



AAAI 1996
Spring Symposium Series

March 25-27, 1996
Stanford University, California

Registration

Sponsored by the
American Association for Artificial Intelligence
445 Burgess Drive, Menlo Park, CA 94025
(415) 328-3123
sss@aaai.org
<http://www.aaai.org/Symposia/symposia.html>

The American Association for Artificial Intelligence, in cooperation with Stanford University's Department of Computer Science, presents the 1996 Spring Symposium Series, to be held Monday through Wednesday, March 25–27, 1996, at Stanford University, Stanford, California. The topics of the eight symposia in the 1996 Spring Symposium Series are:

- *Acquisition, Learning, and Demonstration: Automating Tasks for Users*
- *Adaptation, Coevolution and Learning in Multiagent Systems*
- *Artificial Intelligence in Medicine: Applications of Current Technologies*
- *Cognitive and Computational Models of Spatial Representation*
- *Computational Implicature: Computational Approaches to Interpreting and Generating Conversational Implicature*
- *Computational Issues in Learning Models of Dynamical Systems*
- *Machine Learning in Information Access*
- *Planning with Incomplete Information for Robot Problems*

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:

1996 Spring Symposium Series
AAAI
445 Burgess Drive
Menlo Park, CA 94025
Telephone: (415) 328-3123*
Fax: (415) 321-4457*
Email: sss@aaai.org*

*Credit card orders only, please. Please note that there are security issues involved with the transmittal of credit card information over the internet. AAAI will not be held liable for any misuse of your credit card information during its transmittal to AAAI.

This document is also available at <http://www.aaai.org/Symposia/Spring/1996/sssbrochure-96.html>.

Tentative Program Schedule (subject to change)

Monday, March 25

9:00 AM–5:30 PM

Symposia sessions

6:00 PM–7:00 PM

Reception

Tuesday, March 26

9:00 AM–5:30 PM

Symposia sessions

6:00 PM–8:00 PM

Plenary session

Wednesday, March 27

9:00 AM–12:30 PM

Symposia sessions

Registration will be in the lobby of Cubberly Auditorium located in the School of Education at Stanford.

Acquisition, Learning & Demonstration

Automating Tasks for Users

Automating tasks through interactions with users has always been recognized as an important area of research, one that will attract increasing attention in the next few years. Larger bodies of knowledge will need to be acquired and maintained as AI systems are scaled up and applied to real-world problems. The interactive nature of the growing Internet (where many services will be offered and diverse intelligent assistants created) will pose an increasing demand on tools that help users define tasks they want computers to accomplish for them.

Currently, researchers in three different communities are looking at different aspects of this problem. Machine learning researchers tend to look for ways to automate the acquisition process with algorithms that do explanation or induction based on a user's actions. Knowledge acquisition research, mainly motivated by the automation of knowledge-intensive tasks, concentrates on understanding how to structure the system's interaction with users based on the nature of the task to be automated. The area of programming by demonstration, which emerged from the user interface and human-computer interaction communities, offers more natural ways for non-programmers to automate tasks using systems that analyze the sequence of actions chosen by a user to perform a task.

The primary purpose of this symposium is to bring together these communities in order to exchange ideas and approaches, and to gain a better understanding of the state of the art and the technological and research challenges that we need to address in getting computers to do intelligent tasks for users.

The first day of the symposium will include short tutorial-style presentations to provide a shared background of the approaches and applications in machine learning, knowledge acquisition, and programming by demonstration. The remainder of the sessions will center around a few papers representing current approaches and open issues within each area and across areas. Each presentation will be followed by a discussion prepared by people with an alternative research focus, and finally, by an open discussion.

Discussion topics for this symposium include:

- Combining existing approaches: Which aspects of a task can be learned automatically and how? How can user instruction be incorporated in induction algorithms? When and how can we generalize from a few examples provided by a user? Are the problem-solving methods that have been identified by the knowledge acquisition community useful in knowledge-lean tasks?

What kinds of techniques are adequate to allow users to specify procedural knowledge?

- Analysis and methodology issues: What kinds of knowledge are hard to acquire and why? Can we characterize which tasks users can automate easily? How can we identify adequate paradigms for user interaction for a given task? How much of the task should the system model and understand? What kinds of representations are appropriate?
- Practical concerns: What challenging tasks would users like to automate? What do current approaches offer for these tasks? How do we address the tradeoff between burdening the user and autonomy? How scalable are the proposed methods?

The discussion will center on tasks that are of interest to the participants, including service robot programming, planning and scheduling, management of file systems, and information access.

Organizing Committee

Yolanda Gil (Chair), USC/Information Sciences Institute (gil@isi.edu); William P. Birmingham, University of Michigan at Ann Arbor; Allen Cypher, Apple Computer; Mike Pazzani, University of California at Irvine.

Adaptation, Co-evolution and Learning in Multiagent Systems

Coordination of multiple agents is essential for the viability of systems in which these agents share resources. Learning and adaptation are invaluable mechanisms by which agents can evolve coordination strategies that meet the demands of the environments and the requirements of individual agents. This symposium focuses on research that will address unique requirements for agents learning and adapting to work with other agents. Among others, the symposia will address the following issues:

- Benefits of adaptive/learning agents over agents with fixed behavior in multiagent problems.
- Characterization of methods in terms of modeling power, communication abilities, and knowledge requirement of individual agents.
- Developing learning and adaptation strategies for environments with cooperative agents, selfish agents, partially cooperative agents.
- Analyzing and constructing algorithms that guarantee convergence and stability of group behavior.
- Co-evolving multiple agents with similar/opposing interests.
- Interdisciplinary research from fields like organizational theory, game theory, psychology, sociology, economics, etc.

In addition to presentation of selected papers, the symposia will consist of panel discussions, breakout groups, and invited talks. We will distribute accepted papers and key discussion topics ahead of the symposium.

Organizing Committee

Sandip Sen (Chair), University of Tulsa (sandip@kolkata.mcs.utulsa.edu); Devika Subramanian, Cornell University (devika@CS.Cornell.EDU); Jeff Rosenschein, The Hebrew University (jeff@CS.HUJI.AC.IL); John J. Grefenstette, Naval Research Laboratory (gref@AIC.NRL.Navy.Mil); Michael N. Huhns, University of South Carolina (huhns@sc.edu); Tad Hogg, Xerox PARC (hogg@parc.xerox.com)

Artificial Intelligence in Medicine

Applications of Current Technologies

The theme for the AI in Medicine Symposium is application of current technologies. As the technologies behind medical decision support systems are maturing, the focus of the field is shifting toward steps necessary to insert decision support technology into daily medical practice. 15 oral presentations will be arranged into thematic sessions including machine learning, case-based reasoning, planning, innovative applications, and use of emerging information technologies. Approximately 25 posters on similar topics will be presented in a separate session. A keynote speech and a panel discussion will also address the issue of transitioning successful technology to medical practice.

Organizing Committee

Isaac Kohane, (Chair), Children's Hospital and Harvard Medical School; Ramesh Patil, USC/ISI; Yuval Shahar, MD, Section on Medical Informatics, Stanford Medical School; Peter Szolovits, Clinical Decision Making Group; Serdar Uckun, MD, Rockwell International.

Cognitive and Computational Models of Spatial Representation

Technological advances in multi-media, graphics, vision and speech technology are driving research into new interfaces and retrieval mechanisms based on spatial dialogues and queries. Recent years have also seen an increase in interest in newer fields that depend heavily on spatial representation, in particular, analogical/diagrammatic reasoning, and multimodal interface design. Concurrently, cognitive linguistics has concentrated much effort on semantic accounts of spatial language, and the revival of the imagery debate has sharpened the focus of research into human spatial cognition.

Despite its increasing importance, spatial representation has been tackled as a subproblem of many different domains, which in turn has led to a fragmentation of the overall research effort. This symposium intends to meet the growing desire to integrate research into spatial representation and reasoning by the artificial intelligence, cognitive science and cognitive psychology communities. The goals of the symposium are:

- To initiate an interdisciplinary dialogue to facilitate exchange of ideas and cross fertilization among researchers;
- Review the current influence that research into spatial cognition has on approaches to spatial representation in AI;

- Develop a better appreciation of research into spatial representation by identifying issues that span domain and discipline boundaries;
- Stimulate the discussion of issues in the computational realization of cognitive models of spatial representation.

The eighty submissions for this symposium reflect a broad set of interests in computational and cognitive models of spatial representation, including acquisition, representation and processing of natural language spatial expressions; mental and computational imagery; diagrammatic reasoning; analogical reasoning and direct representations of space; navigation and cognitive models of large scale space.

The symposium will be made up of five half-day sessions; each session will consist of up to three paper presentations addressing cognitive and computational aspects of a key issue in spatial representation. In addition there will be invited critiques of presented papers; panel sessions and plenty of time for open discussion. It is also intended that there will be a demonstration session for implementations of computational models of space representations.

Organizing Committee

Patrick Olivier (Chair), University of Wales, Aberystwyth, UK (plo@aber.ac.uk); Tony Cohn, University of Leeds, UK (agc@scs.leeds.ac.uk); Janice Glasgow, Queen's University, Canada (janice@qcis.queensu.ca); Barbara Landau, UC Irvine, USA (blandau@orion.uci.edu); Keiichi Nakata, University of Wales, Aberystwyth, UK (kkn@aber.ac.uk); Barbara Tversky, Stanford University, USA (bt@psych.stanford.edu)

For further information see http://www.dcs.aber.ac.uk/~plo/AA_AI_SSS or contact:

Patrick Olivier
Centre for Intelligent Systems
Department of Computer Science
University of Wales, Aberystwyth
Dyfed SY23 3DB
United Kingdom
plo@aber.ac.uk
Tel: +44 1970 622447
Fax: +44 1970 622455

Computational Implicature

Computational Approaches to Interpreting and Generating Conversational Implicature

Since the 1980s, several computational and formal approaches have been developed to address Gricean conversational implicatures in non-figurative use of natural language. The purpose of this symposium is to address the following related questions.

- Is the notion of conversational implicature still useful? What role if any do Grice's maxims and cooperative principle still play?
- How does conversational implicature relate to other discourse phenomena, e.g., coherence and discourse expectations? What distinguishes it from other defeasible inferences in discourse?
- How successful have recent developments in discourse processing such as non-monotonic reasoning, abduction, and planning/plan inference been in modeling conversational implicature?
- What are the next problems to be addressed? e.g. corpora usage, evaluation of systems that generate or interpret conversational implicature.

The program will include sessions consisting of: presentations of two or three papers on a common theme, comments by a designated commentator, and open discussion; panel presentations followed by open discussion; possibly several invited talks, and possibly work in small groups.

For more information:
<http://www.isp.pitt.edu/implicature>

Organizing Committee

Barbara Di Eugenio (Cochair), Carnegie Mellon University (dieugeni@andrew.cmu.edu); Nancy Green (Cochair), Carnegie Mellon University (nancy.green@cs.cmu.edu); Julia Bell Hirschberg, AT&T Bell Laboratories; Marilyn Walker, Mitsubishi Electric Research Laboratories; R. Michael Young, University of Pittsburgh

Computational Issues in Learning Models of Dynamical Systems

Many disciplines make use of or attempt to infer models of dynamical systems from time-series data. Speech recognition, financial forecasting, and large molecule design are examples of problems that could profit from more efficient or more accurate methods for recovering and exploiting dynamical models.

This symposium explores problems that involve searching for a function from a restricted family of functions to account for data generated by a particular physical phenomenon. We are interested in the case in which the state space is quite large, infinite or at least exponential in the size of the input. The focus is on discovering and exploiting structure in modeling dynamical systems.

The organization of the symposium reflects its multi-disciplinary scope. The symposium is organized around a set of short tutorials on nonlinear dynamics, Bayesian learning theory, and other core topics. These foundation-setting tutorials are interspersed with focused discussions on specific problems related to the issues introduced and motivated in the tutorials.

Organizing Committee

Thomas Dean, (Chair) Brown University; James Crutchfield, Berkeley; Thomas Dietterich, Oregon State University; Leslie Kaelbling, Brown University; Michael Kearns, AT&T; Melanie Mitchell, Santa Fe Institute; David Wolpert, Santa Fe Institute; Brian Williams, NASA Ames Research Center.

Machine Learning in Information Access

As the volume and importance of the information available on the Internet continues to increase, there is a growing interest in information access (otherwise known as information retrieval) in all areas of computer science. This symposium focuses on new work in the application of machine learning techniques to information access problems, such as identifying interesting pages on the world wide web, text topic classification, and email filtering.

The symposium will include overviews of relevant aspects of both machine learning and information retrieval, paper presentations discussing the use of machine learning in various information-ac-

cess tasks, and an invited talk by Rich Sutton.

There will be substantial scheduled discussion time for the development and exploration of new ideas in this area. We intend this symposium to help develop a well-defined community in this growing field.

Organizing Committee

Marti A. Hearst (Cochair), Xerox PARC; Haym Hirsh (Cochair), Rutgers University; Richard K. Belew, University of California, San Diego; Tom Mitchell, Carnegie Mellon University

Planning with Incomplete Information for Robot Problems

This symposium brings together the robotics and planning communities to focus on the common challenge of constructing autonomous systems that plan and act robustly in spite of incomplete information. Current relevant work includes reasoning with uncertainty, interleaving planning and execution, conditional nonlinear planning, deferred planning, etc.

Although the symposium will host a small number of presentations concerning relevant work, the bulk of the sessions will comprise group discussions involving all symposium participants. Such group discussions will begin with provocative presentations that provide focus for the ensuing discussion. Discussion topics include: taxonomies of incomplete information, direction of search, search space structure and representation, etc.

The symposium will also devote one afternoon session to a robot laboratory in which participants will have the opportunity to control the behavior of four real-world robots (with supplied high-level robot actions and percepts) to solve navigation problems involving incomplete information.

An extended description of the symposium and the robot laboratory are available via the World Wide Web site:

<http://logic.stanford.edu/announcement/symposium.html>

Organizing Committee

Illah Nourbakhsh (Chair), Stanford University (illah@cs.stanford.edu); Erann Gat, Jet Propulsion Laboratory (gat@aig.jpl.nasa.gov); Michael Genereth, Stanford University (genereth@cs.stanford.edu); Maria Gini, University of Minnesota (gini@cs.umn.edu); Reid Simmons, Carnegie Mellon University (reids@cs.cmu.edu)

Registration

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 **February 16, 1996**. After that period, registration will be opened up to the general membership of AAAI and other interested parties. **All registrations must be postmarked by March 8, 1996.**

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

Checks (drawn on US bank) or international money orders should be made out to AAAI. VISA, MasterCard and American Express are also accepted. Please complete the attached registration form and mail it with your fee to:

AAAI Spring Symposium Series
445 Burgess Drive
Menlo Park, CA 94025

If you are paying by credit card, you may email the form to sss@aaai.org or fax it to 415/321-4457. Registration forms are also available on AAAI's web page: <http://www.aaai.org/Symposia/Spring/1996/sssbrochure-96.html>.

Parking will be available on the Stanford campus from March 25-27 for \$15.00. Application for a parking permit is included on the attached registration form. A permit will be mailed to you with your reg-

istration receipt, along with a map and directions to the assigned lots.

Please note: **Requests for refunds must be received in writing by March 15, 1996.** A \$25.00 processing fee will be levied on all refunds granted.

When you arrive at Stanford, please pick up your complete registration packet in the lobby of Cubberley Auditorium, located in the School of Education. Registration hours will be:

Monday, March 25: 8:00 PM–5:00 PM

Tuesday, March 26: 8:00 AM–5:00 PM

Wednesday, March 27:

8:00 AM–12:00 NOON

Hotels

For your convenience, AAAI has reserved a block of rooms at the following hotels:

Symposium attendees must contact the hotels directly. Please identify yourself as an AAAI Spring Symposium Series registrant to qualify for the reduced rate.

Creskide Inn (Best Western)

3400 El Camino Real
Palo Alto, CA 94306

Phone: 415/493-2411

Fax: 415/493-6787

Marguerite shuttle pick-up: 0.5 mile

Rates: \$74 (S or D)

Reserve before 3/7/96

Holiday Inn-Palo Alto

625 El Camino Real
Palo Alto, CA 94301
Phone: 415/328-2800
or 800/874-3516
Fax: 415/327-7362

Marguerite shuttle stop nearby
Rates: \$98 (S), \$108 (D)
Reserve before: 3/8/96

Stanford Terrace Inn

531 Stanford Ave
Palo Alto, CA 94306
Phone: 415/857-0333
Fax: 415/857-0343

Marguerite shuttle stop nearby
Rates: \$84 (S), \$94 (D)
Reserve before: 2/24/96

Other Hotels

(Available only on a first-come, first served basis; all prices are subject to changes without notice):

Mermaid Inn

727 El Camino Real
Menlo Park, CA 94025
Phone: 415/323-9481 (No fax).
Rates: \$55 (S), \$66 (D)

Best Western Riviera

15 El Camino Real
Menlo Park, CA 94025
Phone: 415/321-8772
Fax: 415/321-2137
Rates: \$85 (S or D)

The Cardinal Hotel

235 Hamilton Avenue
Palo Alto, CA 94301
Phone: 415/323-5101
Fax: 415/325-6086
Marguerite shuttle stop nearby
Rates:

Hotel California

2431 Ash Street
Palo Alto, CA 94306
Phone: 415/322-7666 (No fax).

Marguerite shuttle stop nearby
Rates: \$52-\$63 (S and D)
(Continental breakfast included)

Travelodge

3255 El Camino Real
Palo Alto, CA 94306
Phone: 415/493-6340
Fax: 415/424-9535
Marguerite shuttle stop nearby
Rates: \$49 (S), \$54 (D)

Air Transportation and Car Rental

San Francisco/San Jose/Oakland Get there for less on United Airlines, the official carrier for SSS-96. Save 5% on lowest applicable fares, some restrictions apply. Save 10% on lowest unrestricted coach class fares, with 7 day advance purchase. Travel between March 22-30, 1996. Alamo Rent-A-Car is also offering special low rates with unlimited free mileage and bonus frequent flyer miles on United.

For lowest available fares on *any* airline, call Conventions in America, our official travel agency, at 1-800/929-4242 and ask for Group #428. You will also receive free flight insurance of \$100,000, and become eligible to win free travel worldwide in United's bi-monthly drawings. Outside U.S. and Canada, call 619/678-3600; fax 619/678-3699; email: FLYCIA@balboa.com. If you call United direct at 1-800/521-4041, ask for Tour Code #556NT. Alamo 1-800/732-3232, ID# 409268GR.

Disclaimer: In offering United Airlines, Alamo Rent-A-Car, the Creekside Inn (Best Western), Holiday Inn, and Stanford Terrace Inn (hereinafter referred to as "Supplier") and all other service providers for the AAAI Spring Sympo-

sium Series, the American Association for Artificial Intelligence acts only in the capacity of agent for the Supplier which is the provider of transportation or of hotel rooms. 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 assumes 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.

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.

Van

Supershuttle—24 hour van service to and from San Francisco Airport. San Francisco Airport–Palo Alto rates are: \$23.00 for one person one way; \$23.00 plus \$8.00 for two persons going to the same address. Cash and major credit cards accepted. For reservations call 415/558-8500.

Airport Connection—Van service \$20.00 one way to and from San Francisco Airport to Palo Alto. From San Jose Airport, shared ride service (no vans) is \$35.00 to Palo Alto. Cash, major credit cards, or

checks accepted. Call 415/363-1500 within California, or 800/247-7678 in other areas. White courtesy telephone available at San Francisco Airport.

Santa Clara Airporter—Van service to and from San Francisco Airport: \$17.00 one way; van service to and from San Jose Airport: \$15.00 one way. For reservations call 415/771-7710.

South Bay Shuttle—Van service to and from San Francisco or San Jose Airport. Rates are \$15.00 for one person one way. Cash and checks accepted. For reservations call 408/559-9477.

Stanford Shuttle

The Stanford University Marguerite Shuttle Bus service provides service from several points along El Camino Real, the train station, and other surrounding locations to the Stanford Oval as well as transportation around the Stanford campus.

Train

CalTrain runs between San Francisco and Palo Alto station starting at 5:15 AM with the last train leaving San Francisco at 10:00 PM (weekdays), 12:00 midnight (Friday and Saturday nights). The fare is \$7.00 round trip for same-day travel, or \$3.50 one way. For up-to-date fare information and time tables, call toll free 800/660-4287.

Registration Form—1996 AAAI Spring Symposium Series

ALL ATTENDEES MUST PREREGISTER

Please complete in full and return to AAAI, postmarked by February 16, 1996 (invited attendees), or by March 8, 1996 (general registration).

Please print or type.

FIRST NAME _____ LAST NAME _____

AFFILIATION _____

ADDRESS: _____ HOME OR BUSINESS

CITY _____ STATE _____

ZIP OR POSTAL CODE _____ COUNTRY _____

DAYTIME TELEPHONE _____ EMAIL _____

Symposium

(Please check only one)

- 1. Acquisition, Learning, and Demonstration: Automating Tasks for Users
- 2. Adaptation, Coevolution and Learning in Multiagent Systems
- 3. Artificial Intelligence in Medicine: Applications of Current Technologies
- 4. Cognitive and Computational Models of Spatial Representation
- 5. Computational Implicature
- 6. Computational Issues in Learning Models of Dynamical Systems
- 7. Machine Learning in Information Access
- 8. Planning with Incomplete Information for Robot Problems

Fee

- Member: \$ 215.00 Nonmember: \$ 275.00
- Student Member: \$ 100.00 Student nonmember: \$ 125.00
- (students must send legible proof of full-time student status)*
- Temporary Stanford University parking permit, March 25–27 (\$15.00)

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

Method of Payment *(please circle one)*

(All email and fax registrations must be accompanied by credit card information.

Prepayment is required. No PO's will be accepted.)

Check MasterCard VISA American Express

Credit card number _____

Expiration date _____

Name (as it appears on card) _____

Signature _____

Please mail completed form with your payment to

AAAI, SSS-96 • 445 Burgess Drive • Menlo Park, California 94025

Please Note: Requests for refunds must be received *in writing* by March 15, 1996.

A \$25.00 processing fee will be levied on all refunds granted. *Thank you for your registration!*

For Office Use Only

Check Number _____ Amount _____ Received _____

