

## Preface

The design of intelligent trading agents, mechanisms, and systems has received growing attention in the agents and multiagent systems communities in an effort to address the increasing costs of search, transaction, and coordination which follows from the increasing number of Internet-enabled distributed electronic markets. Furthermore, new technologies and supporting business models are resulting in a growing volume of open and horizontally integrated markets for trading of an increasingly diverse set of goods and services. However, growth of technologies for such markets requires innovative solutions to a diverse set of existing and novel technical problems which we are only beginning to understand. Specifically, distributed markets present not only traditional economic problems but also introduce novel and challenging computational issues that are not represented in the classic economic solution concepts. Novel to agent-mediated electronic commerce are considerations involving the computation substrates of the agents and the electronic institutions that supports, and trading, and also the human-agent interface (involving issues of preference elicitation, representation, reasoning and trust). In sum, agent-mediated electronic trade requires principled design (from economics and game theory) and incorporates novel combinations of theories from different disciplines such as computer science, operations research, artificial intelligence and distributed systems.

The collection of above-mentioned issues and challenges has crystallized into a new, consolidated agent research field that has become a focus of attention in recent years: *agent-mediated electronic commerce*.

The papers in this volume originate from the 5th Workshop on Agent-Mediated Electronic Commerce (AMEC V), held in conjunction with the 2nd International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS) in July 2003. The AMEC V workshop continued with the tradition, and built upon the success of the previous AMEC workshops.

The workshop was intended to explore research in the principled design of economic agents, mechanisms, and systems. Along this direction, areas of particular interest included:

- mechanisms, negotiation protocols, and auctions (especially advanced designs such as multi-attribute auctions)
- bidding and negotiation strategies
- integration of negotiation with broader decision making
- economic-based theory and design methodologies
- market-based problem solving
- trading and pricing
- eliciting human preferences and requirements and ensuring that they are represented in automated agent behavior
- significant new problem domains

- systems that support bidding and negotiation
- simulation and evaluation of properties of novel and complex mechanisms

The workshop received a total of 22 submissions, from which 9 were selected for full presentation during the workshop. After the workshop, the authors were asked to submit their revised versions for publication in this volume. The result is that this volume contains 9 high-quality papers that can be regarded as representative of the field.

We have arranged the papers in the book around three major topics:

- *automated negotiation*;
- *mechanism design*; and
- *multi-agent markets*.

The first section contains four papers dealing with a variety of issues on automated negotiation. Somefun et al. elaborate on bargaining strategies aimed at the trading of bundles of information goods. Similarly, Feng et al. examine automated strategies for trading agents, but in a rather different negotiation scenario: stock trading. Complementarily to these works, Luo et al. turn their attention to a central HCI problem of automated negotiation: how to capture a user's preferences so that his agent can adequately represent him. This section ends with the contribution by Hoen et al., who analyze the convenience for trading agents to decommit after a negotiated contract has been settled.

The second section compiles papers focusing on computational mechanism design. Firstly, Sandholm et al. introduce a new allocation mechanism (take-it-or-leave-it auction) that generates close-to-optimal expected utility for the seller while allowing buyers to hide much of their private valuation. Elaborating further on auction design, Likhodedov et al. design a dominant-strategy auction mechanism aimed at maximizing expected social welfare. A rather different approach is taken by Walsh et al., who offer methods designed to sample the strategy profile that is expected to provide the most value of information, measured in terms of beliefs about the effect that one more sample might have on the current decision about the equilibrium of the system. These methods are said to be relevant to *experimental mechanism design*, in which computational methods are used in a closed loop to evaluate alternative designs for electronic markets.

Finally, the third section contains two papers dealing with upcoming issues in digital markets. Firstly, the work by Brooks et al. develops a model of an information goods duopoly to empirically support the hypothesis that a producer using some knowledge of a problem's structure can outperform a producer employing knowledge-free forms of learning. Secondly, Klein et al. address the problem of emergent dysfunctions in open markets where consumers select providers among competing providers. The authors offer a method for coping with such dysfunctions based on selective stochastic resource request rejection.

We would like to conclude by thanking the members of the program committee. They were able to produce a large number of high-quality reviews in a very short time span. Furthermore, we would also like to thank the authors for submitting their papers to our workshop, as well as the attendees and panelists

for their valuable insights and discussions. Needless to say that these helped authors to improve the revised papers published in this book.

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# Workshop Organization

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