



**Seventeenth National
Conference on
Artificial Intelligence
(AAAI-2000)**

WORKSHOP PROGRAM

**July 30-31, 2000
Austin, Texas**

*Sponsored by the
American Association for Artificial Intelligence*
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AAAI is pleased to present the AAAI-2000 Workshop Program. Workshops will be held Sunday and Monday, July 30-31, 2000 (unless otherwise noted) at the Hyatt Regency Austin and the Austin Convention Center in Austin, Texas. Exact locations and dates for the workshops will be determined in early spring. The AAAI-2000 workshop program includes twenty 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 50 participants. Participation at these workshops is by invitation from the workshop organizers. Workshop registration information will be mailed directly to all invited participants. Workshops are included in the AAAI-2000 technical registration. All workshop participants must preregister for the AAAI-2000 technical conference. Workshop participants 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 10, 2000. Workshop organizers will notify submitters of acceptance by March 24, 2000. Camera-ready copy is due back to workshop organizers by April 26, 2000. 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 <http://www.aaai.org/Publications/Templates/macros-link.html>

AAAI-2000 Workshop Chair

Marie desJardins
marie@ai.sri.com

Contents

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- Mobile Robotic Competition and Exhibition Workshop
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- Parallel and Distributed Search for Reasoning
- Representational Issues for Real-World Planning Systems
- Spatial and Temporal Granularity
- Spatial and Temporal Reasoning for Collaborating Mobile Agents

Deadlines

- March 10: Submissions due
- March 24: Notification of acceptance
- April 26: Camera-ready copy due
- July 30-31: AAAI-2000 Workshop Program

Deadlines

- March 10: Submissions due
- March 24: Notification of acceptance
- April 26: Camera-ready copy and electronic papers due
- July 30-31: AAAI-2000 Workshops

Agent-Oriented Information Systems

Agent-Oriented is emerging as a powerful new paradigm in computing. Concepts and techniques from artificial intelligence could well be the foundations for the next generation of mainstream information systems.

Information systems have become the backbone of all kinds of organizations today. Yet the inflexibilities in current technologies and methods have also resulted in poor performance, incompatibilities, and obstacles to change. As many organizations are reinventing themselves to meet the challenges of global competition and e-commerce, there is increasing pressure to develop and deploy new technologies that are flexible, robust, and responsive to rapid and unexpected change.

Agent concepts, which originated in artificial intelligence but which have further developed and evolved in many areas of computing, hold great promise for responding to the new realities of information systems. The workshop will focus on how agent concepts and techniques will contribute to meeting information systems needs today and tomorrow.

Topics

- Agent-oriented modeling and design methods
- Models and architectures for agent-oriented information systems
- Agent-oriented requirements engineering
- Agent-oriented approaches to data integration
- Agent-based workflow management systems
- Agent-oriented enterprise modeling
- Agent-oriented business process modeling and reengineering
- Agent communication languages for business communication
- Ontologies in agent-oriented information systems

Format

The technical program will include invited talks by leading experts in the field, one or more panel discussions, and contributed papers. Poster sessions are also being planned. Attendance is limited to 40 participants.

Submissions

To submit a regular paper, authors should place it as a html, PostScript or pdf file on a web server and send its URL along with the title, author names, affiliations, contact information and an abstract by e-mail to one of the workshop chairs. Papers must be of reasonable size (not exceeding 15 pages)

Chairs

Yves Lespérance, Department of Computer Science, York University, 4700 Keele Street, North York, Ontario M3J 1P3, Canada. Voice: (416) 736-2100. Fax: (416) 736-5872. E-mail: lesperan@cs.yorku.ca

Gerd Wagner, Institute of Informatics, Free University of Berlin, Takust. 9, 14195, Berlin, Germany. Voice (+49 30) 838 75 170. Fax: (+49 30) 838 75 109. E-mail: gw@inf.fu-berlin.de

Eric Yu, Faculty of Information Studies, University of Toronto, 140 St. George Street, Toronto, Ontario M5S 3G6, Canada. Voice: (416) 978-3107. Fax: (416) 971-1399. E-mail: eric.yu@utoronto.ca

Committee

H.-D. Burkhard, Humboldt University; I. Ferguson, Active On-line Systems; A. Gal Rutgers; F. Dignum, Eindhoven University; A.G. Karakoulas, CIBC; G. Lakemeyer, RWTH Aachen; S. Kirn, Techn. University Ilmenau; F. Matthes, TU Harburg; J.P. Mueller, Siemens; J. Mylopoulos, University of Toronto; M. Schroeder, City Univ. London; M. Singh, North Carolina State; C. Woo, University of British Columbia.

Additional Information

<http://www.AOIS.org>

Artificial Intelligence and Enterprise Resource Planning / Customer Response Management Systems

This workshop will bring together key researchers in the areas of AI and knowledge management with those in enterprise resource planning (ERP) and customer response management (CRM). The aim is to start a dialogue between these groups on how AI techniques and knowledge management can support these real-world business systems throughout their life cycles, ranging from system choice to implementation to system support.

ERP systems (e.g., SAP) have been adopted by a large number of firms, including virtually all of the Fortune 500, and many middle market firms. Increasingly, these systems are being seen as providing the information backbone. CRM is becoming increasingly important as the role of the Internet allows firms to be drawn virtually closer to their customers. The role of AI and knowledge management in these systems is beginning to be articulated. This workshop will attempt to facilitate identification of major trends and opportunities in the use of AI and knowledge management.

Topics

- Configuring ERP Systems
- Developing CRM Applications using AI
- Using Portals to Manage ERP/CRM Knowledge
- Using CBR to Support ERP/CRM
- Using Constraint-based Reasoning to Support ERP/CRM
- Integrating Work Flow Into ERP Systems

Format

We anticipate having one half of the day devoted to ERP systems and the other to CRM systems. We also anticipate the possibility of guest speakers and panel sessions.

Attendance

This workshop is open to members of the AI or ERP or CRM communities. To ensure a creative atmosphere, attendance will be strictly 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 should focus on the role that AI technologies and knowledge management can play in any part of the life cycle of ERP and CRM systems. Submissions must be formatted in accordance with the AAAI guidelines and submitted electronically (pdf is preferred) or four paper copies can be mailed to the workshop chair. Submissions should be made in accordance to the timetable established by AAAI for the workshops.

Chair

Daniel E. O'Leary
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Committee

Daniel E. O'Leary (oleary@usc.edu); Rose Gamble (gamble@tara.mcs.utulsa.edu); Robert Plant (rplant@exchange.sba.miami.edu); Alun Preece preece@csd.abdn.ac.uk)

Additional Information

www.usc.edu/schools/business/atisp/AI/AI-Bus/AAAI-2000/

Artificial Intelligence and Music: Towards Formal Models for Composition, Performance, and Analysis

While the AI and music (AIM) field has an important place in AI, its relevance is more compelling than ever: increasing demand for high-quality content from web-based providers, entertainment and computer-game industries has fueled new interest in algorithms to compose and analyze music.

Topics

AIM research has been mostly cognitively driven, and has yielded impressive results. Yet, this work often does not consider computational and other theoretical issues inherent in music processing and understanding. To move forward, a solid understanding of these issues must be developed. This workshop, another in a series of international AIM workshops, will address the following topics:

- Systems using formal AI techniques from such fields as machine learning and constraint-satisfaction problem solving to music processing;
- Computational models of style induction, musical performance, or composition;
- Discussion of how formal models impact traditional areas of music theory and practice; and,
- Discussion of research linking AI approaches to perceptual processing.

Potential participants are encouraged to suggest related topics.

Format

The one-day workshop will include presentations by selected participants, and panel and open discussions on key topics. We encourage workshop participants to provide either live or recorded demonstrations of their research results.

Attendance

Participation will be based on submitted research summaries. We anticipate admit-

ting about 30 persons to the workshop.

Submissions

Please submit a brief paper (approximately 3,000 words) describing research in progress, completed research, or position statements on the workshop topics. Instead of a paper, a short statement of interest (approximately 500 words) describing your interest in the workshop and relevant perspectives you can bring to workshop discussions may be submitted. Please include a concise description of any demonstrations that will be made.

We highly encourage e-mail submission of Postscript, PDF, or Microsoft Word documents, as attachments. Submissions should be single column and 12-point font. Hardcopy submissions are acceptable. All submissions must be sent to:

William Birmingham, The University of Michigan, EECS Department, 1101 Beal Avenue, Ann Arbor, MI 48109 USA (wpb@eecs.umich.edu). Voice: 734-936-1590. Fax: 734-763-1260.

Chairs

William Birmingham, University of Michigan; *Roger Dannenberg*, Carnegie Mellon University (Roger.Dannenberg@cs.cmu.edu); *Gerhard Widmer*, University of Vienna and Austrian Research Institute for Artificial Intelligence (gerhard@ai.univie.ac.at)

Committee

Mary Simoni, University of Michigan, USA; Francois Pachet, Sony Computer Science Laboratory, Paris; Masataka Goto, Electrotechnical Laboratory, Japan; Robert Rowe, New York University, USA; Keiji Hirata, NTT, Japan; Geber Ramalho Universidade Federal de Pernambuco, Brazil.

Additional Information

Please consult the following web page: musen.engin.umich.edu/aaai2000.htm for more information.

Artificial Intelligence for Web Search

The World wide web is one of the most important bodies of information, offering the promise of an immense diversity of knowledge. However, the web's size, rapid growth, high diversity, and erratic organization often make it difficult to find information. AI techniques can be used for organizing, searching, and classifying information on the web. A broad range of AI techniques are relevant including machine learning, autonomous agents, expert systems, knowledge representation, data mining, and natural language processing.

Topics

- Web keyword search
- Topical clustering and classification of search results
- Learning to suggest keywords
- Ranking of results
- Improving search and browsing by learning from users
- Using access information (e.g. collaborative filtering)
- Personalized search and browsing
- Understanding web structure and organization
- Link analysis
- Web site/page clustering
- Computational complexity issues
- Can optimal browsing be learned?
- Web page features
- Feature extraction and knowledge representation for search
- Use of Web page metadata

Format

There will be invited speakers, and regular submitted paper presentations, and above all, extensive interactions and discussions among participants. Extensive discussions that we plan will encourage the right kind of interactive atmosphere during the workshop.

Submissions from all disciplines related to using AI to find information on the web are welcome. Speakers will be topi-

cally grouped, and presentations will be followed by a moderated discussion on each topic. In a final plenary session, directions for joint post-workshop efforts will be discussed. An opportunity to give demonstrations of research prototypes and techniques may be provided.

To encourage discussions, accepted contributions and discussion topics will be published on the web at archive.org/kurt/aaai2k_workshop.html before the workshop. As a consequence, the background of all participants will be known beforehand, so that presentations and discussions can focus on the technical questions. Participants will be encouraged to prepare questions for speakers.

Attendance

The workshop will be of interest to academics, graduate students, and industry researchers/engineers.

Submissions

Submissions should be between two and six pages and be formatted using the standard AAAI guidelines. Papers should be submitted electronically in PostScript or PDF format (as a MIME attachment to an ascii cover letter) via e-mail to kurt@archive.org. Submission of a second copy of each paper in HTML format is highly welcome.

Chairs

Kurt Bollacker, Internet Archive (kurt@archive.org); Justin A Boyan, NASA Ames Research Center (jboyan@mail.arc.nasa.gov); Lee Giles, NEC Research Institute (giles@research.nj.nec.com); Haym Hirsh, Rutgers University (hirsh@cs.rutgers.edu); Steve Lawrence, NEC Research Institute (lawrence@research.nj.nec.com)

Committee

See archive.org/kurt/aaai2k_workshop.html for a listing of the program committee and additional details.

Constraints and AI Planning

The management of constraints is an integral part of today's planning systems. It includes the simple orderings in POP systems as well as the exclusion relations of today's cutting-edge Graphplan-based planners. The need for expressive formalisms with efficient propagation and refinement techniques to extract solutions will grow further given the ongoing orientation toward real-world problems, which are constrained as regards temporal, spatial and many other resources. Constraint programming has much to contribute in this domain.

The workshop will bring together researchers from the AI planning and the constraint programming (including SAT) communities. Despite early work to integrate activity planning and constraint reasoning, there has been little recent exchange between these communities. New interest is now being shown and results from the SAT field have already been integrated in some planners. The workshop will promote communication between researchers and seeks to highlight new and interesting ideas for combining planning with constraint programming.

Topics

- Hybrid systems: separate planners and constraint solvers
- Integrated systems
- Rich plan representations allowing for a variety of constraints
- Planning with resource constraints
- Planning with nontrivial optimization goals
- Specialized propagation techniques and labeling heuristics
- Planning as constraint satisfaction/optimization
- Extended CSP frameworks for handling planning problems

In addition to paper presentations, there will be invited talks and panel discussions addressing the following topics:

- What can constraint programming of-

fer in terms of planning? What kind of problems can be tackled with which techniques?

- How does a planning problem differ from a constraint satisfaction problem? Can we - and, if so, how can we - cope with these differences?

Attendance

Attendance will be limited to 40 participants. Participants will be selected based on refereed submissions. If you wish to attend but are not submitting a paper, please send a one-page statement of interest by the submission deadline.

Submissions

Paper submissions should be no longer than six pages. Guidelines for the submission format can be found at www.aaai.org/Publications/Templates/macros-link.html

Papers may be submitted by e-mailing a document's URL to the workshop chair. If this is not possible, please contact the workshop chair. Accepted submissions will be distributed and included in an AAAI Press technical report.

Chair

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Committee

Eugene C. Freuder, University of New Hampshire; Ulrich Geske, GMD FIRST; Subbarao Kambhampati, Arizona State University; Henry Kautz, AT&T Labs; Nicola Muscettola, NASA Ames; Alexander Nareyek (chair), GMD FIRST; Austin Tate, University of Edinburgh; Peter van Beek, University of Alberta

Additional Information

www.ai-center.com/events/aaai-2000-ws

Constraint Databases for AI

The last few years have seen a growing interest in the use of constraint databases for supporting several problems considered by AI researchers. This workshop focuses on the use of constraint databases for such problems.

Topics

- Constraint-based agents
- Planning and scheduling with temporal constraints
- Robotics with 3-D spatio-temporal constraints
- Knowledge Acquisition Systems with constraints representations
- Dealing with incomplete information or uncertainty
- Constraint-based search strategies

Goals

To achieve cross-fertilization between research in AI and research on constraint databases. On the one hand, AI researchers will learn about databases in general and in particular about constraint database systems that they may use as problem solving tools. On the other hand, constraint database researchers will learn more about AI problem solving needs and explore further opportunities for system development.

Format

The workshop format will be a mix of paper presentations, invited talks, panel discussions, and plenary sessions.

Attendance

Attendance will be limited to between 25-50 active participants.

Submissions

Potential presenters should submit three hard copies of a paper to one of the addresses below. Please follow the AAAI

guidelines for length and format. Selection of papers will be mainly based on relevance, clarity, and significance. Accepted submissions will be distributed and included in an AAAI Press technical report. We also welcome suggestion for panel topics and nominations for panel members.

Cochairs

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E-mail: gyssens@charlie.luc.ac.be
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Fax: (402) 472-7767
www.cse.unl.edu/~revesz

Additional Information

www.cse.unl.edu/~revesz/CDBinAI

Integration of AI and OR Techniques for Combinatorial Optimization

The factory floor does not know the difference between local search and integer programming. It either does or does not work at peak performance—how you get there is irrelevant. In fact there are good reasons to believe that artificial intelligence and operations research (OR) techniques will combine synergistically to provide better results on large realistic problems than techniques from either field alone.

OR has a rich history of sophisticated mathematical techniques, many of which build on linear programming for generating a global view of large, complex optimization problems. By contrast, AI and constraint programming approaches emphasize constraint propagation and often embody creative search strategies. Historically, there has been a significant overlap in the area of local search. The workshop aims at fostering research that crosses the traditional boundaries between AI and OR approaches to combinatorial optimization and especially encourages submissions on practical applications in the area of planning and scheduling.

Topics

- Applications of hybrid techniques, in particular to planning and scheduling: AI planning, production planning and scheduling, inventory management, vehicle routing
- Integration and hybrids between AI and OR approaches, i.e. constraint programming and linear/integer programming, pseudo-Boolean methods
- Common solver frameworks integrating cutting planes, intelligent backtracking, search heuristics, or coupled search spaces
- Iterative repair, local search, integer local search and combinations with linear programming
- Modeling frameworks: constraint languages, extensions of mixed integer linear programming models, hybrid languages

- Customized branch-and-cut and column generation approaches
- Lagrangean and other relaxations, decomposition techniques

Format

The format of the workshop will be a mixture of presentations and discussions. Presentation time will be mostly devoted to papers, along with an invited talk, and a panel. Discussions should address domains that might be particularly amenable to combined AI/OR approaches, as well as reports on successes and failures in applying hybrid techniques to realistic problems.

Attendance

Participation will be by invitation only, limited to 25–50 persons. Please submit a research or position paper of no more than six pages, or a short paper (1 or 2 pages), addressing an important issue or describing an interesting lesson learned.

Submissions

Send electronic submissions (preferred) to James Crawford. Papers may be in PostScript, PDF, or Microsoft Word format, or submit three hard copies.

Committee

Cochairs: James M. Crawford (jc@i2.com), and J. Paul Walser (walser@i2.com), i2 Technologies, 5005 W. Royal Lane, Irving, TX 75063, Fax 972-536-3029

Alexander Bockmayr, Universite de Nancy, LORIA; John Hooker, Carnegie Mellon University; Dana Nau, University of Maryland; Martin Savelsbergh, Georgia Institute of Technology; Bart Selman, Cornell University; Peter Van Beek, University of Alberta

Additional Information

www.i2.com/workshops/aaai2000/aaaior.html

Intelligent Lessons Learned Systems

Lessons learned (LL) systems capture and store experiential knowledge for reuse in subsequent decision-making tasks. This is a central focus of knowledge management (KM) efforts in government and commercial organizations, and many systems for lessons learned (and related) systems are maintained on the WWW or intranets. Several open AI research issues (such as knowledge representation) exist concerning the development, evaluation, and deployment of these types of systems. This motivates the need for more dialogue among AI and KM researchers, and with developers of LL and similar systems, to identify existing approaches, explain their limitations, and suggest AI techniques for improving their utility.

Topics

- Text processing (for example, textual CBR, latent semantic indexing, natural language) techniques for LL systems
- AI techniques (for example, CBR, ML, IR, IE) for representing (e.g., ontologies), acquiring, retrieving, and maintaining lesson repositories and related KM objects
- Intelligent KM processes for LL and related systems (such as for knowledge sharing, acquisition, communication, capture, storage, and reuse of experience)
- Surveys/critiques of LL, best practices, and alert systems
- Integrated LL systems

Format

This workshop will include invited talks by experts on LL systems who will overview the state-of-the-art on related issues, KM experts on corporate/organizational memories, and AI experts who have investigated LL tools. Selected submissions will also be invited for presentation. However, a majority of time will be devoted to focussed discussion topics on intelligent LL systems. A panel session will address potential uses of LL repositories.

Attendance

Limited to 50 attendees.

Submissions

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

Rosina Weber

Naval Research Laboratory, Code 5510
4555 Overlook Ave, SW
Washington, DC 20375-5337
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Voice: (202) 767-2685
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Committee

David W. Aha (Cochair), NRL (aha@aic.nrl.navy.mil); Kevin Ashley, University of Pittsburgh (ashley+@pitt.edu); Irma Becerra-Fernandez, Florida International University (becferi@fiu.edu); L. Karl Branting, University of Wyoming (karl@index.uwyo.edu); Jay Liebowitz, University of Maryland, Baltimore County (liebowit@umbc.edu); J. Robert Lucas, Joint Warfighting Center (lucasr@jwfc.acom.mil); Rosina Weber (Cochair), University of Wyoming (weber@aic.nrl.navy.mil)

Additional Information

www.aic.nrl.navy.mil/AAAI00-ILLS-Workshop/

Knowledge-Based Electronic Markets

This workshop will address the challenges, opportunities, and practical applications of knowledge-based electronic markets (e-markets). By e-markets, we mean markets on the web (or large inter-enterprise private networks) where buyers interact and transact with sellers. e-markets also include infrastructure support and mediation services and players, such as for yellow pages, catalogs, shopping search, advertising, sales assistants, brokering, aggregation, infomediaries, reputation and trust management, authentication, and payments. By knowledge-based, we mean using automated techniques for knowledge representation and reasoning, learning, and communication, for example, in intelligent agents.

Topics

We encourage submissions about practical applications and techniques, business-to-business applications, supply chain management, the use of XML and XML-based mark-up languages, developing and using shared ontologies, the evolution of standards for e-markets (e.g., for agent communication, contracts, XML-encoded information, and domain-specific ontologies), practical recommender services, data mining and machine learning in e-markets, online product and service catalogs, languages and techniques for product and service descriptions and configuration, languages and protocols for automatic negotiation, the integration of decision support systems for e-market applications, and discussion of relevant technical issues underlying important policy questions such as privacy and the protection of intellectual property.

Format and Submissions

The workshop will be a mix of presentations, panels and discussions. Participation will be limited and by invitation only, with preference given to people who have submitted a paper. We invite paper submissions of three kinds: technical papers which report on completed or ongoing research, application descriptions that focus on knowledge-based aspects of a prototype or fielded application, and position papers that describe opportunities, challenges, or problems. Accepted submissions will be included in the workshop notes and will be published as a AAAI technical report. Papers must be submitted electronically (PostScript or PDF) via the KBEM web site.

Committee

The workshop cochairs are Tim Finin, University of Maryland Baltimore County (finin@cs.umbc.edu, 410-455-3522, fax: 410-455-3969) and Benjamin Grosz, IBM T.J. Watson Research Center (grosz@us.ibm.com, 914-784-7783, Fax: 914-784-7455). A complete list of the organizing committee and program committee is available at the KBEM web site.

Additional Information

Further details on the workshop, instructions for submitting papers and position statements, and instructions for requesting an invitation to participate can be obtained at the KBEM web site (www.igec.umbc.edu/kbem/) or from one of the workshop organizers.

Learning from Imbalanced Data Sets

The majority of learning systems previously designed and tested on toy problems or carefully crafted benchmark data sets usually assumes that the training sets are well balanced. Unfortunately, this balanced assumption is often violated in real world settings. Indeed, there exist many domains for which some classes are represented by a large number of examples while the others are represented by only a few.

Although the imbalanced data set problem is starting to attract researchers' attention, attempts at tackling it have remained isolated. It is our belief that much progress could be achieved from a concerted effort and a greater amount of interactions between researchers interested in this issue. The purpose of this workshop is to provide a forum to foster such interactions and identify future research directions.

Topics

- Novel techniques for dealing with imbalanced data sets:
- Techniques for over-sampling the minority class.
- Techniques for down-sizing the majority class.
- Techniques for learning from a single class.
- Techniques for internally biasing the learning process.
- Other approaches.
- Comparing the various methodologies.
- The data imbalance problem in unsupervised learning.

Format

The workshop will consist of several sessions concentrating on the themes identified above. The workshop will conclude with a panel of distinguished guests commenting on the presentations of the day, discussing future directions, and opening the floor for general discussion.

Attendance

This workshop is open to all members of the Machine-Learning, Data-Mining, Statistics and Connectionist communities interested in the data imbalance problem. Attendance is limited to 65 participants.

Submissions

Authors are invited to submit papers on the topics outlined above or on other related issues. Submissions should be 6 pages, and be in line with the AAAI style sheet. Electronic submissions, in Postscript format, are preferred and should be sent to Nathalie Japkowicz at nat@cs.dal.ca. Alternatively, four hard copies of the papers can be sent to:

Nathalie Japkowicz
Faculty of Computer Science
DalTech/Dalhousie University
6050 University Avenue
Halifax, N.S.
Canada, B3H 1W5
Voice: (902) 494-3157
Fax: (902) 492-1517

Committee

Cochairs: Robert Holte, University of Ottawa (holte@site.uottawa.ca); Nathalie Japkowicz, Dalhousie University (nat@cs.dal.ca); Charles Ling, University of Western Ontario (ling@csd.uwo.ca); Stan Matwin, University of Ottawa (stan@site.uottawa.ca)

Additional Information

borg.cs.dal.ca/~nat/Workshop2000/workshop2000.html

Learning Grounded Representations

Situated agents need representations of their environment to engage in a variety of activities, like planning, reasoning and communicating with other agents. The traditional approach of hand-coding representations is often quite difficult, especially for robotic agents with rich sensing abilities that exist in dynamic and uncertain environments. Ideally, situated agents would construct symbolic representations of their environments that are based on (i.e. grounded in) whatever raw sensory information they have available.

The goal of the workshop is to identify the state of the art in learning grounded representations and the technical challenges for future research.

Topics

We welcome submissions on the following and related topics:

- Learning algorithms and representations.
- Identifying relevant sensory information, both across sensors and time.
- Appropriate learning biases, both domain specific and domain general.
- Learning algorithms and representations for dynamic environments.
- The nature and scope of prior structure necessary for learning grounded representation.
- Work in philosophy and psychology that can guide the design and implementation of learning systems.
- The acquisition and grounding of ontological distinctions.

Format

The workshop will consist of technical presentations, an invited speaker, a panel discussion, and a general discussion at the end of the day to identify broad themes and promising directions.

Attendance

Attendance will be limited to 50 participants.

Submissions

Persons interested in participating should submit a short paper (no more than six pages) or a position statement (no more than two pages). Submit electronically (preferred) to oates@cs.umass.edu, or mail three hard copies to either of the cochairs. Postscript and Word are acceptable formats for electronic submissions.

Cochairs

Paul R. Cohen
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Committee

Carole Beal, University of Massachusetts at Amherst (cbeal@psych.umass.edu); Benjamin Kuipers, University of Texas at Austin (kuipers@cs.utexas.edu); Luc Steels, Vrije Universiteit Brussel (steels@arti.vub.ac.be)

Additional Information

eksl-www.cs.umass.edu/aaai2000-workshop/

Learning Statistical Models from Relational Data

Researchers from a variety of backgrounds (including machine learning, statistics, inductive logic programming, databases, and reasoning under uncertainty) are beginning to develop techniques to learn statistical models from relational data. This work diverges from traditional approaches in these fields that assume data instances are structurally identical and statistically independent or assume that relationships are deterministic. New developments in this area are vital because of the growing interest in mining information in relational databases, object-oriented databases, XML and other structured and semi-structured formats. The workshop will focus on learning models that represent statistical correlations between the properties of related entities directly from relational data.

Topics

- Methods for learning statistical models from heterogeneous, nonindependent samples.
- Non-propositional data representations (including relational and first-order models).
- Efficient techniques for mining relational and semi-structured data.
- Applications of relational data analysis (such as Web mining, counter-terrorism, intrusion detection, collaborative filtering, bioinformatics).

Format

The workshop will include several invited talks and the presentation of some of the contributed papers; there will also be time for discussion.

Attendance

The workshop will be limited to 50 invited participants. To participate, submit either an extended abstract describing research results (see below) or a short statement (1-2 pages) describing your relevant

background and interests.

Submissions

Authors are invited to submit an extended abstract on the topics outlined above. Abstracts should emphasize technical research results, either in the form of system capabilities or general findings. Abstracts should be no longer than 4 pages, and follow the AAAI style sheet. Electronic submissions, in PostScript or PDF, should be sent to srl-submit@robotics.stanford.edu. Accepted submissions will be asked to submit a final version (up to 8 pages) of the paper and may be asked to give an oral presentation at the workshop. All papers will be distributed and included in an AAAI Press technical report.

Chairs

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Committee

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Additional Information

srl-info@robotics.stanford.edu; robotics.stanford.edu/srl

Leveraging Probability and Uncertainty in Computation

Recently there has been an increasing interest in approaches based on randomization, probability, and uncertainty to speed up computation and to model resources more realistically. (1) Given that in real world problems computational resources are limited, and the environment is very dynamic, it is important to use flexible, incremental methods that trade off resources for value of information. (2) Probabilistic analysis and empirical studies of the runtime distributions of algorithms have recently been adopted as a better way to characterize algorithm performance. Such studies have improved algorithm design, leading to anytime strategies, and, more generally, methods that combine algorithms into portfolios. (3) There has been considerable success in developing stochastic local search algorithms as well as randomized systematic search methods for solving hard combinatorial problems.

Topics

This workshop will bring together researchers from different areas of AI and Operations Research in order to discuss various topics in randomization, stochastic search techniques, probability analysis of algorithms, flexible computation, and uncertainty. Topics include:

- Utility perspective on computation and information
- Flexible anytime computation based on utility measures
- Probabilistic analysis and evaluation of stochastic algorithms
- Randomization to improve algorithmic efficiency and robustness
- Design and implementation of randomized algorithms
- Stochastic local search vs. randomized systematic search methods, other stochastic search strategies
- Portfolios of algorithms
- Theoretical results on stochastic algorithms

Format

The workshop will include technical paper presentations, invited talks, and panel discussions.

Attendance

The workshop will be limited to about 40 invited participants. Persons interested in attending should submit either full papers (up to 10 pages) or statement of interest (up to 2 pages). Either technical papers or position papers that describe opportunities and challenges are welcome.

Submissions

Submissions should be in PostScript, PDF, or ascii (only for statement of interest). Submit by e-mailing the URL where the submission can be retrieved (preferred method) or by e-mailing the submission itself to gomes@cs.cornell.edu. Acknowledgements will be sent by March 15th.

Cochairs

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Committee

Dimitris Achiloptas, Microsoft Research; Roberto Bayardo, IBM Research; Tom Dean, Brown Univ.; Ian Gent, U. St. Andrews, UK; Joseph Halpern, Cornell University; Adele Howe, Colorado State Univ.; Henry Kautz, AT&T Research; Eric Horvitz, Microsoft Research; Irina Rish, IBM Research; Stuart Russell, UC Berkeley; Gene Santos, University of Connecticut; Bart Selman, Cornell University; Toby Walsh, University of York, UK.

Additional Information

www.cs.cornell.edu/gomes

Mobile Robotic Competition and Exhibition Workshop

The Ninth Annual AAAI Mobile Robot Competition and Exhibition brings together teams from universities and other research laboratories to compete, and also to demonstrate state-of-the-art research in robotics and AI. The goals of the Competition and Exhibition are to foster the sharing of research ideas and technology; allow research groups to showcase their achievements; encourage students to enter the fields of robotics and AI; and increase awareness of the field.

The Competition and Exhibition comprises four separate events—a judged set of contests, a challenge, the exhibition, and the workshop.

The workshop, which is the final event, brings together all participants of the contest, challenge, and exhibition events to present research results and to exchange lessons learned. The workshop allows the participants to understand and benefit from each others efforts. In addition to presentations, we will hold a panel session to discuss improving the competition and exhibition. While the presentations are limited to participants of the competition and exhibition, AAAI conference attendees are invited to attend the workshop. Attendance will be limited to space available.

In order to publish the latest results of each group, including the actual implementation that ran during the events, the proceedings will be assembled after the workshop. Each group will need to supply a paper of up to 8 pages by 1 September 2,000 for publication in proceedings of the workshop. Papers should be submitted electronically to the e-mail address below.

Teams who receive travel support for participating in the mobile robot competition and exhibition *must* attend and present at the workshop. All other participants will be strongly encouraged to attend and present.

Participants should start by registering

for the contest, challenge or exhibition at the web site listed below. Papers for the workshop will be submitted by the due date to:

Alan C. Schultz, Workshop Chair
Intelligent Systems Section - Code 5515
Washington DC 20375-5337
Voice: (202) 767-2684
Fax: (202) 767-3172
E-mail: schultz@aic.nrl.navy.mil

Committee

Lisa Meeden (Swarthmore College, meeden@cs.swarthmore.edu); Marc Bohlen (CMU, bohlen@cs.cmu.edu); Tucker Balch (CMU, trb@cs.cmu.edu); David Kortenkamp (Metrica, david.m.kortenkamp1@jsc.nasa.gov)

Additional Information

www.aic.nrl.navy.mil/~schultz/aaai2000/

Modeling Problems in Constraint Programming

In recent years more and more attention in the constraint programming community has been paid to modeling and solving real-life problems. Both in scientific studies and in industrial projects people have noticed that the way one models a problem can vastly influence the performance of the algorithm solving it. People also noticed that some models do well in combination with one algorithm, while others do well with another. Finding a good model often is a process of trial and error, and little study has been done on what constitutes a good model, or a good combination of a model and an algorithm. In the workshop we intend to focus on exactly these topics.

Topics

The topics of the workshop will include, but will not be limited to CP modeling languages and their influence on modeling and solving problems, real-life applications and the lessons that can be learned, new ways to model certain aspects of a problem, problem modeling using non binary constraints, general methods to remove symmetry in models, theoretical comparisons of different models, computational comparisons of different models.

Format

The workshop will be a one-day meeting. We plan to have one invited talk. The presentations (15 minutes) will be organized into themes. As the whole workshop is aimed at stimulating interaction between the participants, the speakers will be requested to keep that in mind for their presentations. Between the presentations we will reserve time for discussion. The length of the breaks also aims at giving people the opportunity to discuss. Finally we will have a panel and/or general discussion at the end of the day.

Attendance

We invite people to submit a paper describing their work. Based on these submissions the Organizing Committee will invite maximally 25-50 participants. From the participants approximately 10 will be requested to submit a camera-ready paper by April 26, 1999 and to prepare a 15-minute presentation.

Submission

Papers (up to 15 pages) should be sent electronically to one of the contact persons (see below) by March 10, 2000. Electronic submissions using PostScript format are preferred.

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Committee

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Additional Information

www.ilog.fr:8001/AAAI00/

New Research Problems for Machine Learning

Most of the recent research in machine learning has focused on a relatively narrow range of issues that enjoyed wide popularity in the last decade or so. This narrow focus has helped the field to explore in depth some of the essential methods and approaches, and has produced results that attracted wide attention to the field. At this stage, however, time may be ripe to start exploring broader issues that remain unaddressed, or have been ignored or considered too difficult to tackle. We find it important for a healthy progress of the field to encourage researchers to start initiatives in new directions. This workshop seeks to bring together scientists who want to discuss, in a one-day, brainstorming workshop, promising directions for future research in machine learning.

Topics

- Representation of knowledge and data
- Novel learning tasks
- New learning scenarios
- Methods to evaluate learning performance
- Advanced applications

Format

Subrata Dasgupta, known for his work in the philosophy of creativity in science and technology, will present a keynote speech. His talk will be followed by three sessions during which the participants will present their ideas in two different forms: *major problems*, where each talk will take 30 minutes including discussion, and *brief suggestions*, taking 10 minutes each, including one or two questions.

Attendance

To ensure a creative atmosphere, the attendance will be limited to 30 participants, most of which are supposed to present a talk.

Submissions

Submissions (3-5 pages) should be sent to Miroslav Kubat, preferably in electronic form as a PostScript file. Submissions should be in line with the AAAI style sheet. The authors should indicate whether they plan a short (10 minutes) or long (30 minutes) presentation.

Chairs

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Tom Mitchell
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Parallel and Distributed Search for Reasoning

This workshop aims at bringing together researchers from various application areas that are interested in performing intelligent search using multiple computing nodes (computers or processors). By intelligent search we mean search that combines general knowledge of the domain with information derived by the search so far, and uses this combined knowledge to decide where to search next. Thus only limited predictions about the search are possible. But a search procedure that will be parallelized is usually required to be simple and predictable.

Nevertheless, in the last few years several systems have been developed that achieve the combined benefits of using several computing nodes and intelligent search. Although each system uses different domain-specific knowledge, certain types of knowledge and certain parallelization and distribution concepts can be identified and they are usable for several application domains.

As a result of this workshop we hope to achieve a better understanding of the kinds of applications and knowledge that are well-suited for certain parallelization and distribution concepts and to characterize the basic components of such concepts.

Topics

- Parallelization and distribution concepts for learning, planning and scheduling, deduction
- Cooperation concepts for search systems
- Partitioning of problems
- Limiting information exchange
- Configuring parallel search systems
- Adaptation in distributed search systems

Format

The workshop will be a mixture of invited talks, submitted presentations and an

open discussion with regard of our intended results.

Submissions

Interested researchers are asked to submit either a paper (5 pages in AAAI format) or a brief statement of interest electronically to denzinge@informatik.uni-kl.de (see the web page). Some papers will be selected for presentation at the workshop, based on overall quality and to achieve a broad representation of the diverse application areas and general concepts. Submitted papers will also be selected for inclusion both in the working notes to be distributed at the workshop and in a AAAI technical report, which will allow the work to be distributed after the workshop and to be cited. The organizers also intend to pursue a formal publication arising from the workshop.

Committee

Joerg Denzinger (chair), Uni Kaiserslautern (denzinge@informatik.uni-kl.de); Yasuhiko Kitamura, Osaka City University (kitamura@info.eng.osaka-cu.ac.jp); Eugene Santos Jr., University of Connecticut (eugene@engr.uconn.edu); Bruce Spencer, University of New Brunswick (bspencer@unb.ca)

Additional Information

[agent.informatik.uni-kl.de/denzinge/aaai-
ws.html](http://agent.informatik.uni-kl.de/denzinge/aaai-
ws.html)

Representational Issues for Real-World Planning Systems

In recent years, the AI planning community has begun the transition from artificial problems to realistic applications in space, industrial, and military domains. One lesson from this transition is that successful real-world planning systems require much more than fully automated plan generation.

Plans are created to be executed, often in highly dynamic environments; as such, it is essential for plans to be readily adaptable, possibly in the face of strict deadlines. Interactive and mixed-initiative modalities are preferred by many user communities. The availability of tools to support development of planning knowledge bases and their ongoing maintenance is critical for user acceptance. Users generally want more than one plan that meets their requirements, preferring to have assistance in generating and managing such options. Integration with other systems and knowledge bases is essential, as is the ability for users to comprehend the content and rationale underlying plans.

This workshop will bring together researchers and practitioners interested in representational issues for this broader model of planning systems. While there is a rich body of research on core representations for actions and causality, little attention has been paid to the representational requirements needed to support planning-related activities that lie outside basic plan generation.

Discussions will be driven by the following fundamental questions: What information needs to be represented beyond basic models of actions and causality? How can the expressiveness/efficiency trade-off be addressed? How can required knowledge be obtained and maintained? How can systems be made robust in the face of incomplete or incorrect knowledge?

Topics

- Mixed-initiative planning, scheduling, and control;
- Knowledge acquisition and modeling;
- Plan management;
- Resource-constrained planning and scheduling;
- Execution, monitoring, and repair.

Submissions

Each submission should consist of a description of relevant work (no more than 6 pages) or a one to three page proposal of major discussion issues and topics of particular relevance to the authors' work and the themes of the workshop.

Submissions should be sent by e-mail in PDF format to:

Yolanda Gil
Information Sciences Institute/USC
4676 Admiralty Way, Suite 1001
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Fax: (310) 822-0751
E-mail: gil@isi.edu

Committee

Yolanda Gil (cochair), USC/Information Sciences Institute (gil@isi.edu); David Musliner, Honeywell Technology Center (musliner@htc.honeywell.com); Karen Myers (cochair), SRI International (myers@ai.sri.com); Kanna Rajan, NASA Ames Research Center (kanna@ptolemy.arc.nasa.gov); Steve Ray, National Institute of Standards and Technology (ray@nist.gov).

Additional Information

www.isi.edu/~gil/aaai99-planning-workshop

Spatial and Temporal Granularity

The main purpose of this workshop is to bring together active researchers in AI, databases and geographic information science to explore major trends and key issues in the field of spatial and temporal granularity. Providing and relating spatial and/or temporal representations at different grain levels of the same reality is an important research theme in all of these areas, and a major requirement for many applications. The inherent abstraction power of the granularity concept has been successfully exploited in several application domains, including temporal and spatial reasoning, hierarchical planning, natural language understanding, temporal database design, database interoperability, data mining, medical informatics, image processing, hierarchical reasoning in GIS, real-time system specification and verification.

Topics

The workshop will address several issues from the perspectives of the different research communities:

Ontological issues (What is granularity? Which are the relationships between temporal and spatial granularities? Which are the relationships between qualitative and quantitative models of granularity? How many granularity levels—finitely versus infinitely many—should be considered? Are spatial and temporal granularity levels task dependent? Are they correlated to application domains?);

Representational/expressiveness issues (expressibility of spatial/temporal properties; formal languages and corresponding classes of captured granularity structures);

Semantic issues (for example, how to convert information across different granularities?);

Reasoning issues (How to refine temporal/spatial reasoning techniques to work in a multi-granularity context? How to

exploit granularity to improve the efficiency of temporal/spatial reasoning?);

System integration issues (How to integrate specialized reasoning tools to deal with real-world domains and applications?).

Format

The workshop will be conducted as a combination of paper presentations, a panel session and an invited talk.

Attendance

Attendance will be limited to 40 people and will be by invitation based on the review process of submitted papers.

Submissions

Electronic submissions of extended abstracts (6 pp.) or position papers (3 pp.) are solicited in PDF or PostScript format, formatted using the standard AAAI guidelines, and sent to stgran-ws@tizero.usr.dsi.unimi.it.

Cochairs

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Committee

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Additional Information

homes.dsi.unimi.it/~bettini/stgran-ws

Spatial and Temporal Reasoning for Collaborating Mobile Agents

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.

This new workshop will use the important application of collaborating mobile agents as a focal point for the discussion of spatial and temporal reasoning and representation issues. It is intended both 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 domain.

Topics

- Coordinated planning and scheduling
- Synchronization
- Maintaining shared spatio-temporal data about changing environment
- Path finding
- Motion control
- Natural language commands
- Problems of reaching agreement and freshness of data
- Coordinated strategies

Attendance

Around 40 participants will be selected to attend the workshop, contributing and

participating in discussions.

Submissions

Electronic submissions are solicited in TeX, LaTeX, or PostScript format. The papers, starting with title, author's names, addresses, telephone, and fax numbers, 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. Selection of participants will be based on relevance to the indicated focus of the workshop, clarity of the work submitted, and the strength of the research.

Committee

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Additional Information

www.cs.auckland.ac.nz/~hans/spacetime/aaai2000ws.html