

Preface

Intelligent agents are one of the most important developments in computer science in the 1990s. Agents are of interest in many important application areas, ranging from human-computer interaction to industrial process control. The ATAL workshop series aims to bring together researchers interested in the core aspects of agent technology. Specifically, ATAL addresses issues such as theories of agency, software architectures for intelligent agents, methodologies and programming languages for realizing agents, and software tools for developing and evaluating agent systems. One of the strengths of the ATAL workshop series is its emphasis on the synergies between theories, infrastructures, architectures, methodologies, formal methods, and languages.

This year's workshop continued the ATAL trend of attracting a large number of high-quality submissions. In more detail, 75 papers were submitted to the ATAL-99 workshop, from 19 countries. After stringent reviewing, 22 papers were accepted for presentation at the workshop. After the workshop, these papers were revised on the basis of comments received both from the original reviewers and from discussions at the workshop itself. This volume contains these revised papers.

As with previous workshops in the series, we chose to emphasize what we perceive as an important new trend in agent-based computing. In this case, we were motivated by the observation that the technology of intelligent agents and multi-agent systems is beginning to migrate from research labs to software engineering centers. As the rate of this migration increases, it is becoming increasingly apparent that we must develop principled techniques for analyzing, specifying, designing, and verifying agent-based systems. Without such techniques, agent technology will simply not realize its full potential. Consequently, the ATAL-99 program placed particular emphasis on *agent oriented software engineering* and *the evaluation of agent architectures*. Besides several papers in each of these special tracks, the program also featured two associated panels (organized by Mike Wooldridge and Jörg Müller respectively). Another highlight of this year's program was the invited talks by leading exponents of agent research:

THEORIES John Pollock Rational Cognition in OSCAR

ARCHITECTURES Sarit Kraus Agents for Information Broadcasting

It is both our hope and our expectation that this volume will be as useful to the agent research and development community as its five predecessors have proved to be. We believe that ATAL, and the *Intelligent Agents* series of which these proceedings will form a part, play a crucial role in a rapidly developing field, by focusing specifically on the relationships between the theory and practice of agents. Only through understanding these relationships can agent-based computing mature and achieve its widely predicted potential.

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