

AAAI 1997 Fall Symposium Series Call for Participation

*November 8 – 10, 1997
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
<http://www.aaai.org/Symposia/symposia.html>

The American Association for Artificial Intelligence is pleased to present its 1997 Fall Symposium Series, to be held Saturday through Monday, November 8-10, 1997 at the Massachusetts Institute of Technology. The topics of the seven symposia in the 1997 Fall Symposium Series are:

- Communicative Action in Humans and Machines
- Context in Knowledge Representation (KR) and Natural Language (NL)
- Frontiers in Soft Computing and Decision Systems
- ITS Authoring Tools
- Model-Directed Autonomous Systems
- Reasoning with Diagrammatic Representations II
- Socially Intelligent Agents

An informal reception will be held on Saturday, November 8. A general plenary session, in which the highlights of each symposium will be presented, will be held on Sunday, November 9.

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. In addition to

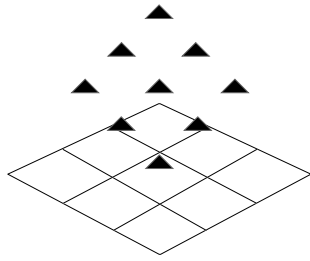
invited participants, a limited number of other interested parties will be able to register in each symposium on a first-come, first-served basis. Registration information will be available in early August.

To obtain registration information, write to:
AAAI, Fall Symposium Series
445 Burgess Drive
Menlo Park, CA 94025-3442
(415) 328-3123 • (415) 321-4457 (fax)
fss@aaai.org
<http://www.aaai.org/Symposia/symposia.html>

Submission Dates

- Submissions for the symposia are due on April 15, 1997
- Notification of acceptance will be given by May 15, 1997
- Material to be included in the working notes of the symposium must be received by August 22, 1997.

See the appropriate section below for specific submission requirements for each symposium.



Communicative Action in Humans and Machines

Since at least the 1950s when Austin told us how we do things with words, it has been recognized that language performance can be fruitfully viewed as action. There has subsequently been a range of work reasoning about the action involved in the spoken language communication process (speech acts), using both formal and empirical methods. Views of communication as action have also been influential in reasoning about machine communication in multiprocessor or distributed systems. Moreover, many human-computer interactions have also been described as actions similar to Austin and Searle's speech acts. In recent years there has been an increased emphasis on theories of action covering other aspects of the communication process, including other modalities than speech and other aspects of dialogue than the illocutionary acts associated with the utterance of sentences. There has also been much subsequent work in philosophy, logic, linguistics, and AI on the nature of actions, which can help shed light on communicative action. We seek to bring together researchers from a variety of perspectives on action in communication, to discuss these issues, including the current state of the art and assess prospects for synergy and future applications.

The symposium will focus on the following themes:

- Theories of action and agency to support representing and reasoning about communicative action.
- Theories of communicative action including other modalities than speech, and nontraditional levels of action.
- Empirical investigation of communicative action.
- Use of communicative action in applications.
- Relations between the communicative action of differing types of communicators (humans, machines, and mixtures of the two).
- Relations between communicative action and other kinds of physical and mental action (e.g., reasoning and learning).

Submission Information

Potential participants should submit each of the following:

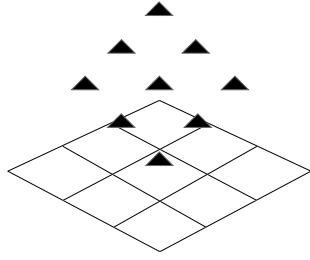
- Name, physical and electronic addresses, also fax number and WWW URL if available. If several people working together (e.g. collaborating authors) wish to attend, each should submit separately, but should also name the others in the group.
- Either an extended abstract of a research paper to be presented at the symposium, or a brief statement describing why you wish to attend and how you believe that you can contribute to the symposium (describe your own related work and/or specific ques-

tions and issues that you feel should be addressed in the symposium). Abstracts should be no more than 10 (12pt) pages (exclusive of references) in plain text or postscript format.

- (optional) Bibliography entries to related papers (preferably in html and/or bibtex format), and links to URLs related to the theme of the symposium. These will be made publicly accessible via the symposium WWW page: <http://www.cs.umd.edu/users/traum/CA/> Please send your submissions via e-mail to traum@cs.umd.edu

Organizing Committee

David Traum (chair), University of Maryland; Phil Cohen, Oregon Graduate Institute (pcohen@cse.ogi.edu); Mark Maybury, Mitre Corporation (maybury@linus.mitre.org); Johanna Moore, University of Pittsburgh (jmoore@cs.pitt.edu); David Sadek, France Telecom (sadek@lannion.cnet.fr); Candace Sidner, Lotus Development Corp. (Candy_Sidner/CAM/Lotus.LOTUS@crd.lotus.com).



Context in Knowledge Representation and Natural Language

Context plays a crucial role in human knowledge representation, reasoning, natural language processing, and perception. Thus, computer systems which act “intelligently” need the ability to represent, utilize and reason about contexts.

Within the AI community, high hopes were set for ways in which context could help reasoning systems. A number of projects aimed at incorporating the notion of context into intelligent KR and NL computer systems were initiated. However, this task turned out to be more difficult than originally anticipated. The accepted view now seems to be that a better understanding of the phenomenon of context and its general mathematical and computational properties are needed before such systems can fully cash in on the “magic of context.”

Making progress in this direction will require an interdisciplinary collaboration. Other academic disciplines, such as linguistics, philosophy and anthropology, have also studied various aspects of the context phenomena. However, their theories usually lie embedded in the analysis of specific linguistic constructions, so applying them in AI systems is a research challenge in and of itself.

This symposium aims at bringing together researchers in AI, linguistics, philosophy, cognitive science, and other related fields who are interested in theoretical and practical aspects of context.

Some technical issues of interest are:

- What are some roles of context in KR and NL systems, particularly in the process of reasoning? We are primarily interested in formal, computable theories addressing the roles of context.
- Is it possible to decrease the computational complexity of a formal system by the means of introducing context?
- What is context?
- Is context an inherent characteristic of natural language that ultimately decides the formal power of natural language?
- How can we represent relations between contexts? How can a computer system automatically infer the relation between some given set of contexts?
- Is decontextualization possible/necessary?
- How can information obtained in one context be utilized in another, possibly unanticipated, context?
- Which aspects of context or which contexts result in refined, more general, and different interpretations of natural language?
- Do the existing theories of context in KR offer insights or solutions into the context dependency of natural language?
- Do natural language theories which involve context

offer solutions to the problems which have motivated the development of theories of context in KR?

- Which aspects of context can be handled in a real-life application such as managing a large knowledge base or processing large volumes of text?

This list is not exhaustive and papers on any topic concerning context in KR or NL are welcome.

Participants: This is a double-size, about 80-100 participant symposium.

Submission Information

Hard copy submissions should be no longer than 12 pages in a 12 point font. Please send 6 hard copies of your paper to:

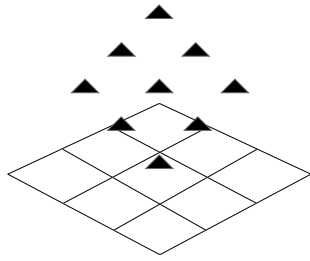
Context Fall Symposium

American Association for Artificial Intelligence
445 Burgess Drive Menlo Park, CA 94025-3442

Additionally: Please place the postscript version of your paper in the “-pub/iwanska/context” directory via the anonymous ftp at: ftp.cs.wayne.edu.

Organizing Committee

Sasa Buvac (cochair), Stanford University (buvac@cs.stanford.edu); Lucja Iwanska (cochair), Wayne State University (lucja@cs.wayne.edu); Kees van Deemter, Philips Electronics (deemter@natlab.research.philips.com); Fausto Giunchiglia, IRST & Università di Trento (fausto@irst.itc.it); R.V. Guha, Apple Computers, Inc. (guha@taurus.apple.com); Pat Hayes, University of Illinois (phayes@picayune.coginst.uwf.edu); Graeme Hirst, University of Toronto (gh@cs.toronto.edu); John McCarthy, Stanford University (jmc@cs.stanford.edu); Stuart Shapiro, SUNY Buffalo (shapiro@cs.buffalo.edu); Rich Thomason, University of Pittsburgh (thomason@isp.pitt.edu); Wlodek Zadrozny, IBM TJ Watson Research Center (wlodcz@watson.ibm.com).



Frontiers in Soft Computing and Decision Systems

An important direction for soft computing is its application to decision analysis and decision systems. While fuzzy logic has a proven and vital role in control systems, applications of soft computing to management decision making may be equally significant. An important next step is to discuss real problems in decision analysis that are faced by organizations today and identify the best roles for soft computing.

Topics may include, but are not limited to, the following:

- The need for methods and tools to deal with high levels of complexity, organization and manipulation of information, and the limitations in the application of formal methods
- Strengths and limitations of methods such as expert systems and other intelligent technologies
- Integration and interface of humans as components of decision systems
- The nature and specific challenges in application areas such as financial planning and project management
- Challenges in decision systems such as incorporation of learning, dynamic knowledge bases, integration of multiple methods, and affordable tools that are effective for complex systems
- Prospects for application of emerging concepts such as granularization and computing with words.

This symposium will be a mixture of lectures, small group work, and roundtable discussions. Researchers and developers from industry, business, and government are invited to participate as well as those in fuzzy and traditional AI areas. Participants who might help find ways to transfer successful techniques in fuzzy control systems and engineering to applications in management decision making are encouraged to attend. The results from the working groups and the contributed papers will be published and could form a road map for future work at the frontiers of soft computing and decision analysis.

Submission Information

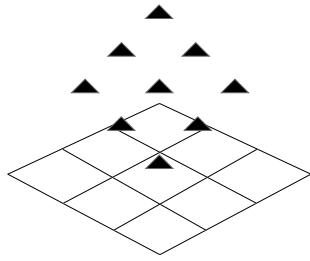
Paper submissions should not exceed ten single-spaced pages. Those wishing to attend without contributing a paper should submit a 1-2 page statement of background and interest. Submissions and questions should be directed to

Larry Medsker
Department of Computer Science and Information Systems
American University
Washington, DC 20016-8116
(202) 885-3306
medsker@american.edu

Further information can be found at www.cas.american.edu/~medsker/fss97.html.

Organizing Committee

Larry Medsker (chair); Ron Yager, Iona College (yager@Panix.com); Lotfi Zadeh, University of California, Berkeley (zadeh@cs.berkeley.edu); Maria Zemankova, National Science Foundation (mzemanko@nsf.gov); Hans Zimmermann, RWTH Aachen (zi@buggi.or.rwth-aachen.de).



ITS Authoring Tools

The attempt to create “smart” computer tutors by combining artificial intelligence and computer-based training resulted in the field called intelligent tutoring systems (ITSs). ITSs are typically separated into four interconnecting parts: the user interface, expert model, student model, and instructional module. Not only do ITSs use this paradigm, but the authoring tools designed to help construct such systems generally have followed suit. However, when the computer coding is complete for an ITS, there is often much overlap between the four components. There may be other ways to approach the design and development of ITS authoring tools.

Commercial authoring tools for computer-based training such as Authorware and IconAuthor have been available for almost a decade. In the last few years there have been a number of authoring tools developed specifically for ITSs, although they are not yet available commercially. This symposium proposes to bring together researchers in authoring tools for ITSs to compare existing authoring tools and their approaches and methods for capturing and representing expert knowledge, student modeling, and instructional strategies.

The first day of the symposium will be an exercise where each of a few representative ITS authoring tools will show the development of a very simple tutor (such as tutoring how to find the area of a triangle or use a cellular phone). Each tool will be used to develop a tutor for the same domain so that each tool’s strengths and weaknesses can be brought out and compared. The second day of the symposium will be a series of short talks on each tool’s approach to expert knowledge acquisition and representation, student modeling, and instructional strategies. The end of the second day will be a discussion of the similarities and differences among the tools (a chart or grid of characteristics could be developed). The final day will be a brainstorming session where we will consider other possible paradigms for ITS authoring tools by addressing what works and what doesn’t work about the current ITS authoring tools.

Submission Information

Attendees to this symposium should have some expertise or experience in the authoring of intelligent tutoring systems or computer-based instruction. Potential participants are invited to submit a paper from 2 to 20 pages on the authoring of computer-based tutoring systems, especially existing ITS authoring tools. The paper can be a system description, the development methodology of an ITS, or a write-up of experience with authoring ITSs and/or ITS authoring tools. Selected submissions will be asked to demonstrate their authoring tools.

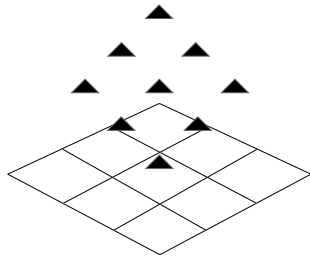
All submissions should be in electronic form, either a Word document or ASCII text, and sent to carol@meitx.com or on a 3 1/2 inch floppy to:

Carol Redfield
Mei Technology Corporation
8930 Fourwinds Dr. #450
San Antonio, TX 78239.

The papers should start with the title and authors names and contact information.

Organizing Committee

Carol Luckhardt Redfield (chair), Mei Technology Corporation; Benjamin Bell, Columbia University (benjamin_bell@columbia.edu); Henry Half, Mei Technology Corporation (henry@meitx.com); Allen Munro, USC Behavioral Technology Laboratories (munro@usc.edu); Tom Murray, University of Massachusetts (tmurray@cs.umass.edu).



Model-Directed Autonomous Systems

The information gathering capabilities of the internet and smaller networked computational systems are offering new testbeds for embedded autonomous agents, from networked building energy systems and reconfigurable traffic systems to autonomous space probes, that provide a driving force for profound social and economic change. Physically these agents involve a large distributed array of simple sensors, actuators and processors. Functionally their attention is directed inward toward maintaining their internal structure, although like traditional robots they may also attend to exploring and manipulating their external environment. Controlling such systems is made difficult by the need to reason through a complex set of system-wide interactions, the one of a kind nature of the testbeds, the harshness of their environment, and the need to coordinate a broad range of discrete, continuous, and software behaviors.

These difficulties are being addressed by a new family of agent architectures, called model-directed autonomous systems, that use a compositional, declarative model to achieve the desired functions. Given the wide range of behaviors exhibited by such systems, these autonomous agents need a rich modeling language and diverse reasoning methods that go well beyond those offered by any single AI sub-discipline. This requires modeling formalisms for state change and interaction that unify features of Markov processes, qualitative state diagrams, concurrent transition systems, plan operators, phase spaces, configuration spaces, belief nets, qualitative algebras and differential equations. The goal of this symposium is to bring together a diverse set of researchers in order to explore the concept of model-directed autonomous systems, from fundamental AI insights to significant applications.

Topics include:

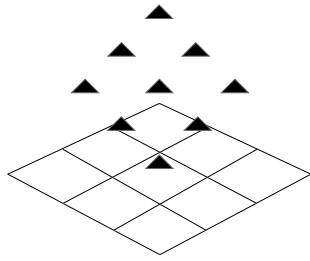
- Model-directed state identification and goal tracking
- Self-modeling and active experimentation
- Model-directed reactive and projective planning
- Combining procedural and model-directed executives
- Decomposition of distributed autonomous systems
- Hybrid discrete/continuous systems
- Modeling languages
- Model acquisition, verification and testing

Submission Information

Potential participants should submit a short paper (up to 5-8 pages) describing work in progress, completed work, positions, comparisons, testbeds, tutorials, discussion topics or potential panels. Other interested participants should submit a one to two page description of their work or interest in this area (including a short list of related publications) or specific questions and issues that they feel should be addressed. Papers should be submitted electronically via anonymous ftp to [ic-ftp.arc.nasa.gov/pub/incoming/aaai97-fs/](ftp://ic-ftp.arc.nasa.gov/pub/incoming/aaai97-fs/), and should be in ascii or PostScript. Submissions must include title, author's name(s), affiliation, mailing address, e-mail address, phone and fax numbers. Invited participants will be asked to submit PostScript versions of their papers. Further information will be posted on a WWW home page for this symposium at:
<http://www.ic.arc.nasa.gov/ic/workshops/aaai97-fs.html>.

Organizing Committee

B. Williams (cochair), NASA Ames Research Center, (williams@ptolemy.arc.nasa.gov); P. Nayak (cochair), NASA Ames Research Center, (nayak@ptolemy.arc.nasa.gov); L. Kaelbling, Brown University (lpk@cs.brown.edu); R. Simmons, Carnegie Mellon University (reids@cs.cmu.edu); F. Zhao, Ohio State University (fz@cis.ohio-state.edu).



Reasoning with Diagrammatic Representations II

Diagrammatic representations and reasoning (DR) are pervasive in many human endeavors. Understanding and modeling the facility that human beings have in DR could be of great benefit, for instance, in terms of computational efficiency through explicit representation, improved human-machine interfacing, and the development of an artificially intelligent agent that interacts with its environment as fluently as a naturally intelligent agent now does.

We define diagrammatic representations as those that analogically model the semantics of a problem domain and diagrammatic reasoning as the process by which we make inferences from such representations. We believe the following broad issues are central to DR:

- Cognitive theories of imagery and imaginal reasoning
- Formal theories of DR
- Computational models of DR
- Synergy between cognitive theories, formal theories, and computational models of DR
- Application of DR in AI, logic, human-machine interfacing, visual languages, information visualization, etc.

The explosion of graphical and visual information has made research in DR of paramount importance. The prevalence of graphical user interfaces, the burgeoning of visual languages, the rapid growth of geographic and molecular structure databases, and the massive graphical content of the World Wide Web exemplify the urgency of this research. This symposium, a sequel to the 1992 AAAI Symposium on Reasoning with Diagrammatic Representations, is in response to that urgency. Its intent is to consolidate research efforts since the original and provide a forum in which to disseminate recent results and initiate new research.

Submission Information

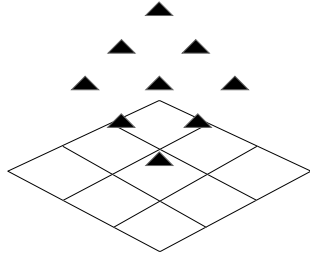
Potential participants are requested to submit either a full technical paper (not exceeding 5000 words), or a brief statement of interest (not exceeding 1000 words), preferably as an ASCII or PostScript file. Authors of accepted papers may be asked to prepare oral presentations. Others may be invited to comment on presented work or to serve on a panel. We would also like to organize panel discussions on fundamental issues/questions about DR. We invite position papers that state one or more issues/questions and take a stand on them supported by cogent arguments. Accepted papers of this kind will become the focus of panels. Submit electronically, saving files under authors first initial and last name, by anonymous ftp to morpheus.hartford.edu (cd to DRII). In lieu of electronic submission, hardcopy submissions (3 copies) should be sent to:

Michael Anderson, chair
Reasoning with Diagrammatic Representations II
Computer Science Department
University of Hartford
200 Bloomfield Avenue
West Hartford, CT 06117
Phone:(860)768-4516, Fax:(860)768-5244
Email: anderson@morpheus.hartford.edu

All submissions should be accompanied by an email message to the chair specifying paper title, author(s) name(s), date sent, and file name (when appropriate). Acknowledgment will be sent upon receipt of the submission. Further information regarding the symposium can be found at <http://morpheus.hartford.edu/DRII>.

Organizing Committee

Michael Anderson (chair), University of Hartford; Gerard Allwein, Indiana University (gtall@phil.indiana.edu); B. Chandrasekaran, The Ohio State University (chandra@cis.ohio-state.edu); Janice Glasgow, Queen's University (janice@qucis.queensu.ca); Vinod Goel, York University (vgoel@yorku.ca); Mary Hegarty, University of California at Santa Barbara (hegarty@condor.psych.ucsb.edu); Yumi Iwasaki, Stanford University (iwasaki@sumex-aim.stanford.edu); N. Hari Narayanan, Auburn University (narayan@eng.auburn.edu); Patrick Olivier, University of Wales (plo@aber.ac.uk); Sun-Joo Shin, University of Notre Dame (sun-joo.shin.3@nd.edu).



Socially Intelligent Agents

This symposium aims to focus on the issue of social expertise which has been discussed so far in different research areas like psychology, sociology, biology, artificial intelligence and robotics. In particular, we wish to address the origins and development of social expertise with respect to the concrete realization of an artificial system. This includes both the external behavior and the internal cognitive and motivational abilities of an agent. The concepts discussed should include both software and hardware agents, in both natural and synthetic environments. The discussions focus on cross-technological concepts (excluding those restricted to a specific hardware or software technology). More information about the symposium can be found at <http://arti.vub.ac.be/~kerstin/aaai-social.html>.

The first day of the symposium is intended to give an overview to "socially intelligent agent" approaches from different scientific fields. Relevant topics are e.g. development and learning of social expertise, the role of the individual (personality, character, motivation, cognitive aspects), modalities of interaction, social roles and groups dynamics.

A social interaction game is planned for the second day. Heterogeneous groups with humans and software agents will have to solve cooperatively a pre-given task. The game is supposed to be a) a first step towards the development of a methodology and contest for testing social expertise of artificial agents, and b) an opportunity for human participants to study and to learn strategies of social interaction "from within", i.e. by being part of the social interaction game. The conditions and rules of the contest will be described in the forthcoming Call for Contest Participation, which will be out by the end of January 1997. The afternoon of the second day is planned for the evaluation of the interaction game. The third day is intended for discussions, summary, and an outlook on the future of socially intelligent agents.

Anybody who would like to take part in the decision process of setting up the social interaction game is welcome to join the discussion and contact the address below!

Submission Information

Potential participants should send a short text describing why they wish to attend, and in what way they would like to contribute, giving pointers to work they have been doing in the field of interest. Participants will have an opportunity to contribute to the working notes.

Please send contributions by fax or e-mail (ascii) to:
Kerstin Dautenhahn, chair

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Vrije Universiteit Brussel (VUB)
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Organizing Committee

Michel Aube, Universite de Sherbrooke, Canada; Joseph Bates, Carnegie Mellon University, USA; Kerstin Dautenhahn (co-chair), VUB AI Lab, Belgium and University of Reading, UK; Philippe Gaussier, ENSEA, France; Judith Masthoff (co-chair), Institute for Perception Research, The Netherlands; Chisato Numaoka (co-chair), Sony Computer Science Laboratory, Paris, France; Aaron Sloman, University of Birmingham, UK.