

Call for Participation

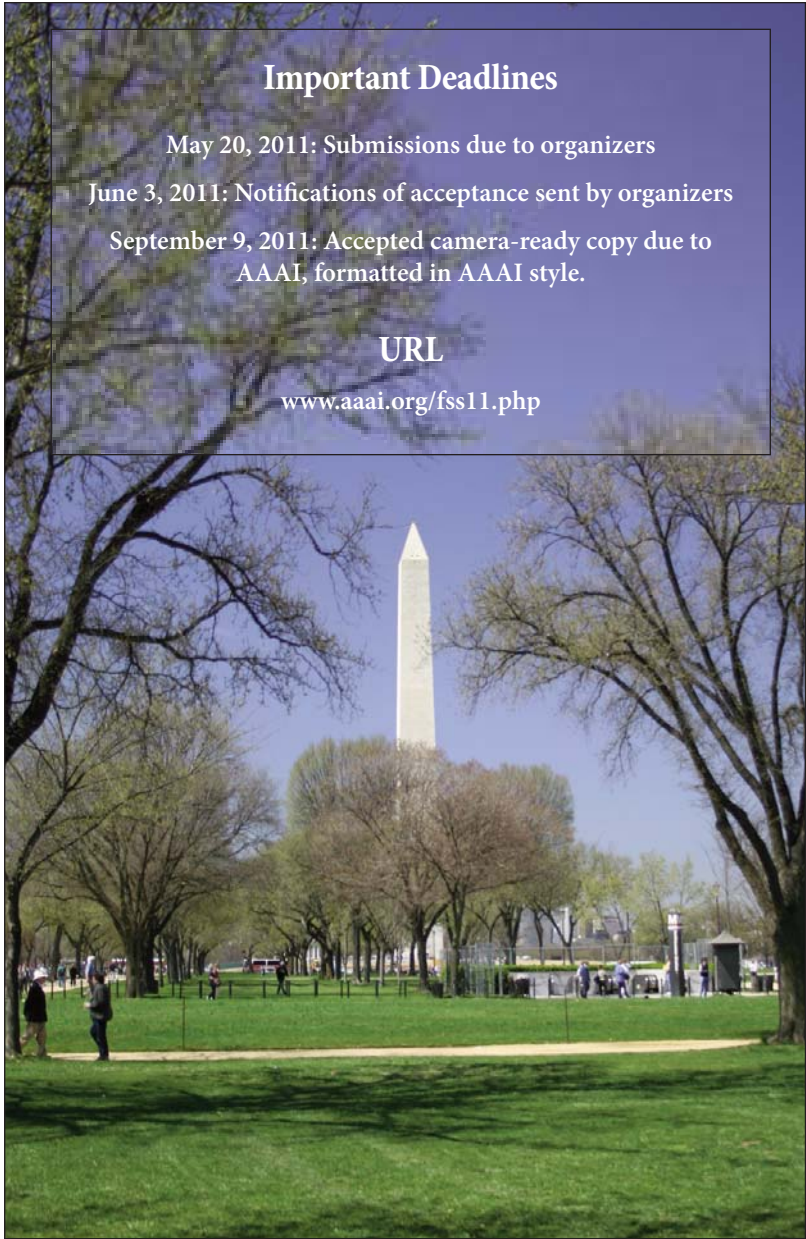
2011 AAAI Fall Symposium Series

November 4–6, 2011  The Westin Arlington Gateway, Arlington, Virginia

Sponsored by the Association for the Advancement of Artificial Intelligence

445 Burgess Drive, Menlo Park, California 94025 USA  fss11@aaai.org

1-650-328-3123  1-650-321-4457 (fax)  www.aaai.org/fss11.php



Important Deadlines

May 20, 2011: Submissions due to organizers

June 3, 2011: Notifications of acceptance sent by organizers

September 9, 2011: Accepted camera-ready copy due to AAAI, formatted in AAAI style.

URL

www.aaai.org/fss11.php

- Multiagent Coordination under Uncertainty
- Open Government Knowledge: AI Opportunities and Challenges
- Question Generation
- Robot-Human Teamwork in Dynamic Adverse Environment

An informal reception will be held on Friday, November 4. A general plenary session, in which the highlights of each symposium will be presented, will be held on Saturday, November 5.

Symposia will be limited to 40–60 participants each. Participation will be open to active participants as well as a limited number of interested individuals on a first-come, first-served basis. Each participant will be expected to attend a single symposium. Technical reports will be prepared and distributed in electronic format (CD) only to the participants in each symposium. Registration information will be available on the AAAI web site in August 2011

To obtain registration information, write to:

AAAI Fall Symposium Series
445 Burgess Drive
Menlo Park, CA 94025-3442
650-328-3123
650-321-4457 (fax)
fss11@aaai.org
www.aaai.org/Symposia/Fall/fss11.php

Submission Requirements

Interested individuals should submit a paper or abstract by the deadline listed in the box. For AAAI formatting guidelines, please see the Author Instructions Pages on the AAAI website (www.aaai.org/Publications/Author/author.php). All papers published by AAAI must follow these instructions without exception. Papers that do not follow the guidelines cannot be published. Please mail your submissions directly to the chair of the individual symposium according to their directions. Do not mail submissions to AAAI.

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

The Association for the Advancement of Artificial Intelligence is pleased to present the 2011 Fall Symposium Series, to be held Friday through Sunday, November 4–6, at the Westin Arlington Gateway in Arlington, Virginia. The Symposium Series will be preceded on Thursday, November 3 by a one-day AI funding seminar. The titles of the seven symposia are as follows:

- Advances in Cognitive Systems
- Building Representations of Common Ground with Intelligent Agents
- Complex Adaptive Systems: Energy, Information and Intelligence

Over the past 25 years, artificial intelligence has made substantial progress on many fronts, but only at the expense of fragmenting into subfields that emphasize incremental progress on narrowly defined tasks. However, there remains a need for research that pursues the discipline's original goal of developing intelligent systems that demonstrate the full range of human cognitive abilities. Many AI researchers remain committed to this goal, but they have no common place to meet and report their results.

The AAAI Fall Symposium on Advances in Cognitive Systems will provide such a venue, bringing together people with interests in human-level intelligence, complex cognition, integrated intelligent systems, cognitive architectures, commonsense reasoning, and related topics. The meeting will examine a variety of issues related to the representation and organization of complex mental structures, their use in multistep cognition, and their acquisition from experience or instruction. These may include any functional capability needed to create and understand complete cognitive systems, including reasoning and inference, problem solving, language processing, high-level execution, structural learning and knowledge capture, social cognition, and metareasoning.

Because the symposium aims to encourage research toward broader understanding of intelligence, its criteria for selecting contributions will differ from traditional ones. Progress may take many forms, including demonstrating new functionality, integrating different facets of intelligence, presenting a novel approach to an established problem, explaining complex cognition in humans, and formally analyzing difficult tasks. Descriptions on new problems or testbeds that challenge existing approaches are especially welcome. Reports on incremental variants of existing methods, minor improvements on performance metrics for established tasks, or mathematical analyses of component algorithms are not in themselves relevant to this meeting unless they aid progress toward cognitive systems with broad functionality.

Format

The meeting will involve a mixture of regular presentations based on submitted papers and invited talks on topics that have received little attention in the literature, with the latter followed by invited commentaries and general discussion. To en-

courage interaction among attendees, we will reserve substantial time after talks for questions and answers.

Submissions

Because attendance at the meeting will be selective, researchers who would like to participate must submit a brief statement of interest at the symposium supplementary web site, along with links to one or more papers they have written in the area of cognitive systems. The organizing committee will use this information to determine whether to invite applicants to participate in the meeting.

We also invite researchers to submit papers for presentation at the event. Submitted papers should follow the AAAI two-column format and should be no more than eight (8) pages in length. Any papers that diverge from this format or that exceed this length will be returned without review. In addition, each submission should state explicitly the problem or capability it addresses, describe its response to this problem, make claims about this approach, and provide evidence in support of these claims. Every paper should also discuss related efforts, examine limitations of the reported work, and outline plans for future research.

Accepted papers will appear in a AAAI technical report that will be available at the meeting. To improve overall quality of these publications, some submissions may be accepted on a conditional basis. To increase participation despite a limited number of speaker slots, we expect to accept some submissions for poster presentation at the meeting.

Organizing Committee

Paul Bello (Office of Naval Research), Nick Casimatis (Rensselaer Polytechnic Institute), Kenneth Forbus (Northwestern University), John Laird (University of Michigan, Ann Arbor), Pat Langley (Arizona State University), Sergei Nirenburg (University of Maryland, Baltimore County)

Supplementary Website

For more information, please see the supplementary symposium website (www.cogsys.org/acs/2011/home).

Building Representations of Common Ground with Intelligent Agents

Much of the success of natural language interaction is caused by the participants' mutual understanding of the circumstances surrounding the communication. These circumstances range from reminiscing about a shared experience, such as a birthday party, to coordinating fire-fighting efforts amongst a team using joint beliefs about mutual capabilities. This mutual understanding of perceived context is termed "common ground," and is made up of all of the background and shared information that will lead to the eventual success of the communication. Some measure of common ground is used in most, if not all, successful interactions between human actors. For humans to have a convincing and beneficial experience interacting with intelligent agents, the agents must have mechanisms that support the fundamentals of common ground. Otherwise, the consequence may be unsuccessful and incomplete interactions.

This symposium aims to bring together researchers from robotics, artificial intelligence, human-computer interaction, computational linguistics, and cognitive modeling to share their diverse perspectives on common ground and its component factors. This investigation of how existing work explicitly or implicitly uses aspects of common ground will bring us closer to a practical approach for a complete common ground in intelligent, computational agents. Work to be presented may consist of currently implemented applications that contain common ground components, theoretical formalisms of these components, proposed frameworks, and work in progress.

Topics

Components of common ground include, but are not limited to, the following:

- Background knowledge
- World knowledge
- Presuppositions
- Mutual knowledge
- Mutual beliefs
- Beliefs about beliefs
- Conversational maxims
- Shared experiences

Examples of how these components may have been incorporated into current work include the following:

- Building of shared histories between actors
- Representations of beliefs or beliefs about beliefs
- Identifying and representing suppositions and presuppositions
- Reasoning about other actors' beliefs
- Creating untruthful or deceptive common ground
- Formalizations of any common ground component
- Agents or models which use common ground components in interaction
- Discourse or dialogue models which use some aspect of common ground
- Extraction of perlocutionary actions or effects from utterances
- Inferring common ground
- Using common ground to ground referents

Submissions

Extended abstracts (500 word maximum) are due on 5/30/2011. If chosen, full papers need to be 6-8 pages in length and follow AAAI's formatting requirements. For submission instructions, please see the symposium supplementary site.

Organizing Committee

Sam Blisard (Naval Research Laboratory), Will Bridewell (Stanford Center for Biomedical Informatics Research), Wende Frost (Naval Research Laboratory), Arthi Murugesan (Naval Research Laboratory), Candace Sidner (Worcester Polytechnic Institute), Alan Wagner (Georgia Tech Research Institute)
previous two days.

Complex Adaptive Systems: Energy, Information, and Intelligence

Complex adaptive systems (CAS) and related technologies have proven to be a powerful framework for understanding system-level phenomena across the physical, natural, and social science. We characterize a general CAS model as having a significant number of autonomous agents that utilize one or more levels of feedback; exhibit emergent properties and self-organization; or produce nonlinear dynamic behavior.

This symposium's theme addresses fundamental issues for understanding complex phenomena: energy, information, and intelligence. This theme builds upon the previous years' focus of threshold effects (2009) and resilience, robustness, and evolvability (2010).

Energy in a complex adaptive system is often more than merely physical energy; it is anything that drives and constrains the system. Agents must cooperate and/or compete for limited resources, whether these resources are "energy," "power," "food," "money," or some other system resource. The success or failure of various agent strategies depends on their effectiveness in acquiring and utilizing these resources.

Information represents any form of verbal, nonverbal, or even nonhuman communication. Information represents what the agents know or learn about their local environment. Papers relating to the theme of information may, for example, cover signal patterns and effects, signal processing, or information storage (memory). Flows of information itself may also be the focus of CAS research, such as in models of political dissent, social contagion, or the dynamical flows across networks.

Intelligence encompasses how agents react to any information that they acquire from the environment, as well as the system-level properties that emerge from these actions and reactions through patterns of correlated feedbacks. Thus, intelligence may refer to the agents themselves or to the system as a whole. Such intelligence can exist at almost any level of complexity, from simple examples of swarm intelligence to complex human cognition.

Format

Our symposium will have invited talks from leaders in the field, as well as paper presentations on both completed and speculative work. Due to the nature and the novelty of the theme, it is essential to allow ample time for both open-ended and targeted discussions; as such, we will hold panel dis-

cussions, round-table talks, and smaller breakout groups to allow for a spirited interaction among participants.

Submissions

Submissions for full papers should be no more than 10 pages, including references. Extended abstracts are acceptable as well, with the caveat that longer papers give the Program Committee more information to make reasonable judgments. Submissions for either papers or panel proposals can be made at the same URL through the EasyChair submission site (see the supplementary website for details). Please use Times Roman 10-point font in the AAAI two column format for your paper and panel submissions. AAAI formatting guidelines can be found here. Downloadable templates for the AAAI format are also available there.

Please note: it is not required to have all the formatting exactly right at the time of submission. However, a close approximation will not only ensure that you are reasonably close to the length limits, but will also save time in making the final adjustments for camera-ready submissions, due in early September.

Organizing and Program Committee

Mirsad Hadzikadic, Chair (University of North Carolina, Charlotte), Ted Carmichael, cochair (University of North Carolina, Charlotte), Mark Altaweel (University of Chicago), Tony Beavers (University of Evansville), Aaron Bramson (University of Toronto), Patrick Grim (SUNY Stony Brook), Ardeshir Kianercy (University of Southern California), Kiran Lakkaraju (Sandia National Laboratory), Megan Olsen (UMass Amherst), Jonathan Ozik (Argonne National Laboratory), Mark Pizzato (University of North Carolina, Charlotte), Bill Rand (University of Maryland), Bob Reynolds (Wayne State University), Molly Rorick (Yale University), John Stamper (Carnegie Mellon University), Forrest Stonedahl (Northwestern University), Tina Yu (Memorial University of Newfoundland).

Supplementary Website

For more information about this symposium, and for submission guidelines and links, please visit the supplementary website (sites.google.com/site/complexadaptivesystems2011), or email cochair Ted Carmichael at tedsaid@gmail.com.

Multiagent Coordination under Uncertainty

In domains ranging from earth observing sensor webs to collaborating ambulances or fire fighters during disaster rescue or software personal assistants scheduling meetings to “coordinators” assisting in executing military missions or exploration of underwater terrains using AUVs (autonomous underwater vehicles) to handling large scale humanitarian logistics, multiple intelligent agents need to coordinate in the presence of uncertainty to achieve team goals. While there have been many interesting models and frameworks presented for addressing and solving various sub-aspects of the problem, the algorithms employed for solving the models have had to trade off between richness in representation and scalability. In fact, the key hindrances to achieving scalable and quality guaranteed coordination between agents are as follows:

Uncertainty: This can arise due to: probabilistic effects of actions taken by agents, inability of agents (either individually or collectively) to completely observe the world, partial availability or unavailability of communication, partially known or unknown motivations of other agents and so on.

Coordination horizon: The total number of decision epochs for which agents need to coordinate affects the solution methodology. Depending on the number of decision epochs left and the history of agent decisions, the coordination decision at the current decision epoch can change. Such dependence on history makes the coordination computationally expensive and one of the key reasons for reduced scalability.

Objective: Due to the lack of certainty about the world, the goal can be one of: (1) Maximize expected value of all the agents involved; (2) Maximize the probability of achieving the goal; (3) Minimize or prevent certain bad states of the world; and many others.

Researchers from various communities, such as artificial intelligence, operations research, game theory and logistics (supply chain) communities, have been actively pursuing the various aspects (mentioned above) of the problem. The goal of this symposium is to bring together these researchers to discover or better understand the commonalities in the hope of making fundamental breakthroughs in the field. As such, we invite papers from researchers from these communities and we expect to discuss current contributions and potential future research directions.

Submissions

Please send in your paper submissions to pradeepv@smu.edu.sg. Submissions can be a maximum of 8 pages in the AAAI style. Please use the AAAI author kit. Submissions will be evaluated based on relevance, significance, originality and clarity. Accepted papers will be allocated time to present their paper at the symposium.

Organizing Committee

Pradeep Varakantham (Singapore Management University), Janusz Marecki (IBM T. J. Watson), William Yeoh (University of Massachusetts, Amherst), Paul Scerri (Carnegie Mellon University)

Supplementary Website

For more information see the supplementary symposium web site (www.mysmu.edu.sg/faculty/pradeepv/aaaifs.html).

Open Government Knowledge: AI Opportunities and Challenges

The 2011 AAAI Fall Symposium on Open Government Knowledge: AI Opportunities and Challenges seeks papers on all aspects of publishing public government data as reusable knowledge on the web. Both long papers presenting research results and shorter papers describing late breaking work, outlining implemented systems, identifying new research challenges, or articulating a position are invited.

Websites like data.gov, research.gov and USASpending.gov aim to improve government transparency, increase accountability, and encourage public participation by publishing public government data online. Although this data has been used for some intriguing applications, it is difficult for citizens to understand and use. This symposium will explore how AI technologies such as the semantic web, information extraction, statistical analysis and machine learning can be used to make the knowledge embedded in the data more explicit, accessible and reusable. The symposium's location of Washington, DC will facilitate the participation of U.S. federal government agency members and enable interchange between researchers and practitioners. We also expect attendance of international open government data players (UK and Australia, for example).

Relevant topics include the automatic and semiautomatic creation of linked data resources, ontologies for government data, entity linking and coreference detection between linked data resources, adding temporal qualifications to government data, creating mash-ups with open government data, linked open government data analysis, metadata for provenance, certainty and trust, policies for information sharing, privacy and use, social networks and government data, machine learning applied to government data, data visualization techniques, and applications.

This symposium will include a mix of invited talks, paper presentations, panels, system demonstrations, a poster session, and discussions. We plan to have several invited speakers drawn from government, academia and industry. We will run panels on the emerging challenges and best practices, including how to enhance transparency and interoperability within an agency and across different agencies and countries, and how to promote nationwide health information network that effectively integrates government-curated public records and citizens' personal health data.

Submissions

We invite submissions of full papers (up to eight pages) presenting research results and short papers (up to four pages) defining a position, articulating a new problem or describing a working system. Papers must be prepared in AAAI format and submitted using the OGK2011 easychair site (www.easychair.org/conferences/?conf=ogk2011)

Organizing Committee

Li Ding (RPI), Tim Finin (UMBC), Lalana Kagal (MIT), and Deborah McGuinness (RPI). Program committee members and additional information are listed on the supplementary symposium site.

Supplementary Website

For more information, please see the supplementary symposium website (tw.rpi.edu/web/event/AAAI/2011/Fall_Symposium_OGK).

Question Generation

Asking questions is a fundamental cognitive process that underlies higher-level cognitive abilities such as comprehension and reasoning. Ultimately, question generation allows humans, and in many cases artificial intelligence systems, to understand their environment and each other. Research on question generation (QG) has a long history in artificial intelligence, psychology, education, and natural language processing. One thread of research has been theoretical, with attempts to understand and specify the triggers (for example, knowledge discrepancies) and mechanisms (for example, association between type of knowledge discrepancy and question type) underlying QG. The other thread of research has focused on automated QG, which has far-reaching applications in intelligent technologies, such as dialogue systems, question answering systems, web search, intelligent tutoring systems, automated assessment systems, inquiry-based environments, adaptive intelligent agents and game-based learning environments.

This symposium will foster theoretical and applied research on computational and cognitive aspects of QG bringing together participants from diverse disciplines including, but not limited to, natural language processing, artificial intelligence, linguistics, psychology, and education.

Topics

We invite submissions that deal with theoretical, empirical, and computational aspects of question generation, encouraging completed as well as speculative or in-progress work. Topics will include, but will not be limited to, the following:

- Cognitive models of QG
- Question taxonomies
- Empirical approaches to QG
- QG tasks and subtasks
- Evaluation methods for QG (human, automatic, semiautomatic)
- Corpus annotation schemes for QG
- Automated question assessment
- Representation language(s) for data/resource sharing between QG systems
- Impact of NLP technologies on QG tasks
- Context-sensitive question type selection or ranking
- Descriptions of implemented systems or components

- Applications of QG (intelligent tutoring systems, dialogue systems, web querying, querying over information repositories, and so on.)
- Generation from different inputs — knowledge bases, ontologies, text, queries
- QG system implementations description

Submissions

We invite submissions of full papers (up to 8 pages, including references) and short papers (up to 4 pages, including references) for poster and/or oral presentations. Presenters of system implementations will be given the option of presenting their work as a demo, a poster, or a combination of both. Submission questions should be directed to the organizers at qg2011@googlegroups.com.

Organizing Committee

Arthur Graesser (University of Memphis, USA), James Lester (North Carolina State University, USA), Jack Mostow (Carnegie Mellon University, USA), Rashmi Prasad (University of Pennsylvania, USA), Svetlana Stoyanchev (The Open University, UK)

Supplementary Website

For more information about the symposium see the supplementary symposium web site (questiongeneration.org/QG2011).

Robot-Human Teamwork in Dynamic Adverse Environment

Since the early 1990s a wealth of research has been developed to promote human-robot collaboration and coordination in socially significant domains such as disaster and endangered areas. Among others initiatives, the robocup rescue research project has promoted interdisciplinary research teams on strategic coordinated behaviours, multiagent planning, sensory communication, common decisions, mixed-initiative planning to foster cooperation in rescue arenas.

Despite the great progress made, it seems that the sociocognitive aspects of teamwork coordination, especially between robots and operators, have been overlooked. In fact, the critical contingency operators are the primary subjects asking for help and collaboration to mitigate their stress under severe circumstances. However, due to a lack of understanding of the real nature of the sociocognitive aspects of robots humans interaction, in adverse environments and contingency operations, it is often the case that rescuers are troubled by the presence of the robots, because of difficulties in both dialogue and control management. A user-centric integrated design is one that fosters the human factor in both requirement analysis and performance metrics. Likewise, a user-centric design, beside the quality of the interaction, takes care of several aspects of the dialogue, from intention to reasoning, to manage all levels of joint operations: from full autonomy to teleoperation.

This symposium will bring together scientists from different research areas (human-robot interaction, cognitive robotics, cognitive vision, planning and execution monitoring, cognitive architectures, adaptive interfaces, agents cooperation, perceptual learning, attention), with a common interest on human-robot and robot-robot collaboration in harsh environments, to answer an emerging request of cognitive based cooperation.

Topics

Topics of interest include the following:

- Cognitive modelling of human and robot workload in stressing situations
- Talking and verbal instruction on the field
- Common decisions on the knife's edge and reciprocal urgencies
- Attention and cognitive perception of environments and events (include learning of)
- Joint planning, mixed initiative planning and joint collaborative tasks schedules

- Common reasoning and meta reasoning in cooperation, game based approaches to reasoning about cooperation
- Situation awareness and robot-operator communication
- Performance metrics of joints operations
- User-centric design of environment representation

Developing teamwork cooperation involves research on a number of topics, including spoken and gesture dialogue, policies modelling and games, roles in team structure, adaptive action selection, communication, action recognition, action affordances, distributed control, robot awareness of other subjects actions, flexible behaviors, and metrics for measuring success.

Format

The symposium will combine a variety of activities intended to facilitate interaction among participants from different communities and discussion of key challenges in bridging research in human-robot teamwork. These activities will include, but are not limited to: keynote speeches that will review the state-of-the-art in these areas and highlight novel directions for crosscutting research; individual technical presentations by researchers of about 20 minutes; open panel discussions on identified core challenges; and breakout discussion sessions focused on developing a roadmap to facilitate crosscutting research in human robot coordination in contingency operating environments.

Submissions

The submissions should be done online at the supplementary website. Papers should be of maximum 6 pages length and the format should follow that of AAAI.

Organizing Committee

Jeff Bradshaw, Alessandro Farinelli, Alexander Ferrein, Vaclav Hlavac, Gerhard Lakemeier, Geert Jan Kruijff, Leora Morgenstern, Mark Neerincx, Fiora Pirri, Roland Siegwart, Hartmut Surman, Tomoichi Takahashi, Roland Siegwart, Mary-Anne Williams)

Supplementary Website

For more information see the supplementary symposium web site (www.dis.uniroma1.it/~alcor/aaai2011sympRHTDAE/index.php?page=home).