Lecture Notes in Artificial Intelligence 7879

Subseries of Lecture Notes in Computer Science

LNAI Series Editors

Randy Goebel
University of Alberta, Edmonton, Canada

Yuzuru Tanaka
Hokkaido University, Sapporo, Japan

Wolfgang Wahlster
DFKI and Saarland University, Saarbrücken, Germany

LNAI Founding Series Editor

Joerg Siekmann
DFKI and Saarland University, Saarbrücken, Germany
Advances on Practical Applications of Agents and Multi-Agent Systems

11th International Conference, PAAMS 2013
Salamanca, Spain, May 22-24, 2013
Proceedings

Springer
Preface

Research on agents and multi-agent systems has matured during the last decade and many effective applications of this technology are now deployed. An international forum to present and discuss the latest scientific developments and their effective applications, to assess the impact of the approach, and to facilitate technology transfer has become a necessity and was in fact created a few years ago.

PAAMS, the International Conference on Practical Applications of Agents and Multi-Agent Systems, is the international yearly platform to present, to discuss, and to disseminate the latest developments and the most important outcomes related to real-world applications. It provides a unique opportunity to bring multi-disciplinary experts, academics, and practitioners together to exchange their experience in the development and deployment of agents and multi-agent systems.

This volume presents the papers that were accepted for the 2013 edition of PAAMS. These articles report on the application and validation of agent-based models, methods, and technologies in a number of key application areas, including: agents for real-world Problems; crowds modelling and analysis; decision making and discovery; interaction with artificial agents; mobility, ubiquity, and clouds; (multi-)agent design technology; and simulation and organization. Each paper submitted to PAAMS went through a stringent peer-review by three members of the international committee composed of 93 internationally renowned researchers from 24 countries. From the 70 submissions received, 14 were selected for full presentation at the conference; another nine papers were accepted as short presentations. In addition, a demonstration session featuring innovative and emergent applications of agent and multi-agent systems and technologies in real-world domains was organized. In all, 16 demonstrations were shown, and this volume contains a description of each of them.

We would like to thank all the contributing authors, the members of the Program Committee, the sponsors (IEEE SMC Spain, IBM, AEPIA, AFIA, University of Salamanca and CNRS), and the Organizing Committee for their hard and highly valuable work. Their work has helped to contribute to the success of the PAAMS 2013 event. Thanks for your help - PAAMS 2013 would not exist without your contribution.

Yves Demazeau
Toru Ishida
Juan Manuel Corchado
Javier Bajo
Organization

General Co-chairs

Yves Demazeau  
Centre National de la Recherche Scientifique,  
France

Toru Ishida  
University of Kyoto, Japan

Juan M. Corchado  
University of Salamanca, Spain

Javier Bajo  
Polytechnic University of Madrid, Spain

Advisory Board

Frank Dignum  
Utrecht University, The Netherlands

Jörg P. Müller  
Universitätstät Clausthal, Germany

Juan Pavón  
Universidad Complutense de Madrid, Spain

Michal Pechouček  
Czech Technical University in Prague,  
Czech Republic

Program Committee

Carole Adam  
University of Grenoble, France

Frédéric Amblard  
University of Toulouse, France

Francesco Amigoni  
Politecnico di Milano, Italy

Luis Antunes  
University of Lisbon, Portugal

Javier Bajo  
Polytechnic University of Madrid, Spain

Jeremy Baxter  
QinetiQ

Michael Berger  
Docuware AG, Germany

Olivier Boissier  
Ecole Nationale Superieure des Mines de Saint Etienne, France

Vicente Botti  
Polytechnic University of Valencia, Spain

Lars Braubach  
Universität Hamburg, Germany

France Brazier  
TU Delft, The Netherlands

Stefano Bromuri  
University of Applied Sciences Western Switzerland

Valerie Camps  
University of Toulouse, France

Longbing Cao  
University of Technology Sydney, Australia

Javier Carbo  
Carlos III University of Madrid, Spain

Lawrence Cavedon  
RMIT Melbourne, Australia

Pierre Chevaillier  
University of Brest, France

Helder Coelho  
University of Lisbon, Portugal

Juan Manuel Corchado  
University of Salamanca, Spain

Keith Decker  
University of Delaware, USA
Yves Demazeau Laboratoire d’Informatique de Grenoble, France
Frank Dignum Utrecht University, The Netherlands
Virginia Dignum TU Delft, The Netherlands
Alexis Drogoul Institut de Recherche pour le Développement, Vietnam
Julie Dugdale University of Grenoble, France
Amal Elfallah University of Paris 6, France
Maksims Fiosins Clausthal University of Technology, Germany
Klaus Fischer DFKI, Germany
Rubén Fuentes Complutense University of Madrid, Spain
Sylvain Giroux University of Sherbrooke, Canada
Marie-Pierre Gleizes University of Toulouse, France
Pierre Glim Université de Toulouse, France
Daniela Godoy ISISTAN, Argentina
Jorge Gomez-Sanz Complutense University of Madrid, Spain
Vladimir Gorodetski University of Saint Petersburg, Russia
Olivier Gutknecht ACM, USA
Kasper Hallenborg University of Southern Denmark, Denmark
Koen Hindriks University of Delft, The Netherlands
Benjamin Hirsch Technical University of Berlin, Germany
Martin Hofmann Lockheed Martin, USA
Tom Holvoet Catholic University of Leuven, Belgium
Shinichi Honiden National Institute of Informatics Tokyo, Japan
Jomi Fred Hubner Universidad Federale de Santa Catarina, Florianopolis
Toru Ishida University of Kyoto, Japan
Takayuki Ito Massachusetts Institute of Technology, USA
Michal Jakob Czech Technical University in Prague, Czech Republic
Vicente Julian Polytechnic University of Valencia, Spain
Achilles Kameas University of Patras, Greece
Takahiro Kawamura Toshiba, Japan
Stefan Kirn Universität Hohenheim, Germany
Franziska Kluegl University of Örebro, Sweden
Matthias Klusch DFKI, Germany
Martin Kollingbaum University of Aberdeen, UK
Ryszard Kowalczyk Swinburne University of Technology, Australia
Jaroslaw Kozlak University of Science and Technology in Krakow, Poland
Jiming Liu Hong Kong Baptist University, China
Beatriz López Universitat de Girona, Spain
Adolfo López Paredes University of Valladolid, Spain
Zakaria Maamar Zayed University, United Arab Emirates
Rene Mandiau University of Valenciennes, France
Organizing Committee

Juan M. Corchado (Chair) University of Salamanca, Spain
Javier Bajo (Co-chair) Polytechnic University of Madrid, Spain
Juan F. De Paz University of Salamanca, Spain
Sara Rodríguez University of Salamanca, Spain
Dante I. Tapia University of Salamanca, Spain
Fernando de la Prieta University of Salamanca, Spain
Davinia Carolina Zato Domínguez University of Salamanca, Spain
Gabriel Villarrubia González University of Salamanca, Spain
Alejandro Sánchez Yuste University of Salamanca, Spain
Antonio Juan Sánchez Martín University of Salamanca, Spain
Cristian I. Pinzón University of Salamanca, Spain
Rosa Cano University of Salamanca, Spain
Emilio S. Corchado University of Salamanca, Spain
Eugenio Aguirre University of Granada, Spain
Manuel P. Rubio University of Salamanca, Spain
Belén Pérez Lancho University of Salamanca, Spain
Angéllica González Arrieta University of Salamanca, Spain
Vivian F. López University of Salamanca, Spain
Ana de Luís University of Salamanca, Spain
Ana B. Gil University of Salamanca, Spain
Mª Dolores Muñoz Vicente University of Salamanca, Spain
Jesús García Herrero Carlos III University of Madrid, Spain
Elena García University of Salamanca, Spain
Roberto González University of Salamanca, Spain
# Table of Contents

## Regular Papers

Preventing Elderly from Falls: The Agent Perspective in EPRs  
*Sebastian Ahrndt, Johannes Fähndrich, and Sahin Albayrak*  
1

Dynamic Organisation of the Household Activities for Energy Consumption Simulation  
*Edouard Amouroux and François Sempé*  
13

MAKKSim: MAS-Based Crowd Simulations for Designer’s Decision Support  
*Luca Crociani, Lorenza Manenti, and Giuseppe Vizzari*  
25

A Multiagent System for Resource Distribution into a Cloud Computing Environment  
*Fernando De la Prieta, Sara Rodríguez, Javier Bajo, and Juan Manuel Corchado*  
37

Empirical Specification of Dialogue Games for an Interactive Agent  
*Guillaume Dubuisson Duplessis, Nathalie Chaïghnaud, Jean-Philippe Kotowicz, Alexandre Pauchet, and Jean-Pierre Pécuchet*  
49

MAS-BPM: Multi-Agent System Bomber Problem Model  
*Zina Elguedria, Boutheina Jlifi, and Khaled Ghédira*  
61

Agent Perception Modeling for Movement in Crowds  
*Katayoun Farrahi, Kashif Zia, Alexei Sharpanskykh, Alois Ferscha, and Lev Muchnik*  
73

SERENA: A Multi-site Pervasive Agent Environment That Supports Serendipitous Discovery in Research  
*Jamie Forth, Thanasis Giannimaras, Geraint A. Wiggins, Robert Stewart, Diana Bental, Ruth Aylett, Deborah Maxwell, Hadi Mehrpooya, Jamie Shek, and Mel Woods*  
85

Towards a Multi-avatar Macroeconomic System  
*Gianfranco Giulioni, Edgardo Bucciarelli, Marcello Silvestri, and Paola D’Orazio*  
97

Dynamic Filtering of Useless Data in an Adaptive Multi-Agent System: Evaluation in the Ambient Domain  
*Valérian Guivarch, Valérie Camps, André Péninou, and Simon Stuker*  
110
ARMAN: Agent-based Reputation for Mobile Ad hoc Networks ........ 122
Guy Guemkam, Djamel Khadraoui, Benjamin Gâteau, and Zahia Guessoum

Decentralized Intelligent Real World Embedded Systems: A Tool to Tune Design and Deployment. .................................................. 133
Jean-Paul Jamont, Michel Occello, and Eduardo Mendes

Multi-agent Models for Transportation Problems with Different Strategies of Environment Information Propagation .................. 145
Jarosław Koźlak, Sebastian Pisarski, and Małgorzata Żabińska

How to Build the Best Macroscopic Description of Your Multi-Agent System? ................................................................. 157
Robin Lamarche-Perrin, Yves Demazeau, and Jean-Marc Vincent

Multi-layered Satisficing Decision Making in Oil and Gas Production Platforms ................................................................. 170
Lars Lindegaard Mikkelsen, Yves Demazeau, and Bo Nørregaard Jørgensen

A Security Response Approach Based on the Deployment of Mobile Agents ........................................................................... 182
Roberto Magán-Carrión, José Camacho-Páez, and Pedro García-Teodoro

Modeling Dependence Networks for Agent Based Simulation of Online and Offline Communities ............................................. 192
Francesca Marzo, Stefano Za, and Paolo Spagnoletti

Improving Classifier Agents with Order Book Information ............ 204
Philippe Mathieu and Matthis Gaciarz

From Real Purchase to Realistic Populations of Simulated Customers ... 216
Philippe Mathieu and Sébastien Picault

REAGENT: Reverse Engineering of Multi-Agent Systems .............. 228
Ricardo Pérez-Castillo, Juan Pavón, Jorge J. Gómez-Sanz, and Mario Piattini

An Agent-Based Analyses of F-formations .................................. 239
Kavin Preethi Narasimhan and Graham White

X-CAMPUS: A Proactive Agent for Ubiquitous Services ............. 251
Hajer Sassi and José Rouillard
## Demo Papers

Agents Vote against Falls: The Agent Perspective in EPRs  
*Sebastian Ahrndt, Johannes Fähndrich, and Sahin Albayrak*  
263

Pedestrians and Crowd Simulations  
with MAKKSim - A Demonstration  
*Luca Crociani, Lorenza Manenti, and Giuseppe Vizzari*  
267

GAMA: A Spatially Explicit, Multi-level, Agent-Based Modeling and Simulation Platform  
*Alexis Drogoul, Edouard Amouroux, Philippe Caillou, Benoit Gaudou, Arnaud Grignard, Nicolas Marilleau, Patrick Taillandier, Maroussia Vavasseur, Duc-An Vo, and Jean-Daniel Zucker*  
271

Demonstrating SERENA: Chance Encounters in the Space of Ideas  
*Jamie Forth, Athanasios Giannimaras, Geraint A. Wiggins, Robert Stewart, Diana Bental, Ruth Aylett, Deborah Maxwell, Hadi Mehrpouya, Jamie Shek, and Mel Woods*  
275

Automatic Deployment of a Consensus Networks MAS  
*Yolanda Gómez, Alberto Palomares, Carlos Carrascosa, and Miguel Rebollo*  
279

Using MASH in the Context of the Design of Embedded Multiagent System  
*Jean-Paul Jamont and Michel Occello*  
283

A Brownian Agent Model for Analyzing Changes in Product Space Structure in China  
*Bin Jiang, Chao Yang, Shuming Peng, Renfa Li, and Takao Terano*  
287

ArgCBR-CallCentre: A Call Centre Based on CBR Argumentative Agents  
*Jaume Jordán, Stella Heras, Soledad Valero, and Vicente Julián*  
292

Analysis of International Relations through Spatial and Temporal Aggregation  
*Robin Lamarche-Perrin, Yves Demazeau, and Jean-Marc Vincent*  
296

Demonstrating Multi-layered MAS in Control of Offshore Oil and Gas Production  
*Lars Lindegaard Mikkelsen, Jørgen Rentler Næumann, Yves Demazeau, and Bo Nørregaard Jørgensen*  
300

IMOSHION: A Simulation Framework Using Virtual Intelligent Agents for Workplace Evacuation in Case of Emergency Situation  
*Stéphane Maruejouls and Caroline Chopinaud*  
304
XIV Table of Contents

A Security Response Approach Based on the Deployment of Mobile Agents: A Practical Vision ........................................ 308  
   Roberto Magán-Carrión, José Camacho-Páez, and Pedro García-Teodoro

The Galaxian Project: A 3D Interaction-Based Animation Engine ........ 312  
   Philippe Mathieu and Sébastien Picault

Demonstration of the Multi-Agent Simulator of Competitive Electricity Markets ........................................................ 316  
   Tiago Pinto, Isabel Praça, Gabriel Santos, and Zita Vale

Multi-Agent Systems Platform for Mobile Robots Collision Avoidance ................................................................. 320  
   Angel Soriano, Enrique J. Bernabeu, Angel Valera, and Marina Vallés

Parallel and Distributed Simulation of Large-Scale Cognitive Agents .... 324  
   Kashif Zia, Katayoun Farrahi, Alexei Sharpanskykh, Alois Ferscha, and Lev Muchnik

Author Index ................................................................. 329