

Preface

Electronic commerce and automatic trading have become a ubiquitous feature of modern marketplaces. Algorithms are used to buy and sell products online, trade in financial markets, participate in complex automated supply chains, regulate energy acquisition in decentralized electricity markets, and bid in online auctions.

The growing reliance on automated trading agents raises many research challenges, both at the level of the individual agent and at a higher system level. In order to design mechanisms and strategies to tackle such challenges, researchers from AI and multi-agent systems have used techniques from a variety of disciplines, ranging from game theory and microeconomics to machine learning and computational intelligence approaches.

The papers collected in this volume provide a collection of such mechanisms and techniques, and are revised and extended versions of work that appeared at two leading international workshops on electronic markets held in 2015 and 2016. The first of these is the Workshop on Agent-Mediated Electronic Commerce and Trading Agent Design and Analysis (AMEC/TADA 2015), co-located with the AAMAS 2015 conference held in Istanbul, Turkey, and the second is the Workshop on Agent-Mediated Electronic Commerce and Trading Agent Design and Analysis (AMEC/TADA 2016), co-located with the IJCAI 2016 conference held in New York, USA. Both workshops aim to present a cross-section of the state of the art in automated electronic markets and encourage theoretical and empirical work that deals with both the individual agent level as well as the system level.

Given the breadth of research topics in this field, the range of topics addressed in these papers is correspondingly broad. They range from papers that study theoretical issues, related to the design of interaction protocols and marketplaces, to the design and analysis of automated trading strategies used by individual agents – which are often, though not exclusively, developed as part of an entry to one of the tracks of the Trading Agents Competition (TAC).

Two of the papers study auction design. Specifically, Alkobi and Sarne discuss the benefit an information broker can get by disclosing information to the general public for free in the context of the Vickrey Auction, while Gujar and Faltings analyze several auction-based matching mechanisms that take into account the worker's preferences in the scenario of dynamic task assignments in expert crowdsourcing. Moreover, Niu and Parsons present a genetic algorithmic approach to automated auction mechanism design in the context of the TAC Market Design game.

Another five papers focus on the problems related with the development of autonomous agents for the current games of the Trading Agents Competition (TAC).

Four of them are concerned with the study of the Power TAC game, a competitive simulation of future retail electric power markets. Specifically, Hoogland and La Poutré describe their Power TAC 2014 agent, while Özdemir and Unland present the winning agent of the 2014 PowerTAC competition.

Natividad et al. and Chowdhury et al. study the use of machine learning techniques to improve the performance of their respective Power TAC agents. Specifically, Natividad et al. focus on using learning techniques to predict energy demands of consumers; while Chowdhury et al. investigate the feasibility of using decision trees and neural networks to predict the clearing price in the wholesale market, and reinforcement learning to learn good strategies for pricing the agent's tariffs in the tariff market.

Finally, motivated by the Ad Exchange Competition (AdX TAC), Viqueria et al. study a market setting in which bidders are multi-minded and there exist multiple copies of heterogeneous goods.

Problems related to energy and electric vehicles are also considered by a further two papers of this volume. Specifically, Hoogland et al. examine the strategies of a risk-averse buyer who wishes to purchase a fixed quantity of a continuous good, e.g., energy, over a two-timeslot period; while Babic et al. analyze the ecosystem of a parking lot with charging infrastructures that acts as both an energy retailer and a player on an electricity market.

We hope that the papers presented in this volume offer readers a comprehensive and informative snapshot of the current state of the art in a stimulating and timely area of research.

We would also like to express our gratitude to those who made this collection possible. This includes the paper authors, who presented their work at the original workshops and subsequently revised their manuscripts, the members of the Program Committees of both workshops, who reviewed the work to ensure a consistently high quality, as well as the workshop participants, who contributed to lively discussions and whose suggestions and comments were incorporated into the final papers presented here.

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Sofia Ceppi
Esther David
Chen Hajaj
Valentin Robu
Ioannis A. Vetsikas

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Ceppi, S.; David, E.; Hajaj, C.; Robu, V.; Vetsikas, I.A.
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