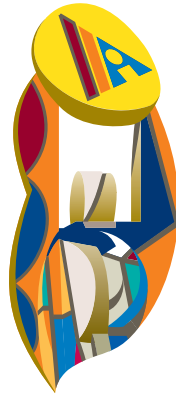


# Nineteenth National Conference on Artificial Intelligence



## Workshop Program

July 25–26, 2004

San Jose, California

[www.aaai.org](http://www.aaai.org)

*Sponsored by  
the*

American Association for Artificial Intelligence  
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650-328-3123

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[workshops04@aaai.org](mailto:workshops04@aaai.org)

<http://www.aaai.org>

## Deadlines

- March 12: Submissions due
- April 16: Notification of acceptance
- May 7: Camera-ready copy due to organizers
- May 24: Camera-ready copy due to AAAI
- July 25-26: AAAI-04 Workshop Program

**A**AAI is pleased to present the AAAI-04 Workshop Program. Workshops will be held Sunday and Monday, June 25-26, 2004 (unless otherwise noted) at the San Jose McEnergy Convention Center and the adjacent headquarter hotel in San Jose, California. Exact locations and dates for the workshops will be determined in early spring. The AAAI-04 workshop program includes 16 workshops covering a wide range of topics in artificial intelligence. Workshops are one day unless noted otherwise in the individual description. Each workshop is limited to approximately 25 to 65 participants. Participation at these workshops is by invitation from the workshop organizers. Workshops are included in the AAAI-04 technical registration, and registration information will be mailed directly to all invited participants. All workshop participants must preregister for the AAAI-04 technical conference, and must indicate which workshop(s) they will be attending. Workshop working notes will be distributed onsite for participants only, and may be available after the conference as technical reports.

## Submission Requirements

Submission requirements vary for each workshop, but the key deadlines are uniform for all. Submissions for all workshops are due to the organizers on March 12, 2004. Workshop organizers will notify submitters of acceptance by April 16, 2004. Camera-ready copy is due back to workshop organizers by May 7, 2004 (working notes) and to AAAI by May 24, 2004. Please mail your submissions directly to the chair of the individual workshop according to their directions. Do not mail submissions to AAAI. For further information about a workshop, please contact the chair of that workshop.

## Formats

Many workshops request or require the AAAI two-column format. Links to styles, macros, and guidelines for this format are located at [www.aaai.org/Publications/instructions.html](http://www.aaai.org/Publications/instructions.html)  
AAAI Workshop Chair  
Milos Hauskrecht  
[milos@cs.pitt.edu](mailto:milos@cs.pitt.edu)

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The amount of information that is available in the form of unstructured and semistructured documents keeps increasing at an unprecedented rate. Even though these terabytes of text contain invaluable information for virtually every domain of activity, the existing tools for accessing and exploiting this data fall short of users' needs, thus preventing the effective use of these rich information sources.

Recent years have brought significant interest and progress in developing techniques for the automatic text extraction and mining (ATEM). ATEM is an extremely active area of research that lies at the intersection of diverse fields such as information extraction, text mining, machine learning, data mining, link analysis, information retrieval, natural language processing, and information integration. The purpose of this workshop is to stimulate the free exchange of ideas among researchers and practitioners from these communities, so that they can discuss and debate recent results and open problems.

## Topics

The workshop's topics include, but are not limited to, applying machine learning and data mining to:

- Text extraction and mining
- Link analysis and relationship discovery within text corpora
- Data cleaning and record linkage
- Automated ontology acquisition

Of particular interest are "provoking" papers raising questions, such as "Is parsing necessary for high-quality information extraction?" "Are ontologies really useful for ATEM?" or "Is domain-independent ATEM doable?"

## Format

The workshop will consist of full-paper and short-paper sessions, an invited presentation, and a panel discussion on lessons learned and future trends.

## Attendance and Submission

The workshop is aimed at researchers in the adaptive information extraction community, but we also expect a strong presence from fields such as text mining, information integration, and ontology learning. The planned workshop attendance is about 30 people. We accept three types of submissions: long, short, and "research statement" papers (6, 3, and 1 pages, respectively). The papers must be submitted via e-mail to [ion.muslea@sri.com](mailto:ion.muslea@sri.com).

## Committee

Ion Muslea (chair), SRI International ([ion.muslea@sri.com](mailto:ion.muslea@sri.com)); Mark Craven, University of Wisconsin Madison ([craven@biostat.wisc.edu](mailto:craven@biostat.wisc.edu)); Fabio Ciravegna, University of Sheffield, ([F.Ciravegna@dcs.shef.ac.uk](mailto:F.Ciravegna@dcs.shef.ac.uk)); Nicholas Kushmerick, University College Dublin ([nick@ucd.ie](mailto:nick@ucd.ie)); Raymond Mooney, University of Texas Austin ([mooney@cs.utexas.edu](mailto:mooney@cs.utexas.edu)); Ellen Riloff, University of Utah ([riloff@cs.utah.edu](mailto:riloff@cs.utah.edu))

## Additional Information

[www.ai.sri.com/~muslea/ATEM-04.html](http://www.ai.sri.com/~muslea/ATEM-04.html)

Agent organizations are an emergent area of application of MAS that requires interdisciplinary research approaches at different levels of abstraction. Agent organizations demand the integration of organizational and individual perspectives, the dynamic adaptation of models to organizational and environmental changes, and rely for a great extent on the notion of openness and heterogeneity of MAS. Practical applications of agents to organizational modeling are being widely developed but formal theories are needed to describe interaction and organizational structure. Furthermore, it is necessary to get a closer look at the applicability of insights and theories from organization sciences to the development of agent organizations.

## Topics

- Engineering organizational coordination
- Application of organizational theory to MAS
- Modeling multi-agent organizations
- Social aspects of MAS
- Organization design, monitoring, and adaptation
- Practical application examples for (aspects of) agent-organization systems
- Applications of agent organizations to knowledge management, CSCW, workflow, etc.
- Implementation and tools for agent organizations
- Dynamic, adaptive and emergent organizational structures and dynamics
- Communication and interaction in agent organizations
- Scaling and control issues in agent organizations
- Simulation, analysis and verification of dynamics of multi-agent organizations
- Human-computer interaction in agent organizations

## Format

This one-day workshop will combine an invited talk with paper presentations, and ample time for general and/or group discussions, between the AI, agents and organizational research communities. To ensure a creative atmosphere and encourage interaction, attendance will be limited to 40 participants. Therefore, if you wish to attend but are not submitting a paper, please submit a one-page statement of interest by the submission deadline.

## Submissions

Submissions may discuss work in any stage of development, from positioning papers to finished work. Submissions should not exceed 8 pages, and be formatted using standard AAAI guidelines. We only accept electronic submissions, preferably in PDF format. Submissions and inquiries should be sent to:

Virginia Dignum  
University of Utrecht  
Information Science Group  
P.O. Box 80089  
3508 TB Utrecht  
The Netherlands  
E-mail: [virginia@cs.uu.nl](mailto:virginia@cs.uu.nl)  
Telephone: ++31 (0) 30 253 9492  
Fax: ++31 (0) 30 351 3791

Depending on the quality of submissions, we will pursue the publication of a post workshop volume, either as a book or special issue of a relevant journal.

## Chairs

Virginia Dignum (Contact Person); Daniel Corkill, University of Massachusetts ([cork@cs.umass.edu](mailto:cork@cs.umass.edu)); Catholijn Jonker, Free University Amsterdam ([jonker@cs.vu.nl](mailto:jonker@cs.vu.nl)); Frank Dignum, University of Utrecht ([dignum@cs.uu.nl](mailto:dignum@cs.uu.nl))

## Committee

Mark Ackerman, University of Michigan; Rosaria Conte, CNR and University of Siena; Ulisses Cortés, Technical University Catalonia; Rose Dieng, INRIA; Bruce Edmonds, Manchester Metropolitan University; Fabien Gandon, Carnegie Mellon University; Olivier Gutknecht, Université de Montpellier; Henry Hexmoor, University of Arkansas; Victor Lesser, University of Massachusetts; John-Jules Meyer, Utrecht University; Scott Moss, Manchester Metropolitan University; Jean Pierre Muller, Cirad, France; James Odell, James Odell Associates; Andrea Omicini, Università di Bologna; Anna Perini, ITC-irst; Juan A. Rodríguez-Aguilar, IIIA, Spain; Paul Scerri, Carnegie Mellon University; Carles Sierra, IIIA, Spain; Walt Truszkowski, NASA; Javier Vázquez-Salceda, Utrecht University

## Additional Information

[www.cs.uu.nl/~virginia/aotp](http://www.cs.uu.nl/~virginia/aotp)

The anchoring problem is an important aspect of the connection between symbolic and sensory based processes in autonomous robotic systems. Anchoring is the problem of how to create, and to maintain in time, the connection between the symbol- and the signal-level representations of the same physical object.

Anchoring must necessarily occur in any physically embedded system that comprises a symbolic reasoning component. A typical example is the problem of connecting, inside an autonomous robot, the symbol used by a planner to refer to a particular door, say “door-21,” to the vision or laser data that correspond to that door. This connection is necessary in order to exploit linguistic knowledge provided by humans, e.g., regarding maps.

Anchoring must also occur in a multiple robot system, since the robots must agree about the meaning of the symbols used to refer to perceived objects in the environment. A typical example is the problem of establishing the correspondence between the symbols used by two different robots embedded in the same physical environment to refer to the same physical object. This is also needed for efficient human-robot interaction.

This workshop is the third event on this subject, and it will be devoted to assessing the progress toward the development of general theories and techniques for anchoring. In addition, this workshop will aim at making contact with other communities that address tasks in which anchoring is present even if it is not mentioned explicitly.

## Topics

Relevant communities include those which study symbol grounding, cognitive vision, cognitive robotics, human-robot interaction, robot navigation and mapping, robot planning and execution, and cooperative robotics. Participants from related non-robotic communities, such as text and image classification, philosophy of language, and cognitive psychology, are also welcome.

The workshop will include presentation of submitted papers, invited talks, a rump session, and joint discussions.

## Submissions

The workshop is open to all interested people, but attendance is limited to active participants. Prospective authors should submit a full paper reporting original results. People who are interested in participating without presenting a paper are invited to submit a short statement of interest. The workshop proceedings will be published as an AAAI Technical Report.

Full papers should be at most ten pages long in single column format. Statements of interest should be maximum two pages. Detailed formatting and submission instructions are given at the workshop home page.

## Organizers

Silvia Coradeschi ([silvia.coradeschi@aass.oru.se](mailto:silvia.coradeschi@aass.oru.se))  
and Alessandro Saffiotti  
([alessandro.saffiotti@aass.oru.se](mailto:alessandro.saffiotti@aass.oru.se))

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Fax: +46 19 303463

Additional Information  
[www.aass.oru.se/Agora/AAAI04/](http://www.aass.oru.se/Agora/AAAI04/)

# Challenges in Game AI

The science of game development is still in its infancy. While researchers and developers seek a better understanding and awareness of game AI problems and techniques, dialog between these two communities is limited. This workshop seeks to identify the problems currently facing game AI programmers, to explore the emerging techniques within development circles, and to highlight AI research that could be of potential use.

## Topics

The workshop will address contemporary challenges and promising directions for game AI research and development. It aims to identify practices that can advance the state of the art.

Broad areas of investigation include:

### *AI Methodologies:*

- Current problems and novel solutions
- Impact of architecture decisions on the development process
- Sharing and re-use of AI systems

### *AI and Game Design:*

- Integrating designer control with autonomous system and agent behavior
- Balancing the goals of smart AI and good gameplay
- Making AI apparent and relevant to the player

### *Case Studies:*

- Lessons learned in development practice

Technical areas of interest include but are not limited to: architectures, action planning, decision-making, multiple agent coordination, dynamic gameplay generation, learning, natural language interaction, characters, emotion, interface standards, and tools.

## Format

The workshop will combine invited talks, panels, short presentations and roundtable discussion. Those who would like to submit to the workshop should address one of the above topic(s); those who would like to attend should signal their intent. Based on papers and responses, the workshop committee will identify common ground among participants and plan accordingly.

## Submissions

Papers should be between 1,000 to 2,500 words (about two to five pages) in length and identify positions, issues, novel solutions, or new directions. Accepted papers will be made available to all workshop participants. Submissions should be e-mailed as PDF or RTE. Please contact Dan Fu about other formats. If e-mail is not possible, send three hard copies to the following address:

Dan Fu  
Stottler Henke  
951 Mariners Island Blvd, Suite 360  
San Mateo, CA 94404  
973-746-7032

## Committee

Dan Fu (cochair), Stottler Henke (fu@stottlerhenke.com); Jeff Orkin (cochair), Monolith Productions (jorkin@blarg.net); Robin Hunicke, Northwestern University (hunicke@cs.northwestern.edu); Craig Reynolds, Sony Computer Entertainment America (craig\_reynolds@playstation.sony.com)

## Additional Information

[www.stottlerhenke.com/gameai](http://www.stottlerhenke.com/gameai)

# Collective Mind: Architectures for Fleets of Equipment that Learn from their Experience

The purpose of the Collective Mind workshop is to develop the technical foundation for a new paradigm for physical systems that reflect upon their operations, know what they are doing and improve over time. The workshop will focus on learning and reasoning approaches that identify and classify emergent behavior of equipment performance and utilization in dynamic environments. This collective operational experience will form a dynamic operational knowledge base for equipment managers, operators and technicians.

Significant progress has been made on diagnostics and prognostic technologies. But it is still rare to see a highly effective equipment health evaluation system deployed. Critical barriers have been the time and cost necessary to create diagnostic and prognostic models and the difficulty of maintaining them as equipment ages, is maintained and is modified.

## Topics

Topics include:

- Unsupervised learning from sensor data across a collection of similar equipment
- Transparency of machine learning to human inspection: incorporation of human input for augmenting data sets and models
- Scalable learning to smaller groups, down to individual units
- Learning causal relations and independencies that adapt to maintenance and upgrades
- Learning generalizations to rapidly create initial diagnostic and prognostic models for new equipment and optimize new equipment design for health management.

## Format

This one-day event will include paper sessions and application reports; discussion; demonstration of prototypes, tools, and deployed systems; and invited talks and a panel discussion.

## Attendance

Participation will be by invitation only, limited to 25-50 persons. To participate, submit either a full paper of no more than six pages, presenting research or full position statement, or a short paper (1 or 2 pages), addressing an important issue or describing an interesting lesson learned, or a proposal for a demo presentation (especially encouraged) indicating the status of the prototype or the deployed system.

## Submissions

Send electronic submissions (preferred) to Norman Sondheimer by March 12, 2004. Papers may be in PostScript or Microsoft Word® format, or submit three hard copies.

## Cochairs

Norman Sondheimer  
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sondheimer@som.umass.edu

William (Al) Wallace  
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## Committee

lice Agogino, UC Berkeley (aagogino@socrates.berkeley.edu); Piero Bonissone, GE Global Research (bonissone@crd.ge.com); Johan DeKleer, PARC (dekleer@parc.com); Kirby Keller, Boeing (kirby.j.keller@boeing.com); Van Parunak, Altarum (van.parunak@altarum.org); Chris Ramming, DARPA/IPTO (chrisramming@yahoo.com); Brian Williams, MIT (williams@mit.edu)

Additional Information  
eei.umass.edu/aaai04/



# Fielding Applications of Artificial Intelligence

This workshop will focus on how to apply artificial intelligence (AI) techniques to solving real world problems. The workshop will leverage the descriptions of deployed applications from conferences like AAAI and IAAI to create best practices for people fielding applications of AI; allow people to present issues and best practices from their current work; compile what has been learned from multiple past and present experiences fielding AI applications; and produce a list of issues critical to success and best practices for dealing with those issues that should be of interest to people attending AAAI or IAAI.

## Topics

We solicit submissions including but not limited to:

- Determining the value of an AI system
- Business goals for AI
- Determining the AI technique, if any, to use
- Assembling a team with the needed skills
- Software engineering of AI
- Gaining user support and easing their fears
- Gaining financial support
- Cultural issues
- Creating a working system
- User interface design
- Verification and validation
- Training users
- Measurement and feedback
- Monitoring and maintenance of AI systems
- Analysis or surveys on why AI system(s) succeeded or failed

## Format

This workshop will include an invited talk, multiple presentations on selected submissions, and a panel session on issues in fielding AI systems and best practices for these issues. Attendance is limited to 65 invitees.

## Submission Requirements

Please submit a short (max 4 pages) Postscript or Word submission, using AAAI's format, or a brief statement of interest. Accepted submissions will be included in a AAAI Press technical report. Please e-mail or send hardcopy submissions to:

William Cheetham  
General Electric Company  
Building K1, Room 5C21A  
1 Research Circle  
Niskayuna, NY 12309  
cheetham@research.ge.com  
(518) 387-5222

Please include your hardcopy address, telephone, and fax numbers in your submission.

## Committee

David W. Aha, Naval Research Laboratory (aha@aic.nrl.navy.mil); Chinatsu Aone, SRA International (aonec@sra.com); Piero Bonissone, GE (bonissone@research.ge.com); William Cheetham (chair), GE (cheetham@research.ge.com); Jody J. Daniels, Lockheed Martin (jdaniels@atl.lmco.com); Richard Ellis, Stratum Management Ltd (richard.ellis@ai-research.org.uk); Kai Goebel, GE (goebel@research.ge.com); Haym Hirsh, Rutgers University (hirsh@cs.rutgers.edu); George Tecuci, George Mason University (tecuci@gmu.edu); Ian Watson, Auckland University (ian@cs.auckland.ac.nz)

## Additional Information

[www.cs.rpi.edu/~goebel/faai/index.htm](http://www.cs.rpi.edu/~goebel/faai/index.htm)



# Forming and Maintaining Coalitions and Teams in Adaptive Multiagent Systems

The Forming and Maintaining Coalitions and Teams in Adaptive Multiagent Systems workshop will focus on the issues of coalitions in dynamic multi-agent systems: specifically on issues surrounding the formation of coalitions among possibly self-interested individuals, and on how coalitions adapt to change in dynamic settings through the choices of individual members.

Traditionally, an agent with complete information can rationalize to form optimal coalitions with its neighbors for problem solving. However, in a noisy and dynamic environment, information cannot be relayed among the agents frequently enough, centralized updates and polling are expensive, and the supporting infrastructure may partially fail, agents are thus forced to form sub-optimal coalitions. Similarly, changes in the environmental dynamics may invalidate some of the reasons for the original existence of a coalition. In this case, individual agents may influence the objectives of the coalition, encourage new members and reject others, and the coalition as a whole adapts as a larger organism. Therefore, agents need to reason to form a successful coalition rather than an optimal one, and to maintain the coalition to suit its changing needs.

## Topics

Topics of interest include:

- Long-term coalitions in P2P systems
- Representation and modeling of other agents in coalition formation and maintenance
- Trade-offs in modifying a noneffective but on-going coalition
- Impact of a single agent in a coalition
- Agent authority in coalition or team formation
- Replacement of agents in a coalition or team
- Allocation of tasks, resources, costs, and profits
- Agent responsibility in coalition assessment.

Topics related to other areas of coalition formation are also of interest.

## Attendance

Participants with paper accepted will automatically be invited to the workshop. Researchers who are interested in the workshop will be invited by the committee. Interested researchers are encouraged to e-mail the workshop chair.

## Format

The tentative format for the workshop consists of two general sessions. Each session will include 7-8 presentations (about 20 minutes each) and a one-hour discussion.

## Submissions

Potential participants should submit an original technical paper (up to 10 pages) including keywords and authors' complete addresses. Submit electronically (in PS or PDF format) to [lksoh@cse.unl.edu](mailto:lksoh@cse.unl.edu).

Workshop Chair  
Leen-Kiat Soh  
Computer Science and Engineering  
University of Nebraska  
115 Ferguson Hall  
Lincoln, NE 68588-0115  
e-mail: [lksoh@cse.unl.edu](mailto:lksoh@cse.unl.edu)  
Telephone:(402) 472-6738  
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## Committee

Leen-Kiat Soh (chair), University of Nebraska ([lksoh@cse.unl.edu](mailto:lksoh@cse.unl.edu)); John E. Anderson (cochair), University of Manitoba ([andersj@cs.umanitoba.ca](mailto:andersj@cs.umanitoba.ca)); Costas Tsatsoulis, University of Kansas ([tsatsoul@ittc.ku.edu](mailto:tsatsoul@ittc.ku.edu)); Julita Vassileva, University of Saskatchewan, ([jiv@cs.usask.ca](mailto:jiv@cs.usask.ca)); Babak Esfandiari, Carleton University ([babak@sce.carleton.ca](mailto:babak@sce.carleton.ca))

## Additional Information

[www.cse.unl.edu/~lksoh/coalition.html](http://www.cse.unl.edu/~lksoh/coalition.html)

# Intelligent Agent Architectures: Combining the Strengths of Software Engineering and Cognitive Systems

We invite research and position papers from people interested in the development of intelligent agent architectures that build on existing traditions and expertise in cognitive systems, intelligent systems, and software engineering.

The Intelligent Agent Architectures: Combining the Strengths of Software Engineering and Cognitive Systems workshop will focus on issues in the development of intelligent agent architectures that combine the functional structures and mechanisms of cognitive architectures with the software engineering principles that have been applied in various types of agent systems. Workshop presentations and discussions will focus on developing a common vision for agent architecture frameworks that allow for the categorization, evaluation, and comparison of advanced agent architectures in a unified way. Such frameworks will aid the development of agent systems with human-level capabilities that incorporate significant amounts of knowledge. These frameworks will also facilitate the rapid development and efficient maintenance of knowledge-intensive agent models.

## Topics

We invite position papers (2 to 6 pages in length) from all members of the research and engineering community who have experience and ideas relevant to developing such frameworks. In order to help translate current experience into formal engineering advances, papers will ideally include analytical descriptions of particular data structures and processes supported by one or more agent/cognitive architectures, include comments and descriptions of how to compare and evaluate architectures, and/or comment on experiences or methods for applying software engineering principles to knowledge-intensive intelligent agents.

We particularly encourage the participation of active researchers and developers in cognitive science, intelligent agents, and software engineering, and we most strongly encourage participants with experience in two or more of these areas.

## Submissions

Please send submissions in a common electronic format (PDF, PostScript, Word, or plain text) to [rjones@colby.edu](mailto:rjones@colby.edu).

## Committee

Randolph M. Jones, Colby College and Soar Technology ([rjones@colby.edu](mailto:rjones@colby.edu)); Robert E. Wray, Soar Technology ([wray@soartech.com](mailto:wray@soartech.com)); Matthias Scheutz, University of Notre Dame ([mscheutz@cse.nd.edu](mailto:mscheutz@cse.nd.edu))

A popular approach to artificial intelligence involves modeling an agent's interaction with the environment through actions, observations, and rewards. Intelligent agents choose actions after every observation, aiming to maximize long-term reward. Markov decision processes (MDPs) are a widely adopted paradigm for modeling an agent's interaction with its environment.

This workshop aims to bring together a wide spectrum of researchers, from people involved with theoretical MDP research, to implementers concerned with real world problems. The workshop will report on theoretical advances in this field; identify the challenges faced by practitioners; and direct the community toward solving problems that are relevant to practice, yet may be computationally tractable.

## Topics

Topics of interest include the following:

- Theoretical foundations of MDPs;
- MDPs and Beyond — Factored state/action spaces, Continuous state/action spaces and continuous time models, Hybrid models, Relational MDPs, Concurrency;
- Heuristics and approximations — Policy and value function approximations, Monte Carlo and advanced simulation methods;
- Merging decision theoretic planning with classical planning frameworks;
- Spatio-temporal abstractions — dynamic factorization, hierarchy and relational structure; Interactive learning - Guided exploration, combining supervised and unsupervised learning, shaping, and learning from few examples;
- Real world applications — Medicine, robotics, manufacturing, security, etc.

## Format and Submissions

The workshop will include invited and contributed presentations followed by discussions, a panel session, and a poster session. A preliminary list of invited speakers includes Rich Sutton (University of Alberta), Sridhar Mahadevan (UMass), Ben Van Roy (Stanford), Martin Puterman (University of British Columbia) and Milos Hauskrecht (University of Pittsburgh).

The final topics for discussion and the constitution of the panel will be based on the submissions. We envision three types of submissions: (1) Position abstracts, which provide some insight into current challenges or applications of interest to the MDP framework. (2) Technical contributions, which describe theo-

retical advances. (3) Application papers, which describe relevant applications in fair detail.

Position abstracts should not exceed 2 pages. Other submissions should not exceed 4 pages. All submissions should use the AAAI style. Electronic submission (PostScript or PDF) is preferred. The workshop proceedings will be published as a AAAI technical report.

All submissions should be sent to Doina Precup at [dprecup@cs.mcgill.ca](mailto:dprecup@cs.mcgill.ca).

## Committee

Daniela Pucci de Farias, MIT; Shie Mannor, MIT, Doina Precup, McGill University; Georgios Theodorou, MIT

## Additional Information

[www.ai.mit.edu/people/theochar/mdp-ws-aaai-04/](http://www.ai.mit.edu/people/theochar/mdp-ws-aaai-04/)

# Models of Global Gene Expression Data from Microarray Experiments: Implications for Biomedical Computing

**M**odels play an important role in the understanding of complex systems. The focus of this workshop will be to examine any and all aspects of modeling as it has been or can be applied to the interpretive analysis of data from microarray experiments, especially with clinical applications. Transcriptional profiling, however, is stymied by the large number of false positives that typically result from tests for finding differentially expressed genes. The hope of reconstructing regulatory networks has similar challenges. The proposed workshop will provide an open forum for the free exchange of ideas, knowledge, and perspective on the strengths and weaknesses of these approaches as understood by experts in the area of high-throughput analysis.

With a special and specific emphasis on understanding gene expression patterns and disruptions in cancer, we invite submitted paper titles and abstracts for podium presentations and posters on the following topics: Statistical models, error modeling, network models, simulation models, hidden Markov models, intuitive, creative approaches to analysis, simple but powerful approaches to analysis, model-free analyses, multivariate modeling, Bayesian network modeling, likelihood models, generalized linear models, gene-specific models, genomic models of cancer progression, types of data most amenable to modeling, pattern modeling, mixture modeling, models for molecular prognosis and diagnosis, modeling software, model validation, model-based normalization, models of differential expression, time-series modeling, generalized linear models, hierarchical Bayesian networks, normalization and modeling relationships, biological language representation of transcriptional processes, statistical machine learning approaches, combined uses of classification error and statistical significance

Central themes of the workshop will include: How can researchers from these disparate paradigms of analysis benefit from each other in the development of analysis standards? Can models be expected to be a central role at every step of the progress of research (e.g., pilot vs. large-scale clinical trials)? How can biomedical researchers without strong backgrounds in computational statistics benefit most from higher-order models? How can biostatisticians, bioinformaticians and computational biologists best communicate about the limitations and capabilities of model-based analysis?

Bioinformaticians and Microarray Facility managers in NCI-Designated Cancer Institutes are especially invited to participate. Graduate students and postdoctoral fellows in Bioinformatics-related fields are especially encouraged to participate. Depending on the level of interest, some funding may be available to offset the cost of travel.

## Submissions

If you are interested in attending the workshop, but not presenting, please write a letter of interest on your Department or Corporate letterhead addressed to Dr. James Lyons-Weiler (address below). Letters may be faxed. These letters will be used to attempt to find funding for the workshop.

To Submit a paper title and abstract or poster title and abstract, please send the title via e-mail to Dr. James Lyons-Weiler with the subject heading "AAAI-04 Paper Title" or "AAAI-04 Poster Title" by March 12, 2004. If you are interested in a poster presentation only, please indicate this in the e-mail.

Sponsors are welcome! Sponsors, software vendors, and publishers of relevant books and journals, are invited to provide funding for travel and lodging for as many participants as possible. Contact Jan Walker (walkerjl@msx.upmc.edu) for more information.

## Organizers

James Lyons-Weiler  
(lyonsweilerj@msx.upmc.edu)  
University of Pittsburgh Cancer Institute  
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School of Medicine, University of Pittsburgh  
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Fax: 412-647-5380

David Rocke (dmrocke@ucdavis.edu)  
Professor, Department of Epidemiology and Preventive Medicine  
coDirector, Center for Image Processing and Integrated Computing  
University of California, Davis

Additional Information  
[bioinformatics.upmc.edu/JLW/AAAI2004/](http://bioinformatics.upmc.edu/JLW/AAAI2004/)

Autonomous navigation and mapping is a key technology in the quest to build useful mobile platforms. The efficacy of a mobile platform is measured by the extent of its autonomy — the ability to navigate for extended periods in dynamic and or unknown environments in a reliable and robust fashion. Autonomous navigation combines aspects of machine learning, uncertainty management, perception, sensing and control to enable a machine to discover, perceive and understand its surroundings.

## Topics

Recent years have seen a bloom of interest and success in this area. Many approaches are being brought to bear on critical areas of research:

- Motion estimation and local registration using any sensor type
- Complexity issues (large scale mapping)
- Loop closure and data association
- Multi-agent cooperation
- State representation

## Format

This AAAI workshop seeks to bring leading members of the mobile robotics, vision, and AI communities to a single forum to discuss and explore the state of the art in autonomous navigation. The workshop will be structured to encourage lively debate and a mixing of perspectives and approaches. The timetable will interleave invited talks with discussion sessions. The talks will be designed to support the “workshop paradigm” and provoke discussion by all members of the intended audience.

## Attendance

An AAAI workshop session is an ideal venue to undertake a scholarly discussion and exposition of differing views and approaches from individuals and groups involved in robotic and AI research. In addition to those actively engaged in autonomous navigation research, this workshop should be of interest (but not limited) to parties researching probabilistic reasoning using graphical models, vision based structure-from-motion, and wide baseline correspondence. Attendance will be limited to 40 individuals.

## Submissions

Parties are invited to submit a one-page statement of interest and background in autonomous navigation. The statement should summarize what the writer sees as the fundamental remaining challenges in this area, and indicate what valuable perspective the writer will bring to the workshop.

On the basis of this the organizers will invite eight twenty-minute talks to form the framework for the discussions between other attendees.

## Cochairs

Kurt Konolige, SRI (konolige@ai.sri.com); Paul Newman, Oxford University (pnewman@robots.ox.ac.uk), Seth Teller, MIT CS and AI Laboratory (teller@csail.mit.edu)

## Additional Information

[www.robots.ox.ac.uk/~pnewman/AAAI2004/Call.html](http://www.robots.ox.ac.uk/~pnewman/AAAI2004/Call.html)

# Ontologies and Controlled Vocabularies

For several years, two independent communities have been investigating the representation, management, and application of controlled vocabularies. One community developed around the notion of ontologies, focusing on their role within the larger framework of the semantic web. The other community developed around the field of controlled languages, with the goal of reducing linguistic complexity and ambiguity. However, a natural and quite important overlap exists. Both communities have recognized the importance of translation, albeit from different perspectives. Discussions of ontologies cite issues surrounding namespaces and translation from one ontology to another, while controlled language researchers have a strong interest in natural language machine translation systems that leverage controlled vocabulary. The Ontologies and Controlled Vocabularies workshop will bring together both communities to exchange ideas and approaches to common problems and leverage each other's work to mutual benefit.

## Topics

Specific topics of interest include the following:

- Methodologies and tools to manage controlled vocabularies
- Representations of multi-lingual ontologies
- Using ontological representation languages as interlinguas for translation
- Ontology-guided content authoring
- Representational issues relating to ambiguity
- Applications to natural language and speech processing.

## Format

This workshop will consist of 20-30 minute presentations by attendees, and possibly 1 or 2 keynotes.

## Submissions

Send in Word or PDF format via e-mail by March 12, 2004 to

Benjamin Van Durme  
vandurme+aaai04submissions@cs.cmu.edu  
Language Technologies Institute  
Carnegie Mellon University  
Pittsburgh, PA 15213.  
Telephone 412-268-7945  
Fax 412-268-3662.

Include contact information for authors, title, abstract, and full text of 4-6 pages. As an alternative to a paper and presentation, a statement of interest will be considered.

## Acceptance Criteria

At least 25 participants will be invited by the committee, which will base its decisions on the originality of the work and relevance to the goal of addressing issues common to both research communities.

## Committee

Kurt Godden (Chair), GM Technical Fellow, GM RandD, 30500 Mound Road, MC480-106-359, Warren, MI 48090 (kurt.godden@gm.com) office 586-986-0445; fax 586-986-9356; Eduard Hovy, Director of the Natural Language Group, Information Sciences Institute, University of Southern California (hovy@isi.edu) Eric Nyberg, Associate Professor, Language Technologies Institute, Carnegie Mellon University (ehn@cs.cmu.edu); Chris Welty, Research Staff Member, IBM Watson Research (welty@watson.ibm.com)

## Additional Information

[www.lti.cs.cmu.edu/Workshops/AAAI04/](http://www.lti.cs.cmu.edu/Workshops/AAAI04/)



Over the years, personalization and recommendation technologies have been developed that use web mining and similar technologies to harvest shallow patterns hidden within masses of transactional, navigational, and content-structural data that are useful for presenting product recommendations and the likes. Without the benefit of deeper semantic or ontological knowledge about the underlying domain, personalization systems cannot handle heterogeneous and complex objects based on their properties and relationships. Nor can these systems possess the ability to automatically explain or reason about the user models or user recommendations. The Semantic Web Personalization workshop aims to bring together researchers and practitioners from the two rapidly developing research areas: semantic web and web intelligence. The aim is to improve the results of web personalization by exploiting the new semantic structures in the web, and by incorporating AI techniques that take advantage of existing, learned, or extracted ontological knowledge.

## Topics

We invite submissions covering the full range of topics related to semantic web personalization, from foundational issues of obtaining, modeling, and integrating relevant data, to the deployment and evaluation of these techniques in concrete architectures and systems. Specific topics of interest include the following:

- Integrating domain knowledge and ontologies with user modeling
- Semantic web mining for personalization
- Integration of content, structure and usage data for personalization
- The role of multi-channel data in online personalization
- Semantically enhanced scalable collaborative filtering techniques
- Ontology-based agents for intelligent information access
- Hybrid recommendation systems
- Multi-agent systems for personalization, including client-side architectures
- Machine Learning techniques for information extraction and integration
- Learning and acquisition of taxonomies or ontologies from web resources
- Metadata learning and harvesting
- Applications of relational data mining in personalization

## Submissions

All papers must be submitted no later than March 12, 2004. All submissions must be made electronically to [mobasher@cs.depaul.edu](mailto:mobasher@cs.depaul.edu). Please use the AAAI prescribed formatting instructions available at [www.aaai.org/Workshops/](http://www.aaai.org/Workshops/). Papers should be no more than 12 pages inclusive of all references and figures.

## Committee

Bamshad Mobasher, School of Computer Science, DePaul University, Chicago ([mobasher@cs.depaul.edu](mailto:mobasher@cs.depaul.edu)); Sarabjot Singh Anand, University of Ulster, Northern Ireland ([ss.anand@ulster.ac.uk](mailto:ss.anand@ulster.ac.uk)); Bettina Berendt, Institute of Information Systems, Humboldt University Berlin ([berendt@wiwi.hu-berlin.de](mailto:berendt@wiwi.hu-berlin.de)); Andreas Hotho, Institute AIFB, University of Karlsruhe, Germany ([hotho@aifb.uni-karlsruhe.de](mailto:hotho@aifb.uni-karlsruhe.de))



Sensor Networks are emerging as a revolutionary and critical information technology. Like the Internet, these large-scale and distributed systems, which are composed of smart sensors and actuators, will eventually infuse the physical world. Sensor networks will form a critical infrastructure resource for society as they will monitor and collect information on such diverse subjects as ecosystem dynamics, soil and air contaminants, medical patients, buildings, bridges and other man-made structures. Across this wide range of applications, sensor networks promise to reveal previously unobservable phenomena, allowing for a greater understanding and control of both natural and man-made environments.

Research on sensor networks has been taking place at several levels, from the lowest physical level to the highest information level. The main goal of this workshop is to foster research at the information level of sensor networks, for which the AI community has a lot to offer in terms of both theory and technique. Specifically, the workshop will provide an opportunity for researchers in the AI community to meet with members of the sensor networks community, to exchange information on the needs and problems in the development and deployment of sensor networks, and on the AI tools and techniques that can be brought to bear on these problems.

## Topics

We encourage submissions that cover any of the following subject areas. First, AI techniques with applications to sensor networks, including distributed inference, reasoning about (the value of) information, machine learning, and multi-robot and multi-agent systems. Second, sensor network applications and deployed systems that could benefit from AI techniques. Third, theoretical approaches and practical systems that already integrate AI techniques into sensor networks.

## Format

The workshop will include 25-50 participants, with a format that includes both paper/position presentations and panel discussions. We will also have a small number of invited presentations to provide participants with background information of global interest. Workshop attendance will be by invitation of the organizers. Selection of attendees will be made by the organizers on the basis of submissions; the final list will be announced on April 20, 2004.

All workshop participants must register for the AAAI-04 Technical Program. AAAI will reproduce and mail copies of working notes for the workshop and AAAI Press offers the opportunity for workshop papers to be published.

## Submissions

We invite the submission of full papers, extended abstracts, and position papers. All submissions are due on March 12, 2004 on the following website:

<http://robotics.usc.edu/AAAI-SN>

All papers should be in PDF format and should use the AAAI style, with the following page limitations in mind. Position statements are limited to 2 pages. Extended abstracts are limited to 5 pages, and full papers are limited to 8 pages.

## Committee

Gaurav S. Sukhatme, USC ([gaurav@usc.edu](mailto:gaurav@usc.edu)); Adnan Darwiche, UCLA ([darwiche@cs.ucla.edu](mailto:darwiche@cs.ucla.edu)); and Deborah Estrin, UCLA ([destrin@cs.ucla.edu](mailto:destrin@cs.ucla.edu))

The Spatial and Temporal Reasoning workshop is intended as a forum for discussion, exchange of points of view, assessment of results and methods, and as a source of dissemination and promotion of the newest advances in the area of spatial and temporal reasoning.

Recent years have witnessed remarkable advances in some of the longstanding problems of the field (for instance, new results about tractability for spatial calculi, explicit construction of models, characterization of important subclasses of relations), as well as in the development of new areas (the appearance of new integrated spatio-temporal calculi is one example, as well as the development of multi-dimensional spatial calculi). Likewise, proposals have been made to remedy some of the weak points of the symbolic approach, by introducing fuzzy versions of classical calculi, or importing non-monotonic techniques for dealing with incomplete information. At the same time, leaders in AI have sounded the need for solving real problems and making the work on representation and reasoning relevant to the real world.

## Format

The program will include a number of presentations by the invitees, followed by breaking up into a few subgroups, each with a different subtheme. After the breakouts, group leaders will present the most important problems and conclusions discussed by their groups.

## Attendance

Up to around 40 participants will be selected to attend the workshop. Accepted papers will be included in the workshop working notes to be published by AAAI. Selection of participants will be based on relevance to the workshop, clarity of the work submitted, and the strength of the research.

## Submissions

Electronic submissions are solicited in TeX, LaTeX, PostScript, or PDF format. The papers, starting with title, authors' names, affiliations, postal and e-mail addresses, followed by keywords, and concluding with relevant bibliographic references, should fit on 4 to 10 single-spaced typewritten A4 or 8.5 x 11 inch pages, in the form of an extended abstract or complete research, survey, or position paper. Submissions should be sent to Hans Guesgen.

## Workshop Chairs

Hans W. Guesgen (primary contact)  
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Frank D. Anger, Deputy Division Director  
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## Additional Information

[www.cs.auckland.ac.nz/~hans/spacetime/aaai04strws.html](http://www.cs.auckland.ac.nz/~hans/spacetime/aaai04strws.html)

With supervisory control, a human operator intermittently takes control of a process that is otherwise controlled by a computer. Supervisory control involves both autonomy and intelligence, although the latter is normally attributed solely to the human operator. One goal of this workshop, therefore, is to bring together researchers in robotics, machine learning, human-computer interaction and other areas to explore the role of supervisory control for AI systems, especially for systems where both human and machine share the ability to learn and adapt to changing circumstances.

In the past, supervisory control has focused primarily on traditional applications of telerobotics, such as hazardous waste disposal, planetary and undersea exploration, and remote surveillance and repair. These applications remain important areas of research today, although in recent years supervisory control has become much more pervasive than we often realize. Assistive technology for the physically handicapped, software agents for electronic commerce, and education technology for the modern classroom are all examples where shared control by human and machine will have increasing societal impact. Thus, another goal of this workshop is to identify real-world applications where the combination of supervisory control and AI will have the most impact.

## Topics

Areas of interest for this workshop include, but are not limited to the following:

- Adjustable autonomy / mixed initiative control
- Colearning
- Assistive technology
- Adaptive user interfaces
- Telerobotics
- Human-robot interaction
- Fault-tolerant learning
- Acquisition of transparent user models
- Learning from demonstration
- Evaluation methods

## Format

This one-day workshop will consist of a keynote talk of general interest, followed by several invited talks and paper presentations on more focused topics. Panels will be used when appropriate to facilitate discussion of clusters of closely related talks. Depending on the submissions, the workshop may include a poster session to encourage more in-depth discussions.

## Submissions

Participants are required to submit either a technical paper (roughly six pages in the conference format) or else an abstract (up to two pages) describing research relevant to the workshop. Submissions should be sent via e-mail to one of the cochairs. If the papers are of sufficient quantity and quality, we will seek to publish them as an edited book or journal special issue.

## Cochairs

Mike Rosenstein  
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## Committee

Chuck Anderson, Colorado State University ([anderson@cs.colostate.edu](mailto:anderson@cs.colostate.edu)); Mathias Bauer, German Research Center for AI ([bauer@dfki.de](mailto:bauer@dfki.de)); Rob St. Amant, North Carolina State University ([stamant@csc.ncsu.edu](mailto:stamant@csc.ncsu.edu)); Holly Yanco, University of Massachusetts Lowell ([holly@cs.uml.edu](mailto:holly@cs.uml.edu))

## Additional Information

[www.cs.umass.edu/~mgh/AAAI-2004/](http://www.cs.umass.edu/~mgh/AAAI-2004/)