Lecture Notes
in Business Information Processing 1

Editorial Board

Wil van der Aalst
Eindhoven Technical University, The Netherlands

John Mylopoulos
University of Trento, Italy

Norman M. Sadeh
Carnegie Mellon University, Pittsburgh, PA, USA

Michael J. Shaw
University of Illinois, Urbana-Champaign, IL, USA

Clemens Szyperski
Microsoft Research, Redmond, WA, USA

Joaquim Filipe
José Cordeiro
Vitor Pedrosa (Eds.)

Web Information Systems and Technologies

International Conferences,
WEBIST 2005 and WEBIST 2006
Revised Selected Papers

Volume Editors

Joaquim Filipe
José Cordeiro
Polytechnic Institute of Setúbal
School of Technology, Dept. of Informatics and Systems
Rua do Vale de Chaves - Estefanilha, 2910-761 Setúbal, Portugal
E-mail: {j.filipe,jcordeiro}@est.ips.pt

Vitor Pedrosa
INSTICC
Rua D. Manuel I, 27A 2° Esq., 2910-595 Setúbal, Portugal
vitor@insticc.org

Library of Congress Control Number: 2007932801

ACM Computing Classification (1998): J.1, H.4, H.3

ISSN 1865-1348
ISBN-10 3-540-74062-7 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-74062-9 Springer Berlin Heidelberg New York

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.

Springer is a part of Springer Science+Business Media

springer.com

© Springer-Verlag Berlin Heidelberg 2007
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12103317 45/3180 5 4 3 2 1 0

Preface

This book contains the best papers from the first two instances of the International Conference on Web Information Systems and Technologies (WEBIST 2005 and 2006), organized by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC) in collaboration with the OMG (Object Management Group), held in Miami (USA) and Setúbal (Portugal) respectively.

The purpose of WEBIST is to bring together researchers, engineers and practitioners interested in the technological advances and business applications of web-based information systems. It has four main topic areas, covering different aspects of Web Information Systems, including Internet Technology, Web Interfaces and Applications, Society, e-Business, e-Government and e-Learning.

WEBIST received submissions from more than 40 countries in all continents. We are happy to note that from 110 submissions in 2005 WEBIST grew to 218 paper submissions in 2006, an increase of practically 100%. After a double-blind review process, with the help of more than 120 experts from the international program committee, and also after presentation at the conference, 25 papers were finally selected to be published and presented in this book.

The organization of these conferences required the dedicated effort of many people. Firstly, we must thank the authors, whose research and development efforts are recorded here. Secondly, we thank the members of the program committee and the additional reviewers for their diligence and expert reviewing. Thirdly, we congratulate the INSTICC organizing team for their excellent work. Last but not least, we thank the invited speakers for their invaluable contribution and for taking the time to synthesize and prepare their talks.

We are certain that a new book will present the successful results of next year's conference: the 3rd WEBIST, to be held in Barcelona (Spain), in March 2007.

June 2006

Joaquim Filipe
José Cordeiro
Vitor Pedrosa

Conference Committee

Conference Chair

Joaquim Filipe, Polytechnic Institute of Setúbal / INSTICC, Portugal

Program Chair

José Cordeiro, Polytechnic Institute of Setúbal / INSTICC, Portugal

Organizing Committee

Marina Carvalho, INSTICC, Portugal
Hélder Coelhas, INSTICC, Portugal
Bruno Encarnação, INSTICC, Portugal
Vitor Pedrosa, INSTICC, Portugal
Mónica Saramago, INSTICC, Portugal

Program Committee

Adel Abunawass, U.S.A.
K. Al-Begain, U.K.
Margherita Antona, Greece
Valeria de Antonellis, Italy
Liliana Ardissono, Italy
Azita Bahrami, U.S.A.
Cristina Baroglio, Italy
Zohra Bellahsene, France
Orlando Belo, Portugal
Bettina Berendt, Germany
Sonia Bergamaschi, Italy
Bharat Bhargava, U.S.A.
Christos Bouras, Greece
Amy Bruckman, U.S.A.
Sonja Buchegger, Switzerland
Maria Claudia Buzzi, Italy
Sergio de Cesare, U.K.
Ku-Ming Chao, U.K.
Weiqin Chen, Norway
Christophe Claramunt, France
Mark Claypool, U.S.A.
Andrea Clematis, Italy
Nigel Collier, Japan
Bin Cong, U.S.A.
Michel Crampes, France
Alexandra Cristea, The Netherlands
Daniel Cunliffe, U.K.
John Philip Cuthell, U.K.
Alfredo Cuzzocrea, Italy
Tom Daniels, U.S.A.
Alessandro D'Atri, Italy
Danco Davcev, Macedonia
Steven Demurjian, U.S.A.
Vladan Devedzic, Serbia and Montenegro
Darina Dicheva, U.S.A.
Ying Ding, Austria
Josep Domingo-Ferrer, Spain
Chyi-Ren Dow, Taiwan
Schahram Dustdar, Austria
Barry Eaglestone, U.K.
Max J. Egenhofer, U.S.A.
Filomena Ferrucci, Italy
Joseph Fong, Hong Kong, China
Akira Fukuda, Japan
Giovanni Fulantelli, Italy
Martin Gaedke, Germany

Nicola Gessa, Italy
Anna Grabowska, Poland
Begoña Gros, Spain
Angela Guercio, U.S.A.
Francesco Guerra, Italy
Aaron Gulliver, Canada
Pål Halvorsen, Norway
Abdelkader Hameurlain, France
Nicola Henze, Germany
Kathleen Hornsby, U.S.A.
Wen Shyong Hsieh, Taiwan
Brian Hudson, U.K.
Tomoko Itao, Japan
Alexander D. Ivannikov, Russia
Kai Jakobs, Germany
Anne James, U.K.
Narayana Jayaram, U.K.
Julius Jillbert, Indonesia
Susan Jones, U.K.
Joemon Jose, U.K.
Jussi Kangasharju, Germany
Roland Kaschek, New Zealand
Ali El Kateeb, U.S.A.
Sokratis Katsikas, Greece
Piet Kommers, The Netherlands
Mamadou Tadiou Kone, Canada
Tsvi Kuflik, Israel
Andy Lapham, U.K.
Tayeb Lemlouma, France
Weigang Li, Brazil
Pascal Lorenz, France
Heiko Ludwig, U.S.A.
Anna Maddalena, Italy
Brent Martin, New Zealand
Andreas Mauthe, U.K.
Johannes Mayer, Germany
Carmel McNaught, Hong Kong, China
Brahim Medjahed, U.S.A.
Elisabeth Metais, France
Alessandro Micarelli, Italy
Kia Ng, U.K.
David Nichols, New Zealand
Christof van Nimwegen, The Netherlands
Andreas Ninck, Switzerland
Vladimir Oleshchuk, Norway
Vasile Palade, U.K.
Jun Pang, France
Chang-Shyh Peng, U.S.A.
Guenther Pernul, Germany
Josef Pieprzyk, Australia
Luis Ferreira Pires, The Netherlands
Bhanu Prasad, U.S.A.
Kimmo Raatikainen, Finland
T. Ramayah, Malaysia
Werner Retschitzegger, Austria
Norman Revell, U.K.
Marco Roccetti, Italy
Dumitru Roman, Austria
Danguole Rutkauskiene, Lithuania
Abdulmotaleb El Saddik, Canada
Maytham Safar, Kuwait
Eduardo Sanchez, Spain
Kamil Sarac, U.S.A.
Abdolhossein Sarrafzadeh, New Zealand
Anthony Savidis, Greece
Vittorio Scarano, Italy
Alexander Schatten, Austria
Alexander Schill, Germany
Heiko Schuldt, Switzerland
Jochen Seitz, Germany
Tony Shan, U.S.A.
Charles A. Shoniregun, U.K.
Miguel-Angel Sicilia, Spain
Miguel Soriano, Spain
J. Michael Spector, U.S.A.
Martin Sperka, Slovakia
Carlo Strapparava, Italy
Eleni Stroulia, Canada
Aixin Sun, Singapore
Junichi Suzuki, U.S.A.
Makoto Takizawa, Japan
Arun-Kumar Tripathi, Germany
Andre Trudel, Canada
Athanasios Vasilakos, Greece
Jari Veijalainen, Finland
Maria Esther Vidal, Venezuela
Maurizio Vincini, Italy
Michael Welzl, Austria
Viacheslav Wolfengagen, Russia
Sung-Ming Yen, Taiwan
Carlo Zaniolo, U.S.A.
Jianying Zhou, Singapore
Weihua Zhuang, Canada

Invited Speakers

Mark M. Davydov, U.S.A.
Bebo White, U.S.A.
Carmel McNaught, Hong Kong, China
Piet Kommers, The Netherlands
Hermann Maurer, Austria

Table of Contents

Invited Papers

The Implications of Web 2.0 on Web Information Systems 3
Bebo White

Developing Criteria for Successful Learning Repositories 8
Carmel McNaught

The Growing Importance of e-Communities on the Web 19
Josef Kolbitsch and Hermann Maurer

Part I: Internet Technology

Design, Implementation and Testing of Mobile Agent Protection Mechanism for Manets 41
Khaled E.A. Negm

An Automatic Generation Method of Differential XSLT Stylesheet from Two XML Documents 53
Takeshi Kato, Hidetoshi Ueno, and Norihiro Ishikawa

Mining Architectural Patterns in Specific Contexts and Its Application to e-Finance 69
Feras T. Dabous and Fethi A. Rabhi

Knowledge Management for Adapted Information Retrieval in Ubiquitous Environments 84
Angela Carrillo-Ramos, Marlène Villanova-Oliver, Jérome Gensel, and Hervé Martin

Ontology-Based Integration of XML Data: Schematic Marks as a Bridge Between Syntax and Semantic Level 97
Christophe Cruz and Christophe Nicolle

Extending an XML Mediator with Text Query 111
Clément Jamard and Georges Gardarin

Instances Navigation for Querying Integrated Data fromWeb-Sites 125
Domenico Beneventano, Sonia Bergamaschi, Stefania Bruschi, Francesco Guerra, Mirko Orsini, and Maurizio Vincini

Web Federates – Towards A Middleware for Highly Scalable Peer-to-Peer Services 138
Ingo Scholtes and Peter Sturm

Part II: Web Interfaces and Applications

Modeling Preferences Online 153
Maria Cleci Martins and Rosina Weber

Efficient Information Access from Constraint Wireless Terminals: Exploiting Personalization and Location-Based Services 166
Hans Weghorn

An Algorithm to Use Feedback on Viewed Documents to Improve Web Query: Enabling Naïve Searchers to Search the Web Smartly 177
Sunanda Patro, Vishv Malhotra, and David Johnson

Web User Interaction: Comparison of Declarative Approaches 190
Mikko Pohja, Mikko Honkala, Miemo Penttinen, Petri Vuorimaa, and Panu Ervamaa

Enabling Vocal Interaction in a Web Portal Environment 204
Federico Bergenti, Lorenzo Lazzari, Marco Mari, and Agostino Poggi

M-FIRE: A Metaphor-Based Framework for Information Representation and Exploration 214
Matteo Golfarelli, Andrea Proli, and Stefano Rizzi

Towards a Data Quality Model for Web Portals: Research in Progress 228
Angélica Caro, Coral Calero, Ismael Caballero, and Mario Piattini

Domain Ontologies: A Database-Oriented Analysis 238
Stéphane Jean, Guy Pierra, and Yamine Ait-Ameur

Real-Time Discovery of Currently and Heavily Viewed Web Pages 255
Kazutaka Maruyama, Kiyotaka Takasuka, Yuta Yagihara, Satoshi Machida, Yuichiro Shirai, and Minoru Terada

Metamodeling the Requirements of Web Systems 267
María José Escalona and Nora Koch

Part III: Society, e-Business and e-Government

Efficient Management of Multi-version XML Documents for e-Government Applications 283
Federica Mandreoli, Riccardo Martoglia, Fabio Grandi, and Maria Rita Scalas

E-namoSupport: A Web-Based Helpdesk Support Environment for Senior Citizens 295
Wei Zhou, Takami Yasuda, and Shigeki Yokoi

Analysis of Weblog Link Structure – A Community Perspective 307
Ying Zhou and Joseph Davis

Part IV: e-Learning

The Autotutor 3 Architecture: A Software Architecture for an Expandable, High-Availability ITS 323
Patrick Chipman, Andrew Olney, and Arthur C. Graesser

Redesigning Introductory Economics: Techno-Collaborative Learning 333
Maha Bali, Aziza El-Lozy, and Herb Thompson

Teaching Database Analysis and Design in a Web-Based Constructivist Learning Environment 343
Thomas M. Connolly and Carolyn E. Begg

Is the Jury Still Out on "Blended Learning"?: Use of a Web-Based Collaborative Teaching Platform 355
Audrey Jennings, Alan Mullally, Catherine O'Connor, Dudley Dolan, Adrian Parkinson, and James A. Redmond

A System for Automatic Evaluation of Programs for Correctness and Performance 367
Amit Kumar Mandal, Chittaranjan Mandal, and Chris Reade

Usability and Instructional Experience in a Web-Based Remote Internetworking Laboratory Environment 381
Shyamala Sivakumar and William Robertson

The VTIE Collaborative Writing Environment 392
Bart Busschots, Luke Raeside, John G. Keating, and Shelagh Waddington

Participation in International Virtual Learning Communities: A Social Learning Perspective 402
Beverly Trayner, John D. Smith, and Marco Bettoni

New Electronic Multi-media Assessment System 414
Simon Chester, Giles Tewkesbury, David Sanders, and Peter Salter

Author Index 421