

Communications in Computer and Information Science

722

Commenced Publication in 2007

Founding and Former Series Editors:

Alfredo Cuzzocrea, Dominik Ślęzak, and Xiaokang Yang

Editorial Board

Simone Diniz Junqueira Barbosa

*Pontifical Catholic University of Rio de Janeiro (PUC-Rio),
Rio de Janeiro, Brazil*

Phoebe Chen

La Trobe University, Melbourne, Australia

Xiaoyong Du

Renmin University of China, Beijing, China

Joaquim Filipe

Polytechnic Institute of Setúbal, Setúbal, Portugal

Orhun Kara

TÜBİTAK BİLGEM and Middle East Technical University, Ankara, Turkey

Igor Kotenko

*St. Petersburg Institute for Informatics and Automation of the Russian
Academy of Sciences, St. Petersburg, Russia*

Ting Liu

Harbin Institute of Technology (HIT), Harbin, China

Krishna M. Sivalingam

Indian Institute of Technology Madras, Chennai, India

Takashi Washio

Osaka University, Osaka, Japan

More information about this series at <http://www.springer.com/series/7899>

Javier Bajo · Zita Vale
Kasper Hallenborg · Ana Paula Rocha
Philippe Mathieu · Pawel Pawlewski
Elena Del Val · Paulo Novais
Fernando Lopes · Nestor D. Duque Méndez
Vicente Julián · Johan Holmgren (Eds.)

Highlights of Practical Applications of Cyber-Physical Multi-Agent Systems

International Workshops of PAAMS 2017
Porto, Portugal, June 21–23, 2017
Proceedings

Editors

Javier Bajo
Departamento de Inteligencia Artificial
Universidad Politécnica de Madrid
Madrid, Spain

Zita Vale
Polytechnic Institute of Porto
Porto, Portugal

Kasper Hallenborg
University of Southern Denmark
Odense, Denmark

Ana Paula Rocha
University of Porto
Porto, Portugal

Philippe Mathieu
Lille University of Science and Technology
Lille, France

Pawel Pawlewski
Poznan University of Technology
Poznan, Poland

Elena Del Val
Polytechnic University of Valencia
Valencia, Spain

Paulo Novais
University of Minho
Braga, Portugal

Fernando Lopes
National Laboratory of Energy and Geology
Lisbon, Portugal

Nestor D. Duque Méndez
National University of Colombia
Manizales, Caldas
Colombia

Vicente Julián
Polytechnic University of Valencia
Valencia, Spain

Johan Holmgren
Malmö University
Malmö, Sweden

ISSN 1865-0929

ISSN 1865-0937 (electronic)

Communications in Computer and Information Science

ISBN 978-3-319-60284-4

ISBN 978-3-319-60285-1 (eBook)

DOI 10.1007/978-3-319-60285-1

Library of Congress Control Number: 2017943000

© Springer International Publishing AG 2017

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The PAAMS Workshops complement the regular program with new or emerging trends of particular interest connected to multi-agent systems.

PAAMS, the International Conference on Practical Applications of Agents and Multi-Agent Systems, is an evolution of the International Workshop on Practical Applications of Agents and Multi-Agent Systems. PAAMS is an international yearly event in which 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 of agents and multi-agent systems.

This volume presents the papers that were accepted in the workshops during the 2017 edition of PAAMS: Workshop on Agent-Based Applications for Air Transport and Application of Agents to Passenger Transport; Workshop on Agent-based Artificial Markets Computational Economics; Workshop on Agents and Multi-agent Systems for AAL and e-HEALTH; Workshop on Agent-Based Solutions for Manufacturing and Supply Chain; Workshop on MAS for Complex Networks and Social Computation; Workshop on Decision Making in Dynamic Information Environments; Workshop on Multi-agent-Based Applications for Smart Grids and Sustainable Energy Systems; Workshop on Multi-agent System-Based Learning Environments; Workshop on Smart Cities and Intelligent Agents. Each paper submitted to the PAAMS workshops went through a stringent peer review by three members of the international committee of each workshop. From the 80 submissions received, 41 were selected for presentation at the conference.

We would like to thank all the contributing authors, the members of the Program Committee, the sponsors (IEEE SMC Spain, IBM, AEPIA, AFIA, APPIA, Universidad Politécnica de Madrid, Polytechnic Institute of Porto, and CNRS), and the Organizing Committee for their hard and highly valuable work. Their work contributed to the success of the PAAMS 2017 event. Thanks for your help – PAAMS 2017 would not exist without your contribution.

This work was supported by the Spanish Ministry of Economy, Industry and Competitiveness (I+D+i Project Ref. TIN2015-65515-C4-3-R – SURF: Self-organizing sensors and biometrics architecture for dynamic vehicle control in smart cities).

May 2017

Javier Bajo
Zita Vale

Organization

Workshops

- W1** – Workshop on Agent-Based Applications for Air Transport and Application of Agents to Passenger Transport
- W2** – Workshop on Agent-Based Artificial Markets Computational Economics
- W3** – Workshop on Agents and Multi-agent Systems for AAL and e-HEALTH
- W4** – Workshop on Agent-Based Solutions for Manufacturing and Supply Chain
- W5** – Workshop on MAS for Complex Networks and Social Computation
- W6** – Workshop on Decision-Making in Dynamic Information Environments
- W7** – Workshop on Multi-agent-Based Applications for Smart Grids and Sustainable Energy Systems
- W8** – Workshop on Multi-agent System-Based Learning Environments
- W9** – Workshop on Smart Cities and Intelligent Agents

Workshop on Agent Based Applications for Air Transport and Application of Agents to Passenger Transport

Program Committee Chairs

Ana Paula Rocha	LIACC, University of Porto, Portugal
António Castro	University of Porto and TAP Portugal, Portugal
Jan A. Persson	Malmö University, Sweden
Johan Holmgren	Malmö University, Sweden
Kai Nagel	TU Berlin Sekr. SG 12, Germany

Program Committee

Alexei Sharpanskykh	Delft University of Technology, The Netherlands
Andrew Cook	University of Westminster, UK
Daniel Silva	University of Porto, Portugal
Elisabete Arsenio	LNEC, Portugal
Henk Blom	Delft University of Technology, The Netherlands
Jorge Silva	University of Beira Interior, Portugal
Lorenzo Castelli	University of Trieste, Italy
Pernilla Ulfvengren	KTH, The Netherlands
Ricardo Hoar	Mont Royal University, Canada
Rodrigo Ventura	IST, Portugal
Rosaldo Rossetti	University of Porto, Portugal
Yang Gao	University of Surrey, UK
Ana Bazzan	Federal University of Rio Grande do Sul, Brazil
Armando Bazzani	University of Bologna, Italy
Gunnar Flötteröd	KTH Royal Institute of Technology, Sweden

Jan A. Persson	Malmö University, Sweden
Johan Holmgren	Malmö University, Sweden
John Polak	Imperial College London, UK
Kai Nagel	Technische Universität Berlin, Germany
Kay W. Axhausen	ETH Zürich, Switzerland
Luk Knapen	Hasselt University, Belgium
Martin Kagerbauer	Karlsruhe Institute of Technology, Germany
Oded Cats	Delft University of Technology, The Netherlands
Peter Vortisch	Karlsruhe Institute of Technology, Germany
Peter Vovsha	WSP Parsons Brinckerhoff, USA
Rolf Moeckel	Technische Universität München, Germany
Stephane Galland	Université de Technologie de Belfort-Montbéliard, France

Workshop on Agent-Based Artificial Markets Computational Economics

Program Committee Chairs

Philippe Mathieu (Co-chair)	Université des Sciences et Technologies de Lille, France
Shu-Heng Chen (Co-chair)	National Chengchi University, Taiwan

Program Committee

Jasmina Arifovic	Simon Fraser University, Canada
Javier Arroyo	University Complutense of Madrid, Spain
Yuji Aruka	Chou University, Japan
Bruno Beauflis	University of Lille1, France
Hugues Bersini	Université libre de Bruxelles, Belgium
Olivier Brandouy	University of Bordeaux IV, France
Shu-Heng Chen	National Chengchi University, Taipei
Siew Ann Cheong	Nanyang Technological University, Singapore
Florian Hauser	University of Innsbruck, Austria
Duk Hee Lee	Korea Advanced Institute of Science and Technology, South Korea
Philippe Mathieu	University of Lille1, France
Adolfo López Paredes	University of Valladolid, Spain
Paolo Pellizzari	Ca'Foscari University of Venice, Italy
Ragu Pathy	Goldsmiths, University of London, UK
Marco Raberto	University of Genoa, Italy
Roger Waldeck	Telecom Bretagne, France
Murat Yildizoglu	University of Bordeaux IV, France
Freiderike Wall	Alpen-Adria Universität, Klagenfurt Austria
Ling Xue	Peking University, China

Workshop on Agents and Multi-agent Systems for AAL and e-Health

Program Committee Chairs

Kasper Hallenborg (Co-chair)	University of Southern Denmark, Denmark
Sylvain Giroux (Co-chair)	University of Sherbrooke, Canada

Program Committee

Juan M. Corchado	University of Salamanca, Spain
Javier Bajo	Technical University of Madrid, Spain
Juan F. De Paz	University of Salamanca, Spain
Sara Rodríguez	University of Salamanca, Spain
Valerie Camps	Paul Sabatier University of Toulouse, France
Cristian I. Pinzón	Technical University of Panama, Panama
Sigeru Omatu	Osaka Institute of Technology, Japan
Paulo Novais	University of Minho, Portugal
Luis F. Castillo	University of Caldas, Colombia
Florentino Fernandez	University of Vigo, Spain
Belén Pérez Lancho	University of Salamanca, Spain
Jesús García Herrero	Carlos III University of Madrid, Spain
Helena Lindgren	University of Umea, Sweden
Goretti Marreiros	Instituto Superior de Engenharia do Porto, Portugal
Gaetano Carmelo La Delfa	University of Catania, Italy
Tiancheng Li	Northwestern Polytechnical University, China

Workshop on Agent-Based Solutions for Manufacturing and Supply Chain

Program Committee Chairs

Pawel Pawlewski	Poznan University of Technology, Poland
Patrycja Hoffa	Poznan University of Technology, Poland

Program Committee

Zbigniew J. Pasek	IMSE/University of Windsor, Canada
Paul-Eric Dossou	ICAM Vendee, France
Grzegorz Bocewicz	Koszalin University of Technology, Poland
Paweł Sitek	Kielce University of Technology, Poland
Izabela E. Nielsen	Aalborg University, Denmark
Peter Nielsen	Aalborg University, Denmark
Allen Greenwood	Mississippi State University, USA

Workshop on MAS for Complex Networks and Social Computation

Program Committee Chairs

Vicente Botti	Universitat Politècnica de València, Spain
Miguel Rebollo	Universitat Politècnica de València, Spain
Elena Del Val	Universitat Politècnica de València, Spain

Program Committee

Angelo Costa	Universidade do Minho, Portugal
Daniel Villatoro	Vodafone, UK
Carlos Carrascosa	Universidad Politécnica de Valencia (UPV), Spain
Francisco Grimaldo	Universitat de València, Spain
Katarzyna Musial-Gabrys	Bournemouth University, UK
Vicente Julián	Universidad Politécnica de Valencia (UPV), Spain
Guillem Martínez	Universitat de València, Spain
Alberto Palomares	Universidad Politécnica de Valencia (UPV), Spain
Victor Sanchez Anguix	Coventry University, UK

Workshop on Decision-Making in Dynamic Information Environments

Program Committee Chairs

Tiago Oliveira	Universidade do Minho, Portugal
Jose Carlos Montoya	Universidad Carlos III, Spain
Paulo Novais	Universidade do Minho, Portugal
Ken Satoh	National Institute of Informatics, Japan

Program Committee

Ângelo Costa	University of Minho, Portugal
Claudia Schulz	Imperial College London, UK
Davide Carneiro	University of Minho, Portugal
Goreti Marreiros	Polytechnic of Porto, Portugal
Hiroshi Hosobe	Hosei University, Japan
José Neves	University of Minho, Portugal
Jason J. Jung	Chung-Ang University, South Korea
Javier Bajo	Technical University of Madrid, Spain
Kristijonas Cyras	Imperial College London, UK
Paulo Moura Oliveira	University of Trás-os-Montes e Alto Douro, Portugal
Pedro Henriques	University of Minho, Portugal
Randy Goebel	University of Alberta, Canada
Tony Ribeiro	Ecole Centrale de Nantes IRCCyN, France
Vicente Julián	Valencia University of Technology, Spain
Fábio Silva	University of Minho, Spain
Igor Kottenko	Laboratory of Computer Security Problems, Russia

Brahim Ouhbi	Ensam-Meknès University, Morocco
Nuno Silva	Polytechnic of Porto, Portugal
Vali Derhami	Yazd University, Iran
Antonio Fernández Caballero	Universidad de Castilla-La Mancha, Spain
Ryuta Arisaka	National Institute of Informatics, Japan

Workshop on Multi-agent-Based Applications for Smart Grids and Sustainable Energy Systems Committee

Program Committee Chairs

Fernando Lopes	LNEG National Research Institute, Portugal
Roozbeh Morsali	Swinburne University - Melbourne, Australia
Rainer Unland	University of Duisburg-Essen, Germany

Program Committee

Anke Weidlich	Offenburg University, Germany
Christian Derksen	Universität Duisburg-Essen, Germany
Costin Badica	University of Craiova, Romania
David Sislak	CTU in Prague, Czech Republic
Fernando Lopes	LNEG National Research Institute, Portugal
Georg Frey	Saarland University, Germany
Giancarlo Fortino	Università della Calabria, Italy
Helder Coelho	University of Lisbon, Portugal
Hugo Morais	Denmark Technical University, Denmark
Jan Treur	Vrije Universiteit Amsterdam, The Netherlands
Lars Braubach	University of Hamburg, Germany
Lars Monch	University of Hagen, Germany
Marcin Paprzycki	Polish Academy of Sciences, Poland
Matthias Klusch	Research Center for AI (DFKI), Germany
Nir Oren	University of Aberdeen, UK
Olivier Boissier	ENS Mines Saint-Etienne, France
Peter Palensky	TU Delft, The Netherlands
Rainer Unland	University of Duisburg-Essen, Germany
Ryszard Kowalczyk	Swinburne University of Technology, Australia
Sascha Ossowski	University Rey Juan Carlos, Spain
Zita Vale	Polytechnic Institute of Porto, Portugal
Bo Norregaard Jorgensen	University of Southern Denmark, Denmark
Hugo Algarvio	Technical University of Lisbon, Portugal
Nick Bassiliades	Aristotle University of Thessaloniki, Greece
Tiago Pinto	University of Salamanca, Spain

Workshop on Multi-agent System-Based Learning Environments

Program Committee Chairs

Ricardo Azambuja Silveira	Universidade Federal de Santa Catarina, Brazil
Rosa Vicari	Universidade Federal do Rio Grande do Sul – UFRGS, Brazil
Néstor Darío Duque Méndez	Universidad Nacional de Colombia, Colombia

Program Committee

Néstor Darío Duque Méndez	Universidad Nacional de Colombia, Colombia
Ricardo Silveira	UFSC, Brazil
Ana Belén Gil González	University of Salamanca, Spain
Jose Cascalho	Universidade dos Azores, Portugal
Rosa Vicari	UFRGS, Brazil
Demetrio Arturo Ovalle Carranza	Universidad Nacional de Colombia - Sede Medellín, Colombia
Marta Rosecler Bez	UFRGS, Brazil
Ramon Fabregat	Universitat de Girona, Spain
Silvia Margarita Baldiris Navarro	Universitat de Girona, Spain
Tiago Primo	Samsung Research Institute, Brazil
Martin Llamas-Nistal	University of Vigo, Spain
Fernando De La Prieta	University of Salamanca, Spain
María N. Moreno García	University of Salamanca, Spain
Patricia Jaques	UNISINOS, Brazil
Júlia M.C. Silva	Instituto Federal do Rio Grande do Sul, Brazil
Rosângela Bez	SAMSUNG Research Institute, Brazil
Fernando Koch	SAMSUNG Research Institute, Brazil
Vicente Julian Inglada	Universidad Politécnica de Valencia, Spain
Fernando Moreira	Universidad PortoCalense, Portugal
Juan Pavón	Universidad Complutense Madrid, Spain
Angela Cristina Carrillo Ramos	Universidad Javeriana, Colombia

Workshop on Smart Cities and Intelligent Agents Committee

Program Committee Chairs

Vicente Julián	Universitat Politècnica de València, Spain
Adriana Giret	Universitat Politècnica de València, Spain
Juan Manuel Corchado	Universidad de Salamanca, Spain
Alberto Fernández	Universidad Rey Juan Carlos, Spain
Holger Billhardt	Universidad Rey Juan Carlos, Spain
Javier Bajo	Universidad Politécnica de Madrid, Spain

Program Committee

Adriana Giret	Universidad Politécnica de Valencia, Spain
Alberto Fernández	Rey Juan Carlos University, Spain
Fabio Carrera	Worcester Polytechnic Institute, UK
Holger Billhardt	Rey Juan Carlos University, Spain
Javier Bajo	Universidad Politécnica de Madrid, Spain
Juan Manuel Corchado	Universidad de Salamanca, Spain
Jürgen Dunkel	Hannover University of Applied Sciences and Arts, Germany
Kuldar Taveter	Tallinn University of Technology, Estonia
Michael Batty	University College London, UK
Paul Davidsson	Malmö University, Sweden
Ryszard Kowalczyk	Swinburne University of Technology, Australia
Rosaldo Rossetti	Universidade do Porto, Portugal
Sascha Ossowski	Rey Juan Carlos, University, Spain
Stéphane Galland	IRTES-SET
Vincent Corruble	Université Pierre et Marie Curie, France
Vicente Julián	Universidad Politécnica de Valencia, France
Ramón Hermoso	University of Zaragoza, Spain
Roberto Centeno	National Distance Education University (UNED)
Marin Lujak	Rey Juan Carlos University, Spain
Angelo Costa	Universidade do Minho, Portugal
Carlos Carrascosa	Universidad Politécnica de Valencia, Spain
Michael Weiss	Carleton University, Canada
Julian Padget	University of Bath, UK
Victor Sanchez-Anguix	Coventry University, UK
Vincent Hilaire	UTBM/IRTES-SET, France

Organizing Committee

Javier Bajo (Chair)	Universidad Politécnica de Madrid, Spain
Zita Vale (Co-chair)	Polytechnic of Porto, Portugal
Brigida Teixeira	Polytechnic of Porto, Portugal
Filipe Sousa	Polytechnic of Porto, Portugal
João Soares	Polytechnic of Porto, Portugal
Lúis Conceição	Polytechnic of Porto, Portugal
Lúis Gomes	Polytechnic of Porto, Portugal
Nuno Borges	Polytechnic of Porto, Portugal
Sérgio Ramos	Polytechnic of Porto, Portugal
Tiago Sousa	Polytechnic of Porto, Portugal

PAAMS 2017 Sponsors



Contents

AAAT+TAAPT

Agent Based Model for Hub Operations Cost Reduction	3
<i>Luis Delgado, Jorge Martín, Alberto Blanch, and Samuel Cristóbal</i>	
Argumentation in the Re-accommodation of Airline Passengers Using Mobile Devices	16
<i>Jorge Lima, Ana Paula Rocha, and Antonio J.M. Castro</i>	
Incorporating Stability of Mode Choice into an Agent-Based Travel Demand Model.	28
<i>Nicolai Mallig and Peter Vortisch</i>	
A Cost-Optimization Model in Multi-agent System Routing for Drone Delivery	40
<i>Miae Kim and Eric T. Matson</i>	
Microsimulation Travel Models in Practice in the US and Prospects for Agent-Based Approach	52
<i>Peter Vovsha</i>	
Towards a Testbed for Dynamic Vehicle Routing Algorithms.	69
<i>Michal Maciejewski, Joschka Bischoff, Sebastian Hörl, and Kai Nagel</i>	

ABAM

On Simulating the Adoption of New Products in Markets with Rational Users and Companies	83
<i>Juan Manuel Sanchez-Cartas and Gonzalo Leon</i>	
Optimality of a Two-Tier Rate Structure for a Transaction Tax in an Artificial Market.	95
<i>Danilo Liuzzi, Paolo Pellizzari, and Marco Tolotti</i>	
Evolving Trading Signals at Foreign Exchange Market	107
<i>Svitlana Galeshchuk and Sumitra Mukherjee</i>	
ResMAS - A Conceptual MAS Model for Resource-Based Integrated Markets.	117
<i>Thiago R.P.M. Rúbio, Zafeiris Kokkinogenis, Henrique Lopes Cardoso, Eugénio Oliveira, and Rosaldo J.F. Rossetti</i>	

Initial Solution Heuristic for Portfolio Optimization of Electricity
Markets Participation 130
Ricardo Faia, Tiago Pinto, and Zita Vale

AHEALTH

Autonomous Safety System for a Smart Stove for Cognitively
Impaired People 145
*Nicola Kuijpers, Sylvain Giroux, Florent de Lamotte,
and Jean-Luc Philippe*

Multi-agent Systems for Epidemiology: Example of an Agent-Based
Simulation Platform for Schistosomiasis. 157
*Papa Alioune Cisse, Jean Marie Dembele, Moussa Lo,
and Christophe Cambier*

Transforming Medical Advice into Clinical Activities
for Patient Follow-Up 169
António Silva, Tiago Oliveira, José Neves, and Paulo Novais

A Multi-agent Architecture for Labeling Data and Generating Prediction
Models in the Field of Social Services. 177
*Emilio Serrano, Pedro del Pozo-Jiménez, Mari Carmen Suárez-Figueroa,
Jacinto González-Pachón, Javier Bajo, and Asunción Gómez-Pérez*

AMSC

Multiagent Managerial Model of Technical Infrastructure Used
at Ore Mining. 187
Arkadiusz Kowalski and Tomasz Chlebus

Analysis of the Survival of Complex Systems with an Actions
Coordination Mechanism 197
Katarzyna Grzybowska and Patrycja Hoffa-Dabrowska

A Multi-level Framework for Simulating Milk-Run, In-plant
Logistics Operations 209
Allen G. Greenwood, Kamila Kluska, and Pawel Pawlewski

A Hybrid Modeling Approach for Simulating Milk-Run In-plant
Logistics Operations 221
Allen G. Greenwood, Kamila Kluska, and Pawel Pawlewski

CNSC

Multi-agent System for Privacy Protection Through User Emotions
in Social Networks 235
G. Aguado, V. Julian, and A. Garcia-Fornes

Simulating the Impacts of Information Diffusion on Meningitis Outbreak
in West-Africa Using Agent-Based Model 246
Eric Youl, Mahamadou Belem, Sadouanouan Malo, and Issouf Traoré

An Adaptive Temporal-Causal Network Model for Enabling Learning
of Social Interaction 257
Charlotte Commu, Mathilde Theelen, and Jan Treur

Computing Aggregates on Autonomous, Self-organizing Multi-agent
System: Application “Smart Grid”. 271
Sai Manoj Marepalli and Andreas Christ

DeMaDIE

Evaluating the Perception of the Decision Quality in Web-Based
Group Decision Support Systems: A Theory of Satisfaction 287
João Carneiro, Ricardo Santos, Goreti Marreiros, and Paulo Novais

Decision Process to Manage Renewable Energy Production in Smart
Grid Environment 299
*João C. Ferreira, Vitor Monteiro, J.G. Pinto, Ana Lúcia Martins,
and João L. Afonso*

Distributed Multimodal Journey Planner Based on Mashup
of Individual Planners’ APIs. 307
*Joao C. Ferreira, António R. Andrade, António Ramos,
Ana Lúcia Martins, and João Almeida*

Developing an Individualized Survival Prediction Model for Rectal Cancer . . . 315
Ana Silva, Tiago Oliveira, Paulo Novais, and José Neves

MASGES

Decentralized Surplus Distribution Estimation with Weighted *k*-Majority
Voting Games 327
Jörg Bremer and Sebastian Lehnhoff

Multi-agent Wholesale Electricity Markets with High Penetrations
of Variable Generation: A Case-Study on Multivariate Forecast
Bidding Strategies 340
*Hugo Algarvio, António Couto, Fernando Lopes, Ana Estanqueiro,
and João Santana*

A Linear Programming Model to Simulate the Adaptation of Multi-agent Power Systems to New Sources of Energy	350
<i>Hugo Algarvio, Fernando Lopes, and João Santana</i>	
MAS Based Demand Response Application in Port City Using Reefers	361
<i>Ntountounakis Manolis, Ishtiaq Ahmad, Kanellos Fotios, Peter Palensky, and Wolfgang Gawlik</i>	
MASLE	
A Model to Aggregate Heterogeneous Learning Objects Repositories	373
<i>Luiz Henrique Longhi Rossi, Marcos Freitas Nunes, Paulo Schreiner, and Rosa Maria Vicari</i>	
Survey of Software Visualization Systems to Teach Message-Passing Concurrency in Secondary School	386
<i>Cédric Libert and Wim Vanhoof</i>	
Multi-agent Model for Failure Assessment and Diagnosis in Teaching-Learning Processes	398
<i>Oscar Salazar, Santiago Álvarez, and Demetrio Ovalle</i>	
Validation of a Content Recommendation System for Learning Objects, Using Agents that Simulate Disabled People.	409
<i>Paula Rodríguez, Luis Londoño, Mauricio Giraldo, Valentina Tabares, and Néstor Duque</i>	
Accessibility Evaluation of Learning Object Using Agents	420
<i>Luis Londoño, Valentina Tabares, Néstor Duque, and Mauricio Giraldo</i>	
SCIA	
Transport Network Analysis for Smart Open Fleets	433
<i>Miguel Rebollo, Carlos Carrascosa, and Vicente Julian</i>	
WSNs in FIWARE – Towards the Development of People-Centric Applications	445
<i>Ngombo Armando, Duarte Raposo, Marcelo Fernandes, André Rodrigues, Jorge Sá Silva, and Fernando Boavida</i>	
Toward Smart Island Simulation Application: A Case Study of Reunion Island	457
<i>Tahina Ralitera and Rémy Courdier</i>	
Intelligent Transport System Through the Recognition of Elements in the Environment	470
<i>Pablo Martín-Martín, Alfonso González-Briones, Gabriel Villarrubia, and Juan F. De Paz</i>	

A Serious Game to Reduce Consumption in Smart Buildings 481
*Oscar García, Pablo Chamoso, Javier Prieto, Sara Rodríguez,
and Fernando de la Prieta*

Author Index 495