general membership of AAAI and other interested parties. All registrations must be postmarked by October 15, 1995.

Your registration fee covers your attendance at the symposium, a copy of the working notes for your symposium, and the reception.

Please fill out the attached registration form and mail it with your fee to:
AAAI 1995 Fall Symposium
445 Burgess Drive
Menlo Park, CA 94025

Checks (drawn on US bank) or international money orders should be made out to AAAI. VISA, MasterCard and American Express are also accepted. Please note: All refund requests must be in writing and postmarked by October 25, 1995.

When you arrive at Massachusetts Institute of Technology, please pick up your complete registration packet in the foyer of The Tang Center.

Registration hours will be:

Thursday, November 9
5:00 pm - 7:30 pm

Friday, November 10
8:00 am - 5:00 pm

Saturday, November 11
8:00 am - 5:00 pm

Please call Annette Eldredge at 415/328-3123 for further information.

Accommodations

For your convenience, AAAI has reserved a block of rooms at the Hyatt Regency Hotel. The rate is \$119.00 for a single or double room. Symposium attendees must contact the Hyatt Regency Cambridge Hotel directly. Please identify yourself as an American Association for Artificial Intelligence Fall Symposium registrant to qualify for the reduced rate.

Hyatt Regency Cambridge
575 Memorial Drive
Cambridge, MA 02139
Phone: 617-492-1234
Fax: 617-441-6489

Air Transportation and Car Rental

Attendees who fly American Airlines, the official carrier for AAAI, will save 5% on lowest applicable fares—some restrictions apply. Save 10% on lowest unrestricted coach class fares, with 7 day advance purchase. Travel between November 7-15 1995.

Alamo Rent A Car is also offering special rates starting as low as \$26/day or \$125/week. Unlimited free mileage and bonus frequent flyer miles when you drive Alamo and fly American.

For lowest available fares on any airline, call Conventions in America, the official travel agency for AAAI, at 1-800-929-4242 or 619-678-3600 (FAX: 619-678-3699) and ask for group #428. You will also receive free flight insurance of \$100,000 and become eligible to win free travel worldwide in

their bi-monthly drawings. If you call American 1-800-433-1790, ask for Index #S9272. Alamo 1-800-732-3232, ask for ID #270105,GR.

Parking

Parking on the MIT campus is restricted Monday through Friday from 7:30 am to 4:00 pm. As the dates for the Symposium coincide with a state holiday and normal business will not be conducted at the Institute on those dates, parking by visitors will be permitted in the surrounding lots. Public parking is also available in the garage adjacent to the Marriot Hotel.

Campus Police Parking and Traffic Division has compiled this list of public parking facilities for your use. Please note that all information is subject to change and should not be considered final.

MIT
139 Massachusetts Avenue
253-8232
(\$7.00 per day, \$2.00 hour.)

Park and Lock
354 3rd Street
547-2685. (\$6.00 per day.)

Kinney Systems
Four Cambridge Center (Entrance is on Ames St. and Broadway)
492-1956 (\$2.75 for one hour, \$5.25 for two hours, \$7.75 for twelve hours, \$10.50 for 24 hours.)

Kinney Systems
Ten Cambridge Center
621-3115 (\$2.25 for one hour, \$4.50 for two hours, \$6.75 for twelve hours, \$9.00 for 24 hours.)

Ground Transportation

This information is the best available at time of printing. Fares and routes change frequently. Please check by telephoning the appropriate numbers below for the most up-to-date information.

Arrival by Air

Logan International Airport is approximately five miles from the MIT campus. Taxi fare to the campus is approximately \$15.00, regardless of the number of passengers. Public transportation to MIT is available; although an inexpensive alternative, it is quite cumbersome with luggage and not recommended.

Arrival by Train

You will arrive in Boston at South Station. Taxi service and public transportation are available.

Arrival by Car

MIT is located in Cambridge on Memorial Drive, a major roadway in the region's highway system. From the west and northwest, there is access to Memorial Drive from the Massachusetts Turnpike (Interstate 90) and Route 2. From the north (Interstate 93/Southeast Expressway), the suggested approach is to connect with Storrow Drive in Boston via the central artery bridgeways, heading west on Storrow Drive. Take the Massachusetts Avenue exit onto the Harvard Bridge which crosses the Charles River and leads you straight to MIT's central entrance at 77 Massachusetts Avenue (Building 7).

Disclaimer

In offering the Hyatt Regency Cambridge, American Airlines, Alamo Rent-A-Car (hereinafter referred to as "Supplier") and all other service providers for the AAAI Fall Symposium Series, the American Association for Artificial Intelligence acts only in the capacity of agent for the Supplier which is the provider of hotel rooms and transportation. Because the American Association for Artificial Intelligence has no control over the personnel, equipment or operations of providers of accommodations or other services included as part of the Symposium program, AAAI assume no responsibility for and will not be liable for any personal delay, inconveniences or other damage suffered by symposium participants which may arise by reason of (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.

Registration Form-1995 AAAI Fall Symposium Series

ALL ATTENDEES MUST PREREGISTER

Please complete in full and return to AAAI, postmarked by September 30, 1995 (invited attendees) or by October 15, 1995 (general registration). *Please print or type.*

First name _____ Last name _____

Affiliation _____

Address _____ Home or Business

City _____ State _____

Zip or postal code _____ Country _____

Daytime telephone _____ Net address _____

Symposium

(Please check only one)

- 1. Active Learning
- 2. Adaptation of Knowledge for Reuse
- 3. AI Applications in Knowledge Navigation and Retrieval
- 4. Computational Models for Integrating Language and Vision
- 5. Embodied Language and Action
- 6. Formalizing Context
- 7. Genetic Programming
- 8. Rational Agency

Fee

Member: \$ 215.00 Nonmember: \$ 275.00

Student Member \$ 100.00 Nonmember student: \$ 125.00

(Students, must send legible proof of full-time student status.)

TOTAL FEE *(Please enter correct amount.)* \$ _____

Method of Payment *(please circle one)*

CHECK MASTERCARD VISA AMERICAN EXPRESS MONEY ORDER

Credit card number _____ Expiration date _____

Name (as it appears on card) _____

Signature _____

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or fax with credit card information to 415/321-4457.**

Please Note: Requests for refunds must be received *in writing* by 25 October 1995.

A \$25.00 processing fee will be levied on all refunds granted.

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