

Lecture Notes in Business Information Processing

226

Series Editors

Wil van der Aalst

Eindhoven Technical University, Eindhoven, The Netherlands

John Mylopoulos

University of Trento, Povo, Italy

Michael Rosemann

Queensland University of Technology, Brisbane, QLD, Australia

Michael J. Shaw

University of Illinois, Urbana-Champaign, IL, USA

Clemens Szyperski

Microsoft Research, Redmond, WA, USA

More information about this series at <http://www.springer.com/series/7911>

Valérie Monfort · Karl-Heinz Krempels (Eds.)

Web Information Systems and Technologies

10th International Conference, WEBIST 2014
Barcelona, Spain, April 3–5, 2014
Revised Selected Papers



Springer

Editors

Valérie Monfort
University of Paris
Paris, Paris
France

Karl-Heinz Krempels
RWTH Aachen University
Aachen
Germany

ISSN 1865-1348 ISSN 1865-1356 (electronic)
Lecture Notes in Business Information Processing
ISBN 978-3-319-27029-6 ISBN 978-3-319-27030-2 (eBook)
DOI 10.1007/978-3-319-27030-2

Library of Congress Control Number: 2015955374

Springer Cham Heidelberg New York Dordrecht London
© Springer International Publishing Switzerland 2015

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.

Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media
(www.springer.com)

Preface

This book includes extended and revised versions of a set of selected papers from WEBIST 2014 (the 10th International Conference on Web Information Systems and Technologies), held in Barcelona, Spain, in 2014, organized and sponsored by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC). The conference was technically sponsored by the European Research Center for Information System (ERCIS).

The purpose of the WEBIST series of conferences is to bring together researchers, engineers, and practitioners interested in technological advances and business applications of Web-based information systems. WEBIST had five main topic areas, covering different aspects of Web Information Systems, including “Internet Technology,” “Web Interfaces and Applications,” “Society, e-Business, e-Government,” “Web Intelligence,” and “Mobile Information Systems.”

The conference was also complemented by one special session, namely, the Special Session on Business Apps – BA 2014 (chaired by Tim A. Majchrzak).

WEBIST 2014 received 153 paper submissions from 49 countries on all continents. A double-blind review process was enforced, with the help of 214 experts from the International Program Committee; each of them specialized in one of the main conference topic areas. After reviewing, 23 papers were selected to be published and presented as full papers and 41 additional papers, describing work-in-progress, as short papers. Furthermore, 35 papers were presented as posters. The full-paper acceptance ratio was 15 %, and the total oral paper acceptance ratio was 42 %.

The papers included in this book were selected from those with the best reviews taking also into account the quality of their presentation at the conference, assessed by session chairs. Therefore, we hope that you find these papers interesting, and we trust they may represent a helpful reference for all those who need to address any of the research aforementioned areas.

We wish to thank all those who supported and helped to organize the conference. On behalf of the conference Organizing Committee, we would like to thank the authors, whose work mostly contributed to a very successful conference and to the members of the Program Committee, whose expertise and diligence were instrumental to ensure the quality of final contributions. We also wish to thank all the members of the Organizing Committee whose work and commitment was invaluable. Last but not least, we would like to thank Springer for their collaboration in getting this book to print.

April 2015

Valérie Monfort
Karl-Heinz Krempels

Organization

Conference Chair

Valérie Monfort

Université de Paris1 Panthéon Sorbonne, France

Program Chair

Karl-Heinz Krempels

RWTH Aachen University, Germany

Organizing Committee

Marina Carvalho	INSTICC, Portugal
Helder Coelhas	INSTICC, Portugal
Bruno Encarnação	INSTICC, Portugal
Ana Guerreiro	INSTICC, Portugal
André Lista	INSTICC, Portugal
Andreia Moita	INSTICC, Portugal
Carla Mota	INSTICC, Portugal
Raquel Pedrosa	INSTICC, Portugal
Vitor Pedrosa	INSTICC, Portugal
Cláudia Pinto	INSTICC, Portugal
Susana Ribeiro	INSTICC, Portugal
Sara Santiago	INSTICC, Portugal
Fábio Santos	INSTICC, Portugal
Mara Silva	INSTICC, Portugal
José Varela	INSTICC, Portugal
Pedro Varela	INSTICC, Portugal

Program Committee

Jose Luis Herrero Agustín	University of Extremadura, Spain
Mugurel Ionut Andreica	Polytechnic University of Bucharest, Romania
Guglielmo de Angelis	CNR – IASI, Italy
Margherita Antona	Foundation for Research and Technology – Hellas (FORTH), Greece
Valeria De Antonellis	University of Brescia, Italy
Liliana Ardissono	Università di Torino, Italy
Giuliano Armano	University of Cagliari, Italy
Ismailcem Budak Arpinar	University of Georgia, USA
Elarbi Badidi	United Arab Emirates University, UAE
Andrea Ballatore	University College Dublin, Ireland

David Bell	Brunel University, UK
Orlando Belo	University of Minho, Portugal
Werner Beuschel	CRADL Lab, Germany
Christoph Bussler	VoxeoLabs, Inc., USA
Maria Claudia Buzzi	CNR, Italy
Elena Calude	Massey University, Institute of Natural and Mathematical Sciences, New Zealand
Pasquina Campanella	University of Bari Aldo Moro, Italy
Cinzia Cappiello	Politecnico di Milano, Italy
Sven Casteleyn	Universitat Jaume I, Spain
Federica Cena	University of Turin, Italy
Weiqin Chen	University of Bergen, Norway
Dickson Chiu	Dickson Computer Systems, Hong Kong
Chin-Wan Chung	Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of
Christophe Claramunt	Naval Academy Research Institute, France
Mihaela Cocea	University of Portsmouth, UK
Martine De Cock	Ghent University, Belgium
Christine Collet	Grenoble Institute of Technology, France
Marco Comuzzi	City University London, UK
Isabelle Comyn-Wattiau	Cnam and Essec, France
Anna Corazza	University of Naples Federico II, Italy
Daniel Cunliffe	University of South Wales, UK
Florian Daniel	University of Trento, Italy
Mats Daniels	Uppsala University, Sweden
Mark M. Davydov	Independent Consultant, USA
Steven Demurjian	University of Connecticut, USA
Enrico Denti	Alma Mater Studiorum – Università di Bologna, Italy
Stefan Dessloch	Kaiserslautern University of Technology, Germany
Oscar Díaz	University of Basque Country, Spain
Josep Domingo-Ferrer	Universitat Rovira i Virgili, Spain
Atilla Elci	Aksaray University, Turkey
Vadim Ermolayev	Zaporozhye National University, Ukraine
Larbi Esmahi	Athabasca University, Canada
Davide Eynard	University of Lugano, Switzerland
Alexander Felfernig	Technische Universität Graz, Austria
Anna Fensel	STI Innsbruck, University of Innsbruck, Austria
Miriam Fernandez	The Open University, UK
Joao Carlos Amaro Ferreira	ISEL, Portugal
Josep-Lluis Ferrer-Gomila	Balearic Islands University, Spain
Karla Donato Fook	IFMA – Instituto Federal de Educação Ciência e Tecnologia do Maranhão, Brazil
Geoffrey Charles Fox	Indiana University, USA
Pasi Fräntti	Speech and Image Processing Unit, University of Eastern Finland, Finland
Britta Fuchs	FH Aachen, Germany

Giovanni Fulantelli	Italian National Research Council, Italy
Ombretta Gaggi	Università di Padova, Italy
John Garofalakis	University of Patras, Greece
Panagiotis Germanakos	University of Cyprus, Cyprus
Massimiliano Giacomin	Università degli Studi di Brescia, Italy
José Antonio Gil	Universitat Politècnica de València, Spain
Anna Goy	University of Turin, Italy
Thomas Greene	MIT, USA
Ratvinder Grewal	Laurentian University, Canada
Begoña Gros	University of Barcelona, Spain
William Grosky	University of Michigan – Dearborn, USA
Angela Guercio	Kent State University, USA
Francesco Guerra	University of Modena and Reggio Emilia, Italy
Miguel Guinaliu	Universidad de Zaragoza, Spain
Shanmugasundaram Hariharan	TRP Engineering College, India
Ioannis Hatzilygeroudis	University of Patras, Greece
Stylianios Hatzipanagos	King's College London, UK
A. Henten	Aalborg University, Denmark
Emilio Insfran	Universitat Politècnica de València, Spain
Ivan Ivanov	SUNY Empire State College, USA
Kai Jakobs	RWTH Aachen University, Germany
Dietmar Jannach	Technical University of Dortmund, Germany
Monique Janneck	Lübeck University of Applied Sciences, Germany
Ivan Jelinek	Czech Technical University in Prague, Czech Republic
Yuh-Jzer Joung	National Taiwan University, Taiwan
Carlos Juiz	Universitat de les Illes Balears, Spain
Katerina Kabassi	TEI of the Ionian Islands, Greece
Georgia Kapitsaki	University of Cyprus, Cyprus
George Karabatis	UMBC, USA
Sokratis Katsikas	University of Piraeus, Greece
Natalya Keberle	Zaporozhye National University, Ukraine
Matthias Klusch	Deutsches Forschungszentrum für Künstliche Intelligenz, Germany
In-Young Ko	Korea Advanced Institute of Science and Technology, Republic of Korea
Waldemar W. Koczcodaj	Laurentian University, Canada
Hiroshi Koide	Kyushu Institute of Technology, Japan
Fotis Kokkoras	TEI of Thessaly, Greece
Agnes Koschmider	KIT, Germany
Karl-Heinz Krempels	RWTH Aachen University, Germany
Tsvi Kuflik	The University of Haifa, Israel
Peep Kungas	University of Tartu, Estonia
Daniel Lemire	TELUQ, Canada
Stefania Leone	ETH Zürich, USA
Kin Fun Li	University of Victoria, Canada

Weigang Li	University of Brasilia, Brazil
Xitong Li	MIT Sloan School of Management, USA
Dongxi Liu	CSIRO, Australia
Xiaozhong Liu	Indiana University, USA
Xumin Liu	Rochester Institute of Technology, USA
Ying Liu	Cardiff University, UK
Leszek Maciaszek	Wroclaw University of Economics, Poland and Macquarie University, Sydney, Australia
Cristiano Maciel	Universidade Federal de Mato Grosso, Brazil
Michael Mackay	Liverpool John Moores University, UK
Tim A. Majchrzak	University of Münster, Germany
Dwight Makaroff	University of Saskatchewan, Canada
Massimo Marchiori	University of Padua, Italy
Kazutaka Maruyama	Meisei University, Japan
Michael Melliar-Smith	University of California, USA
Tarek Melliti	University of Evry, France
Ingo Melzer	Daimler AG, Germany
Emilia Mendes	Blekinge Institute of Technology, Sweden
Panagiotis Metaxas	Wellesley College, USA
Abdelkrim Meziane	CERIST Alger, Algeria
Tommi Mikkonen	Institute of Software Systems, Tampere University of Technology, Finland
Valérie Monfort	Université de Paris1 Panthéon Sorbonne, France
Louise Moser	University of California, Santa Barbara, USA
Tomasz Muldner	Acadia University, Canada
Stavros Nikolopoulos	University of Ioannina, Greece
Vit Novacek	Digital Enterprise Research Institute, Nuig, Ireland
Jeff Z. Pan	University of Aberdeen, UK
Laura Papaleo	Province of Genova, Italy
Kyparisia Papanikolaou	ASPETE, Greece
Marcin Paprzycki	Polish Academy of Sciences, Poland
Eric Pardede	La Trobe University, Australia
Kalpdrum Passi	Laurentian University, Canada
Viviana Patti	University of Turin, Italy
David Paul	The University of Newcastle, Australia
Toon De Pessemier	Ghent University – iMinds, Belgium
Alfonso Pierantonio	University of L’Aquila, Italy
Luis Ferreira Pires	University of Twente, The Netherlands
Pierluigi Plebani	Politecnico di Milano, Italy
Jim Prentzas	Democritus University of Thrace, Greece
Birgit Pröll	Johannes Kepler University Linz, Austria
Dana Al Qudah	University of Warwick, UK
Werner Retschitzegger	Johannes Kepler University, Austria
Thomas Risse	L3S Research Center, Germany
Thomas Ritz	FH Aachen, Germany
Davide Rossi	University of Bologna, Italy

Gustavo Rossi	Lifia, Argentina
Davide Di Ruscio	University of L'Aquila, Italy
Maytham Safar	Kuwait University, Kuwait
Aziz Salah	Université du Québec à Montréal, Canada
Yacine Sam	University Tours, France
Comai Sara	Politecnico di Milano, Italy
Anthony Savidis	Institute of Computer Science, FORTH, Greece
Bernhard Schandl	Gnowsis.com, Austria
Claudio Schifanella	Università degli Studi di Torino, Italy
Harald Schöning	Software AG, Germany
Hamida Seba	University Lyon 1, France
Jochen Seitz	Technische Universität Ilmenau, Germany
Marianna Sigala	University of the Aegean, Greece
Marten van Sinderen	University of Twente, The Netherlands
Richard Soley	Object Management Group, Inc., USA
Anna Stavrianou	Xerox Research Centre Europe, France
Nenad Stojanovic	FZI at the University of Karlsruhe, Germany
Hussein Suleman	University of Cape Town, South Africa
Christoph Terweltp	RWTH Aachen University, Germany
Dirk Thissen	RWTH Aachen University, Germany
Thanassis Tiropanis	University of Southampton, UK
Giovanni Toffetti	IBM Research Lab Haifa, Israel
Riccardo Torlone	Università Roma Tre, Italy
Guy Tremblay	Université du Quebec a Montreal, Canada
Th. Tsatsos	Department of Informatics, Aristotle University of Thessaloniki, Greece
George Tsihrintzis	University of Piraeus, Greece
Athina Vakali	Aristotle University, Greece
Geert Vanderhulst	Alcatel-Lucent Bell Labs, Belgium
Jari Veijalainen	University of Jyvaskyla, Finland
Maria Esther Vidal	Universidad Simon Bolivar, Venezuela
Maria Virvou	University of Piraeus, Greece
Petri Vuorimaa	Aalto University, Finland
Mohd Helmy Abd Wahab	Universiti Tun Hussein Onn Malaysia, Malaysia
Fan Wang	Microsoft, USA
Jason Whalley	Strathclyde University, UK
Bebo White	Stanford University, USA
Maarten Wijnants	Hasselt University, Belgium
Manuel Wimmer	Technische Universität Wien, Austria
Marco Winckler	University Paul Sabatier (Toulouse 3), France
Viacheslav Wolfengagen	Institute JurInfoR, Russian Federation
Bin Xu	Tsinghua University, China
Guandong Xu	University of Technology Sydney, Australia
Amal Zouaq	Royal Military College of Canada, Canada

Additional Reviewers

Alberto De La Rosa Algarin	University of Connecticut, USA
Markus C. Beutel	RWTH Aachen University, Germany
Matteo Ciman	University of Padua, Italy
José Cordeiro	Polytechnic Institute of Setúbal/INSTICC, Portugal
Javier Espinosa	LAFMIA Lab, France
Golnoosh Farnadi	Ghent University, The Netherlands
Sevket Gökay	RWTH Aachen University, Germany
Beatriz Gomez	University of the Balearic Islands, Spain
Nuno Pina Gonçalves	EST-Setúbal/IPS, Portugal
Wolfgang Kluth	RWTH Aachen University, Germany
Fangfang Li	AAI, Australia
José António Sena Pereira	IPS – ESTSetúbal, Portugal
Laura Po	University of Modena and Reggio Emilia, Italy
Michael Rogger	STI, Austria
Christian Samsel	RWTH Aachen University, Germany
Alexander Semenov	University of Jyvaskyla, NRU ITMO, Finland
Xin Wang	University of Southampton, UK
Stefan Wueller	RWTH Aachen, Germany

Invited Speakers

Steven Willmott	3scale, Spain
Fabien Gandon	INRIA, France
Andreas Pfeiffer	Hubject GmbH - joint venture of BMW Group, Bosch, Daimler, EnBW, RWE & Siemens, Germany
Zakaria Maamar	Zayed University, UAE

Contents

Invited Papers

The Three ‘W’ of the World Wide Web Call for the Three ‘M’ of a Massively Multidisciplinary Methodology	3
<i>Fabien Gandon</i>	
Enterprise 2.0: Research Challenges and Opportunities	16
<i>Zakaria Maamar, Noura Faci, Ejub Kajan, Khouloud Boukadi, Sherif Sakr, Mohamed Boukhebouze, Soraya Kouadri Mostéfaoui, Vanilson Burégio, Fadwa Yahya, Valérie Monfort, and Romain Hennion</i>	

Internet Technology

Multitier Debugging of Web Applications	33
<i>Manuel Serrano</i>	
Securing a Loosely-Coupled Web-Based eLearning Ecosystem Combining Open Standards	48
<i>Jean-Noël Colin and Hoang Minh Tien</i>	
Permutation Based XML Compression.	63
<i>Tomasz Miłdner, Jan Krzysztof Miziołek, and Tyler Corbin</i>	
Leveraging Efficient XML Interchange (EXI) for Filter-Enabled Data Dissemination in Embedded Networks	79
<i>Sebastian Käbisch and Richard Kuntschke</i>	
Semantic Matching-Based Selection and QoS-Aware Classification of Web Services	96
<i>Salem Chakhar, Alessio Ishizaka, and Ashraf Labib</i>	
A Social Semantic Approach to Adaptive Query Expansion	113
<i>Claudio Biancalana, Fabio Gasparetti, Alessandro Micarelli, and Giuseppe Sansonetti</i>	
A Comparative Survey of Cloud Identity Management-Models	128
<i>Bernd Zwattendorfer, Thomas Zefferer, and Klaus Stranacher</i>	
Scenario-Based Design and Validation of REST Web Service Compositions	145
<i>Irum Rauf, Faezeh Siavashi, Dragos Truscan, and Ivan Porres</i>	

Web Interfaces and Applications

- A Client-Side Approach to Improving One-Handed Web Surfing
on a Smartphone 163
Karsten Seipp and Kate Devlin

- Contextinator: Addressing Information Fragmentation with a Web-Based
Project Manager 179
Benjamin V. Hanrahan, Ankit Ahuja, and Manuel A. Pérez-Quiñones

Society, e-Business and e-Government

- Integrating the Technology Acceptance Model and Satisfaction
to Understand Drivers of Online Travel Booking Behavior 197
Maria Madlberger

- Geo-Spatial Trend Detection Through Twitter Data Feed Mining 212
Maarten Wijnants, Adam Blazejczak, Peter Quax, and Wim Lamotte

Web Intelligence

- The GENIE System: Classifying Documents by Combining
Mixed-Techniques 231
*Angel L. Garrido, Maria G. Buey, Sandra Escudero, Alvaro Peiro,
Sergio Ilarri, and Eduardo Mena*

- Comparing LDA and LSA Topic Models for Content-Based Movie
Recommendation Systems 247
Sonia Bergamaschi and Laura Po

- Generating Product Feature Hierarchy from Product Reviews 264
Nan Tian, Yue Xu, Yuefeng Li, Ahmad Abdel-Hafez, and Audun Josang

- Automatic Web Page Classification Using Visual Content for Subjective
and Functional Variables 279
Nuno Goncalves and Antonio Videira

- Rocchio Algorithm to Enhance Semantically Collaborative Filtering 295
Sonia Ben Ticha, Azim Roussanaly, Anne Boyer, and Khaled Bsaïes

Mobile Information Systems

- Cascading Information for Ubiquitous Mobility Assistance 315
*Christian Samsel, Shirley Beul-Leusmann, Maximilian Wiederhold,
Karl-Heinz Krempels, Martina Ziefle, and Eva-Maria Jakobs*

Measuring Energy Consumption of Cross-Platform Frameworks for Mobile Applications	331
<i>Matteo Ciman and Ombretta Gaggi</i>	
Process-Driven Data Collection with Smart Mobile Devices	347
<i>Johannes Schobel, Marc Schickler, Rüdiger Pryss, and Manfred Reichert</i>	
An Engine Enabling Location-Based Mobile Augmented Reality Applications	363
<i>Marc Schickler, Rüdiger Pryss, Johannes Schobel, and Manfred Reichert</i>	
Author Index	379