Lecture Notes in Artificial Intelligence   3192

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

Christoph Bussler   Dieter Fensel (Eds.)

Artificial Intelligence: Methodology, Systems, and Applications

11th International Conference, AIMSA 2004
Varna, Bulgaria, September 2-4, 2004
Proceedings

Springer

Series Editors

Jaime G. Carbonell, Carnegie Mellon University, Pittsburgh, PA, USA
Jörg Siekmann, University of Saarland, Saarbrücken, Germany

Volume Editors

Christoph Bussler
Digital Enterprise Research Institute (DERI)
National University of Ireland
University Road, Galway, Ireland
E-mail: chris.bussler@deri.org

Dieter Fensel
Digital Enterprise Research Institute (DERI)
University of Innsbruck
Technikerstr. 13, 6020 Innsbruck, Austria
E-mail: dieter.fensel@deri.org

Preface

The 11th Conference "Artificial Intelligence: Methodology, Systems, Applications – Semantic Web Challenges" (AIMSA 2004) continued successfully pursuing the main aim of the AIMSA series of conferences – to foster the multidisciplinary community of artificial intelligence researchers, embracing both the theoretic underpinnings of the field and the practical issues involved in development, deployment, and maintenance of systems with intelligent behavior. Since the first conference in 1984 AIMSA has provided an ideal forum for international scientific exchange between Central/Eastern Europe and the rest of the world and it is even more important nowadays in the unifying Europe.

The current AIMSA edition is focused on Semantic Web methods and technologies. The Internet is changing the everyday services landscape, and the way we do things in almost every domain of our life. Web services are rapidly becoming the enabling technology of today's e-business and e-commerce systems, and will soon transform the Web as it is now into a distributed computation and application framework. The emerging Semantic Web paradigm promises to annotate Web artefacts to enable automated reasoning about them. When applied to e-services, the paradigm hopes to provide substantial automation for activities such as discovery, invocation, assembly, and monitoring of e-services.

One hundred and seventy-six interesting papers were submitted to the conference. Each paper was reviewed by at least three independent reviewers. The programme committee selected for the conference program 56 high-quality contributions. 52 of them were prepared in time to form the current volume. These papers concern a wide spectrum of artificial intelligence areas, e.g., ontology engineering, Semantic Web tools and services, but also some traditional AI topics, e.g., knowledge representation, machine learning and data mining, natural language processing, soft computing, multi-agent systems, e-learning Systems, intelligent decision making, and intelligent information retrieval.

AIMSA 2004 invited two keynote speakers: Jeffrey T. Pollock from Network Inference for his contributions to AI business applications, and Darina Dicheva for her work on Semantic Web approaches to e-learning.

We would like to thank the AIMSA program committee and the additional reviewers for their hard work in helping make this conference a success.

July 2004   Christoph Bussler
                                                                                       Dieter Fensel

Conference Chair

Dieter Fensel
Digital Enterprise Research Institute
Innsbruck, Austria

Program Committee Chair

Christoph Bussler
Digital Enterprise Research Institute
Galway, Ireland

Program Committee

Karl Aberer (Switzerland)
Nabil Adam (USA)
Sudhir Agarwal (Germany)
Gennady Agre (Bulgaria)
Marco Aiello (Italy)
Yuan An (Canada)
Anupriya Ankolekar (USA)
Budak Arpina (USA)
Boualem Benatallah (Australia)
Bettina Berendt (Germany)
Sonia Bergamaschi (Italy)
Abraham Bernstein (Switzerland)
Elisa Bertino (Italy)
Omar Boucelma (France)
Paolo Bresciani (Italy)
Diego Calvanese (Italy)
Fabio Casati (USA)
Tiziana Catarci (Italy)
Edward Chang (USA)
Vincenzo D'Andrea (Italy)
Veleria de Antonellis (Italy)
Maarten de Rijke (The Netherlands)
Stefan Decker (Ireland)
Christo Dichev (USA)
Ying Ding (Austria)
Danail Dochev (Bulgaria)
Asuman Dogac (Turkey)
Jerome Euzenat (France)
Martin Frank (USA)
Martin Gaedke (Germany)
Jonathan Gelati (Italy)
Carole Goble (UK)
Asun Gomez-Perez (Spain)
Sergio Greco (Italy)
William Grosso (USA)
Francesco Guerra (Italy)
Siegfried Handschuh (Germany)
Andreas Hotho (Germany)

Zachary Ives (USA)
Paul Johannesson (Sweden)
Gerti Kappel (Austria)
Vipul Kashyap (USA)
Alfons Kemper (Germany)
Rania Khalaf (USA)
Roger King (USA)
Atanas Kiryakov (Bulgaria)
Mauel Kolp (Belgium)
Irena Korpinska (Australia)
Manolis Koubarakis (Greece)
Winfried Lamersdorf (Germany)
Doug Lea (USA)
Alain Leger (France)
Qing Li (Hong Kong)
Xuemin Lin (Australia)
Chengfei Liu (Australia)
Jianguo Lu (Canada)
Raphael Malyankar (USA)
Ioana Manolescu (France)
Maurizio Marchese (Italy)
Massimo Marchiori (Italy)
David Martin (USA)
Pat Martin (Canada)
Brian McBride (UK)
Massimo Mecella (Italy)
Sergey Melnik (Germany)
Michele Missikoff (Italy)
Pavlos Moraitis (Cyprus)
Boris Motik (Germany)
Enrico Motta (UK)
Haralambos Mouratidis (UK)
Claire Nedellec (France)
Natasha Noy (USA)
Borys Omelayenko (The Netherlands)
Maria Orlowska (Australia)
Massimo Paolucci (USA)
Mike Papazoglou (The Netherlands)

Loris Penserini (Italy)
Giacomo Piccinelli (UK)
Dimitris Plexousakis (Greece)
Christoph Quix (Germany)
Zbigniew Ras (USA)
Michael Rosemann (Australia)
Michael Rys (USA)

Shazia Sadiq (Australia)
Wasim Sadiq (Australia)
Monica Scannapieco (Italy)
Guus Schreiber (The Netherlands)
Karsten Schulz (Australia)
Ming-Chien Shan (USA)
Keng Siau (USA)

Additional Reviewers

David Ahn
Ferda N. Alpaslan
Nedjem Ayat
Kartik Babu
Shahram Bahadori
Toby Baier
Roberta Benassi
Marco Benedetti
D. Beneventano
Daniela Berardi
Stephan Bloehdorn
George Boukeas
Lars Braubach
Andrea Calì
Malu Castellanos
Jean Caussanel
S. Sze-Man Chan
Jing Chen
Philipp Cimiano
Dana Cobzas
Ahmet Cosar
Simon Cox
Gregory Craske
P. Cudre-Mauroux
Arun D. Qamra
Agnieszka Dardzinska
Anwitaman Datta
Luigi Dragone
Ludger van Elst
Peter Fankhauser
Alain Ferrarini
Rudi Freund
Alfredo Garro
Gionata Gelati
Rosella Gennari

Georgi Gluhchev
Daniel Gmach
Ozgur Gulderen
Chris Halaschek
Nadim Haque
Dau Hoang
Bodo Huesemann
Prasad Jayaweera
Andrew Jennings
Esther Kaufmann
Markus Keidl
Shailesh Kelkar
Christoph Kiefer
Stephen Kimani
Fabius Klemm
Jacek Kopecky
Iris Kösters
Richard Kuntschke
Brian Lam
Alexander Lazovik
Jens Lechtenboerger
Yuangui Lei
Elvis Leung
Sonia Lippe
Riccardo Maroglia
F. Martin-Recuerda
Eric Max Meisner
Michele Melchiori
Diego Milano
Willie Milnor
Daniele Miselli
Vladimir Monov
Daniele Montanari
Kemal Oflazer
Emanuele Olivetti

Navneet Panda
Markus Peters
Eleftheria Petraki
Alexander Pokahr
George Potamias
Jean-Francois Puget
Maurizio Rafanelli
Dnyanesh Rajpathak
Andreas Rauber
Martin Reczko
Robert Richardson
Mark Riding
Jean-Claude Saghbini
Nora Sanchez
Federica Schiappelli
Christoph Schmitz
Ron Van Schyndel
Zhe Shan
Spiros Skiadopoulos
Gleb Skobeltsyn
Diego Sona
Nikolaos Spanoudakis
Peter Stuckey
Yannis Stylianou
Andrea Tagarelli
Francesco Taglino
Julien Tane
Ismail Hakki Toroslu
F. Toumani
Erwan Tranvouez
Irina Trubitsyna
Vassil Vassilev
S. Veeramachaneni
Kunal Verma
Peter Vorburger

Wei-Jen Wang	Jie Wu	Bernhard Zeller
Peter Westerkamp	Yi Wu	Ning Zhang
Alicja Wieczorkowska	Murat Yukselen	Yuting Zhao
Gang Wu	Massimo Zancanaro	Anna Zhdanova

Local Organizers

Danail Dochev (Chair)	Violeta Magerska	Kamenka Staykova
Gennady Agre	Ivo Marinchev	

Table of Contents

Knowledge Presentation and Processing

Machine Learning and Data Mining

Natural Language Processing

Soft Computing

Neural Networks

E-learning Systems

Multi-agent Systems

Pattern Recognition

Intelligent Decisionmaking

Information Retrieval