

AAAI 2003

Spring Symposium Series

March 24 – 26, 2003

Stanford University, California

Call for Participation

Sponsored by the

American Association for Artificial Intelligence

445 Burgess Drive, Menlo Park, CA 94025

(650) 328-3123

sss@aaai.org

www.aaai.org/Symposia/symposia.html

The American Association for Artificial Intelligence, in cooperation with Stanford University's Computer Science Department, is pleased to present its 2003 Spring Symposium Series, to be held Monday through Wednesday, March 24-26, 2003 at Stanford University in Stanford, California. The topics of the eight symposia in this symposium series are:

- Agent-Mediated Knowledge Management
- Computational Synthesis: From Basic Building Blocks to High Level Functionality
- Foundations and Applications of Spatio-Temporal Reasoning (FASTR)
- Human Interaction with Autonomous Systems in Complex Environments
- Intelligent Multimedia Knowledge Management
- Logical Formalization of Commonsense Reasoning
- Natural Language Generation in Spoken and Written Dialogue
- New Directions in Question Answering

An informal reception will be held on Monday, March 24. A general plenary session, in which the highlights of each symposium will be presented, will be held on Tuesday, March 25.

Symposia will be limited to between forty and sixty participants. Each participant will be expected to attend a single symposium. Working notes will be prepared and distributed to participants in each symposium. In addition to invited participants, a limited number of interested parties will be able to register in each symposium on a first-come, first-served basis. Registration information will be available in December. To obtain registration information, write to:

- AAI Spring Symposium Series
445 Burgess Drive
Menlo Park, CA 94025-3442 USA
Voice: 650-328-3123
Fax: 650-321-4457
sss@aaai.org
www.aaai.org/Symposia/symposia.html

Submission Dates

- Submissions for the symposia are due on October 4, 2002
- Notification of acceptance will be given by November 8, 2002
- Material to be included in the working notes of the symposium must be received by January 20, 2003.

Please see the appropriate section in each symposium description for specific submission requirements.



Agent-Mediated Knowledge Management

Knowledge management (KM) provides new challenges to the AI community, like context-aware knowledge delivery. Scaling-up research prototypes to real-world solutions usually requires an application-driven integration of several basic technologies. Typical characteristics to be dealt with are manifold logically and physically dispersed actors and knowledge sources, different degrees of formalization of knowledge, different kinds of services and systems, and conflicts between local and global goals. Agent approaches have already been successfully employed for many partial solutions within the overall picture: Agent-based workflow, cooperative information gathering, intelligent information integration, or personal information agents are established techniques in this area.

To cope with the inherent complexity of a more comprehensive solution, agent-mediated knowledge management (AMKM) deals with collective aspects of the domain in an attempt to cope with the conflict between desired order and actual behavior in dynamic environments. AMKM introduces a social layer, which structures the society of agents by defining specific roles and possible interactions between them.

We invite contributions which illustrate methodological, technical and application aspects of AMKM, including (1) analysis and design methods for AMKM systems, (2) relationship between AMKM and general agent-oriented software engineering, (3) relationship between AMKM and business engineering methods, (4) distributed organizational memories, (5) ontology negotiation and ontology life-cycle management, (6) agents for group formation and awareness, (7) agents for supporting social processes (trust, reputation), (8) agent-based workflow in the KM context, (9) collaborative information retrieval, (10) architectures and platforms for socially enabled agents, (11) distributed KR&R for socially enabled agents, (12) user modeling for agent-mediated social processes, (13) practical application examples for (aspects of) AMKM systems, (14) basic research questions, benefits and reasons for the application of the agent paradigm to KM, (15) organizational implications of agent use in KM, and (16) formal models for AMKM.

Submission Information

Those interested in participating should send a three-page extended abstract describing their related work and areas of interest. Submissions may discuss work in any stage of development, from concepts and future directions to finished work. Alternatively, full papers up to 8 pages may be submitted. Full papers must be complemented by a one-page expression of interest from those authors who intend to participate in the symposium. PDF-submissions in AAAI format should be sent to elst@dfki.de.

Organizing Committee

Ludger van Elst (Cochair), German Research Center for Artificial Intelligence (DFKI), (elst@dfki.de); Virginia Dignum (Cochair), Achmea & University of Utrecht, (virginia@cs.uu.nl); Andreas Abecker (Cochair), German Research Center for Artificial Intelligence (DFKI), (aabecker@dfki.de); Rose Dieng, INRIA, Sophia-Antipolis; Michael N. Huhns, University of South Carolina, Columbia; Daniel O'Leary, University of Southern California, Los Angeles; Pietro Panzarasa, University of Southampton; Amit P. Sheth, University of Georgia, Athens; Walt Truszkowski, NASA Goddard Space Flight Center; Gerd Wagner, Eindhoven University of Technology

Computational synthesis research seeks formal algorithmic procedures that combine



Computational Synthesis: From Basic Building Blocks to High Level Functionality

Computational synthesis research seeks formal algorithmic procedures that combine low-level building blocks or features to achieve given arbitrary high-level functionality. The primary challenge is scaling to high complexities, and the paths of investigation deal with automatic composition of building blocks into useful modules, automatic abstraction of module functionality, and automatic hierarchical reuse of modules. This symposium will focus on domain-independent methods that address modularity, regularity, hierarchy, and abstraction in automatic synthesis. Recently there has been a surge of interest in these fundamental issues from three directions: AI researchers interested in scaling discovery processes, engineers interested in fully automated design, and biologists interested in the origin of complexity.

Topics of interest include:

- Models of bottom-up composition and top-down decomposition
- Scalability of composition processes to high complexities
- Automatic identification and composition of useful modules
- Regularity and hierarchy in composition
- Automatic abstraction and encapsulation of modules
- Efficient and adaptive representations of design space
- Solution-neutral goal specification
- Stochastic, game-theoretic and co/evolutionary processes
- Machine learning in synthesis
- Synthesis as models for discovery in nature and engineering
- No free lunch: What can we trade to get open-ended design?

Symposium Format

Diversity of problem-domains will be encouraged. The symposium seeks to informally bring together researchers from diverse problem domains to address universal approaches and common issues in automatic synthesis. We welcome technical papers describing proposed or completed research activities; position papers outlining a research agenda or evaluating current ideas and approaches; or suggestions for panel discussions. Particularly welcome are contributions that suggest a generic and domain independent approach, although they might be demonstrated for a particular problem domain. Typical presentations will be short (10 minutes) with most of the time allocated for discussion led by a designated peer. Abstracts will be circulated by mail prior to meeting.

Interested applicants should send a 2-page abstract (in PDF) to hod.lipson@cornell.edu. For more information visit www.mae.cornell.edu/ccsl/conf. Student scholarships are available.

Symposium Chairs

Hod Lipson, Cornell University; Erik K. Antonsson, Caltech; and John R. Koza, Stanford University



Foundations and Applications of Spatio-Temporal Reasoning (FASTR)

In the last few decades, tremendous progress has been made in the field of spatio-temporal knowledge management and reasoning with qualitative and incomplete information, primarily in inventing new domains of space and time and in studying complexity issues in reasoning over them. It has now attained a critical mass where a new investigation needs to be launched in order to understand the foundation of all these works. A lack of such fundamental understanding is behind the reason why the field has not found as much enthusiasm amongst the information technology practitioners as it should have had. Space and time being ubiquitous in information processing the expectation of having such applications is very high, but so far that remained somewhat elusive. Apparently the causes behind the situation are:

- *Fundamental*: no existing generalized understanding across different domains of space and time.
- *Methodological*: the lesser practicable algebraic approach primarily taken by the community so far as opposed to a geometrical one closer to the actual underlying space.
- *Strategic*: the lack of critical mass of application fields for each individual spatial or temporal domain.

All three problems are linked with each other, i.e. they could be attacked at the same time. This symposium will try to formalize these three shortcomings of the community, set a direction in which the research should focus on in the spatio-temporal reasoning area, and galvanize the community into forming a long-term vision and infrastructure for future works.

Researchers participating in the symposium will be asked to give some special thoughts in the generalizing aspects between different ontologies than just reporting the results from their theoretical works from any individual ontology. In order to address the third issue mentioned above we will also seek participation from practitioners who may benefit from the results in spatio-temporal reasoning works. Our expected participants outside the STR community would be on the one end geometers/algebraists who see STR works as a development of a new angle in mathematics of qualitative space, on the other end engineers who need qualitative reasoning in some abstract space.

Additional details about the symposium can be found on the FASTR web page: www.cs.auckland.ac.nz/~hans/aaaisymp03.html

Organizing Committee

Hans W. Guesgen (primary contact), University of Auckland, Auckland, New Zealand, hans@cs.auckland.ac.nz; Debasis Mitra, Florida Institute of Technology, Melbourne, Florida, USA, dmitra@cs.fit.edu; Jochen Renz, Vienna University of Technology, Vienna, Austria, renz@dbai.tuwien.ac.at



Human Interaction with Autonomous Systems in Complex Environments

Autonomous systems can greatly enhance human effectiveness in complex environments by handling routine or cognitively challenging operations. However, autonomy changes the nature of human tasks and can introduce new risks. Mitigating those risks raises issues in autonomous systems research such as: (1) How to accept task inputs from humans; (2) How to adjust the level of autonomy and/or change the distribution of roles and responsibilities between autonomous systems and humans; (3) How to model humans and their tasks and to what level of detail and; (4) How to facilitate human understanding of the goals, tasks and contexts of autonomous systems to reduce the potential that anomalies would lead to unexpected responses from the system or inappropriate responses by the human.

How do we make people more effective and safe in performing tasks in cooperation with an autonomous system? It is our view that effective human interaction with autonomous systems requires more than just good user interface design. It involves substantial challenges in the design of the autonomous systems themselves and in the representation and use of the cognitive models underpinning human interaction with autonomous systems. Specifically, it affects the design requirements for autonomous system functions ranging from planning and modeling to natural language and intent inference.

The objective of this symposium is to promote technology development for improved human-autonomy interaction by facilitating collaboration between researchers in autonomy and researchers in human-computer interaction. We are especially interested in technology and case studies relevant to complex, applied environments in which people interact with autonomous systems regularly and in-depth. Such systems include autonomous control of buildings or spacecraft, robots that interact with people, and software for assisting complex human tasks, such as logistics planning.

This symposium will include paper presentations, breakout sessions, and an invited keynote address. Significant time for interaction and commentary between human-computer interaction researchers and autonomous systems researchers will be scheduled.

Submissions

Please submit abstracts or papers of 2-6 pages in length electronically to David Kortenkamp at kortenkamp@jsc.nasa.gov by the symposium deadline.

More Information

www.traclabs.com/~korten/spring_symposium03/

Program Committee

David Kortenkamp, NASA Johnson Space Center/Metrica Inc. (cochair); Mike Freed, NASA Ames Research Center (cochair); Michael Cleary, Draper Laboratory; Debra Schreckenghost, NASA JSC/Metrica Inc.; Reid Simmons, Carnegie Mellon University; David Woods, Ohio State University



Intelligent Multimedia Knowledge Management

Research in diverse areas of media processing is starting to be integrated to form systems for intelligent multimedia knowledge management. Systems of this type will be able to perform knowledge management activities such as extracting information from various media such as text, speech and video, and integrating these into alternative media streams to enrich them.

Applications for which these systems might be developed include: (1) Education, e.g. through integrating aural and visual presentations with personal notes and external information resources. (2) Entertainment, e.g. by automatically annotating television and video material with related information of featured individuals or events. (3) Business, e.g. by automatically providing additional relevant information during meetings. (4) Research, e.g. via knowledge discovery and integration from different sources.

Component technologies required by these systems include information retrieval, information extraction, speech recognition, video and image analysis, summarisation, agent technologies, multilingual systems, database systems and information visualisation. For example, extraction of information from multimedia data requires the development and integration of robust information extraction methods for event detection and named entity recognition with spoken transcripts and can be integrated with information derived from video streams. Thus rather than merely trying to locate documents, intelligent knowledge management seeks to further integrate technologies to actually mine knowledge from documents and automatically make use of it.

The symposium follows on from the successful 1997 AAAI Spring Symposium on Intelligent Integration and Use of Text, Image, Video, and Audio Corpora. Although presentations describing research into the novel integration of technologies and prototype systems will be the central aspect of this symposium, the meeting also aims to bring together researchers who might otherwise not meet to exchange ideas and foster new research initiatives. It is hoped that learning about related research and potential applications will inspire participants to develop new directions in their own work and possibly to collaborate with others working in fields complementary to their own.

Submissions

The symposium will consist of formal paper presentations describing current research or prototype systems, as well as interdisciplinary discussion sessions exploring future developments of knowledge management technologies. Those interested in participating are invited to submit either a full paper of not more than 5,000 words in length or a one page statement of interest outlining their relevant research activities and how they would like to contribute to the symposium. Submission information is available from www.dcs.ex.ac.uk/aaai03-imkm/

Organizing Committee

Gareth Jones (chair), University of Exeter, UK; Ruud Bolle, IBM T.J. Watson Research Center, USA; Anni Coden, IBM T.J. Watson Research Center, USA; Alexander Hauptmann, Carnegie Mellon University, USA; Corinna Ng, Canon Research Centre Europe Ltd, UK; Shin'ichi Satoh, National Institute of Informatics, Japan



Logical Formalizations of Commonsense Reasoning

One of the major long-term goals of AI is to endow computers with commonsense reasoning capabilities. Although we know how to design and build systems that excel at certain bounded or mechanical tasks which humans find difficult, such as playing chess, we have little idea how to construct computer systems that do well at commonsense tasks which are easy for humans. Formalizing commonsense reasoning using logic-based approaches will be the focus of the symposium. Emphasis will be placed on representation rather than algorithms, and on formal rather than informal methods.

Topics of interest include, but are not limited to: (1) change, action, and causality; (2) ontologies, including space, time, shape, and matter, and ontologies of networks and structures; (3) large commonsense knowledge bases (including work related to the high performance knowledge bases (HPKB) project and the rapid knowledge formation (RKF) project); (4) axiomatizations of benchmark commonsense problems; (5) exploration of new commonsense domains in a preformal way: e.g. new microworlds or benchmark problems; (6) nonmonotonic reasoning; (7) formal models of probabilistic reasoning; (8) formal theories of context; (9) mental attitudes including knowledge, belief, intention, and planning; (10) belief change, update, and revision; (11) cognitive robotics; and (12) reasoning about multi-agent systems and social interactions among agents

While mathematical logic is expected to be the primary lingua franca of the symposium, we also welcome papers using rigorous but non-logical approaches to the representation of commonsense domains. Technical papers offering new results in the area are especially welcome. However, survey papers, papers studying the relationship between different approaches, and papers on methodological issues such as theory evaluation, are also encouraged.

Submission Information

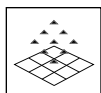
Please submit papers of up to 6000 words, excluding the bibliography. Electronic submissions in PDF, are preferred; otherwise 6 hard copies of the paper are acceptable. To only attend the workshop, please submit a 1-2 page research summary including a list of relevant publications. All submissions and requests for attendance should be sent to one of the Symposium Chairs: Patrick Doherty, John McCarthy, or Mary-Anne Williams (see below). For more information, please see www.ida.liu.se/~patdo/cs/cs2003.html

Organizing Committee

Patrick Doherty, Linkoping University (patdo@ida.liu.se); John McCarthy, Stanford University (jmc@steam.stanford.edu); Mary-Anne Williams, University of Newcastle, (maryanne@cafe.newcastle.edu.au)

Preliminary Program Committee

Eyal Amir, University of California Berkley, USA; Vinay Chaudhri, SRI, USA; Tom Costello, IBM, USA; Ernie Davis, NYU, USA; Patrick Hayes, University of West Florida; Jim Hendler, University of Maryland, USA; Jerry Hobbs, SRI, USA; Fritz Lehmann, Austin, USA; Hector Levesque, University of Toronto, Canada; Vladimir Lifschitz, University of Texas at Austin, USA; Fangzhen Lin, Hong Kong University of Science and Technology; Leora Morgenstern, IBM, USA; Pavlos Peppas, University of Patras, Greece; Murray Shanahan, Imperial College, UK; Yoav Shoham, Stanford University, USA



Natural Language Generation in Spoken and Written Dialogue

All types of dialogue systems, including spoken, written, GUI-based and multimodal, have become more prevalent in recent years. Separate workshops have focused on the building and evaluation of these systems and on the generation of everything from noun phrases to longer monologues. The goal of this symposium is to bring together people involved with all types of dialogue and natural language generation research to discuss current challenges and improve existing techniques for meeting them. We expect builders of dialogue systems to come away with insight into problems and solutions already discovered by the NLG community, and builders of generation systems to develop a new appreciation of issues that arise in dialogue systems.

Potential contexts include tutoring and interactive help systems, entertainment applications such as animated intelligent agents and generation of dialogue in narrative, multimedia systems, information retrieval and transaction processing, and even computer-computer dialogue intended to be seen by humans.

Some relevant topics include: generation of repairs and other dialogue-specific phenomena, application customization and level of knowledge representation, the role of user modeling, the relation between quality of dialogue understanding and generation quality, the use of different modalities in dialogue systems, the effect of domain and genre on dialogue, initiative handling, synchronization, and speech synthesis vs. pre-recorded audio. Also relevant are papers on corpus collection and analysis, system evaluation, resource sharing and reuse, and authoring tools and APIs. (Papers exclusively on speech synthesis are outside the range of this symposium.)

Submissions

The symposium will consist mainly of panel discussions, group sessions, and a poster session, but there will also be time for researchers to present their work. Potential participants may submit technical papers between 2 and 10 pages in length. Papers can be theoretical or applied, with technical details or positions, completed or in progress. We expect diverse perspectives such as spoken vs. text, generation vs. dialogue structure, and statistical vs. knowledge-based. Student submissions are encouraged. Electronic submission in PostScript or PDF is requested. Further information is available at www.cs.niu.edu/~nlgdial, or by writing to Charles Callaway (callaway@itc.it) or Reva Freedman (freedman@cs.niu.edu).

Organizing Committee

Reva Freedman (Cochair), Northern Illinois University; Charles Callaway (Cochair), ITC-irst, Italy; Gregory Aist, NASA - RIACS; Nancy Green, University of North Carolina/Greensboro; Pamela W. Jordan, University of Pittsburgh; David R. Traum, ICT, University of Southern California; Marilyn Walker, ATT Labs - Research



New Directions in Question Answering Motivation

Question answering promises an important new way of information access for all. There are several significant question answering activities underway (see below). In spite of many activities, the potential richness of question answering has still only been partially investigated in terms of the variety richness of sources (e.g., multilingual, multimedia), potential range of processing possibilities, the hope for new applications (e.g., question answering for help desks, manuals), and possible methods of presentation.

This symposium will focus on integrating across these various activities, communicating results from them, and aim to leverage recent government, industrial, and academic initiatives in question answering, share these results with graduate students and researchers, and work to foster new research directions.

This symposium will focus on new directions in burgeoning area of question answering. These will include, but not be limited to temporal question answering; multiple perspective question answering; multimedia question answering; multilingual question answering; interactive and/or dialogue-based question answering; usability and habitability of question answering systems; re-use in question answering; new challenges within specific tasks within question answering such as question analysis, information integration, answer presentation generation; and evaluation of question answering.

Apart from government program reviews and formal government evaluation conferences for question answering (e.g., TREC), there are no specific forums for addressing advanced research directions in an open scientific form such as the Symposium series offers. This meeting will draw directly upon these recent programs, activities and resources: ARDA AQUAINT Program (www.ic-arda.org/InfoExploit/aquaint/index.html); ARDA Q&A Roadmap (www-nlpir.nist.gov/projects/duc/papers/qa.Roadmap-paper_v2.doc); LREC Q&A Roadmap Workshop (www.lrec-conf.org/lrec2002/lrec/wksh/QuestionAnswering.html); ARDA NRRRC Summer 2002 workshops on temporal and multiple perspective question answering (nrrc.mitre.org); TREC QA track (trec.nist.gov/presentations/TREC10/qa/).

Submissions Format

Potential participants are invited to submit a paper of 1,500 - 6000 words, proposing questions, reporting work in progress, discussing applications, or theoretical contributions. Submissions should be sent electronically in Word (preferably) or ASCII text format to Paula MacDonald (pmmmac@mitre.org). Demonstrations will be considered as well. Please send a demonstration description no less than one page but no longer than the full paper specifications. The symposium form will be a series of short presentations, demonstrations, and joint working sessions aimed to understand key impediments to progress, formulate new research areas, and identify opportunities for cross site collaboration (e.g., in algorithm development, corpora creation, annotation standards, evaluation methods). We will target around 40 participants who are active in the field.

Organizing Committee

David Day, MITRE, day@mitre.org; Mark Maybury, MITRE, maybury@mitre.org (chair); John Prange, ARDA, jprange@nsa.gov; James Pustejovsky, Brandeis University, jamesp@cs.brandeis.edu; Janyce Wiebe, Univ. of Pittsburgh, wiebe@cs.pitt.edu