2002 Fall Symposium Series

November 15-17, 2002
Sea Crest Conference Center
North Falmouth, Massachusetts

Call for Participation

Sponsored by the

American Association
for Artificial Intelligence

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http://www.aaai.org/Symposia/symposia.html

The American Association for Artificial Intelligence is pleased to present its 2002 Fall Symposium Series, to be held Friday through Sunday, November 15-17, 2002 at Sea Crest Conference Center in North Falmouth, Massachusetts. The topics of the five symposia in the 2002 Fall Symposia Series are:

- Chance Discovery: The Discovery and Management of Chance Events
- Etiquette for Human-Computer Work
- Human-Robot Interaction
- Intent Inference for Users, Teams, and Adversaries
- Personalized Agents

An informal reception will be held on Friday, November 15. A general plenary session, in which the highlights of each symposium will be presented, will be held on Saturday, November 16.

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

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Submission Dates

- Submissions for the symposia are due on May 15, 2002
- Notification of acceptance will be given by June 14, 2002
- Material that will be included in the working notes of the symposium must be received by September 6, 2002.

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

Chance Discovery: The Discovery and Management of Chance Events

Chance events are rare or novel events with potentially significant consequences for decision-making, i.e., events to be conceived as a risk or an opportunity. This symposium will be devoted to questions: How may we predict, identify or explain chance events and their consequences? ("chance discovery") and How may we assess, prepare for or manage them? ("chance management").

An agent—human, robot or software agent—engaged in planning needs to adopt a view of the future: In order to decide goals, and to decide the best sequence of actions to achieve these goals, how can an agent or agents discover rare or novel events and forecast their consequences? The consequences of such events may significantly impede or facilitate the achievement of agents' goals, but their unlikeness makes them difficult to predict or explain by methods that use historical data or pattern-matching.

One can think of chance discovery as a search of maximum or minimum of a surface whose shape is unknown, in a space whose dimensions may also be unknown. The focus on the agent and its environment as one interacting system can be another point. This symposium will seek to bring together members of the AI community with people from various relevant domains listed below, to create and share approaches to chance discovery/management. Topics of interest include, but are not restricted to:

■ Agent systems and planning with emergent behaviors
■ Human-computer or agent-environment interactions
■ Complex systems
■ WWW Awareness
■ Knowledge discovery and data mining
■ Statistics and data analysis
■ Information retrieval
■ Risk analysis, prediction, assessment and management
■ Marketing theory and demand forecasting for innovative products
■ Opportunity identification in business
■ Social trends analysis
■ Social psychology
■ Natural disaster prediction and management
■ Management and decision sciences
■ Operations research
■ Philosophy of forecasting and risk
■ Hypothesis discovery in scientific theories

Submissions

Potential participants are invited to submit a paper of 1,500–6000 words, proposing questions, reporting work in progress, discussing applications or a theoretical contribution. Please submit in PostScript format to osawa@ gssm.otsuka.tsukuba.ac.jp. More information: www.miv.t.u-tokyo.ac.jp/~matumura/FSS02/

Organizing Committee

Yukio Ohsawa, University of Tsukuba (osawa@gssm.otsuka.tsukuba.ac.jp); Simon Parsons, University of Liverpool (s.d.parsons@csc.liv.ac.uk); Peter McBurney, University of Liverpool (p.j.mcburney@csc.liv.ac.uk).

Etiquette for Human-Computer Work

As we come to rely on the increasing capabilities of computers, it becomes critical to define roles and relationships that both human and computer can live with. The rules governing such relationships are etiquette rules. By *etiquette* we mean the defined roles, acceptable behaviors and interaction moves of human and intelligent agent participants in a common setting. Etiquette creates an informal social contract, allowing expectations to be formed about the behavior of other parties. Etiquette is not just about politeness and nicety; it is also about expectations, efficiency, safety, and trust.

Our focus will be on etiquette in human-computer work settings—how to generate and embody it, how to measure its effects, how to design effective etiquette for various domains, etc. As such, we hope to bridge very divergent research populations. We expect participants from the human factors and automation communities interested in building real world, adaptive automation and information systems where human control and safety are critical, and from CS and HCI who have traditionally built desktop systems where adaptiveness and aiding are equally important but ease of use, attractiveness, and even entertainment values can be higher and the costs of error lower. We also invite researchers in UI design, personified interfaces and embodied agents, natural language, computer supported cooperative work, ubiquitous computing, and machine learning. Psychologists and sociologists with interests in trust, effective teamwork, and etiquette are also welcome.

This symposium will seek to define the notion of etiquette for human-computer relationships, to identify its similarities and differences to human-human relationships, and to provide a variety of examples of etiquettes that do and don't contribute to human-computer work. We expect the agenda to include short summaries of the various contributing fields, an invited presentation from an etiquette expert—a psychologist, sociologist or an etiquette maven, many presentations of prior or current work, and panels/discussions on (1) defining etiquette and its role in HCI design, (2) brainstorming about etiquette failures and potential fixes in current systems, and (3) brainstorming an appropriate etiquette for a challenge problem.

Submissions

Those interested in participating should send a three-page extended abstract describing their related work and areas of interest. Electronic submissions in AAAI format (PDF or Word preferred) should be sent to Chris Miller at cmiller@ SIFT.info by the submission deadline.

Organizing Committee

Christopher A. Miller, Smart Information Flow Technologies; Timothy Bickmore, MIT Media Lab; Clifford Nass, Stanford University; Raja Parasuraman, The Catholic University of America.

Human-Robot Interaction

While we talk about "autonomous" robots, we realize that for virtually all of the future applications for autonomous vehicles, humans will always be in the loop at some level. The level of interaction can vary—for example, a tactical mobile robot might have regular and frequent interactions with a human, while a planetary exploration robot might take supervisory instructions only occasionally—yet the human is still part of the system. Even more, many envision a tighter collaboration between future intelligent vehicles and humans where the interactions are more mixed initiative, with all parties contributing according to their expertise.

In much current research, we have concentrated on robotic architectures and then put user interfaces on as means of monitoring and controlling the robotic platform. To develop a more synergistic system it is necessary to develop robotic architectures that accommodate the human in the loop from the beginning. However, this architecture needs to be designed to support dynamic autonomy. It should support human intervention when needed as well as supporting more autonomous behavior when the robot is capable of such actions.

This symposium will bring together researchers interested in human-robot interactions and interfaces. We expect this to be a highly interdisciplinary session with researchers in artificial intelligence, robotics, cognitive science, human-computer interfaces, linguistics—even ethics.

Topics of interest include:

■ Dynamic autonomy and mixed initiative

■ One human interacting with teams of robots; multiple humans interacting with one or more robots; hand-off issues

■ Multi-modal interfaces — combining speech, gestures and other modes of communication

■ Social issues of robots in human environments

■ Role of cognitive science

■ Architectures for human-robot interaction

■ Learning and adaptation in human-robot teams

■ Performance metrics for human-robot interaction; evaluation methodologies

■ Applications: UCAVS, Micro-air vehicles, UUVs, UGVs, planetary exploration, assembly in space, clean up, urban search and rescue

The symposium will include short presentations intermixed with working groups and panel sessions. One panel session will include government representatives discussing application areas and funding.

Organizers

Alan C. Schultz, NRL; Jean Scholtz, NIST; Michael Goodrich, BYU; Robin Murphy, USF

Additional Information

www.aic.nrl.navy.mil/~schultz/fss02-hri

Intent Inference for Users, Teams, and Adversaries

Advances in AI have enabled decision support systems to assume substantive roles in supporting human operators of complex systems. As such systems become more capable of autonomous performance, they must engage more fully with human operators negotiating tasks assignments, anticipating near-term needs, and proactively providing information, analysis, and alerts. 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. Research into task analysis and modeling, intelligent software agents, functional state measurement, and dialog management has helped fuel the development of intent-aware systems.

As this need for such sophistication extends to systems with multiple operators, research into team and adversarial intent inference becomes critical. The notion of a team or crew is central to applications involving complex systems and organizations ranging from transportation systems to command and control centers. For adversarial intent inference, decision support for teams facing an intelligent opponent (hostile force) are limited in their utility without an understanding of the adversary's goals and actions. Thus, adversarial intent inference is a key capability in applications including counter-terrorism, counter-drug, and asymmetric warfare.

In response to this fast-emerging need, researchers are now focusing on team dynamics and workflow. From a socio-anthropological heritage come approaches to capturing workplace procedures and information flows; cognitive task analysis contributes tools for capturing process models; and principles of reasoning under uncertainty allow for such models to remain robust under the complex conditions typical of multiple operators of complex systems. More recently, collaborative agent research has opened new avenues in modeling and implementing teams of cooperative agents, and "keyhole" approaches to non-intrusive observation of users promises to enable systems to reliably track users' progress.

By bringing together researchers throughout the community, 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) task analysis—cognitive and team; (2) task modeling – non-linear and probabilistic; (3) plan recognition; and, (4) interface agency.

Submissions

Those interested in participating should send a three-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 Eugene Santos Jr. at eugene@cse.uconn.edu by the submission deadline.

Organizers

Eugene Santos Jr. (Chair), University of Connecticut (eugene@cse.uconn.edu); Benjamin Bell (Cochair), Lockheed Martin (benjamin.l.bell@lmco.com)

Personalized Agents

Although the term "agent" has come to mean many things, it perhaps has the most traction when identified with an anthropomorphized and autonomous program that acts as a personal assistant to a specific user (or set of users). In this model, the agent usually "lives" in a virtual world, may have access to data about its user, and is empowered to act on its user's behalf in a variety of computer-based tasks, including appointment scheduling, vetting messages, engaging in negotiation with other users, discovering items of interest, and even initiating contact with other users and agents.

This personalized agent has several qualities, including: (1) The agent is almost always "on," working on the user's behalf even when the user is not present; (2) The agent must continually adapt over a longtime horizon to the user's changing needs; and (3) The agent is mostly focused on modeling the behavior and preferences of a specific individual or small group of individuals, rather than discovering large trends over aggregate data

We believe that a key component to a successful personalized agent is learning from the user, both supervised and unsupervised. This symposium will focus on the unique issues that arise when developing adaptive learning methods for such agents. In particular, we are interested in several topics:

■ Unusual or non-standard domains where learning agents have an impact

■ Balancing the possibly competing individual interests of many different users

■ Learning methods that directly address the sparse data problem

■ Learning methods that handle distinct changes in a user's preferences

■ Natural ways of teaching agents specific behaviors

■ Benefits of learning agents over agents with fixed behavior

■ Evaluation of the effectiveness of individual learning strategies (e.g., case-based, explanation-based, inductive, reinforcement learning), or multistrategy combinations.

■ Characterization of learning and adaptation methods in terms of modeling power, communication abilities, knowledge requirements and processing abilities of individual agents

■ Agents learning by observing other agents

■ Investigation of teacher-student relationships between agents and users

■ User modeling

Submission Requirements

Those interested in participating should e-mail Charles Isbell at aaai2002-fs@ai.mit.edu by the submission deadline. The email should include keywords, and complete contact information for the authors, as well as the URL of either a brief statement of interest (1 page), or a complete paper (8 pages). The statement of interest or paper should be in Postscript, PDF or HTML.

Organizers

Peter Stone, Charles Isbell (isbell@research.att.com), and Gal Kaminka.