

## Editorial

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# Special Section on Engineering Semantic Agent Systems

*Applying Semantic Web technologies in research and development of software agents, mobile agents and multi-agent systems*

Atilla Elci<sup>a,\*</sup>, Mamadou Tadiou Kone<sup>b</sup> and Tharam S. Dillon<sup>c</sup>

<sup>a</sup>*Computer Engineering Department, and Internet Technologies Research Center Eastern Mediterranean University Gazimagusa (TRNC), North Cyprus, Turkey*

<sup>b</sup>*Department of Computer Science, Faculty of Science and Engineering, Laval University, Qu'ébec, Canada*

<sup>c</sup>*Digital Ecosystems and Business Intelligence Institute, Curtin University of Technology, Perth, Australia*

### 1. Introduction

The IEEE International Workshop Series on Engineering Semantic Agent Systems (ESAS) has been held since 2006 in conjunction with the Annual IEEE International Computer Software and Applications Conferences (COMPSAC, [www.compsac.org](http://www.compsac.org)). Whereas semantic web technologies render dynamic, heterogeneous, distributed, shared content equally accessible to human readers and software agents, at ESAS the vision is to achieve a synergy of the semantic web technologies with multi-agent systems (MAS) technologies whereby agents will be at center stage. ESAS has two complementary objectives:

1. To inquire into the theory and practice of engineering semantic multi-agent systems, especially methods, means, and best cases.
2. To explore unifying software engineering methodologies employed in implementing semantic MAS applications across domains.

ESAS topics span a wide spectrum of both theory and practice in autonomous semantic agents, context-aware intelligent agents, agents as semantic web services, software agents, mobile agents, agent architectures, multi-agent systems, agent communities, cooperation and goal seeking through sharing policy and ontology, safety & security in systems, other QoS issues, and so on.

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\*Corresponding author: Atilla Elci, Computer Engineering Department, Eastern Mediterranean University, Gazimagusa (TRNC), North Cyprus, Via Mersin 10, Turkey. Tel.: +90 392 630 2843; Fax: +90 392 365 0711; E-mail: [atilla.elci@emu.edu.tr](mailto:atilla.elci@emu.edu.tr)

## 2. Synopsis

ESAS 2006 gathered researchers and practitioners of software agents, mobile agents, MAS and semantic web technologies to present papers and participate in the workshop. There were a total of 34 papers submitted which rendered the ESAS 2006 the biggest of all workshops in COMPSAC. After a thorough refereeing process, 11 high quality papers were selected for presentation at the workshop and these were included in the proceedings published by the IEEE Computer Society. Of those highly expanded versions of the following three made it to this special issue:

*Consensus Ontologies in Socially Interacting MultiAgent Systems* by **Ergun Biçici** presents approaches for building, managing, and evaluating consensus ontologies from the individual ontologies of a network of socially interacting agents. Its contributions are: modeling the emergence of consensual agreements among socially interacting agents; developing heuristics measures for evaluating the consensus ontology based on three different levels of abstraction; and, showing a method of concept mapping based on the conceptual structures in the ontologies.

*Provision of Semantic Web Services through an Intelligent Semantic Web Service Finder* by **Duygu CELIK** and **Atilla ELCI** puts forward a search agent mechanism to discover and present Semantic Web Services satisfying client requirements in order to facilitate the provision of web services to a client. The approach combines and retargets complimentary aspects of Smart Web Query Engine and Matchmaking Algorithm of OWL-S/UDDI Matchmaker.

*Dynamic Agent-Oriented Reasoning about Belief and Trust* by **Stanislav Ustymenko** and **Daniel G. Schwartz** builds a formal language with well-defined semantics for an agent to express relevant conditions of belief and trust in another, and outlines some key techniques for dynamic reasoning with these expressions. Its contributions are the use of linguistic, rather than numeric, measures of belief; and, an explicit delineation of the context within which the language and reasoning techniques are to be applied.

These papers and others that appeared in the ESAS Series of workshops are contributions towards addressing a serious drawback we experience in the semantic multiagent systems community: the tool(s) to produce major agent-based information systems that run on semantic web fuel [1]. This could eventually prove a worthwhile response to Jim Hendler's Paradox [2].

## 3. Reviewers for the special issue

Alex Abramovich, Tibor Bosse, Stijn Christiaens, Asuman Dogac, Atilla Elci, Vadim Ermolayev, M. Adeep Ghonaimy, Ibrahim Gokcen, Angus Huang, Ahmed Kayed, Mamadou Kone, Alexander Kostin, Pieter de Leenheer, Jiming Liu, Vitaliy Mezhuev, Michal Pechoucek, Mustafa Riza, Markus Schaal, Michael Stollberg, Andreas Tolk, Jan Treur, Murat Osman Unalir, Laurentiu Vasiliu, and Stephen J. H. Yang.

## References

- [1] Atilla Elci, A Distress Call: Needing Tools to Large-Scale Semantic-Aware Agent Systems. Position Statement in Proc. The Second IEEE International Workshop on Engineering Semantic Agent Systems (ESAS 2007), 24–27 July 2007 in conjunction with 31st COMPSAC Annual International Computer Software & Applications Conference, 24–27 July 2007, Beijing, China. The IEEE Computer Society Press, p. 186. ISBN: 978-0-7695-2870-0, 2007.
- [2] J. Hendler's, paradox: Where are all the agents (long form) <http://www.mindswap.org/blog/2007/04/23/where-are-all-the-agents-long-form/>. Accessed last on May 18, 2007.