AAAI 1996
Spring Symposium Series

March 25 – 27, 1996

Stanford University, California

Call for Participation

THE AMERICAN ASSOCIATION for Artificial Intelligence presents the 1996 Spring Symposium Series, to be held Monday through Wednesday, March 25-27, 1996, at Stanford University.

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 and Using Models of Dynamical Systems
- Machine Learning in Information Access
- Planning with Incomplete Information for Robot Problems

Symposia will be limited to between forty and sixty participants. Each participant will be expected to attend a single symposium. Working notes will be prepared and distributed to participants in each symposium.

A general plenary session, in which the highlights of each symposium will be presented, will be held on Tuesday, March 26, and an informal reception will be held on Monday, March 25.

In addition to invited participants, a limited number of other interested parties will be able to register in each symposium on a first-come, first-served basis. Registration will be available by January 1, 1996. To obtain registration information write to:

AAAI
45 Burgess Drive
Menlo Park, CA 94025
(sss@aaai.org).

Submission Information

Submissions for the symposia are due on October 31, 1995. Notification of acceptance will be given by November 30, 1995. Material to be included in the working notes of the symposium must be received by January 19, 1996. See the appropriate section below for specific submission requirements for each symposium.

This document is available as

http://www.aaai.org/Symposia/Spring/1996/sssparticipation-96.html

Acquisition, Learning and 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 nonprogrammers 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. Possible discussion topics for this symposium include:

Combining existing approaches: Which aspects of a task can be learned automatically and how? Can we handle with current induction techniques the iterative constructs required for tasks typical of demonstration systems? 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?

Analysis and methodology issues: What kinds of knowledge are hard to acquire and why? Can we characterize classes of tasks that users can automate easily? How can computers interact better with users in specific contexts? How much of the task should the system model and understand?

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 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 rest 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. Based on the submissions received, we will select a set of sample tasks that will be suggested to the participants to guide the preparation of the final papers and the discussions during the symposium.

Submission Information

Potential participants should submit a short paper (two to eight pages) with a crisp description of open questions in interactive task automation, solutions presented by a specific approach, or lessons learned from a research project. Send PostScript or hard-copy submissions to Yolanda Gil, Information Sciences Institute / USC, 4676 Admiralty Way, Marina del Rey, CA 90045. (310) 822-1511 gil@isi.edu

Organizing Committee

William P. Birmingham, Univ. of Michigan at Ann Arbor; Allen Cypher, Apple Computer; Yolanda Gil (chair), USC/ISI, gil@isi.edu; Mike Pazzani, Univ. of California at Irvine.

Adaptation, Coevolution and Learning in Multiagent Systems

Coordination of multiple agents is essential for the viability of systems in which these agents share resources. Most of the research in distributed artificial intelligence have concentrated on developing coordination strategies off-line. These pre-fabricated strategies can quickly become inadequate if the system designer's world model is incomplete or incorrect or if the environment can change dynamically. 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.

The goal of this symposium is to focus on research that will address unique requirements for agents learning and adapting to work with other agents. Recognizing the applicability and limitations of current machine learning research as applied to multiagent problems as well as developing new learning and adaptation mechanisms particularly targeted to these class of problems will be of particular relevance to this symposium. We would particularly welcome new insights into this class of problems from other related disciplines, and thus would like to emphasize the inter-disciplinary nature of the symposium. Among others, papers of the following kind are welcome:

- 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.
- Coevolving multiple agents with similar or opposing interests.

- Interdisciplinary research from fields like organizational theory, game theory, psychology, sociology, economics, etc.

Submission Information

The symposium will consist of individual presentations, invited talks, break-out group discussions, panels, and video sessions. Participants interested in presenting their work should send an extended abstract (12-point font, 5 pages or less) describing work in progress or completed work. Other interested participants should send a one-page description of their research interests with a short list of relevant publications. We would like to encourage submissions for video presentations and for working systems that can be used for hands-on demonstration during the symposium. We will accept only email submissions of PostScript files. Submissions should be sent to sandip@kolkata.mcs.utulsa.edu. Further information on this symposium can be found on the web at http://euler.mcs.utulsa.edu/~sandip/ss.html.

Organizing Committee

John J. Grefenstette, Naval Research Laboratory; Tad Hogg, Xerox PARC; Michael N. Huhns, MCC; Jeff Rosenschein, The Hebrew University; Sandip Sen (Chair), University of Tulsa, sandip@kolkata.mcs.utulsa.edu; Devika Subramanian, Cornell University.

Artificial Intelligence in Medicine: Applications of Current Technologies

Artificial intelligence in medicine (AIM) researchers have developed several technologies over the course of the past three decades. Many of these technologies were considerably ahead of their time and were not successfully exploited. The electronic information delivery and additional automation that they required has only recently begun to be implemented on a large scale. In the perspective of these recent developments does the earlier AIM technology have greater relevance or utility? What further capabilities do current advances in AIM research provide? In addition to addressing these questions, participants in the symposium will also be asked to present state-of-the-art AIM systems and how they contribute to the various tasks of modern health care delivery including: practice guideline development and execution, quality assurance, knowledge-discovery, and automated control. On-line clinical data sets will be made available, on demand, to interested participants.

Submission Information

Potential participants are invited to submit abstracts no longer than 2 pages (< 1200 words) by October 31, 1995. The abstracts should outline methodology and emphasize how the methodology has been applied. The abstracts may be sent in ASCII or RTF formats to aim-96@medg.lcs.mit.edu. Authors of accepted abstracts will be asked to submit a working paper by January 19, 1996. They will also be asked to prepare either a poster or an oral presentation.

Submissions will *only* be accepted in electronic format.

For further information, please contact the organizing committee at the address below or (preferably) via email at: aim-96@medg.lcs.mit.edu. Up to date information regarding the symposium can be found on the Web at http://www.medg.lcs.mit.edu/projects/aim/aim-96.html

Isaac S. Kohane, MD, Cochair
AIM-96
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Organizing Committee

Isaac Kohane, Children's Hospital and Harvard Medical School; Ramesh Patil, 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 multimedia, 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:

- 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.

Contributions are invited on the computational and cognitive modeling of spatial representation in any problem domain, in particular, we are keen to encourage contributions from researchers interested in spatial aspects of: the 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.

For further information see http://www.dcs.aber.ac.uk/~plo/AAAI_SSS

Submission Information

Potential attendees should submit either (1) a full technical paper (not exceeding 5000 words), or (2) a brief statement of interest preferably a summary of an ongoing research effort (not exceeding 1000 words). Send five copies by October 31, 1995 to: Patrick Olivier Centre for Intelligent Systems Department of Computer Science University of Wales, Aberystwyth Dyfed SY23 3DB United Kingdom

Organizing Committee

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

Computational Implicature

Computational Approaches to Interpreting and Generating Conversational Implicature

Since the 1980s, several computational and formal approaches have been developed to address pragmatic phenomena with the properties of Gricean conversational implicatures, occurring in nonfigurative 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? Would it be useful to analyze other discourse phenomena as types of conversational implicature? What is the role of linguistic (e.g., prosodic or pragmatic) constraints versus background knowledge?

- How successful have recent developments in discourse processing such as use of non-monotonic reasoning, abduction, and planning/plan inference been in modeling conversational implicature? How well do these models address related problems of intention, mutual belief, cancelation, and reinforceability? How well do they address both generation and interpretation? How should they be evaluated?

- Most models have focused on single classes of conversational implicature. What problems would arise in integrating them? Are they scalable?

- What problems in conversational implicature should be addressed in the immediate future? E.g., how can corpora be used? Do generation and interpretation pose different problems?

Submission Information

Organizing Committee

Barbara Di Eugenio (cochair), Carnegie Mellon University, dieugeni@lcl.cmu.edu; Nancy Green (co-chair), 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. Speech recognition, alignments and classification in molecular biology, and packet routing in communication networks are examples of problems that could profit from more efficient or more accurate methods for recovering and exploiting dynamical models. This workshop will explore problems that involve searching for a function from a restricted family of functions to account for data generated by a particular physical phenomenon (a form of system identification) and searching for a function with a particular input/output behavior (a form of automatic programming). 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 of the workshop is on sharing insights on the structure of dynamical systems and on investigating methods for using such structure to provide computational advantage.

Submission Information

We invite extended abstracts (maximum of five pages) addressing technical issues or proposing specific methods for using or learning models of complex dynamical systems. Authors are strongly encouraged to read a *long version* of this document available on the web: http://www.cs.brown. edu/research/ai/dynamics/symposium/cfp.html

Electronic submissions are strongly encouraged and should be sent to spring@cs.brown.edu. Paper submissions should be sent to:

Thomas Dean
Department of Computer Science
Brown University
Box 1910
Providence, RI 02912

Organizing Committee

James Crutchfield, Berkeley; Thomas Dean, Brown University; 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 in all areas of computer science. There has been substantial recent work on the application of machine learning techniques (e.g., inductive learning, genetic algorithms, and neural networks) to information access problems. For example, machine learning has been used to improve weights on terms for relevance feedback, to learn rules for filtering netnews articles, for automatic identification of hypertext links, and for text topic identification.

Thus far, though, there has been no professional gathering devoted to investigating the use of machine learning techniques to improve access to textual information. The goal of this symposium is to provide the much-needed opportunity to develop new ideas and a well-defined community in this growing field.

For this symposium, authors are asked to submit papers concerning the use of machine learning to enable or improve users' access to online information. Machine Learning techniques are especially appropriate for, but not limited to, the following information access tasks: Text categorization and segmentation routing/filtering relevance feedback clustering user preferences/usage pattern analysis browsing multi-source integration

Papers can describe the use of machine learning on one or more of these tasks, or the development of new machine-learning algorithms tailored to information access tasks, or a comparison of learning algorithms vs. no learning on a given task. Although we expect that all accepted papers will provide objective evaluations of the main contributions of the described work (the use of standard test collections is encouraged, where applicable), this is an area with a lot of room for new ideas, and we would like this symposium to serve as an appropriate medium for publication of such work.

Authors should make certain that the learning techniques they describe address the special issues that are associated with problems in information access. For example, because there are so many words in a typical text collection, ML problems in IA often involve a very large number $>(10^5 - 10^6)$ of features. Characteristics of the available relevance assessments also make standard methods of evaluation problematic.

Submission Information

The symposium will consist of invited talks, paper presentations, and discussion sessions. Researchers from the information retrieval community are especially encouraged to participate. Interested participants should submit a short paper (5-8 pages maximum) addressing one or more of the research issues described above. If submitting via email, send either a URL pointing to a postscript version of the paper or the PostScript copy itself to

mlia@parc.xerox.com.

Or, send 5 hard copies to

Marti Hearst
Xerox PARC
3333 Coyote Hill Rd.
Palo Alto, CA 94304
Telephone: (415) 812-4742
Fax: (415) 812-4374

For further information, a web page for this symposium is located at http://www.xerox.com/PARC/mlia/mlia.html

Organizing Committee

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

Planning with Incomplete Information for Robot Problems

As the planning and robotics communities have begun addressing more complex, real-world problems, it has become apparent that planners usually do not have complete information about all aspects of a target domain. Incomplete information comes in many forms, including incomplete information about the initial conditions, the effects of actions, the discerning power of perceptual systems, etc.

This symposium brings together the robotics and planning communities to focus on the common challenge of constructing 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.

The symposium is designed with two goals in mind, one ground-level goal and one meta goal that also serves as a reference point for future discussions: 1.) Present and discuss successful solution techniques for specific types of incomplete information. 2.) Construct a taxonomy of the types of incomplete information faced by real-world systems and address underlying definitional questions; e.g., how do we define "completeness" for interleaving systems?

To provide participants with a common experience as a point of discussion, there will also be a special laboratory session in which symposium participants will solve a high level problem on four actual robots equipped with reliable low-level navigation systems.

Further information will be forthcoming. Monitor our Web site: http://logic.stanford.edu /announcement/symposium.html.

Submission Information

If you wish to present specific material, submit up to 12 pages (12- point, 1" margins). Others interested in participating should submit an extended abstract (3 pages max.) in one of three forms:

1) a position paper addressing the topics above, 2) a research summary describing successful, relevant work, or 3) a description of specific issues and questions that you feel should be discussed in this forum.

Financial assistance is available for student participation. Please contact the chair for more information.

Organizing Committee

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