



2001 Fall Symposium Series

November 2-4, 2001

Sea Crest Conference Center on Cape Cod
North Falmouth, Massachusetts

Call for Participation

Sponsored by the
American Association for Artificial Intelligence
445 Burgess Drive
Menlo Park, CA 94025
650-328-3123
650-321-4457 (Fax)
fss@aaai.org
www.aaai.org/Symposia/

The American Association for Artificial Intelligence is pleased to present its 2001 Fall Symposium Series, to be held Friday through Sunday, November 2-4, 2001 at the Sea Crest Conference Center in North Falmouth, Massachusetts. The topics of the five symposia in the 2001 Fall Symposia Series are:

- Anchoring Symbols to Sensor Data in Single and Multiple Robot Systems
- Emotional and Intelligent II: The Tangled Knot of Social Cognition
- Intent Inference for Collaborative Tasks
- Negotiation Methods for Autonomous Cooperative Systems
- Using Uncertainty within Computation

An informal reception will be held on Friday, November 2. A general plenary session, in which the highlights of each symposium will be presented, will be held on Saturday, November 3.

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

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

Submission Dates

- Submissions for the symposia are due March 30, 2001
- Notification of acceptance will be given by May 4, 2001
- Material to be included in the working notes of the symposium must be received by August 24, 2001.

See the individual symposium descriptions for specific submission requirements.

Anchoring Symbols to Sensor Data in Single and Multiple Robot Systems

The focus of this symposium is on the connection between abstract- and physical-level representations of objects in autonomous robotic systems. We call “anchoring” the process of creating, and maintaining in time, this connection. Anchoring can thus be seen as a special case of symbol grounding where the symbols denote physical objects.

Anchoring is required in any robot that uses a symbolic representation. A typical example is to identify and track a specific person in a crowd given a linguistic description. Anchoring must also occur in multiple robot systems whenever the robots exchange information via symbolic representations. We talk in this case of “grounded communication.” Grounded communication is also needed for efficient human-robot cooperation.

Our main preoccupation is a practical one. All existing robotics systems that comprise a symbolic reasoning component implicitly incorporate a solution to the anchoring problem. However, this solution is typically developed on a system by system basis on a restricted domain. The ambition of this symposium is to create an interdisciplinary community that will develop a general theory of anchoring. The emphasis will be on the computational aspects of anchoring, including the functionalities and representations needed to perform it.

Topics of interest include:

- General theories of anchoring
- Action grounding
- Perceptual attention

- Visual tracking
- Grounded communication
- Cooperative perception
- Symbol grounding
- Architectures for anchoring
- Anchoring in natural systems
- Theories of linguistic reference

Submissions

Potential participants are invited to submit either a full paper of up to 8 pages reporting work in progress or fully finished work; or a short paper of up to 2 pages summarizing recent work, proposing questions to be discussed at the symposium, or stating a position with respect to the symposium themes; or a statement of interest, consisting in a short bio and a paragraph describing the participant’s interest in this symposium. Submit to Silvia.Coradeschi@aass.oru.se. Additional information is available at www.aass.oru.se/Living/FSS01/. We will consider the possibility of editing a book, or a special issue of a journal, reporting the outcomes of the symposium and including selected work by the symposium participants.

Organizing Committee

Silvia Coradeschi and Alessandro Saffioti (Cochairs), Orebro University, Sweden; Kurt Konolige, SRI International; Benjamin Kuipers, University of Texas at Austin; Yves Lesperance, York University, Canada; Maja Mataric, University of Southern California; Luc Steels, Free University of Brussels, Belgium

Emotional and Intelligent II: The Tangled Knot of Social Cognition

According to some theories, emotions come into play as soon as we consider individuals in interaction with their social environment. For some researchers, emotions are at the very heart of what being social means. In the last years, the AI community has echoed the importance of emotions in social interactions in a growing number of applications: expressive and social robots, animated and storytelling characters with “feelings,” expressive interfaces, systems for human-computer emotional interaction, etc. This symposium proposes a multi-disciplinary framework where researchers can exchange ideas and reflect on the motivations, scientific grounds, and practical consequences of these efforts.

The symposium investigates the role of emotions in grounding interpersonal behaviors and social cognition, from the perspective of both the individual and the collectivity. The main focus is on natural and artificial agents (in all sorts of embodiments) in social environments, and on the possibilities for cross-fertilization between research in artificial emotions and studies of emotions in animals and humans. Contributions on emotions in individual agents are also welcomed, but authors should state how their work is relevant from the perspective of social interactions and cognition.

Submissions are sought regarding, among others, the following issues, in artificial or in biological systems embedded in a social environment:

- Synthesizing, expressing, and eliciting emotions
- Perceiving other’s and own emotions, perceiving others through emotions
- Embodiment and biological aspects of emotions
- Emotions in (social) cognition and learning
- Developmental and cultural perspectives of emotions
- Intra- and inter-individual regulation in social interactions
- Emotion and motivation in adaptation and behavior
- Origins, evolution, and emergence of emotional phenomena
- Emotions, communication, and language
- Emotional disorders, emotions and social interactions in therapy
- Philosophical aspects
- Applications

Contributions from fields other than AI, ALife, and robotics (such as arts, biology, ethology, humanities, neurosciences, philosophy, psychology, social sciences), are strongly encouraged.

Interaction among participants will be fostered, and ample time will be devoted to discussions. Presentations will be short and organized around particular topics. Poster sessions will allow for more detailed and technical discussions.

Submissions

Potential participants who would like to present their work at the symposium should submit a short paper (up to 5,000 words) or extended abstract (1,500 to 2,500 words). Contributions

should describe work in progress, completed work, positions, or give significant insight into the current state or perspectives of research in artificial, animal, or human emotions in social settings. Other potential participants should send a statement of interest (one page), briefly describing their work and their interest in the symposium.

Please send your contributions by e-mail (ASCII or URL from which your contribution can be downloaded are preferred; otherwise attached PDF, UNIX-compatible PostScript, or an RTF file), to the symposium chair:

Lola D. Canamero
LRI, Bat. 490
Universite Paris-XI
F-91405 Orsay Cedex, France
E-mail: lola@lri.fr
Fax: +33-1-69.15.65.86

Further information can be obtained from www.lri.fr/~lola/ei-fs01.html

Organizing Committee

Cynthia Breazeal (MIT, USA); Lola D. Canamero, Chair (Univ. Paris-XI, France); Kerstin Dautenhahn (University of Hertfordshire, UK); Philippe Gaussier (ENSEA, France); Eva Hudlicka (Psychometrix, USA); Susanne Kaiser (University of Geneva, Switzerland); Andrew Ortony (Northwestern University, USA); Paolo Petta (OEFAL, Austria); Rosalind Picard (MIT, USA)

Intent Inference for Collaborative Tasks

As decision support systems become more capable of autonomous performance, they must engage more fully with human operators (and other autonomous entities), negotiating task assignments, anticipating near-term needs, and proactively providing information, analysis, and alerts. A body of work in intent inference has shed much light on how automation systems can be given some measure of understanding of their users' tasks and needs. But decision support systems are seldom limited to a single operator, and research into *team* intent-inference is therefore assuming greater importance.

Understanding team-level intent requires a multidisciplinary approach informed by team dynamics and workflow, workplace procedures, cognitive task analysis, reasoning under uncertainty, and intelligent collaborative agents. By bringing together researchers from the intent inference community, those engaged in the study of collaboration, and prominent players in the application domains, this symposium will help foster the emerging discipline of team intent inference and promote the development of intent-aware decision support for multi-operator complex systems.

Specific areas of interest include: (1) intelligent agents that interact with users based on intent inference; (2) task analysis at the team or workplace level; (3) representing collaborative tasks with nonlinear or probabilistic modeling; (4) monitoring user actions

to track progress and manage dialog; and (5) applying team intent inference to decision support, human-agent teaming, attention focusing / alerting, and information filtering / retrieval.

The symposium will present a survey of representative works in progress and foster a meaningful dialog to promote research agenda and collaboration along lines of shared interest. A presymposium discussion of "visions" will help set the stage for the on-site schedule, which will include invited presentations and breakout sessions that synthesize emerging concepts and approaches, assess application needs, and suggest areas for fruitful research.

Submissions

Those interested in participating should send a 1-3 page extended abstract describing their related work and areas of interest. Submissions may discuss work in any stage of development, from concepts and future directions to finished work. Electronic submissions in AAAI format (PDF or Word preferred) should be sent to Benjamin Bell at benjamin.l.bell@lmco.com by the submission deadline.

Organizing Committee

Benjamin Bell (Chair), Lockheed Martin; Scott Brown, Air Force Research Laboratory; Todd J. Callantine, NASA Ames Research Center; Neal Lesh, Mitsubishi (MERL); Eugene Santos (Cochair), Univ. of Connecticut; Sriprakash Sarathy, Clark Atlanta University.

Negotiation Methods for Autonomous Cooperative Systems

Negotiation is one important mechanism through which groups of autonomous systems can reach agreement, in a distributed fashion, on the sharing of limited resources or the allocation of tasks. Through negotiation, groups can form cooperative teams, in a bottom-up fashion, to resolve a variety of constraint satisfaction problems. Many competing protocols have been put forward for this purpose, such as auctions, contract nets, bargaining systems, and argumentation systems. Negotiation between autonomous systems has emerged as a significant new reasoning technique.

In cooperative settings, negotiating entities must be able to evaluate local constraints in a way that respects global constraints as much as possible. Such systems are typically characterized by: (1) decentralized control, (2) partial and uncertain information, and (3) some sort of real-time constraint on resource or task allocation. This symposium will provide a forum for researchers to present their work on negotiation for cooperative systems. The focus of this symposium will be on:

- Negotiation methods to achieve just-in-time solutions that leave all negotiation partners satisfied, without necessarily achieving an optimal resource distribution, which may be impossible given real-time constraints.
- The application of negotiation techniques to problems of constraint satisfaction, especially in domains where problems are overconstrained.
- Emergent group behavior during and

as a result of the negotiation process.

- Comparisons and evaluations of alternative negotiation techniques in cooperative settings.
- Comparisons with other “traditional” reasoning methodologies for groups of agents and for resource allocation or constraint satisfaction.

This symposium will bring together researchers from a variety of areas such as distributed problem solving, multi-agent systems, decision theory, economic models, and game theory, to examine alternative methods for negotiation in cooperative settings. We will accept experimental and theoretical results in these areas. Our general format will combine short presentations with extended discussion periods of key issues.

The distinguishing characteristic of the negotiation approaches of interest in this symposium is the explicit time-bounds on calculation of actions. More specifically, we are concerned with negotiation techniques that create real-time resource management systems that operate in highly decentralized environments, making maximum use of local information, providing solutions that are both good enough, and soon enough. Potential participants are invited to submit papers to Costas Tsatsoulis (tsatsoul@ittc.ukans.edu).

Organizing Committee

Costas Tsatsoulis, Chair, U. Kansas;
Michael Huhns, U. South Carolina; Victor Lesser, U. Massachusetts-Amherst; Robert Neches, ISI; Charlie Ortiz, SRI; Leen-Kiat Soh, U. Kansas.

Using Uncertainty within Computation

To reason about complex computational systems, researchers are starting to borrow techniques from the field of uncertainty reasoning. In some cases, this is because the algorithms contain stochastic components. For example, Markov decision processes are now being used to model the trajectory of stochastic local search procedures. In other cases, uncertainty is used to help model and cope with the stochastic nature of inputs to (possibly deterministic) algorithms. For example, Monte Carlo sampling is used to deal with uncertainty in game playing programs, whilst probability distributions are used to model variations in runtime performance. Uncertainty and randomness have also been found to be a useful addition to many deterministic algorithms. And a number of areas like planning, constraint satisfaction, and inductive logic programming, which have traditionally ignored uncertainty in their computations, are waking up to the possibility of incorporating uncertainty into their formalisms. The goal of this symposium is to encourage symbiosis between these different areas.

The aim is to bring together researchers from a number of different areas of AI, including agents, constraint programming, decision theory, game playing, knowledge representation and reasoning, learning, planning, probabilistic reasoning, qualitative reasoning, reasoning under uncertainty, and search. Topics include incorporating uncertainty into existing frameworks; modeling uncertainty in

computation; Monte Carlo sampling; probabilistic analysis and evaluation of algorithms; randomization of algorithms; stochastic versus systematic algorithms; and utility and computation.

Submission Information

The symposium will consist of invited talks, panel discussions, individual presentations and group discussions. Potential presenters should submit a technical paper of up to 15 pages in LNCS format. Other participants should submit a position paper or research abstract of up to 2 pages. Email submissions in PostScript format to tw@cs.york.ac.uk.

Alternatively, send 4 hard copies to Toby Walsh, Department of Computer Science, The University of York, Heslington, York YO10 5DD United Kingdom. Voice: +44 1904 432793. Fax: +44 1904 432767.

Send questions to Carla Gomes (gomes@cs.cornell.edu) or Toby Walsh (tw@cs.york.ac.uk) or consult www.cs.york.ac.uk/~tw/fall.

Organizing Committee

Tom Dean, Brown; Marek Druzdzel, Pittsburgh; Matt Ginsberg, CIRL; Carla Gomes (Cochair), Cornell; Holger Hoos, UBC; Eric Horvitz, Microsoft; Michael Jordan, UC Berkeley; Henry Kautz, Washington; Scott Kirkpatrick, IBM; Michael Littman, AT&T; Stephen Muggleton, York; David Poole, UBC; Stuart Russell, UC Berkeley; Bart Selman, Cornell; Stephen Smith, CMU; Toby Walsh (Cochair), York.