

AGENT MODELING

AAAI-96 WORKSHOP

Portland, Oregon

August 4, 1996

Introduction

The study of issues arising in building agents competent in interacting with other agents has played a central role in much of AI research. Clearly, an automated intelligent agent operating in a realistic environment will often need to interact with other agents to achieve its goals. Agent modeling — the capability of modeling and reasoning about other agent's knowledge, beliefs, goals, and actions — is central to intelligent interaction. This capability is being addressed in a variety of research areas, including distributed AI (DAI) and multi-agent systems, natural language discourse, plan recognition, human-computer interaction, intelligent tutoring and user interfaces, as well as in related areas, such as game theory, and cognitive science and psychology. A variety of techniques are being used, from building theoretical models to implementing actual systems, within all of the areas. Added impetus to this work comes from the recent explosion of work on agents in dynamic interactive (virtual reality) simulation, software (such as information retrieval), and related environments. These environments bring with them a new set of concerns for agent modeling for collaboration and competition.

Aims of the Workshop and Themes

The workshop is intended to bring together researchers working in all areas related to the theoretical and practical aspects of agent modeling. The aim is to assess the state of the art, discuss common foundations of representation and reasoning with models of agents, and explore future directions in which current theories and systems must be extended. We hope that a productive (and provocative) exchange of ideas will further the participants' understanding and expertise.

Specific topics include, but are not limited to:

Agent modeling theory

- What paradigms and theories should the modeling be based on? Should it be logical, knowledge-theoretic, decision-theoretic, game-theoretic?

- What level of modeling is appropriate for different tasks? Is it always the case that treating agents in terms of knowledge, beliefs and desires is better? Can they be treated as simple mechanisms?
- What are the methods for making use of the models? How is the information contained in the model being processed?
- Are there special concerns in modeling groups of agents?

Agent modeling in practice

- Can the models already considered, either in game theory, or in psychology, be used in AI applications?
- Are theoretical models developed for agent modeling in DAI of relevance for building intelligent tutoring systems? Do these tutoring system offer new insights into agent modeling, or possibly present harder problems that we might have otherwise expected?
- How do concerns of real-time performance and reactivity in the synthetic simulation environments change the nature of agent modeling?

Agent modeling and communication

- What are the implications of various approaches to modeling for intelligent communication? What is the relation between the models and the communicative acts?
- How can what is known about human-to-human interaction be applied to the interaction of human and artificial agents?

Agent modeling: Learning and representations

- How can agents learn/acquire models of other agents (including human users)?
- What representations emerge as common across the subfields and applications? Are there any promising alternatives?

Submission information

Interested participants should submit a 10 page extended abstract (12 pt font). We strongly encourage email submissions of text/postscript files. If this is not possible, please send four hard copies to the following address: Milind Tambe, Information Sciences Institute, University of Southern California, 4676 Admiralty Way, Marina del Rey, CA 90292, email: tambe@isi.edu.

Important Dates

Deadline for submission and request for participation:	March 18, 1996.
Notification of acceptance:	April 15, 1996.
Final date for camera-ready copies to organizers:	May 13, 1996.

Organizing committee

- Milind Tambe (co-chair) (Information Sciences Institute, USC) tambe@isi.edu
- Piotr Gmytrasiewicz (co-chair) (Univ of Texas at Arlington) piotr@cse.uta.edu
- Sandra Carberry (Univ of Delaware)
- Ed Durfee (Univ of Michigan)
- Lewis Johnson (Information Sciences Institute, USC)
- Charles Rich (Mitsubishi Electric Research Labs)
- Sandip Sen (Univ of Tulsa)
- Candy Sidner (Lotus Corp)
- Katia Sycara (Carnegie Mellon University)