AAAI 2000

Spring Symposium Series

March 20 – 22, 2000

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 2000 Spring Symposium Series, to be held Monday through Wednesday, March 20-22, 2000 at Stanford University, Stanford, California. The topics of the six symposia in this symposium series are:

- Adaptive User Interfaces
- Artificial Intelligence and Interactive Entertainment
- Bringing Knowledge to Business Processes
- My Dinner with R2D2: Natural Dialogues with Practical Robotic Devices
- Real-Time Autonomous Systems
- Smart Graphics

An informal reception will be held on Monday, March 20. A general plenary session, in which the highlights of each symposium will be presented, will be held on Tuesday, March 21.

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 December 15, 1999. To obtain registration information, write to:

- AAAI Spring Symposium Series
  445 Burgess Drive
  Menlo Park, CA 94025-3442
  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 8, 1999.
- Notification of acceptance will be given by November 5, 1999.
- Material to be included in the working notes of the symposium must be received by January 14, 2000.

Please see the individual symposium descriptions for specific submission requirements.

Adaptive User Interfaces

As COMPUTERS BECOME MORE ACCESSIBLE, the problem of designing effective user interfaces becomes more severe. Many new users expect interacting with a computer to be as natural and intuitive as interacting with a person, but current interfaces are artificial and constraining. One particular weakness with most interfaces is their static nature. Programmers create these interfaces to interact identically with all users and for a range of tasks, without considering differences in knowledge, preferences, and purpose. At best, some interfaces allow limited customization by explicitly setting preferences and options.

A new cross-disciplinary approach has emerged in recent years from researchers in human-computer interaction, information extraction, machine learning, and other fields. In this approach, a system takes advantage of feedback from its user or the environment to *adapt* its performance. This adaptation can take a number of forms. Some examples include presenting different information to the user, altering the presentation order, changing the level of interaction, or describing information differently. Feedback is generally unobtrusive, with the goal of making the interface more effective without the burden of explicitly configuring the system. A popular approach is to model facets of the system's functionality with parameters, such as a user, task, or world model. An adaptive component estimates parameter values from feedback, and a performance component uses these values to control the information presented.

This symposium will invite researchers from relevant fields to meet and discuss common issues and problems. We are particularly interested in complete working systems, and encourage participants to demonstrate their systems.

Submissions

Potential participants should submit a concise 1–2 page abstract of their work in the area. The abstract should briefly describe their specific problem, their formulation of the problem into a well-defined computable task (including a description of models used, if any), their method of obtaining feedback to adapt the system, how different kinds of feedback affect system performance, and experimental results or project status. Electronic submission is preferred.

E-mail submissions to Seth Rogers (rogers@rtna.daimlerchrysler.com) in PostScript or PDF format.

For more information, see the symposium web page at www.isle.org/~aui.

Organizing Committee

Seth Rogers (Cochair), DaimlerChrysler Research and Technology Center North America; Wayne Iba (Cochair), Institute for the Study of Learning and Expertise; Mathias Bauer, German Research Center for Artificial Intelligence; Pat Langley, Stanford University (CSLI); Christopher A. Miller, Honeywell Technology Center

Artificial Intelligence and Interactive Entertainment

COMPUTER GAMES AND COMPUTER ENTERTAINMENT SOFTWARE are a part of the vast frontier of interactive media that can take advantage of current AI technology. Current and near-future advances will push back the boundaries of computing power available to entertainment-related AIs. Meanwhile, the consumers of this media themselves are demanding smarter games and toys.

This symposium includes both traditional games (which tend to be centered on competition, linear exploration, and combat) and new entertainment architectures, such as shared interactive environments and robotic toys. Questions for this symposium include:

- How can we strengthen the burgeoning relationship between academia and industry we started in last year's Artificial Intelligence and Computer Games symposium?

- What are examples of entertainment AI problems? What are the parameters of research on which academia and industry can collaborate?

- What are the next steps in AI-related entertainment? What kinds of new, nontraditional AI applications will there be? What sorts of new technologies are on the horizon?

- How can we make human-like characters seem more smart and aware, whether they be on-screen or robotic? What has succeeded in this regard for developers and academics? What is there left to do?

- Can we define basic tools that would allow the two groups to share code, algorithms, etc.? How can we develop programs at universities that cultivate the right sorts of talents? How can we transfer people along with technology?

Submissions

Potential participants should submit a short paper (3-5 pages) describing a work recently completed or in progress that they would like to discuss or a proposal (1-2 pages) of questions to help seed a discussion on these or related topics. For all submissions, participants should include a CV or resume highlighting their work in this area.

Send submissions to Wolff Dobson, wolff@cs.nwu.edu.

We require that all submissions come by e-mail. ASCII is preferred and Acrobat or HTML will be accepted. Web page: www.cs.nwu.edu/~wolff/AIIE-2000.html

Organizing Committee

Wolff Dobson (Chair), Northwestern University; Ken Forbus, Northwestern University; John Laird, University of Michigan; Ernest Adams, Electronic Arts; Ian Davis, Activision; Mike Van Lent, University of Michigan; Andrew Stern, PF Magic

Bringing Knowledge to Business Processes

PROVIDING THE RIGHT PIECE OF KNOWLEDGE to the right person(s) at the right time is a primary goal of knowledge management (KM). There exists a huge amount of work in the areas of business process management (BPM) and artificial intelligence (AI) that holds a high potential for contributing to this goal but has not much been considered so far. Though innovative systems for business process support require the convergence and integration of tools and techniques from AI, BPM and KM, unifying views on this area are largely missing so far.

The topic of this symposium reflects this widespread need for intelligent behavior as well as user- and situation-specific adaptation in automated business processes. We are interested in new ways to enhance knowledge-intensive business processes and are looking for novel solutions that cross the boundaries of AI, KM, and BPM, thus integrating techniques and practices of all three areas.

Submissions

We invite contributions that advance the state-of-the-art in this triangle of AI, KM, and BPM such that these different communities may learn from each other. The AI side could provide knowledge-based approaches that may streamline business processes, such as knowledge representation and reasoning, ontologies, planning, reasoning under uncertainty, case-based reasoning, distributed AI, agent-based systems, adaptive systems or learning systems. The KM side might cover issues like information integration, support of cooperative work and context-dependent knowledge delivery, while BPM could contribute on techniques for modeling, analyzing and optimizing processes.

Persons interested in participating should submit either a technical paper (less than 5,000 words) or a position paper (less than 1,500 words) addressing new research issues. In addition, we solicit proposals for panel discussions and break-out groups that work towards visions for intelligent processes. The topics handled in these break-out groups might include, e.g. strategies for knowledge corporations, scenarios for evaluation, or new forms of cooperation between the three subfields. Additional, on-going information will be posted at www.aifb.uni-karlsruhe.de/~sst/sss00/

Submit electronically (strongly preferred!) to staab@aifb.uni-karlsruhe.de or send three hard copies of your submission to

Bringing Knowledge to Business Processes
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Organizing Committee

Dan O'Leary (Cochair), USC, USA; Ann Macintosh, University of Edinburgh, UK; Leora Morgenstern, IBM T.J. Watson Research, USA; Mark Musen, Stanford University, USA; Ulrich Reimer, Swiss Life, Switzerland; Steffen Staab (Cochair), Karlsruhe University, Germany; Wil van der Aalst, Eindhoven University of Technology, The Netherlands

My Dinner with R2D2: Natural Dialogues with Practical Robotic Devices

IF ROBOTS ARE HARDWARE AGENTS with varying combinations of reactivity, autonomy, mobility, and sensory processing, then are there robotic applications for which spoken dialogue can be of benefit? If so, what defines this class of applications and how can dialogue help? Can the following three aspects of spoken dialogue be evaluated independently for their benefits to command and control of robots:

(1) *The modality of speech:* Is it justified when (a) robots are too small, too numerous, too distant, too mobile, or too autonomous to control through any sort of direct manipulation interface, or (b) the user is impaired by darkened surroundings, human vision limitations, or loss of line-of-site to the mobile robotic device?

(2) *Natural language:* When do the things we want to say to robots warrant the expressive power (and cost) of human language, versus teaching humans the robot's command language?

(3) *Dialogue interaction:* When do the tasks we want to delegate to robots require negotiation of understanding; successive refinement of input commands; integration of sensory input—visual, tactile, and auditory—from human or robot; interruptability: let the human barge in during command execution or verbal reply to a query; system-initiated repair of temporary misconceptions; integration of communicative and physical context events and entities as the robot manipulates and alters the physical environment; or natural interaction that requires no human learning phase for walk-up use

Semi-autonomous robots make some decisions but are subject to dynamic input from a human to "micromanage" the robot in real time. How does conversing with a physically embedded agent differ from virtual agents? Does the physical instantiation make dialogue easier? How does one integrate gestural dialogue and deictic references into spoken speech?

Is the interpersonal model of dialogue the unachievable ideal or are there superior models for human-device dialogue? How could these models be evaluated and how would familiar models fare by this evaluation method: *Rosie* the Jetson housekeeper with regional/class dialect; *Maria* from Metropolis; *C3P0* (modeled after *Maria)*; Quasi-dialogue devices such as VCR's, DTMF (phone menus), and *R2D2?*

What future developments in component technologies will make them suitable for robotic dialogue? Beyond vocabulary size, word-recognition accuracy, etc., are there particular classes of speech, NL, or dialogue functionality that will be required by future robotic tools?

Submissions

Submit a one-page position statement to luperfoy@iet.com describing your interests in the above issues and/or robotic application areas that define constraints for dialogue technology.

Organizing Committee

Susann LuperFoy (Cochair)
Information Extraction and Transport, Inc (IET), 1911 N. Fort Myer Drive, Arlington, VA 22209. Telephone: 703-841-3500 ext. 610. Fax: 703-841-3501. E-mail: luperfoy@iet.com.

David Miller (Cochair), KISS Institute for Practical Robotics; Pete Bonasso, NASA; David Duff, IET, Inc; Lynette Hirschberg, MITRE; Ian Horswill, Northwestern University; Paul Martin, Sun Microsystems; Polly Pook, ISR; Bonnie Webber, University of Edinburgh; Barry Werger, USC.

Real-Time Autonomous Systems

AUTONOMOUS SYSTEMS CONTROLLING MOBILE VEHICLES, spacecraft, refineries, and other major application domains face inflexible real-time deadlines. If they fail to meet those deadlines, catastrophic consequences can result: lost lives, environmental damage, millions or billions of dollars up in smoke or down the drain.

This symposium will explore the issues and approaches involved in applying AI and autonomous control techniques to hard real-time application domains. We expect participation from both the AI/autonomous systems community and the real-time systems community. Relevant topics include planning with time, reasoning about time; modeling real-time domains; time-bounded AI/search/planning techniques; time-bounded reactive systems; anytime algorithms, imprecise computations; performance guarantees, safety validation; scheduling; deliberation scheduling, design-to-time algorithms; discrete event and hybrid discrete/continuous control; formal system verification; model checking for real-time systems; and real-time operating systems support for AI.

The symposium will be deliberately scheduled to provide extensive discussion time and group interactions. The symposium will consist of a series of medium length paper presentations (20-30 minutes) with significant question-and-answer time following each paper, as well as two topic-oriented group discussion sessions and two or more poster/discussion sessions.

Submissions

Those interested in participating should send either a 1-3 page extended abstract or a 6-8 page paper 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. Particular attention should be paid to clarifying the real-time aspects of the research. Electronic submissions of PostScript, PDF, or PC Word in AAAI format are preferred, and should be sent to Denise Kelsay, the symposium administrator, at kelsay@htc. honeywell.com by the submission deadline. More information will be available at the symposium web site, www.cs.umd.edu/users/musliner/ss00.

Organizing Committee

David J. Musliner (Chair and Organizer)
Honeywell Technology Center, MN65-2600, 3660 Technology Drive, Minneapolis, MN 55418
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Denise Kelsay (Administrator)
Honeywell Technology Center, MN65-2200, 3660 Technology Drive, Minneapolis, MN 55418
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Edmund H. Durfee, University of Michigan; Kang G. Shin, University of Michigan; Victor Lesser, University of Massachusetts; Shlomo Zilberstein, University of Massachusetts

Smart Graphics

ADVANCES IN THE FIELD OF COMPUTER GRAPHICS have made visual media a major ingredient of the modern interface and it is certain that graphics will play an increasingly important role in the way people communicate and interact with computers in the future.

Smart Graphics is the interdisciplinary approach to the design, generation, presentation and interaction with 2D and 3D graphical interfaces in a manner that is sensitive to technological, computational and cognitive constraints. As an enterprise it relies on the synthesis of insights from graphic design, cognitive science, human-computer interaction, graphics and artificial intelligence, and the symposium aims to broker a multidisciplinary dialogue between these communities.

Smart Graphics aims to move beyond the current requirement that designers anticipate every data, task and technological scenario, and instead facilitate the dynamic generation and presentation of content in such a manner that: (1) engages the user and is aesthetically satisfying; (2) takes account of cognitive insights as to the use of external representations, for example, minimizing potential for imprecision and ambiguity; (3) is sensitive to the real-time demands of the task in the context of the available computational resources; and (4) adapts the form of the output according to constraints placed on the presentation by the nature of the target media and available interaction devices.

An extended CFP and a detailed description of the scope of the symposium can be found at the symposium home page: www.cs.york.ac.uk/~patrick/SG2000

Smart Graphics research can be loosely divided into principles, methods and systems-based research, and submissions in all these areas are encouraged. The symposium will be highly interactive in character, including a mixture of talks, coordinated discussion, demonstrations and presentations of design work.

Submissions

There are 5 classes of submission:
- Full presentation (papers of 3000-5000 words)
- Poster talk/presentation (abstracts of 1000-2000 words)
- Presentation of design work (1000-2000 words)
- System demonstration (system description of 1000-2000 words)
- Statement of interest (statements of less than 1000 words)

Since attendance at the symposium is primarily by invitation, and many of the symposium activities will be based on preparations made prior to the symposium, potential attendees must at the very least submit a "statement of interest." Submissions should be either in PostScript, PDF, or HTML format and should be e-mailed to Andreas Butz (butz@cs.uni-sb.de) by the submission date (receipt will be confirmed by e-mail).

Organizing Committee

Andreas Butz (Organizer), Saarbrücken, butz@cs.uni-sb.de; Antonio Krüger (Organizer), Saarbrücken, krueger@dfki.uni-sb.de; Patrick Olivier (Organizer), York, patrick@cs.york.ac.uk; Barbara Hayes-Roth, Stanford; Steven Feiner, Columbia; James Lester, NCSU; John Maeda, MIT; Joe Marks, MERL; W. Bradford Paley, Digital Image Design; Mike Scaife, Sussex; Barbara Tversky, Stanford.