brought to you by CORE
provided by ResearchOnline at James Cook University

Stephen Cranefield
Insu Song (Eds.)

LNAI 7580

Agent Based Simulation for a Sustainable Society and Multi-agent Smart Computing

International Workshops, PRIMA 2011
Wollongong, Australia, November 2011
Revised Selected Papers

core.ac.uk

Lecture Notes in Artificial Intelligence 7580

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

Stephen Cranefield Insu Song (Eds.)

Agent Based Simulation for a Sustainable Society and Multi-agent Smart Computing

International Workshops, PRIMA 2011
Wollongong, Australia, November 14, 2011
Revised Selected Papers

Springer

Series Editors

Randy Goebel, University of Alberta, Edmonton, Canada
Jörg Siekmann, University of Saarland, Saarbrücken, Germany
Wolfgang Wahlster, DFKI and University of Saarland, Saarbrücken, Germany

Volume Editors

Stephen Cranefield
University of Otago
Department of Information Science
P.O. Box 56, Dunedin 9054, New Zealand
E-mail: scranefield@infoscience.otago.ac.nz

Insu Song
James Cook University
School of Business/IT, Australia
1 James Cook Drive, Douglas, QLD 4811, Australia
E-mail: insu.song@jcu.edu.au

ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-642-35611-7 e-ISBN 978-3-642-35612-4
DOI 10.1007/978-3-642-35612-4
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: Applied for

CR Subject Classification (1998): I.2.11, I.6.3, I.6.5-7, K.4.4, J.2, K.4.1, J.7

LNCS Sublibrary: SL 7 – Artificial Intelligence

© Springer-Verlag Berlin Heidelberg 2012
This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.
The use of general descriptive names, registered names, trademarks, 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.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This volume contains selected and revised versions of papers that were presented at two of the workshops held at the 14th International Conference on Principles and Practice of Multi-Agent Systems (PRIMA 2011) on November 14, 2011, in Wollongong, Australia. PRIMA is one of the oldest active agent computing forums, beginning in 1998 as a regional agent workshop (the Pacific Rim International Workshop on Multi-Agents).

Alongside the main conference, PRIMA includes workshops that are intended to facilitate active exchange, interaction and comparison of approaches, methods and various ideas in specific areas related to intelligent agent systems and multi-agent systems. In alignment with the conference theme for PRIMA 2011 of "Agents for Sustainability," the 2011 workshop program sought to encourage thought leadership in the agent community as to how agent computing can be applied to enhance sustainable practices in our world, from agriculture and personal resource usage to the design and operation of more sustainable cities. The call for workshops invited proposals for workshops addressing this theme, as well as workshops that continued to explore the "Agents and Services" theme of PRIMA 2010, which addressed connections to service science and service-oriented computing.

The two workshops covered by this volume are the Workshop on Agent-Based Simulation for a Sustainable Society (ABSSS 2011) and the International Workshop on Multi-Agent Smart Computing (MASmart 2011). A third workshop was also held at PRIMA 2011: the Second International Workshop on Services and Agents (ServAgents 2011).

Papers submitted to these workshops were reviewed by at least two reviewers, and the accepted papers were included in the informal workshop proceedings and presented at the workshops. Selected papers were then invited to be revised and submitted for consideration for inclusion in this volume after further review by the workshop Program Chairs.

The PRIMA 2011 workshops were held at the University of Wollongong, Australia, which provided generous support. Particular mention goes to the conference General Chairs, Aditya Ghose and Guido Governatori, the Local Organizing Chairs, Minjie Zhang and Hoa Dam, the ServAgent 2011 Organising Committee (Hoa Khanh Dam and Aditya Ghose), the ABSSS 2011 Organising Committee (Frank Dignum, Virginia Dignum, Liz Sonenberg, Yoshi Kashima and Sarah Hickmott), and the MASmart 2011 Organizing Committee (Takayuki Ito and Gokiso Showa-ku). Finally, we thank the members of the workshop Program Committees who produced timely reviews under time constraints.

July 2012

Stephen Cranefield
Insu Song

Organisation

Programme Committees

ABSSS

Frank Dignum	Utrecht University, The Netherlands
Virginia Dignum	Delft University of Technology, The Netherlands
Alexis Drogoul	IRD, UPMC, MSI-IFI, Vietnam
Bruce Edmonds	Manchester Metropolitan University, UK
Benoit Gaudou	University of Toulouse, France
Hiromitsu Hattori	Kyoto University, Japan
Ho Tuong Vinh	UMI UMMISCO, IRD, IFI, Vietnam
Peter McBurney	Kings College, London, UK
Yuu Nakajima	Kyoto University, Japan
Craig Pearson	University of Melbourne, Australia
Jens Pfau	University of Melbourne, Australia
Dirk van Rooy	Australian National University, Australia
David Scerri	RMIT University, Australia
Alex Smajgl	CSIRO, Australia
Liz Sonenberg	University of Melbourne, Australia
Tiberiu Stratulat	Polytech Montpellier, France
Sung-Bae Cho	Yonsei University, South Korea
Patrick Taillandier	University of Toulouse, France
The Duy Bui	Vietnam National University, Vietnam

MASmart

Takayuki Ito	Nagoya Institute of Technology, Japan
Tokuro Matsuo	Yamagata University, Japan
Minjie Zhang	University of Wollongong, Australia
Shohei Kato	Nagoya Institute of Technology, Japan
Akira Iwata	Nagoya Institute of Technology, Japan
Naoki Fukuta	Shizuoka University, Japan
Ivan Marsa-Maestre	University of Alcala, Spain
Miguel A. Lopez-Carmona	University of Alcala, Spain

Workshop Organisers

ABSSS

Frank Dignum	Utrecht University, The Netherlands
Virginia Dignum	Delft University of Technology, The Netherlands
Liz Sonenberg	University of Melbourne, Australia
Yoshi Kashima	University of Melbourne, Australia
Sarah Hickmott	RMIT University, Australia

MASmart

Takayuki Ito	Nagoya Institute of Technology, Japan
Tokuro Matsuo	Yamagata University, Japan
Minjie Zhang	University of Wollongong, Australia
Shohei Kato	Nagoya Institute of Technology, Japan
Akira Iwata	Nagoya Institute of Technology, Japan
Naoki Fukuta	Shizuoka University, Japan
Ivan Marsa-Maestre	University of Alcala, Spain
Miguel A. Lopez-Carmona	University of Alcala, Spain

PRIMA Workshop Chairs

Stephen Cranefield	University of Otago, New Zealand
Insu Song	James Cook University, Australia

Table of Contents

Workshop on Agent Based Simulation for a Sustainable Society (ABSSS 2011)

Multi-Agent-Based Simulation for Analysis of Transport Policy and Infrastructure Measures 1
Johan Holmgren, Linda Ramstedt, Paul Davidsson, and Jan A. Persson

An Agent-Based Simulation of Employing Social Norms in Energy Conservation in Households 16
Bastin Tony Roy Savarimuthu, Maryam Purvis, and Harko Verhagen

An Agent-Based Model of Stereotype Communication 32
Jens Pfau, Michael Kirley, and Yoshihisa Kashima

International Workshop on Multi-Agent Smart Computing (MASmart 2011)

An Approach to Sustainable Electric Power Allocation Using a Multi-round Multi-unit Combinatorial Auction 48
Naoki Fukuta and Takayuki Ito

A Co-dependent Value-Based Mechanism for the Internet Advertisement Auction 64
Satoshi Takahashi, Tokuro Matsuo, Takayuki Ito, and Roger Y. Lee

Evaluation of Special Lanes as Incentive Policies for Promoting Electric Vehicles 78
Ryo Kanamori, Takayuki Morikawa, and Takayuki Ito

Simulation of Coordinated Anticipatory Vehicle Routing Strategies on MATSim 90
Enrique de la Hoz, Ivan Marsa-Maestre, and Miguel A. Lopez-Carmona

Agent-Based Demand Management in a Power Distribution Network by Considering Distributed Generations 109
Fenghui Ren, Minjie Zhang, and Danny Soetanto

Author Index 125