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2nd International Workshop on Intelligent Agent Technology, Power Systems and Energy Markets (IATEM 2013)

A workshop of the 24th International Conference on Database and Expert Systems Applications (DEXA 2013)

August 26-30, 2013, Prague, Czech Republic

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www.gecad.isep.ipp.pt/iatem/

From the times of Leibniz and Babbage until the late 1950s, computation was understood as calculation, or the manipulation of numbers. Throughout the next decade (and still perhaps for many people), computation came to be understood as information processing, or the manipulation of data. With the rise of Artificial Intelligence (AI) and expert systems, the idea arose of computation as cognition, or the manipulation of concepts. With the growth of the Internet and the World Wide Web, a new metaphor is appropriate: computation as interaction, or the joint manipulation of concepts and actions by discrete entities, called software agents.

Multi-agent systems (MAS) are systems composed of software agents that interact to solve problems that are beyond the individual capabilities of each agent. MAS represent a relatively new and rapidly expanding area of research and development. The major motivations for the increasing interest in MAS research include the ability to solve problems in which data, expertise, or control is distributed, the ability to allow inter-operation of existing legacy systems, and the ability to enhance performance along the dimensions of computational efficiency, reliability, and robustness. Agent technology has been used to solve real-world problems in a range of industrial and commercial applications.

The electrical power industry provides the production and delivery of electricity to consumers through a power grid. Electricity is most often produced at power stations, transmitted at high-voltages to multiple substations near populated areas, and distributed at medium and low-voltages to consumers. Clearly, the complexity of the power grid and the potential cascading events combining natural and human causes can lead to catastrophic failures (e.g., the 4 October 2006 quasi-blackout that affected nine European countries).

Furthermore, the deregulation of the electricity industry has basically separated the contestable functions of electricity generation and retail from the natural monopoly functions of transmission and distribution. This, in turn, has led to the establishment of a wholesale market for electricity generation, when competing generators can offer their electricity output to retailers, and a retail market for electricity retailing, when end-use customers can choose their supplier from competing electricity retailers. These competitive markets and new renewable energy sources have further complicated the already complex power industry.

Intelligent software agents are a potentially powerful computational tool to provide new solutions to practical power systems engineering and energy market problems. This tool (and the associated technologies) creates an opportunity for cross-fertilization between power systems and energy markets. Accordingly, the purpose of this event as a workshop of DEXA 2012 is to provide a high-profile, internationally respected discussion forum on the most recent and innovative scientific research in the areas of power systems and energy markets that can benefit most from AI and software agents (now and in the future). The unifying focus of the workshop will be on methodological aspects. Both theoretical and practical research should be situated in the context of existing or new methodologies for agent-oriented software engineering. This will not preclude any specific topic, but preference will be given both to research work that establishes some connection with methodological aspects and to successful applications built upon some existing or developing methodology.

TOPICS OF INTEREST

Power Systems

- Agent-based Approaches for Renewable and Distributed Generation
- Intelligent Optimization in Planning and Operating Energy Networks

- Agent-based Smart Grid Modelling
- Intelligent Optimization of Energy use within Micro-grids and Small Island Systems
- Intelligent Demand Management
- Sustainable Energy Systems
- Intelligent Monitoring and Diagnosis of Power Systems
- Intelligent Supervisory Control Systems

Energy Markets

- Agent-based Approaches in Energy Markets
- Power Generation Strategic Planning
- Market Modelling and Simulation
- Market Power and Market Strategies
- Coalition Formation and Virtual Power Players
- Capacity and Ancillary Services Markets
- Novel Electricity Markets and Trading Strategies
- Impact of Renewable Energies and Distributed Generation on Markets

Software Agents

- Agent-Oriented Software Engineering
- Auctions, Contracts and Contracting Issues
- Bilateral Negotiation and Computational Argumentation
- Coalition Formation and Teams
- Interaction Protocols and Mechanism Design

IMPORTANT DATES

Full Paper Submission: March 30th

Notification of Acceptance: April 26th

Camera-ready Papers: May 23rd

SUBMISSION DETAILS

Authors are invited to submit original, unpublished research papers in English, which are not being considered in another forum. Papers should be no longer than 5 pages (two-columns, A4), including figures and references, and should be formatted according to the IEEE format, following the **instructions** on the IEEE's site.

Submission of papers (in PDF format) is made electronically through the main conference management system **ConfDriver**. Submitted papers will be peer-reviewed by at least 3 reviewers. Papers will be carefully evaluated based on originality, significance, technical soundness, and clarity of exposition. All accepted papers will be published by **IEEE Computer Society's Conference Publishing Services (CPS)** as proceedings of the DEXA'13 workshops (indexed by the **Thomson ISI Web of Knowledge**). At least one author is required to attend the workshop and present the paper.

PROGRAM COMMITTEE

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