

Lecture Notes in Business Information Processing

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Preface

The design and analysis of electronic commerce systems in which agents are deployed involves finding solutions to a large and diverse array of problems, concerning individual agent behaviors, interaction, and collective behavior. A wide variety of electronic commerce scenarios and systems, including agent approaches to these, have been studied in recent years. These studies suggest models that support the design and the analysis at both the level of the single agent and the level of the multiagent system.

This volume contains revised, selected papers from the 10th Workshop on Agent-Mediated Electronic Commerce (AMEC-X), co-located with the 7th International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 2008), and from the 6th Workshop on Trading Agent Design and Analysis (TADA), co-located with the 23rd AAAI Conference on Artificial Intelligence (AAAI 2008). The primary, and complementary, goal of both workshops was to continue to bring together novel work from diverse fields that focus on modeling, implementation, and evaluation of computational trading institutions and/or agent strategies.

The papers in this volume that originated at AMEC address a variety of issues in the field of electronic commerce in general and agent and multiagent problems in the context of electronic commerce in particular. An interesting example of the diversity is a paper that suggests a test that can prevent a single user from creating multiple accounts. Some other papers in this volume focus on negotiation. For instance, in one study, preferences and reasoning are incorporated into a negotiation model to improve overall negotiation results. Another work facilitates the learning of preferences and their usage for negotiation. Automated bargaining is yet another aspect of negotiation addressed in this volume.

In addition to negotiation which is mostly two-sided, some studies in this volume address dynamic pricing and auctions, where multiple agents take part in the mechanism. For instance, one paper suggests the use of option pricing as a means to solving the exposure problem in sequential auctions. Another paper studies markets in which multiple double auctions are implemented and agents can select their auction of preference, thus introducing competition among the auctions. Dynamic pricing is also studied, where agents hold limited information regarding preferences and need to update prices of multiattribute goods dynamically.

In many cases, multiagent electronic commerce requires that agents be allocated tasks. The problem of task allocation is complex, and solutions depend on specific settings. In this volume, one study addresses task allocation in a social setting where agents attempt to under-report. The suggested solution devises means to prevent such under-reporting. In another study, task allocation is associated with a recommender system.

The papers in this volume that originated at TADA stem from the effort of the community to design scenarios where trading agent designers and market designers can be pitched against one another.

The Trading Agent Competition (TAC) has included several scenarios over the years, which have stimulated considerable research in autonomous economic behavior. The supply-chain management (TAC SCM) scenario placed six agents in the role of a PC manufacturer. Each agent had to procure raw materials and sell finished goods in competitive markets while managing inventory and production facilities. The supply-chain scenario included two side competitions. The first was a procurement challenge that allowed agents to balance risk and cost in the procurement market by providing both long-term and short-term contracts. The second was a prediction challenge designed to test price-prediction capabilities of competing agents in both procurement and sales markets. In contrast to the supply-chain scenario, which cast the competing agents as traders, the CAT scenario placed agents in the role of competing exchanges. The CAT competition was motivated by the rise of independent, for profit, stock and commodity exchanges that compete for the attention of traders. CAT agents competed by defining rules for matching buyers and sellers and by setting commission fees for their services. Profitability was the ultimate measure of performance in both the supply chain and CAT scenarios.

This volume includes two papers related to TAC SCM, one related to TAC Travel, and one related to the Market Design Competition (CAT). One of the papers focused on various aspects of performance analysis for the TAC SCM procurement and prediction challenges, giving an assessment of the agents' prediction performance in isolation of other decision components. The complexity and uncertainty in the baseline TAC SCM game scenario make it difficult to assess prediction accuracy, since the predictions of one agent affect another. One paper presented a survey of agent designs in TAC SCM. The survey showed that, in some areas such as modularity, there are common themes emerging in how to design a successful trading agent, while in other areas, such as coordination, there are strong differences in the designs. Another paper undertook an experimental study of bidding heuristics designed for the TAC Travel game, showing that using as much distributional information as possible is an effective approach for an agent in one-shot auctions settings. Another paper discussed how to classify bidding strategies in CAT, and found out that using a Hidden Markov Model yields the best results.

The decision on paper acceptance was not easy, as we had excellent submissions to select from. We believe that the resulting volume presents both quality and diversity. We have studies related to auctions and pricing; we have theoretical and experimental studies; we have research on automated negotiation and on market mechanism design; we have work on reputation; we also have work on trading agent design and dynamic market modeling and pricing.

The list of topics presented in this volume is diverse, but they all contribute to the theory and practice of agent electronic commerce. The papers included in this volume suggest models that support the design and the analysis at the level of the single agent and at the level of the multiagent system. Hence, this book addresses both the agent level and the system level, combining design and analysis aspects of electronic commerce. The primary goal of this volume is to continue to bring together novel work from diverse fields such as computer science, game theory, economics, artificial intelligence and distributed systems that focus on modeling, implementation and evaluation of computational trading agents and institutions. We hope that this collection indeed meets this goal.

Finally, we would like to conclude by thanking the members of the Program Committees of the AMEC and the TADA workshops. 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 workshops, as well as the active attendees and panelists for their valuable insights and discussions. These reviews helped the authors improve the revised papers published in this volume.

August 2008

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