

Preface

Special issue of Information Technology and Control: Recent advances in software

The following four papers constitute a Special Section entitled “Recent advances in software agents and agent systems.” It consists of material selected from three recent conferences. Its aim is to illustrate the breadth of research pursued by the software agent community. The first three papers are significantly extended and modified versions of the original conference submissions. The remaining paper is based on one page abstract and contains brand new material. Each of these papers has been additionally refereed and thoroughly revised based on reviewers’ suggestions.

First, “Monadic foundations for promises in Jason,” by Alex Muscar, is based on a paper presented during the 2012 edition of the Intelligent Distributed Computing (IDC) conference. It introduces a monadic model for concurrency to be used in the Jason programming language. The proposed scheme uses promises to allow plan synchronization to take place. This approach leads to a solution that avoids some of the pitfalls of the alternatives, such as use of callbacks.

Next, “Distributed distance matrix generator based on agents,” written by Dejan Mitrović, Zoltan Geler, Mirjana Ivanović, originates from the 2012 International Conference on Web Intelligence, Mining and Semantics (WIMS). This paper presents a new agent-oriented system for distributed computing, named ADiS, which has been designed for operating in dynamic networks of personal computers. The ADiS system relies on the agent technology to adapt to dynamic changes in a computational network. Originally it was envisioned as a distributed system for distance matrix calculations. However, it has been recently redesigned as a general-purpose, extensible architecture for arbitrary computing in a distributed environment.

Finally, we have selected two papers from the 2012 Workshop on Applications of Software Agents (WASA) held within 5th Balkan Conference in Informatics (BCI).

First, “Neuroevolution based Multi-Agent System for Micromanagement in Real-Time Strategy Games,” authored by Iuhasz Gabriel, Viorel Negru and Daniela Zaharie. The main focus of this paper was creation of a neuroevolution based multi-agent system to serve as a micromanagement layer for an RTS game AI. Apart from the architecture itself, the main contribution was the use of an ontology to create the starting topology (input and output) of the initial neural network population. This means that the proposed system can be potentially reused for different game types and genres, provided there exists at least a basic taxonomy of the game units.

Second, “Applying Saaty’s Multicriterial Decision Making Approach in Grid Resource Management,” by Katarzyna Wasielewska, Maria Ganzha, Marcin Paprzycki, Paweł Szmeja, Michał Drozdowicz, Ivan Lirkov, and Costin Badica. The aim of this paper was to combine ontologically represented information with the Saaty’s Analytic Hierarchy Process (AHP) to facilitate decision support for Grid users. Ontologies and the AHP method are used in an agent-based system, which aims at development of an agent-based infrastructure for efficient resource management in the Grid.

We would like to sincerely thank the reviewers of the original submissions, as well as of the journal-bound material for their diligent work. They have helped to considerably improve the quality of the final versions of the four papers appearing in the Special Section.

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