



*Call for Participation*

# 2010 AAAI Spring Symposium Series

March 22–24, 2010

Stanford University, Stanford, California

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

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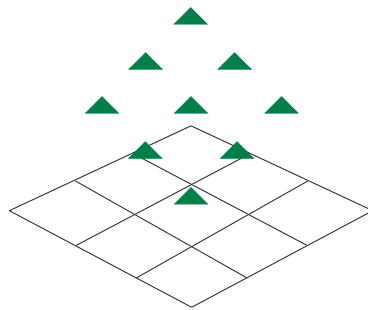
[www.aaai.org/Symposia/Spring/](http://www.aaai.org/Symposia/Spring/)

## Deadlines Common to All Symposia

- ❑ October 2, 2009: Submission Deadline
- ❑ November 6, 2009: Notification of Acceptance
- ❑ January 22, 2010: 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 Computer Science Department, is pleased to present the 2010 Spring Symposium Series, to be held Monday through Wednesday, March 22-24, 2010 at Stanford University. The titles of the seven symposia are

- Artificial Intelligence for Development (AI-D)
- Cognitive Shape Processing
- Embedded Reasoning: Intelligence in Embedded Systems
- Intelligent Information Privacy Management
- It's All in the Timing: Representing and Reasoning about Time in Interactive Behavior
- Linked Data Meets Artificial Intelligence
- Using Electronic Tangibles to Promote Learning: Design and Evaluation

An informal reception will be held on Monday, March 22. A general plenary session, in which the highlights of each symposium will be presented, will be held on Tuesday, March 23. 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  
Menlo Park, CA 94025-3442 USA  
Voice: 650-328-3123  
Fax: 650-321-4457  
sss10@aaai.org  
[www.aaai.org/Symposia/Spring/](http://www.aaai.org/Symposia/Spring/)

## Submission Date

Submissions for the symposia are due on October 3, 2008. Notification of acceptance will be given by November 7, 2008. Material to be included in the working notes or technical report of the symposium must be received by January 16, 2009.

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

## Author Formatting Instructions

Final electronic camera copy must be submitted in AAAI style. Templates, macros, and formatting instructions are located on the AAAI web site:

- [www.aaai.org/Publications/Author/](http://www.aaai.org/Publications/Author/)

There has been great interest in information and communication technology for development (ICT-D) over the last several years. The work is diverse and extends from information technologies that provide infrastructure for micropayments to techniques for monitoring and enhancing the cultivation of crops. While efforts in ICT-D have been interdisciplinary, ICT-D has largely overlooked opportunities for harnessing machine learning and reasoning to create new kinds of services, and to serve a role in analyses of data that may provide insights about socioeconomic development for disadvantaged populations. The unprecedented volume of data currently being generated in the developing world on human health, movement, communication, and financial transactions provides new opportunities for applying machine learning methods to development efforts, however. Our aim is to foster the creation of a subfield of ICT-D, which we refer to as artificial intelligence for development (AI-D), to harness these opportunities. To this end, we hope the AAAI Spring Symposium at Stanford will serve as a focal point to bring together a critical mass of researchers who are interested in applying AI research to development challenges.

The goals of the symposium will be to (1) identify a core set of AI-D researchers, (2) explore key topics and representative projects in this realm, and (3) to lay out an ontology of AI-D research challenges and opportunities. We are seeking original contributions in the form of both full papers and position papers on a wide range of related topics. For example, papers could address the potential for machine reasoning to make valuable off-line and real-time inferences from the large-scale mobile phone data sets currently being generated in the developing world. Such analytics could provide a better understanding of social relationships and information flows in disadvantaged societies, as well as guiding and monitoring ICT-D interventions and public policy, and giving insight into population responses to crises. Other topics would include exploring how machine learning and inference could help us understand human mobility patterns, yielding, for example, real-time estimates of the progression of disease outbreaks and guiding public health interventions. Machine reasoning could also pro-

vide remote areas with medical support through automated diagnosis, along with guidance for the effective triaging of limited resources and human medical expertise. Additional potential topics include instant machine translation for better communication and coordination among people who speak different languages, user modeling for online tutoring, investment advisory tools, and simulation, modeling, and decision support for agricultural optimization.

The AAAI Artificial Intelligence for Development Spring Symposium at Stanford will help define this new research area, and identify the next steps to establishing a sustainable and vibrant AI-D research community.

## Submissions

Interested participants should submit full papers (6 pages) and position papers (2 pages) in AAAI format to [submissions@ai-d.org](mailto:submissions@ai-d.org). Selected papers from the symposium will be published as an AAAI technical report.

## Organizing Committee

Nathan Eagle, cochair (Santa Fe Institute), Eric Horvitz, cochair (Microsoft Research), Kentaro Toyama, cochair (Microsoft Research), Saleema Amershi (University of Washington), Gaetano Boriello (University of Washington and Google), Neil Ferguson (Imperial, UK), Ashish Kapoor (Microsoft Research), John Quinn (Makerere University, Uganda), Roni Rosenfeld (Carnegie Mellon University), Peter Waiganjo Wagacha (University of Nairobi).

## For More Information

For more information, see the supplementary symposium website ([ai-d.org](http://ai-d.org)).

Real-world spatial problems typically deal with diverse types of spatial knowledge at the same time and involve complex objects with meaningful and specific shapes. Understanding mental processing of knowledge about shapes thus seems essential for understanding mental processing of spatial knowledge in real world scenarios. With the term “cognitive shape processing” we refer to all forms of knowledge processing involving shape information that are related to, inspired by, or derived from principles found in natural cognitive systems.

The goal of the symposium is to bring together researchers from artificial intelligence and cognitive science to promote the understanding — from a cognitive point of view — of how shape information can be acquired, represented, retrieved, (re-)constructed, and integrated with other types of spatial information.

Some sample questions of interest in cognitive shape processing include the following:

- How is shape knowledge represented in and retrieved from long-term mental storage and from technical knowledge bases?
- Is shape knowledge compositional (that is, constructed from elementary shapes) or are specific shapes uniquely represented?
- Is shape knowledge contour-based or area-based? or neither?
- How do prototypical (categorical) shapes relate to specific shapes?
- How does partial shape matching work, that is, when only parts of a specific shape are known or visible?
- How can varying levels of granularity be modeled in shape processing?
- Given that visual and spatial aspects are involved in spatial knowledge processing, how does shape information interact with these modes?
- Is shape information dealt with in 2D, 2.5D, 3D, ... and how does dimensionality scale up or down?
- What is the role of attention-related processes in cognitive shape processing? How does shape knowledge guide (visual) attention?
- What is the relation between control processes in visual perception and knowledge about shapes?
- How can brain-imaging, eye movement, and behavioral studies contribute to the understanding of cognitive shape processing?
- How do different modes of shape perception interact (for example, visual and haptic)?

The symposium will be scheduled to provide extensive discussion time and group interactions.

## Submissions

Please e-mail submissions of 4-6 pages (preferably in AAAI format as PDF) to [barkowsky@sfbtr8.uni-bremen.de](mailto:barkowsky@sfbtr8.uni-bremen.de). Submissions can be position statements, work in progress, or completed work.

## Organizing Committee

Thomas Barkowsky, Chair (Universität Bremen, [barkowsky@informatik.uni-bremen.de](mailto:barkowsky@informatik.uni-bremen.de), primary contact), Sven Bertel (University of Illinois at Urbana-Champaign, [bertel@illinois.edu](mailto:bertel@illinois.edu)), Christoph Hölscher (University of Freiburg, [hoelsch@cognition.uni-freiburg.de](mailto:hoelsch@cognition.uni-freiburg.de)), Thomas F. Shipley (Temple University, [tshipley@temple.edu](mailto:tshipley@temple.edu))

## For More Information

For more information, see the supplementary symposium website. ([www.spatial-cognition.de/CSP](http://www.spatial-cognition.de/CSP)).

The field of embedded reasoning is seeing a surge of interest driven by rapid advances in embedded computing power and the desire to control increasingly complex systems safely, efficiently, and reliably. It incorporates the strengths of AI reasoning — planning, scheduling, controlling, learning, and diagnosing — into physical systems. This advances system capabilities in solving complex tasks, in acting on high-level goals, and in adapting to changing and uncertain states.

A number of applications are being revolutionized, from robotics to transportation systems to industrial automation. The integrated methods by which we approach these problems are also rapidly evolving. As illustrated by recent research programs and applications, these emerging capabilities require a tight integration of diverse techniques with a strong multidisciplinary understanding of their relationship. The traditional interfaces of the fields of AI reasoning, control, and human factors are becoming blurred, with control system optimizations running on embedded processors, and artificial intelligence controlling autonomous vehicles.

Intelligence in embedded systems faces a number of challenges to enable systems of sensors, actuators, and processors to be adaptive, distributed, and robust. There is often a tight coupling with both the physical world and temporal requirements, leading to challenges in real-time execution and in process and communication concurrency. Systems must be able to understand their environment and act intelligently and often autonomously, with potentially noisy sensor inputs and imperfect models of system behavior. They often involve the integration of capabilities such as inference, strategic and tactical planning, optimal behavior selection, and reactive control. It is vital to consider the associated programming paradigms and approaches to verification and fault tolerance. Systems must interact appropriately with each other and transparently with their human operators. Embedded reasoning systems draw upon a multitude of technologies.

We invite researchers to bring perspectives from multiple disciplines including control, artificial intelligence, and human factors research. Additionally, survey and comparison papers are welcome. The goals are to bring researchers together to share and discuss exist-

ing techniques, present new approaches, and to learn from and celebrate recent examples of successful experiments and applications on the frontiers of embedded reasoning. This symposium is meant to encourage direct comparisons of theories and of implementations to unify concepts from varying perspectives, and to provide a venue for discussion on the direction of the field.

## Submissions

Prospective participants are invited to submit either full papers (up to 8 pages), short or position papers (2–4 pages), or panel proposals (up to 2 pages, indicating the names, affiliations, and e-mail addresses for all panelists). Where appropriate, participants are strongly encouraged to demonstrate projects at the symposium for other symposium participants (please indicate this with paper submissions). Selected papers (both long and short) from the symposium will be published as an AAAI technical report.

All submissions should be in PDF format adhering to AAAI style, and should be sent to Gabe Hoffmann at [gabeh@parc.com](mailto:gabeh@parc.com). Optional videos accompanying submissions (under 10 MB) will be shared on the workshop website.

## Organizing Committee

Michael Beetz (Tech. Univ. of Munich), Johan de Kleer (PARC), Jeremy Frank (NASA ARC), Gabe Hoffmann, Chair (PARC), Michel Ingham (NASA JPL), Lukas Kuhn (PARC), Conor McGann (Willow Garage), Claire Tomlin (UC Berkeley).

## For More Information

For more information, see the supplementary symposium website. ([era.parc.com/aaai\\_er10](http://era.parc.com/aaai_er10)).

Unlocking and harvesting value embedded in personal information can lead to disclosure of private information and subsequent harm. Business practices for personal information management are subject to privacy law; however, law is jurisdiction based and information is typically collected across different economies with a wide range of cultural attitudes, social norms, business practices and legal frameworks for privacy.

The symposium will focus on fresh and intelligent multidisciplinary approaches to information privacy management. It will develop a better understanding of the underlying tension between transparency and disclosure in the privacy versus business strategy arena. There is a significant and growing need to use intelligent technology-enabled tools and techniques to assist users in monitoring and managing their personal information and its usage in a more transparent proactive fashion.

Individuals possess a digital footprint that applications can discover and exploit. Individuals can benefit by increased relevance of services offered; however, if privacy is not adequately protected, then personal information is disclosed and privacy compromised.

The underlying nature of the web and how it is used has changed dramatically over the last decade, creating a profound need for smarter, more effective privacy management. There are major advantages in pursuing a best practices approach because personal information flows that respect privacy promote sustainable innovation in technology-enabled services. Trust plays an important role in privacy management and without trust consumers avoid engagement, they minimize or falsify responses, and as a result business opportunities are missed, and innovation is retarded.

## Topics

- Privacy Leadership and Governance
- Privacy Principles, Policies and Procedures
- Privacy Requirements
- Privacy Management Best Business Practice
- Information Privacy Protection
- Information Privacy Law
- Privacy and Information Aggregation and Inte-

gration

- Privacy Codes of Practice
- Personally Identifiable Information
- Privacy Related Laws and Global Issues
- Intelligent Privacy Management Technologies
- Privacy in Social Networks and Recommender Systems
- The Role of Trust and Risk Management in Privacy Protection

## Submissions

Interested participants should submit full papers (up to 6 pages) or position papers (2 pages) in AAAI format as PDF documents to Mary-Anne Williams at [mary-anne@it.uts.edu.au](mailto:mary-anne@it.uts.edu.au). Selected papers from the symposium will be published as an AAAI technical report.

## Organizing Committee

Michael Genesereth (Stanford University, [genesereth@stanford.edu](mailto:genesereth@stanford.edu)) and Mary-Anne Williams (University of Technology, Sydney, [mary-anne@it.uts.edu.au](mailto:mary-anne@it.uts.edu.au))

# **It's All in the Timing: Representing and Reasoning about Time in Interactive Behavior**

People do not experience the world solely as an ordered sequence of events. The timing of our perceptions and behaviors has as much of an impact on our experiences as the nature of the events themselves. Yet many of the representations currently used to model human behavior do not incorporate explicit models of the temporal expression of these stimuli or actions. Dynamic behavior is often modeled sequentially in such a way that its temporal resolution is reduced and potential nonstationarity is ignored for the sake of computational efficiency (as in Markov state-based models of behavior), or causal mappings between observations and behavior are simplified to mitigate the sparseness of available datasets. Given that any artificial agent designed to interact with people will be dealing with intelligent partners with rich mental representations of time, are we using the appropriate representations?

The issue of timing can be even more critical when designing natural interactive social behaviors for robots or other synthetic characters. Human social behaviors are extremely dependent on a close feedback loop of simultaneous and coordinated activity between multiple interactors. Yet how to best represent these interdependencies and temporal relationships to produce interactive behaviors is just beginning to be explored and understood from a computational perspective. Speed, acceleration, tempo, and delay are concepts that AI and robotics researchers recognize as important in everything from motor control to verbal communication, but we do not yet possess a well-motivated framework for how these temporal considerations should be designed into our systems.

This symposium is oriented towards several different groups of researchers, including, but not limited to: computer scientists who use machine learning techniques to model human behavior, psychologists and neuroscientists who study social behavior, and designers of robots or computational artifacts that interact naturally with humans in real time. By bringing together members of these communities through a shared interest in temporal representations, our goal is to identify critical areas of study and promising techniques. Papers on any aspect of modeling or studying the temporal aspects of human or

human-machine social interaction are welcome.

## **Submissions**

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. Please e-mail submissions to [aaai10sstime@google-mail.com](mailto:aaai10sstime@google-mail.com).

## **Organizing Committee**

Frank Broz (University of Hertfordshire), Marek Michalowski (Carnegie Mellon University), Emily Mower (University of Southern California)

## **For More Information**

For more information, see the supplementary symposium website. ([asimov.usc.edu/~mower/aaai10ss\\_time](http://asimov.usc.edu/~mower/aaai10ss_time))

The goal of linked data is to enable people to share structured data on the web as easily as they can share documents today. The basic assumption behind linked data is that the value and usefulness of data increases the more it is interlinked with other data. Today, this emerging web of data includes data sets as extensive and diverse as DBpedia, Geonames, US Census, EuroStat, MusicBrainz, BBC Programmes, Flickr, DBLP, PubMed, UniProt, FOAF, SIOC, OpenCyc, UMBEL, Virtual Observatories, and Yago.

The availability of this linked data creates a new opportunity for the exploitation of AI techniques that have historically played a central role in knowledge representation, information extraction, information integration, and cognitive agents. The symposium is aimed at bringing together researchers working on linked data and AI. Successful submissions will address at least some aspect of both areas.

#### *Light-Weight Ontologies for Linked Data*

- Light-weight representation languages for capturing linked data
- Light-weight ontologies to specify semantics in linked data
- Conceptual modeling techniques for representing linked data
- Ontology community evolution and maintenance environments for use with linked data

#### *Semantic Publishing*

- Tools for publishing large data sources using light-weight ontologies on the web (for example, relational databases, XML repositories)
- Curating policies and approaches for linked data
- Embedding linked data with semantics into classic web documents (for example, GRDDL, RDFa, Microformats)
- Business models for linked data publishing and consumption

#### *Exploiting Linked Data*

- User interaction and usability issues surrounding linked data
- Visualization techniques for exploring linked data
- Use of machine learning algorithms for linking and identity resolution
- Inference and techniques for answering questions using linked data
- Exploiting rich knowledge bases in conjunction with the linked data

#### *Linked Data Application Architectures*

- Crawling, caching and querying linked data on the Web
- Linked data search engines and search interfaces
- Building intelligent agents that exploit linked data

### **Submissions**

Interested participants should submit full papers (6 pages) or position papers (2 pages) in AAAI format to [linkedai.admin@gmail.com](mailto:linkedai.admin@gmail.com). Reports on experimental results, descriptions of implemented systems, and position papers are all welcome. Selected papers from the symposium will be published as an AAAI technical report.

### **Organizing Committee**

Dan Brickley (VU University Amsterdam), Vinay K. Chaudhri (SRI International), Harry Halpin (University of Edinburgh), Deborah McGuinness (Rensselaer Polytechnic Institute).

### **For More Information**

For more information, see the supplementary symposium website. ([www.foaf-project.org/events/linkedai](http://www.foaf-project.org/events/linkedai)).



# Using Electronic Tangibles to Promote Learning: Design and Evaluation

For over twenty years, robots, electronics, microcontrollers, and other physically-instantiated devices have been used as educational tools in both formal (in-school) and informal (out-of-school) settings. Particularly at the high school and undergraduate levels, these tools have been used to enhance computer science education and illustrate artificial intelligence concepts. In the last several years, a number of programs have been developed which use physically instantiated devices to promote learning in a wider variety of topics, including science, engineering, math, as well as storytelling, sculpture, and other art forms. Such programs, while not always directly teaching AI concepts, do promote technological literacy in participants and may motivate some to further study in science, technology, engineering, and math (STEM). In order to further expand programs based on electronic, tangible components into these and other areas, it is important to demonstrate the impacts that these education programs have on participants, in both the short- and the long-term.

This symposium will provide a forum for researchers working with many different types of programs, including researchers in robotics, computer science, education, and formal and informal learning evaluation. This symposium will highlight (1) work featuring AI- and electronic tangibles used to promote learning in any topic (including approaches targeting arts and humanities in addition to STEM education); and (2) descriptions of the evaluation methodology and impacts of such programs.

## Topics

Topics of interest include the following:

- Design of physically instantiated electronic educational tools
- Curriculum design process
- Evaluation methodology for programs featuring electronic tangibles
- Evaluation results from such programs, both quantitative and qualitative.

We welcome contributions describing programs both in and out of school settings, utilizing a variety of electronic tangibles (robots, microcontrollers, ...), targeting any age, and promoting learning in the arts, humanities, or STEM disciplines. In addition to papers, we

welcome short abstracts for demonstration, hands-on, and panel discussion sessions.

## Submissions

We welcome prospective participants to submit either full papers (up to 6 pages), short papers (1–2 pages), or panel proposals (up to 2 pages, clearly indicating the names, affiliations, and e-mail addresses for all panelists). Where appropriate, participants are strongly encouraged to demonstrate educational projects at the symposium or provide hands-on experiences for other symposium participants (please indicate your demonstration plans with paper submissions). Selected papers (both long and short) from the symposium will be published as an AAAI technical report. All submissions should be in PDF format adhering to the AAAI conference paper formatting guidelines, and should be sent to Tom Lauwers at [tlauwers@andrew.cmu.edu](mailto:tlauwers@andrew.cmu.edu).

## Organizing Committee

Aude Billard (EPFL), Douglas Blank (Bryn Mawr College), Emily Hamner (Carnegie Mellon University), Tom Lauwers, Cochair (Carnegie Mellon University), Kristen Stubbs, Cochair (iRobot Corporation).

## For More Information

For more information, see the supplementary symposium website. ([www.cs.cmu.edu/~AAAI10-ETPL](http://www.cs.cmu.edu/~AAAI10-ETPL)).



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