

WOA 2011
12th Workshop on Objects and Agents

Design and analysis of complex systems through agent based modeling and simulation

Rende (CS), 4th-6th July 2011
University Club
University of Calabria,
Campus of Arcavacata, Rende (CS)

The agent paradigm is an approach particularly suitable for supporting the modeling of complex systems in a variety of application domains (engineering, economics, finance, logistics, biophysics, etc) as it allows to represent a system at different levels of abstraction in terms of entities that are autonomous, interacting, organized in societies and directed to the fulfillment of specific objectives. However, when such paradigm is used for the construction of software systems to be deployed in dynamic and heterogeneous environments, it is necessary to have suitable techniques and tools for the validation and evaluation of the developed systems before their deployment: among such techniques, simulation is gaining more and more interest.

The main goal of the 2011 annual WOA meeting was to discuss new ideas and results obtained in the context of the engineering of software-intensive complex systems through agents and simulation.

The programme of the workshop, held at the University of Calabria in July 4-6, included, in particular, a Mini-School, which took place on July 4 and delivered the following tutorials:

- An introduction to cooperative game theory (F. Scarcello – University of Calabria);
- The role of Reliability and Reputation in competitive multi-agent systems (D. Rosaci - Università Mediterranea di Reggio Calabria);
- Coordination Models and Languages: From Parallel Computing to Self-Organisation (A. Omicini - Università di Bologna);
- Physical agent programming in Agentspeak/Jason dialect: pitfalls and pratfalls (C. Santoro - Università di Catania);
- Services and Agents for the negotiation and management of Cloud resources provided by heterogeneous providers (B. Di Martino e S. Venticinquè – Seconda Università di Napoli)

The scientific contributions, which were scheduled for July 5 and 6, included the referred as well as the invited papers reported in these proceedings. In particular, the invited papers are:

- Multi-agent systems and Optimization - Andrea Schaerf (DIEGM, Università di Udine);
- Dynamical models of genetic regulatory networks - Roberto Serra (ECLT—Venezia e Università di Modena);
- Cloud Computing e Software Agents: Challenges and Opportunities - Domenico Talia (ICAR-CNR e Università della Calabria).

Moreover, on the 6th of July, a Panel Session on the applications of the Agent Technology in Industry involving the companies belonging to Technest (the technological incubator of the University of Calabria), was held and a session dedicated to the demonstration of prototypes of systems based on agent technology, offered the opportunities to see *agents in action*.

The selected scientific articles due to their breadth and depth with respect to the proposed topics, allowed to analyze the state of the art of techniques and methodologies for agent-based modeling and simulation, development processes based on simulation of multi-agent systems, and simulation and analysis of emergent behaviors in multi-agent systems. Moreover the main potential directions of future research were identified along with the technologies that will drive future innovation in the multi-agent systems

context. Overall, the results of the Workshop could provide a significant contribution to two important agent-oriented research areas, Agent-Based Simulation (ABS) and Agent-Oriented Software Engineering (AOSE), so promoting their convergence and integration through a research roadmap agreed by researchers belonging to both communities.

The Organizing Scientific Committee would like to thank the invited speakers, the authors of the scientific contributions and demos, the members of the WOA steering and program committees, and all people involved in the organization of WOA 2011 whose precious contribution made possible to perform such successful initiative.

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