

Call for Participation

2011 AAAI Spring Symposium Series

March 21–23, 2011
Stanford University, Stanford, California

*Sponsored by the Association for the Advancement of Artificial Intelligence
In cooperation with Stanford University*

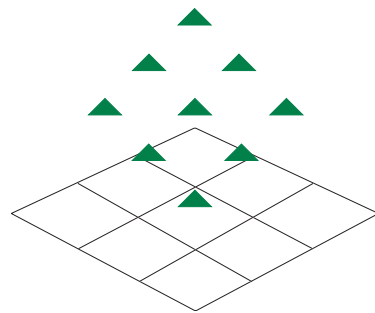
sss11@aaai.org
www.aaai.org/Symposia/Spring/

Deadlines Common to All Symposia

- ❑ October 8, 2010: Submission Deadline
- ❑ November 12, 2010: Notification of Acceptance
- ❑ January 21, 2011: Final Electronic Camera-Ready Copy Due

Formatting Guidelines

- ❑ <http://www.aaai.org/Publications/Author/author.php>



The Association for the Advancement of Artificial Intelligence, in cooperation with Stanford University's Department of Computer Science, is pleased to present the 2011 Spring Symposium Series, to be held Monday through Wednesday, March 21–23, 2011 at Stanford University. The titles of the eight symposia are as follows:

- AI and Health Communication
- Artificial Intelligence and Sustainable Design
- AI for Business Agility
- Computational Physiology
- Help Me Help You: Bridging the Gaps in Human-Agent Collaboration
- Logical Formalizations of Commonsense Reasoning
- Multirobot Systems and Physical Data Structures
- Modeling Complex Adaptive Systems as if They Were Voting Processes

An informal reception will be held on Monday, March 21. A general plenary session, in which the highlights of each symposium will

be presented, will be held on Tuesday, March 22. Symposia will be limited to between forty and sixty participants. Each participant will be expected to attend a single symposium. AAAI technical reports or 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:

- AAAI Spring Symposium Series
445 Burgess Drive, Suite 100
Menlo Park, CA 94025-3442 USA
Voice: 650-328-3123
Fax: 650-321-4457
sss11@aaai.org
www.aaai.org/Symposia/Spring/sss11.php

Submission Dates

- Submissions for the symposia are due on October 8, 2010
- Notification of acceptance will be given by November 12, 2010
- Material to be included in the working notes or technical report of the symposium must be received by January 21, 2011

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

Formatting Requirements

While submission format may be more flexible (see individual symposium listings for details), all papers published in the AAAI Spring Symposium must be formatted in AAAI Style. The technical report author instructions may be found at <http://www.aaai.org/Publications/Author/author.php>. The AAAI author kit is available from www.aaai.org/Publications/Templates/AuthorKit.zip

Design of effective health communication systems faces major challenges in terms of accessibility, trust, expert-to-lay knowledge translation, and persuasiveness. It is proposed that some of these challenges can be addressed by use of AI techniques in combination with empirically-based theoretical frameworks from the field of health communication and related areas. This symposium will bring together an interdisciplinary group of scholars to identify possible solutions.

Topics

AI researchers are invited to submit papers on their work related to health communication. Topics of interest include but are not limited to the following:

- Communication interventions
- Games, conversational agents, or dialogue systems for healthy behavior promotion
- Intelligent interactive monitoring of patient's environment and needs
- Intelligent interfaces supporting access to healthcare
- Patient-tailored decision support, explanation for informed consent, and retrieval and summarization of online healthcare information
- Risk communication and visualization
- Tailored access to electronic medical records
- Tailoring health information for low-literacy, low-numeracy, or under-served audiences
- Virtual healthcare counselors
- Virtual patients for training healthcare professionals.

Scholars from health communication disciplines are invited to submit papers on the following issues as they pertain to the symposium goals:

- Health literacy
- Healthcare provider-consumer communication
- Risk communication, including written and visual formats
- Use of behavioral, persuasion, and argumentation theories for healthy behavior promotion.

Participants presenting papers will be invited to submit expanded versions to a journal special issue on this topic.

Submissions

Full papers (8 pages maximum) and short papers (4 pages maximum) on original work are invited. Submit papers in formatted PDF via www.easychair.org.

Organizing Committee

Cochairs: Nancy Green (University of North Carolina Greensboro), Sara Rubinelli (University of Lucerne and Swiss Paraplegic Research), Donia Scott (University of Sussex)

Artificial Intelligence: Tim Bickmore (North-eastern University), Richard Cox (University of Edinburgh), Chrysanne Dimarco (University of Waterloo), George Ferguson (University of Rochester), Floriana Grasso (University of Liverpool), Eva Hudlicka (Psychometrix Associates), Patrick Kenny (Institute for Creative Technologies), Brian Magerko (Georgia Tech), Irene Mazzotta (Università degli Studi di Bari), Sergei Nirenburg (University of Maryland, Baltimore County), Paul Piwek (Open University), Ehud Reiter (University of Aberdeen), Marjorie Skubic (University of Missouri)

Health Communication: David Brinberg (Virginia Tech), Frans van Eemeren (University of Amsterdam), Gunther Eysenbach (University Health Network), David Hitchcock (McMaster University), Gary Kreps (George Mason University), Rita Kukafka (Columbia University), Kent Nakamoto (Virginia Tech), Linda Newhauser (University of California, Berkeley), Daniel O'Keefe (Northwestern University), Paolo Paolini (Politecnico di Milano), Peter Schulz (University of Lugano).

For More Information

For more information, see the supplementary symposium web site (www.uncg.edu/~nl-green/aaai-sss11-aihc.html).

AI has provided computational approaches to design processes and the representation of design knowledge. Design of materials, products, buildings and other artifacts have long been a focus of artificial intelligence research and application. Artificial intelligence representations and reasoning models have been influenced and inspired by design cognition resulting in AI methods as the basis for computer-aided design and decision support in many contexts. "Design for X" has become a way of changing design thinking so that downstream concerns are considered early in the design process.

Imperatives for environmental and societal sustainability are challenging designers to think beyond Design for X and more broadly to consider factors that had been previously given little attention. Life cycle costs should be considered along many dimensions, including energy requirements during manufacture and use phases, and material loss and environmental damage at the end of a product's life. In fact, a long-term vision for the field of AI and sustainable design is cradle-to-cradle design, so that products are not designed to be thrown away or recycled in very limited ways, but products are designed and built that enable full reuse, with nothing thrown out and nothing degraded.

Our presumption is that the increased complexity of design necessitated by a desire for very long-term planet sustainability requires application of and advances in artificial intelligence. AI and design is established already, with conferences and journals. The purpose of this symposium is to focus on the challenges of sustainable design and the role that AI plays in achieving sustainability.

Topics

Paper topics include, but are not limited to the following:

- AI applications in sustainable design of chemicals and materials, products and appliances, buildings and communities
- Computational and cognitive models of sustainable-design thinking
- Biologically-inspired and evolutionary models of sustainable design
- Collaborative design and collective intelligence for sustainable design
- Games and simulation for teaching and embedding sustainable design

Submissions

This symposium intends to support virtual participation for a limited number of participants using internet-based virtual technology. When submitting a paper, please inform the organizers if you would like to be considered for virtual participation. To encourage graduate student participation, we also invite advanced PhD students to submit thesis position papers (6 pages, AAAI format) by the submission deadline. Interested participants should submit papers in PDF format. Please see the symposium supplemental web site for submission instructions.

Symposium Chairs

Douglas H. Fisher (Vanderbilt University) and Mary Lou Maher (National Science Foundation)

For More Information

For more information, see www.vuse.vanderbilt.edu/~dfisher/AI-Design-Sustainability.html

Business agility is a topic of increasing interest, in particular boosted by the recent global financial crisis. For any business, anticipating changes and adapting quicker and more efficient is a challenge and various approaches such as cloud computing, business information technology alignment, or context modeling try to provide solutions. There are two arbitrary principles leading to agility: change and maturing. Whereas the first is an explicit transformation of an enterprise architecture or well-defined part of it from a status A to a status A', the latter can be viewed as being a continuous improvement. Working on these various aspects of agility could bring together (research) communities of enterprise architecture modeling and artificial intelligence. The following is a preliminary list of potential questions to be considered in talks and discussions:

- How can change and maturity for business agility be modeled and measured?
- How can enterprise architecture models for the alignment of business and IT be formalized?
- What is the relation of enterprise ontologies and Enterprise Architecture frameworks?
- How can anomalies in an enterprise architecture (for example, defined roles which never appear in business processes) be detected?
- What business intelligence techniques can be applied to discover patterns that are indicators for both maturing and changes?
- How can agile business processes be modeled?
- Are business rules an appropriate approach for requirements modeling and compliance?
- Can web 3.0 and semantic web services be used to implement agile process orchestration and choreography allowing for new forms of cooperation in virtual organisations?
- What techniques can be used to evaluate the degree of interoperability of an implemented enterprise architecture?
- How can human-related aspects (for example, social, cultural and collaboration issues) in an enterprise architecture be designed and formalized?

The symposium on business agility aims to bring together the various communities to learn and benefit from each other in order to avoid pitfalls on one hand side and provide the ground for synergetic co-operations. Besides researchers, the participation of business people would be highly beneficial for providing input about real-world business requirements.

Topics

Relevant topics that would be considered for contributions to the symposium include but are not limited to the following: Semantically enriched enterprise architecture models; enterprise ontologies; knowledge maturing and learning; context awareness; the role of ontologies in context modeling; collaborative (context) ontology modeling; identification of opportunities for change; logical sensors for context change; cross-border and interorganizational services; machine learning of patterns for change; data mining, process mining and text mining; business rules; business rules modeling and management; service oriented architectures; component based applications; semantic web services and agents for business agility; semantic and technical interoperability; integration of heterogeneous data sources; design of sociotechnical systems.

Submissions

Prospective participants are invited to submit research papers (up to 12 pages) or position papers (up to 4 pages), in PDF format, via the symposium website. Papers should be prepared using AAAI style. All submissions will be reviewed by the program committee. We also welcome proposals for breakout sessions, working sessions and discussion, containing a description of the topic, the objective and the expected results.

Organizing Committee

Knut Hinkelmann, cochair (FHNW University of Applied Sciences Northwestern Switzerland, knut.hinkelmann@fhnw.ch), Barbara Thönssen, cochair (University of Applied Sciences Northwestern Switzerland, barbara.thoenssen@fhnw.ch), Aurore Gerber (Meraka Institute), Michael Gruninger (University of Toronto), Michael Rosemann (Queensland University of Technology), Rainer Telesko (FHNW University of Applied Sciences Northwestern Switzerland), Alta Van der Merwe (Meraka Institute)

For More Information

For more information, see web.fhnw.ch/plattformen/ai4ba2011.

Automated human health-state monitoring aims to identify when an individual moves from a healthy to a compromised state. For example, changes in diet or physical activity can lead to life-threatening hypo or hyperglycemia in diabetics. Similarly, elderly individuals managing multiple chronic conditions may experience rapid changes in physical and cognitive health state that must be caught quickly for treatments to be most effective. Even in healthy individuals, heavy exertion in extreme climates can quickly lead to life threatening situations.

The emergence of inexpensive and unobtrusive health sensors promises to shift the healthcare industry's focus from episodic care in acute settings to early detection and longitudinal care for chronic conditions in natural living environments. The same technologies can also be used to monitor healthy individuals in high-stress work situations. While these sensing systems are able to provide a wealth of physiological information, the non-invasive measurements are often quite different from those used by physicians. The medical community is accustomed to making decisions from high-quality clinical data from a limited set of sessions. Data from continuously measuring sensors requires us to draw conclusions from large quantities of lower quality data from subacute environments where these measures are often not specific to health states of interest and can reflect the output of multiple latent variables. As the availability of longitudinal data increases, we have an unprecedented opportunity to discover new early predictors of clinically significant events.

This symposium will bring together researchers from the fields of artificial intelligence, machine learning, engineering, physiology, and medicine. The symposium will have invited talks and panels by select atten-

dees to share relevant completed work. We will have breakout sessions and poster sessions to foster speculative discussions and presentation of works in progress. The goal of the symposium is to allow ample time for discussion and bridging of interdisciplinary perspectives.

Submissions

We are seeking extended abstracts (2 pages) or short papers (4–6 pages) that describe the following:

1. New ambulatory and noncontact sensing technologies or novel applications of existing sensors
2. Specific difficulties associated with measuring human health states of interest (for example, internal body temperature, hydration, cognitive decline, blood glucose level)
3. Inference techniques that address the challenges of decision-making with these data (for example, continuous monitoring, multisensor fusion, movement artifacts)
4. Interfaces or approaches for providing real-time advice to individuals towards preventing injury and maintaining health

Reports on experimental results, descriptions of implemented systems, and position papers are all welcome. Papers should be in AAAI format. Please e-mail submissions to mbuller@cs.brown.edu.

Organizing Committee

Mark Buller (Brown University, mbuller@cs.brown.edu), Paul Cuddihy (GE Research), Finale Doshi-Velez (Massachusetts Institute of Technology, finale@mit.edu)

For More Information

For more information, see people.csail.mit.edu/finale/sss-11-cp

Help Me Help You: Bridging the Gaps in Human-Agent Collaboration

From traffic lights to household cleaning robots, automation is a ubiquitous and growing aspect of our lives. However, the transition from automation to agency, where a software or robotic agent conducts a role and has the responsibility that might have once been only trusted to a human, is still lagging. Currently, the scope of most intelligent agent systems is limited to specific domains, specific configurations, and specific operating conditions. To move ahead, we must address several gaps in order to advance to human-agent collaboration. These include the following:

Understanding Objectives: An agent may not know the desires of the user, because (a) there isn't a language to convey it, (b) a language would be too complex or (c) the user may not know what they want until they see a solution. In addition, the agent may not be able to convey its objectives to the human. For example, consider the barriers to creating an autonomous agent that would book flights instead of simply gathering and displaying flight data.

Adapting to Context: An agent may be required to understand and adapt to general aspects of the state of the world outside the basic scope of its task. In addition, it should adapt given the objectives and goals mentioned above. For example, consider a route-planning agent that would not just consider current traffic conditions but anticipate how sporting events or upcoming weather phenomena would affect solutions.

Computational Complexity: There are many problems, such as coordination of rescue and recovery efforts after a disaster, where generating a solution is too complex for an intelli-

gent agent to generate a reasonable solution. There may be collaborations where, with human guidance, intelligent agents can be created to improve performance when partnered with human actors.

The aim of this symposium is to begin to form a community of researchers working on different aspects of the problem. The agents and AI communities have tackled this problem from the agents' point of view, while the intelligent user interfaces community has begun to address this problem from the human's point of view. By bringing together researchers from these and other communities, we can foster collaborations to share accomplishments so far, identify common issues and challenges, compare architectures and propose directions to move forward.

Submissions

Interested participants may submit either full-length papers (up to 6 pages in AAAI format) or short papers/extended abstracts (2 pages) in PDF format to maheswar@usc.edu.

Symposium Chairs

Rajiv Maheswaran (University of Southern California), Nathan Schurr (Aptima), Pedro Szekely (University of Southern California)

For More Information

For more information, see www.isi.edu/~maheswar/hmhy2011.html.

Endowing computers with commonsense is a major goal of artificial intelligence. One approach to this problem is to characterize commonsense reasoning using representations based on logic or other formal theories. The challenges to creating such formalizations include accumulating knowledge about the everyday world, representing this knowledge formally, integrating different representations, and developing reasoning methods for these representations.

A decade ago, the topic of commonsense reasoning was considered visionary, but reality has aggressively caught up with it. For example, robotic systems are becoming commercially feasible; they are deployed in complex environments and interact with humans. Commonsense knowledge is essential both for robust interaction and for public acceptance. Another example: information extraction systems combine commonsense domain knowledge with corpus-based learning to interpret texts. Therefore, the symposium will introduce a new applied track, to discuss progress in these areas, how logic-based commonsense reasoning contributes to this enterprise, and how these trends should influence our future research agendas.

Topics

Topics of interest include the following:

- Formal representations and reasoning methods for commonsense domains including time, change, action, and causality; space; commonsense physics and biology; mental states, propositional attitudes, and emotions; and agent interactions and social relations.
- Preformal analysis of these domains.
- Applications of commonsense reasoning to specific tasks including cognitive robotics (action and perception), planning, natural language processing, web search and web-based services computer vision, computer-aided instruction, home automation, assistive technologies, and biomedical informatics.
- Relations among theories, such as abstraction and contextualization.

- Methods of deductive and plausible reasoning applicable to commonsense problems, including answer set programming; heuristic, approximate, nonmonotonic, and probabilistic reasoning; and belief revision
- Relevant metalogical results.
- Relation of formal theories to other approaches to implementing common sense, including large commonsense knowledge bases and corpus-based machine learning.
- Relation of work in philosophy, linguistics, cognitive psychology, game theory, and economics to automated commonsense reasoning.

In addition to technical papers, we also welcome survey papers, papers comparing different approaches, and methodological papers; demos of practical systems that use commonsense reasoning; and proposals for panel or open discussions.

Format and Participants

The symposium will include technical paper sessions with extended discussions, invited papers, panel and open discussions, and demos of applied systems, particularly robotic systems. Participants will be researchers who study the formalization of commonsense reasoning.

Submissions

Papers may be submitted via www.easy-chair.org. Submissions should be at most 6 pages long, in AAAI format. Questions about submissions may be e-mailed to the chairs.

Symposium Chairs

Ernest Davis, (New York University, davise@cs.nyu.edu), Patrick Doherty (Linkoping University, patdo@ida.liu.se), Esra Erdem (Sabanci University, esraerdem@sabanciuniv.edu)

For More Information

For more information, see commonsensereasoning.org/2011/.

Multirobot systems can represent and manipulate physical representations of information by modifying their environment or changing their positions. Information necessary for agent coordination or collective task performance can be externalized (“written”) into the environment, and then used (“read”) by other robots when and where necessary. Systems are able to exploit the locality of this external information, its persistence, its dynamics, or how it affects the task mechanics to complete tasks with higher efficiency or enable radically different solutions. However, there is no unified theory of the cost and complexity of communicating or storing information in this way.

This symposium aims to bring researchers together who study aspects of external information in algorithms for multirobot systems. This includes researchers interested in quantifying information requirements, those who have shown reduction in sensing, communication, or computational requirements via externalization of information. Researchers interested in processes which operate on the physical environment in order to perform computation or information processing, and evaluation thereof. We are interested in the theory and practice of these techniques, and welcome submissions that are experimental, theoretical or taxonomical.

Observations and discussion of physical information representations are found throughout the robotics literature, but it is seldom the primary goal of the work. We hope to foster a collaborative dialog to bring multiple perspectives on physical information representation together. Ultimately, these techniques should pave the way to multirobot systems that exploit their embodiment and their environment to accomplish tasks more effectively than the current state of the art.

Topics

- Data-structurelike models for classes of mechanisms in which state is externalized including analysis (for example, semantics, correctness, performance, and addressing)
- Examples and analysis of instances in which robots themselves are the units used to encode information (for example, chaining and morphogenesis)
- Formalisms for pheromone computing and robotics
- Experimental demonstrations of physical data structures

Submissions

Papers on any aspect of external information and physical representations of information in algorithms for multirobot systems are welcome. Interested participants may submit either full-length papers (up to 6 pages in AAAI format) or short papers or extended abstracts (2 pages). Reports on experimental results, descriptions of implemented systems, and position papers are all welcome. Submissions should be sent via e-mail to physical.data_structures@gmail.com.

Organizing Committee

Dylan Shell (Texas A&M University, Department of Computer Science and Engineering), James Mclurkin (Rice University, Department of Computer Science)

For More Information

For more information, see robots.cs.tamu.edu/aaai11ss_physical_data_structures/.

Modeling Complex Adaptive Systems as if They Were Voting Processes

The goal of this symposium is to explore models of voting as explanatory tools for understanding complex adaptive systems. In voting systems, simple or multidimensional information at a low level is represented by data (votes), which are fused across client-server or peer-to-peer networks to form collective outcomes in an emergent and predictable pattern. These voting outcomes yield inferences about facts or preferences associated with a group's behavior.

Recently, error-resilient data fusion (ERDF) patterns of voting behavior have been discovered in which the collective outcome can be inferred on the basis of incomplete and imperfect information. ERDF models relate the time to decision in collective choice processes to the systemic attributes of voting systems designed to represent and fuse data. These models can yield a novel theoretical understanding of data fusion techniques, swarm and quorum sensing behavior, and the design of resilient and sustainable critical infrastructure.

In mainstream voting theory, preferences or judgments are taken as given and the problem is to aggregate the information to produce a collective outcome that satisfies desired crite-

ria. But when voting processes are used to model physical processes, describing the origins of preferences and judgments becomes important for understanding and validating vote-theoretic explanations. Although direct scrutiny of voting processes may not be feasible in complex, adaptive systems, theoretical properties that can be manipulated to test hypotheses indirectly and enable us to hone a science of the artificial based on models of data fusion interpreted as if they operated on voting principles.

Submissions

Interested participants may submit either full-length papers (up to 6 pages in AAAI format) or short papers/extended abstracts (2 pages) in PDF format to the symposium chair at arnieu@email.arizona.edu.

Symposium Chair

Arnie Urken (University of Arizona)

For More Information

For more information, please send inquiries to arnieu@email.arizona.edu.