
Editorial

Maria Ganzha and Marcin Paprzycki*

Systems Research Institute,
Polish Academy of Sciences,
ul. Newelska 6,01-447, Warsaw, Poland
E-mail: Maria.Ganzha@ibspan.waw.pl
E-mail: Marcin.Paprzycki@ibspan.waw.pl
*Corresponding author

Biographical notes: Maria Ganzha obtained her MS and PhD in Applied Mathematics from the Moscow State University, Moscow, Russia in 1987 and 1991, respectively. Her initial research interests were in the area of differential equations, currently she works in the areas of software engineering, distributed computing and agent systems in particular. She has published more than 70 research papers and is on editorial boards of five journals and a book series and was invited to Program Committees of over 60 international conferences.

Marcin Paprzycki (Senior Member of the IEEE, Senior Member of the ACM, Senior Fulbright Lecturer, IEEE CS Distinguished Visitor) received his MS in 1986 from Adam Mickiewicz University in Poznań, Poland, his PhD in 1990 from Southern Methodist University in Dallas, Texas and his DrSc from Bulgarian Academy of Sciences in 2008. His initial research interests were in high performance computing and parallel computing, high performance linear algebra in particular. Over time, they evolved toward distributed systems and internet-based computing; in particular, agent systems. He has published more than 200 research papers and was invited to Program Committees of over 300 international conferences. He is on editorial boards of 14 journals and a book series.

Dear Readers,

In the special issue in your hands you will find four papers from the *Agent Based Computing (ABC) Workshop* which took place as a part of the *International Multiconference on Computer Science and Information Technology*, in Wisła, Poland, on 15–17 October 2007. After a careful selection, authors of best papers from the *ABC Workshop* have been invited to submit improved and extended version of their work. These contributions have been further refereed and only four papers have made the final cut. These papers cover an important area of current agent systems research.

It is a well known fact that designing secure and reliable mobile agent systems is a very difficult task. The first two papers in the special issue focus on this area. In ‘Constructing secure mobile agent systems using the agent operating system’, authors discuss how the agent operating system (AOS) can become a foundation simplifying task of developing secure mobile agent systems. Specifically, they discuss how the AOS provided primitives for secure communication, secure and tamper-evident agent packaging and agent migration are a step toward solving the mobile agent security problem.

Security is also addressed in the paper entitled 'Enforcing integrity of agent migration paths by distribution of trust'. Here authors focus their attention on mobile agents and propose new protocols for secure agent migration. Feasibility of the proposed approach is illustrated using the AgentScape – an agent platform for mobile agents.

One of the areas where there is a definite need for agent security is electronic commerce and utilisation of autonomous agents in price negotiations. This latter subject is the focus of the third paper entitled: 'A practical approach for researching trading agents' behaviour in a CDA environment'. Here, its author investigates the process of multi-agent negotiations, involving a continuous double auction and presents a possible approach for finding an effective solution to the problem of resource allocation in a distributed computational environment.

Resource allocation in a distributed environment is just an example of a larger class of distributed problems for which software agents are used. One of key issues of distributed problem solving is coordination of agent's actions and methods for designing effective coordination strategies. This area is the focus of the last paper in the issue: 'Performance evaluation of DPS coordination strategies modelled in pi-calculus'. Here, the aim of the research is to develop a tool that would support humans in designing strategies for agent coordination. Such tool should allow a proposed strategy to be easily modelled, at various levels of abstraction, and should be able to analyse various properties of the strategy, such as the possibility of deadlock. In this context, use of pi-calculus as a formal framework is investigated.