The IADIS International Conference Intelligent Systems and Agents 2007 was held in Lisbon, Portugal, 3-5 July, 2007.

This conference was part of the Multi Conference on Computer Science and Information Systems 2007, 3 - 8 July 2007, which had a total of 1091 submissions.

The IADIS Intelligent Systems and Agents (ISA) 2007 conference addresses in detail two main aspects: intelligent systems and agents. The conference has the intention to provide a contribution to academics and practitioners. So, both fundamental and applied research are considered relevant.

The IADIS Intelligent Systems and Agents 2007 conference received 126 submissions from more than 28 countries. Each submission has been anonymously reviewed by an average of two independent reviewers, to ensure that accepted submissions were of a high standard. Consequently only 17 full papers were approved which means an acceptance rate below of 14%. A few more papers were accepted as short papers and posters. An extended version of the best papers will be published in the IADIS International Journal on Computer Science and Information Systems (ISSN: 1646-3692) and also in other selected journals.

The topics for the conference submissions included the following:

**Intelligent Systems**
- Algorithms
- Artificial Intelligence
- Automation Systems and Control
- Bio Informatics
- Computational Intelligence
- Expert Systems
- Fuzzy Technologies and Systems
- Game and Decision Theories
- Intelligent Control Systems
- Intelligent Internet Systems
- Intelligent Software Systems
- Intelligent Systems
- Machine Learning
- Neural Networks
- Neurocomputers
- Optimization
- Parallel Computation
- Pattern Recognition
- Robotics and Autonomous Robots
- Signal Processing
- Systems Modelling
- Web Mining

**Agents**
- Adaptive Agent Systems
- Agent Applications
- Agent Communication
- Agent Development
- Agent middleware
- Agent Models and Architectures
- Agent Ontologies
- Agent Oriented Systems and Engineering
- Agent Programming, Languages and Environments
- Agent Systems
- Agent Technologies
- Agent Theories
- Agent Trends
- Agents Analysis and Design
Agents and Learning
Agents and Ubiquitous Computing
Agents in Networks
Agents Protocols and Standards
Artificial Systems
Computational Complexity
eCommerce and Agents
Embodied Agents
Mobile Agents
Multi-Agent Systems
Negotiation Strategies
Performance Issues
Security, Privacy and Trust
Semantic Grids
Simulation
Web Agents

The Conference comprised the presentation of full papers, short papers, reflection papers and posters, and also three keynote presentations by Professor Katia Sycara, Director of the Intelligent Software Agents Lab, Carnegie Mellon University, USA, Dr. Alex Rogers, University of Southampton, UK and Professor Fatemeh (Mariam) Zahedi, Wisconsin Distinguished Professor, University of Wisconsin-Milwaukee, USA, an internationally distinguished researchers.

Keynote Presentation:

K1 - MULTI-AGENT COORDINATION IN LARGE SCALE, OPEN AND DYNAMIC ENVIRONMENTS by Prof. Katia Sycara, School of Computer Science, Carnegie Mellon University, USA

Abstract:

Software Agents are computer programs that have to some degree the following characteristics: situatedness, autonomy, interactivity and adaptivity. By situatedness we mean that an agent is in an environment, it receives sensory inputs from the environment and it acts to change the environment in some way. By autonomy, we mean that an agent is goal-directed, and has control over its own actions and internal state, i.e. it can reason and act without direct intervention of others (humans or agents). By interactivity, we mean that an agent interacts in peer to peer fashion with other agents or humans in multiparty interactions in order to accomplish its various goals. By adaptivity we mean that an agent exhibits proactive and reactive behavior to changes in its environment. While it may be relatively easy to predict and control the behavior of a small number of agents as the system scales conventional tools become ineffective. In this talk I introduce new methods for coordinating large scale multiagent systems including large-scale capability based coordination, token-based coordination for large teams, and models from statistical mechanics for predicting large scale performance.

K2 - SENSOR NETWORKS by Professor Alex Rogers, Intelligence, Agents, Multimedia Group School of Electronics and Computer Science, University of Southampton, UK

Sensor networks are increasingly seen as a means to perform wide-area monitoring and surveillance within environmental, security and military scenarios. The distributed nature of these networks, and the
autonomous behaviour expected of them, naturally lend themselves to a multi-agent methodology. However such systems pose many additional challenges; not least how to manage limited computation and energy resources, severely constrained communication, and unreliable network components. In this talk I shall describe work that I have been pursuing on robust decentralised control algorithms for such applications.

K3 - TRUST IN INTELLIGENT AGENTS by Professor Fatemeh (Mariam) Zahedi, Wisconsin Distinguished Professor, University of Wisconsin-Milwaukee, USA

Abstract:

As intelligent agents (IA) become a common feature in web-based systems and day-to-day lives of people all over the globe, behavior aspects of encounters with IA become of great interest to both developer and user groups. Of the behavior issues, trust has been shown to be of great importance in the encounter and use of IA, particularly in the web-based environments. In this talk, we explore the research in trust, contributing factors in building trust, and its role in market success.

Conference Best Papers:

- **EATS: AN AGENT-BASED AIR TRAFFIC SIMULATOR** by José Miguel Canino Rodríguez, Jesús García Herrero, Juan Besada Portas and Luis Gómez Déniz Universidad de Las Palmas de Gran Canaria, Spain

  Abstract:

  We present an Experimental Air Traffic Simulator (EATS) implemented as a Multi-Agent System to run on a JADE framework. The EATS is conceived as a tool for preliminary evaluation of algorithms, flight procedures and manmachine interfaces to be used in future Navigation and Air Traffic surrounding the new Communication, Navigation and Surveillance System to Air Traffic Management (CNS/ATM). The EATS simulator provides realistic data for the aircraft dynamic and includes the exchange of information among the aircraft from the point of view of the Air Traffic Control (ATC). It also takes into account the meteorological and terrain conditions. The architecture of this system facilitates its later extension to incorporate and to evaluate new communication protocols and negotiation between the agents that fly in a specific air space.

- **CALCULATING THE NORMALIZED MAXIMUM LIKELIHOOD DISTRIBUTION FOR BAYESIAN FORESTS** by Hannes Wettig, Petri Kontkanen and Petri Myllymäki, University of Helsinki, Finland

  Abstract:

  When learning Bayesian network structures from sample data, an important issue is how to evaluate the goodness of alternative network structures. Perhaps the most commonly used model (class) selection criterion is the marginal likelihood, which is obtained by integrating over a prior distribution for the model parameters. However, the problem of determining a reasonable prior for the parameters is a highly controversial issue, and no completely satisfying Bayesian solution has yet been presented in the non-informative setting. The normalized maximum likelihood (NML), based on Rissanen's information-theoretic MDL methodology, offers an alternative, theoretically solid criterion that is objective and non-informative, while no parameter prior is required. It has been previously shown that for discrete data, this criterion can be computed in linear time for Bayesian networks with no arcs, and in quadratic time for the so called Naïve Bayes network structure. Here we extend the previous results by showing how to compute the NML criterion in polynomial time for tree-structured Bayesian networks. The order of the polynomial depends on the number of values of the variables, but neither on the number of variables itself, nor on the sample size.

- **EXPERIENCES IN AUTOMATED WOKFLOWERS USING DIALECTICAL ARGUMENTATION** by Visara Urovi, Stafano Bromuri, Jarred Mcginnis, Kostas Stathis and Andrea Omicini, University of Bologna, Italy
Abstract:

This paper presents a multi-agent framework based on argumentative agent technology for the automation of the workflow selection and execution. In this framework, workflow selection is coordinated by agent interactions governed by the rules of a dialogue game whose purpose is to evaluate the workflow's properties via argumentation. Once a workflow is selected using this process, the workflow is executed by dynamically configuring workflow engines to coordinate the participating agents' workflow activities.

A complete version of this paper and also of all the other papers published in the IADIS International Conference Intelligent Systems and Agents 2007 can be accessed by IADIS Members at our Digital Library (http://www.iadis.net/dl/).


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