

Boualem Benatallah Fabio Casati  
Dimitrios Georgakopoulos Claudio Bartolini  
Wasim Sadiq Claude Godart (Eds.)

LNCS 4831

# Web Information Systems Engineering – WISE 2007

8th International Conference on  
Web Information Systems Engineering  
Nancy, France, December 2007, Proceedings



Springer

Boualem Benatallah Fabio Casati  
Dimitrios Georgakopoulos  
Claudio Bartolini Wasim Sadiq  
Claude Godart (Eds.)

# Web Information Systems Engineering – WISE 2007

8th International Conference on  
Web Information Systems Engineering  
Nancy, France, December 3-7, 2007  
Proceedings



Springer

## Volume Editors

Boualem Benatallah

The University of New South Wales, Sydney, NSW 2052, Australia

E-mail: boualem@cse.unsw.edu.au

Fabio Casati

University of Trento, 38050 Trento, Italy

E-mail: casati@dit.unitn.it

Dimitrios Georgakopoulos

Telcordia, Austin Research Center, Austin, TX 78701, USA

E-mail: dimitris@research.telcordia.com

Claudio Bartolini

HP Laboratories, Palo Alto, CA 94304, USA

E-mail: claudio.bartolini@hp.com

Wasim Sadiq

SAP Australia, Brisbane, QLD 4000, Australia

E-mail: wasim.sadiq@sap.com

Claude Godart

LORIA-ECOO, 54506 Vandœuvre-lès-Nancy, France

E-mail: claud.godart@loria.fr

Library of Congress Control Number: 2007939800

CR Subject Classification (1998): H.4, H.2, H.3, H.5, K.4.4, C.2.4, I.2

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

ISSN 0302-9743

ISBN-10 3-540-76992-7 Springer Berlin Heidelberg New York

ISBN-13 978-3-540-76992-7 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: 12197309 06/3180 5 4 3 2 1 0

*Commenced Publication in 1973*

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

## Editorial Board

David Hutchison

*Lancaster University, UK*

Takeo Kanade

*Carnegie Mellon University, Pittsburgh, PA, USA*

Josef Kittler

*University of Surrey, Guildford, UK*

Jon M. Kleinberg

*Cornell University, Ithaca, NY, USA*

Friedemann Mattern

*ETH Zurich, Switzerland*

John C. Mitchell

*Stanford University, CA, USA*

Moni Naor

*Weizmann Institute of Science, Rehovot, Israel*

Oscar Nierstrasz

*University of Bern, Switzerland*

C. Pandu Rangan

*Indian Institute of Technology, Madras, India*

Bernhard Steffen

*University of Dortmund, Germany*

Madhu Sudan

*Massachusetts Institute of Technology, MA, USA*

Demetri Terzopoulos

*University of California, Los Angeles, CA, USA*

Doug Tygar

*University of California, Berkeley, CA, USA*

Moshe Y. Vardi

*Rice University, Houston, TX, USA*

Gerhard Weikum

*Max-Planck Institute of Computer Science, Saarbruecken, Germany*

# Lecture Notes in Computer Science

Sublibrary 3: Information Systems and Application, incl. Internet/Web and HCI

For information about Vols. 1– 4480  
please contact your bookseller or Springer

Vol. 4877: C. Thanos, F. Borri, L. Candela (Eds.), *Digital Libraries: Research and Development*. XII, 350 pages. 2007.

Vol. 4871: M. Cavazza, S. Donikian (Eds.), *Virtual Storytelling*. XIII, 219 pages. 2007.

Vol. 4857: J.M. Ware, G.E. Taylor (Eds.), *Web and Wireless Geographical Information Systems*. XI, 293 pages. 2007.

Vol. 4853: F. Fonseca, M.A. Rodríguez, S. Levashkin (Eds.), *GeoSpatial Semantics*. X, 289 pages. 2007.

Vol. 4836: H. Ichikawa, W.-D. Cho, I. Satoh, H.Y. Youn (Eds.), *Ubiquitous Computing Systems*. XIII, 307 pages. 2007.

Vol. 4832: M. Weske, M.-S. Hacid, C. Godart (Eds.), *Web Information Systems Engineering – WISE 2007 Workshops*. XV, 518 pages. 2007.

Vol. 4831: B. Benatallah, F. Casati, D. Georgakopoulos, C. Bartolini, W. Sadiq, C. Godart (Eds.), *Web Information Systems Engineering – WISE 2007*. XVI, 675 pages. 2007.

Vol. 4825: K. Aberer, K.-S. Choi, N. Noy, D. Allemang, K.-I. Lee, L. Nixon, J. Golbeck, P. Mika, D. Maynard, R. Mizoguchi, G. Schreiber, P. Cudré-Mauroux (Eds.), *The Semantic Web*. XXVII, 973 pages. 2007.

Vol. 4816: B. Falcidieno, M. Spagnuolo, Y. Avrithis, I. Kompatsiaris, P. Buitelaar (Eds.), *Semantic Multimedia*. XII, 306 pages. 2007.

Vol. 4813: I. Oakley, S. Brewster (Eds.), *Haptic and Audio Interaction Design*. XIV, 145 pages. 2007.

Vol. 4806: R. Meersman, Z. Tari, P. Herrero (Eds.), *On the Move to Meaningful Internet Systems 2007: OTM 2007 Workshops*, Part II. XXXIV, 611 pages. 2007.

Vol. 4805: R. Meersman, Z. Tari, P. Herrero (Eds.), *On the Move to Meaningful Internet Systems 2007: OTM 2007 Workshops*, Part I. XXXIV, 757 pages. 2007.

Vol. 4804: R. Meersman, Z. Tari (Eds.), *On the Move to Meaningful Internet Systems 2007: CoopIS, DOA, ODBASE, GADA, and IS*, Part II. XXIX, 683 pages. 2007.

Vol. 4803: R. Meersman, Z. Tari (Eds.), *On the Move to Meaningful Internet Systems 2007: CoopIS, DOA, ODBASE, GADA, and IS*, Part I. XXIX, 1173 pages. 2007.

Vol. 4802: J.-L. Hainaut, E.A. Rundensteiner, M. Kirchberg, M. Bertolotto, M. Brochhausen, Y.-P.P. Chen, S.S.-S. Cherfi, M. Doerr, H. Han, S. Hartmann, J. Parsons, G. Poels, C. Rolland, J. Trujillo, E. Yu, E. Zimányi (Eds.), *Advances in Conceptual Modeling – Foundations and Applications*. XIX, 420 pages. 2007.

Vol. 4801: C. Parent, K.-D. Schewe, V.C. Storey, B. Thalheim (Eds.), *Conceptual Modeling – ER 2007*. XVI, 616 pages. 2007.

Vol. 4797: M. Arenas, M.I. Schwartzbach (Eds.), *Database Programming Languages*. VIII, 261 pages. 2007.

Vol. 4796: M. Lew, N. Sebe, T.S. Huang, E.M. Bakker (Eds.), *Human–Computer Interaction*. X, 157 pages. 2007.

Vol. 4794: B. Schiele, A.K. Dey, H. Gellersen, B. de Ruyter, M. Tscheligi, R. Wichert, E. Aarts, A. Buchmann (Eds.), *Ambient Intelligence*. XV, 375 pages. 2007.

Vol. 4777: S. Bhalla (Ed.), *Databases in Networked Information Systems*. X, 329 pages. 2007.

Vol. 4761: R. Obermaisser, Y. Nah, P. Puschner, F.J. Rammig (Eds.), *Software Technologies for Embedded and Ubiquitous Systems*. XIV, 563 pages. 2007.

Vol. 4747: S. Džeroski, J. Struyf (Eds.), *Knowledge Discovery in Inductive Databases*. X, 301 pages. 2007.

Vol. 4744: Y. de Kort, W. IJsselstein, C. Midden, B. Eggen, B.J. Fogg (Eds.), *Persuasive Technology*. XIV, 316 pages. 2007.

Vol. 4740: L. Ma, M. Rauterberg, R. Nakatsu (Eds.), *Entertainment Computing – ICEC 2007*. XXX, 480 pages. 2007.

Vol. 4730: C. Peters, P. Clough, F.C. Gey, J. Karlgren, B. Magnini, D.W. Oard, M. de Rijke, M. Stempfhuber (Eds.), *Evaluation of Multilingual and Multi-modal Information Retrieval*. XXIV, 998 pages. 2007.

Vol. 4723: M. R. Berthold, J. Shawe-Taylor, N. Lavrač (Eds.), *Advances in Intelligent Data Analysis VII*. XIV, 380 pages. 2007.

Vol. 4721: W. Jonker, M. Petković (Eds.), *Secure Data Management*. X, 213 pages. 2007.

Vol. 4718: J. Hightower, B. Schiele, T. Strang (Eds.), *Location- and Context-Awareness*. X, 297 pages. 2007.

Vol. 4717: J. Krumm, G.D. Abowd, A. Seneviratne, T. Strang (Eds.), *UbiComp 2007: Ubiquitous Computing*. XIX, 520 pages. 2007.

Vol. 4715: J.M. Haake, S.F. Ochoa, A. Cechich (Eds.), *Groupware: Design, Implementation, and Use*. XIII, 355 pages. 2007.

Vol. 4714: G. Alonso, P. Dadam, M. Rosemann (Eds.), *Business Process Management*. XIII, 418 pages. 2007.

Vol. 4704: D. Barbosa, A. Bonifati, Z. Bellahsene, E. Hunt, R. Unland (Eds.), *Database and XML Technologies*. X, 141 pages. 2007.

- Vol. 4690: Y. Ioannidis, B. Novikov, B. Rachev (Eds.), *Advances in Databases and Information Systems*. XIII, 377 pages. 2007.
- Vol. 4675: L. Kovács, N. Fuhr, C. Meghini (Eds.), *Research and Advanced Technology for Digital Libraries*. XVII, 585 pages. 2007.
- Vol. 4674: Y. Luo (Ed.), *Cooperative Design, Visualization, and Engineering*. XIII, 431 pages. 2007.
- Vol. 4663: C. Baranauskas, P. Palanque, J. Abascal, S.D.J. Barbosa (Eds.), *Human-Computer Interaction – INTERACT 2007, Part II*. XXXIII, 735 pages. 2007.
- Vol. 4662: C. Baranauskas, P. Palanque, J. Abascal, S.D.J. Barbosa (Eds.), *Human-Computer Interaction – INTERACT 2007, Part I*. XXXIII, 637 pages. 2007.
- Vol. 4658: T. Egokido, L. Barolli, M. Takizawa (Eds.), *Network-Based Information Systems*. XIII, 544 pages. 2007.
- Vol. 4656: M.A. Wimmer, J. Scholl, Å. Grönlund (Eds.), *Electronic Government*. XIV, 450 pages. 2007.
- Vol. 4655: G. Psaila, R. Wagner (Eds.), *E-Commerce and Web Technologies*. VII, 229 pages. 2007.
- Vol. 4654: I.-Y. Song, J. Eder, T.M. Nguyen (Eds.), *Data Warehousing and Knowledge Discovery*. XVI, 482 pages. 2007.
- Vol. 4653: R. Wagner, N. Revell, G. Pernul (Eds.), *Database and Expert Systems Applications*. XXII, 907 pages. 2007.
- Vol. 4636: G. Antoniou, U. Almann, C. Baroglio, S. Decker, N. Henze, P.-L. Patranjan, R. Tolksdorf (Eds.), *Reasoning Web*. IX, 345 pages. 2007.
- Vol. 4611: J. Indulska, J. Ma, L.T. Yang, T. Ungerer, J. Cao (Eds.), *Ubiquitous Intelligence and Computing*. XXIII, 1257 pages. 2007.
- Vol. 4607: L. Baresi, P. Fraternali, G.-J. Houben (Eds.), *Web Engineering*. XVI, 576 pages. 2007.
- Vol. 4606: A. Pras, M. van Sinderen (Eds.), *Dependable and Adaptable Networks and Services*. XIV, 149 pages. 2007.
- Vol. 4605: D. Papadias, D. Zhang, G. Kollios (Eds.), *Advances in Spatial and Temporal Databases*. X, 479 pages. 2007.
- Vol. 4602: S. Barker, G.-J. Ahn (Eds.), *Data and Applications Security XXI*. X, 291 pages. 2007.
- Vol. 4601: S. Spaccapietra, P. Atzeni, F. Fages, M.-S. Hacid, M. Kifer, J. Mylopoulos, B. Pernici, P. Shvaiko, J. Trujillo, I. Zaihrayeu (Eds.), *Journal on Data Semantics IX*. XV, 197 pages. 2007.
- Vol. 4592: Z. Kedad, N. Lammari, E. Métais, F. Meziane, Y. Rezgui (Eds.), *Natural Language Processing and Information Systems*. XIV, 442 pages. 2007.
- Vol. 4587: R. Cooper, J. Kennedy (Eds.), *Data Management*. XIII, 259 pages. 2007.
- Vol. 4577: N. Sebe, Y. Liu, Y.-t. Zhuang, T.S. Huang (Eds.), *Multimedia Content Analysis and Mining*. XIII, 513 pages. 2007.
- Vol. 4568: T. Ishida, S. R. Fussell, P. T. J. M. Vossen (Eds.), *Intercultural Collaboration*. XIII, 395 pages. 2007.
- Vol. 4566: M.J. Dainoff (Ed.), *Ergonomics and Health Aspects of Work with Computers*. XVIII, 390 pages. 2007.
- Vol. 4564: D. Schuler (Ed.), *Online Communities and Social Computing*. XVII, 520 pages. 2007.
- Vol. 4563: R. Shumaker (Ed.), *Virtual Reality*. XXII, 762 pages. 2007.
- Vol. 4561: V.G. Duffy (Ed.), *Digital Human Modeling*. XXIII, 1068 pages. 2007.
- Vol. 4560: N. Aykin (Ed.), *Usability and Internationalization, Part II*. XVIII, 576 pages. 2007.
- Vol. 4559: N. Aykin (Ed.), *Usability and Internationalization, Part I*. XVIII, 661 pages. 2007.
- Vol. 4558: M.J. Smith, G. Salvendy (Eds.), *Human Interface and the Management of Information, Part II*. XXIII, 1162 pages. 2007.
- Vol. 4557: M.J. Smith, G. Salvendy (Eds.), *Human Interface and the Management of Information, Part I*. XXII, 1030 pages. 2007.
- Vol. 4541: T. Okadome, T. Yamazaki, M. Makhtari (Eds.), *Pervasive Computing for Quality of Life Enhancement*. IX, 248 pages. 2007.
- Vol. 4537: K.C.-C. Chang, W. Wang, L. Chen, C.A. Ellis, C.-H. Hsu, A.C. Tsoi, H. Wang (Eds.), *Advances in Web and Network Technologies, and Information Management*. XXIII, 707 pages. 2007.
- Vol. 4531: J. Indulska, K. Raymond (Eds.), *Distributed Applications and Interoperable Systems*. XI, 337 pages. 2007.
- Vol. 4526: M. Malek, M. Reitenspieß, A. van Moorsel (Eds.), *Service Availability*. X, 155 pages. 2007.
- Vol. 4524: M. Marchiori, J.Z. Pan, C.d.S. Marie (Eds.), *Web Reasoning and Rule Systems*. XI, 382 pages. 2007.
- Vol. 4519: E. Franconi, M. Kifer, W. May (Eds.), *The Semantic Web: Research and Applications*. XVIII, 830 pages. 2007.
- Vol. 4518: N. Fuhr, M. Lalmas, A. Trotman (Eds.), *Comparative Evaluation of XML Information Retrieval Systems*. XII, 554 pages. 2007.
- Vol. 4508: M.-Y. Kao, X.-Y. Li (Eds.), *Algorithmic Aspects in Information and Management*. VIII, 428 pages. 2007.
- Vol. 4506: D. Zeng, I. Gotham, K. Komatsu, C. Lynch, M. Thurmond, D. Madigan, B. Lober, J. Kvach, H. Chen (Eds.), *Intelligence and Security Informatics: Bio-surveillance*. XI, 234 pages. 2007.
- Vol. 4505: G. Dong, X. Lin, W. Wang, Y. Yang, J.X. Yu (Eds.), *Advances in Data and Web Management*. XXII, 896 pages. 2007.
- Vol. 4504: J. Huang, R. Kowalczyk, Z. Maamar, D. Martin, I. Müller, S. Stoutenburg, K.P. Sycara (Eds.), *Service-Oriented Computing: Agents, Semantics, and Engineering*. X, 175 pages. 2007.
- Vol. 4500: N.A. Streitz, A.D. Kameas, I. Mavrommati (Eds.), *The Disappearing Computer*. XVIII, 304 pages. 2007.
- Vol. 4495: J. Krogstie, A. Opdahl, G. Sindre (Eds.), *Advanced Information Systems Engineering*. XVI, 606 pages. 2007.

# Preface

WISE 2007 was held in Nancy, France, during December 3–6, hosted by Nancy University and INRIA Grand-Est. The aim of this conference was to provide an international forum for researchers, professionals, and industrial practitioners to share their knowledge in the rapidly growing area of Web technologies, methodologies and applications. Previous WISE conferences were held in Hong Kong, China (2000), Kyoto, Japan (2001), Singapore (2002), Rome, Italy (2003), Brisbane, Australia (2004), New York, USA (2005), and Wuhan, China (2006).

The call for papers created a large interest. Around 200 paper submissions arrived from 41 different countries (Europe: 40%, Asia: 33%, Pacific: 10%, North America: 7%, South America: 7%, Africa: 2%). The international Program Committee selected 40 full-papers (acceptance rate of 20%) and 18 short papers (acceptance rate of 9%). As a result, the technical track of the WISE 2007 program offered 13 sessions of full-paper presentation including one industrial session and 5 sessions of short papers. The selected papers cover a wide and important variety of issues in Web information systems engineering such as querying; trust; caching and distribution; interfaces; events and information filtering; data extraction; transformation and matching; ontologies; rewriting, routing and personalization; agents and mining; quality of services and management and modelling. A few selected papers from WISE 2007 will be published in a special issue of the *World Wide Web Journal*, by Springer. In addition, \$1000 value was awarded to the authors of the paper selected for the “Yahiko Kambayashi Best Paper.” We thank all authors who submitted their papers and the Program Committee members and external reviewers for their excellent work.

Finally, WISE 2007 included two prestigious keynotes given by Eric Billingsley, eBay research and Lutz Heuser, SAP research, one panel, one preconference tutorial, and six workshops.

We would also like to acknowledge the local organization team, in particular Anne-Lise Charbonnier and François Charoy. We also thank Mohand-Said Hacid and Mathias Weske as Workshop Chairs, Manfred Hauswirth as Panel Chair, Mike Papazoglou as Tutorial Chair, Olivier Perrin, Michael Sheng and Mingjun Xiao as Publicity Chairs, Qing Li, Marek Rusinkiewicz and Yanchun Zhang for the relationship with previous events and the WISE Society, and Ustun Yildiz for his work in the editing proceedings.

We hope that the present proceedings will contain enough food for thought to push the Web towards many exciting innovations for tomorrow’s society.

September 2007

Boualem Benatallah  
Fabio Casati  
Dimitrios Georgakopoulos  
Claudio Bartolini  
Wasim Sadiq  
Claude Godart

# Organization

|                              |                                                                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Chairs               | Claude Godart, France<br>Qing Li, China                                                                                                                                                  |
| Program Chairs               | Boualem Benatallah, Australia<br>Fabio Casati, Italy<br>Dimitrios Georgakopoulos, USA                                                                                                    |
| Industrial Program Chairs    | Claudio Bartolini, USA<br>Wasim Sadiq, Australia                                                                                                                                         |
| Workshop Chairs              | Mohand-Said Hacid, France<br>Mathias Weske, Germany                                                                                                                                      |
| Tutorial Chair               | Mike Papazoglou, The Netherlands                                                                                                                                                         |
| Panel Chair                  | Manfred Hauswirth, Ireland                                                                                                                                                               |
| Publicity Chairs             | Olivier Perrin, France<br>Michael Sheng, Australia<br>Mingjun Xiao, China                                                                                                                |
| Publication Chair            | Claude Godart, France                                                                                                                                                                    |
| Wise Society Representatives | Yanchun Zhang, Australia<br>Marek Rusinkiewicz, USA                                                                                                                                      |
| Local Organization Chair     | François Charoy, France                                                                                                                                                                  |
| Local Organization Committee | Anne-Lise Charbonnier, France<br>Laurence Félicité, France<br>Nawal Guermouche, France<br>Olivier Perrin, France<br>Mohsen Rouached, France<br>Hala Skaf, France<br>Ustun Yildiz, France |

## Program Committee

|                               |                          |
|-------------------------------|--------------------------|
| Karl Aberer, Switzerland      | Rafael Alonso, USA       |
| Marco Aiello, The Netherlands | Toshiyuki Amagasa, Japan |

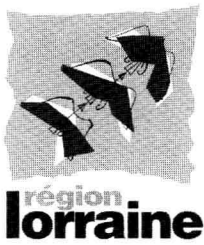
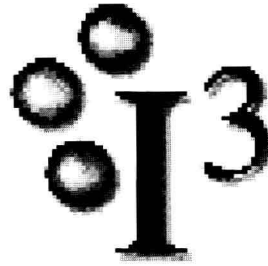
## VIII Organization

Yasuhito Asano, Japan  
Karim Baina, Morocco  
Luciano Baresi, Italy  
Ladjel Bellatreche, France  
Elisa Bertino, USA  
Athman Bouguettaya, USA  
Shawn Bowers, USA  
Alex Buchamnn, Germany  
Dave Buttler, USA  
Rajkumar Buyya, Australia  
Wojciech Cellary, Poland  
François Charoy, France  
Arbee L.P. Chen, Taiwan  
Soon Ae Chun, USA  
Andrzej Cichocki, USA  
Christine Collet, France  
Gill Dobbie, New Zealand  
Marlon Dumas, Australia  
Schahram Dustdar, Austria  
Johann Eder, Austria  
Fernand Feltz, Luxembourg  
Ling Feng, The Netherlands  
James Geller, USA  
Paul Grefen, The Netherlands  
Daniela Grigori, France  
Mohand-Said Hacid, France  
Wook-Shin Han, Korea  
Jun Han, Australia  
Christian Huemer, Austria  
Patrick C.K. Hung, Canada  
Yoshiharu Ishikawa, Japan  
George Karabatis, USA  
Hiroyuki Kitagawa, Japan  
Masaru Kitsuregawa, Japan  
Herman Lam, USA  
Jianzhong Li, China  
Xuemin Lin, Australia  
Tok Wang Ling, Singapore  
Chengfei Liu, Australia  
Peng Liu, USA  
Jianguo Lu, Canada  
Pat Martin, Canada  
Michael Maximilien, USA  
Xiaofeng Meng, China  
Paolo Misser, UK  
Mukesh Mohania, India

Nouredine Mouaddib, France  
Miyuki Nakano, Japan  
Ekawit Nantajeewarawat, Thailand  
Amedeo Napoli, France  
Anne Hee Hiong Ngu, USA  
Beng Chin Ooi, Singapore  
Mourad Ouzzani, USA  
Helen Paik, Australia  
Thimios Panagos, USA  
Zhiyong Peng, China  
Olivier Perrin, France  
Jean-Marc Petit, France  
Dimitris Plexousakis, Greece  
Rodion Podorozhny, USA  
Fethi A. Rabhi, Australia  
Thomas Risse, Germany  
Norbert Ritter, Germany  
Uwe Roehm, Australia  
Colette Rolland, France  
Keun Ho Ryu, Korea  
Shazia Sadiq, Australia  
Regis Saint-Paul, Australia  
Yucel Saygin, Turkey  
Monica Scannapieco, Italy  
Klaus-Dieter Schewe, New Zealand  
Ming-Chien Shan, USA  
Tony Shan, USA  
Michael Sheng, Australia  
Amit Sheth, USA  
Jianwen Su, USA  
Aixin Sun, Singapore  
Stefan Tai, USA  
Kian-Lee Tan, Singapore  
Samir Tata, France  
Farouk Toumani, France  
Aphrodite Tsalgatidou, Greece  
Julien Vayssiere, Australia  
Yannis Velegarakis, Italy  
Wei Wang, Australia  
Raymond Wong, Australia  
Guotong Xie, China  
Jian Yang, Australia  
Ge Yu, China  
LiangZhao Zeng, USA  
Xiaofang Zhou, Australia  
Aoying Zhou, China

## Sponsoring Institutions

Nancy-Université



emisa.org

# Table of Contents

## Session 1: Querying

|                                                                                           |    |
|-------------------------------------------------------------------------------------------|----|
| On Tree Pattern Query Rewriting Using Views .....                                         | 1  |
| <i>Junhu Wang, Jeffrey Xu Yu, and Chengfei Liu</i>                                        |    |
| Querying Capability Modeling and Construction of Deep Web<br>Sources .....                | 13 |
| <i>Liangcai Shu, Weiyi Meng, Hai He, and Clement Yu</i>                                   |    |
| Optimization of Bounded Continuous Search Queries Based on Ranking<br>Distributions ..... | 26 |
| <i>Dirk Kukulenz, Nils Hoeller, Sven Groppe, and Volker Linnemann</i>                     |    |

## Session 2: Trust

|                                                                                                             |    |
|-------------------------------------------------------------------------------------------------------------|----|
| Evaluating Rater Credibility for Reputation Assessment of Web<br>Services .....                             | 38 |
| <i>Zaki Malik and Athman Bouguettaya</i>                                                                    |    |
| An Approach to Trust Based on Social Networks .....                                                         | 50 |
| <i>Vincenza Carchiolo, Alessandro Longheu, Michele Malgeri,<br/>Giuseppe Mangioni, and Vincenzo Nicosia</i> |    |
| A New Reputation-Based Trust Management Mechanism Against False<br>Feedbacks in Peer-to-Peer Systems .....  | 62 |
| <i>Yu Jin, Zhimin Gu, Jinguang Gu, and Hongwu Zhao</i>                                                      |    |

## Session 3: Caching and Distribution

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Freshness-Aware Caching in a Cluster of J2EE Application Servers .....                          | 74 |
| <i>Uwe Röhm and Sebastian Schmidt</i>                                                           |    |
| Collaborative Cache Based on Path Scores .....                                                  | 87 |
| <i>Bernd Amann and Camelia Constantin</i>                                                       |    |
| Similarity-Based Document Distribution for Efficient Distributed<br>Information Retrieval ..... | 99 |
| <i>Sven Herschel</i>                                                                            |    |

## Session 4: Interfaces

|                                                                |     |
|----------------------------------------------------------------|-----|
| BEIRA: A Geo-semantic Clustering Method for Area Summary ..... | 111 |
| <i>Osamu Masutani and Hirotoshi Iwasaki</i>                    |     |

Building the Presentation-Tier of Rich Web Applications with Hierarchical Components ..... 123  
*Reda Kadri, Chouki Tibermachine, and Vincent Le Gloahec*

WeBrowSearch: Toward Web Browser with Autonomous Search ..... 135  
*Taiga Yoshida, Satoshi Nakamura, and Katsumi Tanaka*

**Session 5: Events and Information Filtering**

A Domain-Driven Approach for Detecting Event Patterns in E-Markets: A Case Study in Financial Market Surveillance ..... 147  
*Piyanath Mangkorntong and Fethi A. Rabhi*

Adaptive Email Spam Filtering Based on Information Theory ..... 159  
*Xin Zhang, Wenyuan Dai, Gui-Rong Xue, and Yong Yu*

Time Filtering for Better Recommendations with Small and Sparse Rating Matrices ..... 171  
*Sergiu Gordea and Markus Zanker*

**Session 6: Data Extraction, Transformation, and Matching**

A Survey of UML Models to XML Schemas Transformations ..... 184  
*Eladio Domínguez, Jorge Lloret, Beatriz Pérez, Áurea Rodríguez, Ángel L. Rubio, and María A. Zapata*

Structural Similarity Evaluation Between XML Documents and DTDs ..... 196  
*Joe Tekli, Richard Chbeir, and Kokou Yetongnon*

Using Clustering and Edit Distance Techniques for Automatic Web Data Extraction ..... 212  
*Manuel Álvarez, Alberto Pan, Juan Raposo, Fernando Bellas, and Fidel Cacheda*

**Session 7: Ontologies**

A Semantic Approach and a Web Tool for Contextual Annotation of Photos Using Camera Phones ..... 225  
*Windson Viana, José Bringel Filho, Jérôme Gensel, Marlène Villanova-Oliver, and Hervé Martin*

Formal Specification of OWL-S with Object-Z: the Dynamic Aspect ... 237  
*Hai H. Wang, Terry Payne, Nick Gibbins, and Ahmed Saleh*

|                                                                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------|-----|
| An Approach for Combining Ontology Learning and Semantic Tagging<br>in the Ontology Development Process: eGovernment Use Case ..... | 249 |
| <i>Ljiljana Stojanovic, Nenad Stojanovic, and Jun Ma</i>                                                                            |     |

## Session 8: Rewriting, Routing, and Personalisation

|                                                                                                                                             |     |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Term Rewriting for Web Information Systems – Termination and<br>Church-Rosser Property .....                                                | 261 |
| <i>Klaus-Dieter Schewe and Bernhard Thalheim</i>                                                                                            |     |
| Development of a Collaborative and Constraint-Based Web<br>Configuration System for Personalized Bundling of Products and<br>Services ..... | 273 |
| <i>Markus Zanker, Markus Aschinger, and Markus Jessenitschnig</i>                                                                           |     |
| SRI@work: Efficient and Effective Routing Strategies in a PDMS .....                                                                        | 285 |
| <i>Federica Mandreoli, Riccardo Martoglia, Wilma Penzo,<br/>Simona Sassatelli, and Giorgio Villani</i>                                      |     |

## Session 9: Agents and Mining

|                                                                                      |     |
|--------------------------------------------------------------------------------------|-----|
| Learning Management System Based on SCORM, Agents and<br>Mining .....                | 298 |
| <i>Carlos Cobos, Miguel Niño, Martha Mendoza, Ramon Fabregat, and<br/>Luis Gomez</i> |     |
| A Web-Based Learning Resource Service System Based on Mobile<br>Agent .....          | 310 |
| <i>Wu Di, Cheng Wenqing, and Yan He</i>                                              |     |
| Wikipedia Mining for an Association Web Thesaurus Construction .....                 | 322 |
| <i>Kotaro Nakayama, Takahiro Hara, and Shojiro Nishio</i>                            |     |

## Session 10: QoS and Management

|                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------|-----|
| Economically Enhanced Resource Management for Internet Service<br>Utilities .....                     | 335 |
| <i>Tim Püschel, Nikolay Borissov, Mario Macías, Dirk Neumann,<br/>Jordi Guitart, and Jordi Torres</i> |     |
| Enhancing Web Services Performance Using Adaptive Quality of<br>Service Management .....              | 349 |
| <i>Abdelkarim Erradi and Piyush Maheshwari</i>                                                        |     |
| Coverage and Timeliness Analysis of Search Engines with Webpage<br>Monitoring Results .....           | 361 |
| <i>Yang Sok Kim and Byeong Ho Kang</i>                                                                |     |

Session 11: Modeling

Managing Process Customizability and Customization: Model,  
Language and Process ..... 373  
*Alexander Lazovik and Heiko Ludwig*

A WebML-Based Approach for the Development of Web GIS  
Applications..... 385  
*Sergio Di Martino, Filomena Ferrucci, Luca Paolino,  
Monica Sebillio, Giuliana Vitiello, and Giuseppe Avagliano*

An Object-Oriented Version Model for Context-Aware Data  
Management ..... 398  
*Michael Grossniklaus and Moira C. Norrie*

Session 12: Topics

Extending XML Triggers with Path-Granularity ..... 410  
*Anders H. Landberg, J. Wenny Rahayu, and Eric Pardede*

A Replicated Study Comparing Web Effort Estimation Techniques ..... 423  
*Emilia Mendes, Sergio Di Martino, Filomena Ferrucci, and  
Carmine Gravino*

Development Process of the Operational Version of PDQM ..... 436  
*Angélica Caro, Coral Calero, and Mario Piattini*

A New Reputation Mechanism Against Dishonest Recommendations in  
P2P Systems ..... 449  
*Junsheng Chang, Huaimin Wang, Gang Yin, and Yangbin Tang*

Industrial Session

A Framework for Business Operations Management Systems..... 461  
*Tao Lin, Chuan Li, Ming-Chien Shan, and Suresh Babu*

A Practical Method and Tool for Systems Engineering of  
Service-Oriented Applications ..... 472  
*Lisa Bahler, Francesco Caruso, and Josephine Micallef*

A Layered Service Process Model for Managing Variation and Change  
in Service Provider Operations..... 484  
*Heiko Ludwig, Kamal Bhattacharya, and Thomas Setzer*

Short Paper Session 1

Providing Personalized Mashups Within the Context of Existing Web  
Applications..... 493  
*Oscar Díaz, Sandy Pérez, and Iñaki Paz*

|                                                                                |     |
|--------------------------------------------------------------------------------|-----|
| Wooki: A P2P Wiki-Based Collaborative Writing Tool .....                       | 503 |
| <i>Stéphane Weiss, Pascal Urso, and Pascal Molli</i>                           |     |
| Creating and Managing Ontology Data on the Web: A Semantic Wiki Approach ..... | 513 |
| <i>Chao Wang, Jie Lu, Guangquan Zhang, and Xianyi Zeng</i>                     |     |
| Web Service Composition: A Reality Check .....                                 | 523 |
| <i>Jianguo Lu, Yijun Yu, Debashis Roy, and Deepa Saha</i>                      |     |

## Short Paper Session 2

|                                                                                                             |     |
|-------------------------------------------------------------------------------------------------------------|-----|
| MyQoS: A Profit Oriented Framework for Exploiting Customer Behavior in Online e-Commerce Environments ..... | 533 |
| <i>Ahmed Ataulloh</i>                                                                                       |     |
| Task Assignment on Parallel QoS Systems .....                                                               | 543 |
| <i>Luis Fernando Orleans, Carlo Emmanoel de Oliveira, and Pedro Furtado</i>                                 |     |
| Autonomic Admission Control for Congested Request Processing Systems .....                                  | 553 |
| <i>Pedro Furtado</i>                                                                                        |     |
| Towards Performance Efficiency in Safe XML Update.....                                                      | 563 |
| <i>Dung Xuan Thi Le, and Eric Pardede</i>                                                                   |     |

## Short Paper Session 3

|                                                                                               |     |
|-----------------------------------------------------------------------------------------------|-----|
| From Crosscutting Concerns to Web Systems Models .....                                        | 573 |
| <i>Pedro Valderas, Vicente Pelechano, Gustavo Rossi, and Silvia Gordillo</i>                  |     |
| Generating Extensional Definitions of Concepts from Ostensive Definitions by Using Web .....  | 583 |
| <i>Shin-ya Sato, Kensuke Fukuda, Satoshi Kurihara, Toshio Hirotsu, and Toshiharu Sugawara</i> |     |
| Modeling Distributed Events in Data-Intensive Rich Internet Applications.....                 | 593 |
| <i>Giovanni Toffetti Carughi, Sara Comai, Alessandro Bozzon, and Piero Fraternali</i>         |     |
| Privacy Inspection and Monitoring Framework for Automated Business Processes .....            | 603 |
| <i>Yin Hua Li, Hye-Young Paik, and Jun Chen</i>                                               |     |

## Short Paper Session 4

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Digging the Wild Web: An Interactive Tool for Web Data Consolidation ..... | 613 |
| <i>Max Goebel, Viktor Zigo, and Michal Ceresna</i>                         |     |

A Web-Based Learning Information System - AHKME ..... 623  
    *Hugo Rego, Tiago Moreira, and Francisco José Garcia*

A Recommender System with Interest-Drifting..... 633  
    *Shanle Ma, Xue Li, Yi Ding, and Maria E. Orlowska*

**Short Paper Session 5**

Improving Revisitation Browsers Capability by Using a Dynamic  
Bookmarks Personal Toolbar ..... 643  
    *José A. Gámez, Juan L. Mateo, and José M. Puerta*

Hierarchical Co-clustering for Web Queries and Selected URLs..... 653  
    *Mehdi Hosseini and Hassan Abolhassani*

Navigating Among Search Results: An Information Content  
Approach ..... 663  
    *Ramón Bilbao and M. Andrea Rodríguez*

**Author Index** ..... 673

# On Tree Pattern Query Rewriting Using Views<sup>\*</sup>

Junhu Wang<sup>1\*\*</sup>, Jeffrey Xu Yu<sup>2</sup>, and Chengfei Liu<sup>3</sup>

<sup>1</sup> Griffith University, Gold Coast, Australia

J.Wang@griffith.edu.au

<sup>2</sup> Chinese University of Hong Kong, Hong Kong, China

yu@se.cuhk.edu.hk

<sup>3</sup> Swinburne University of Technology, Melbourne, Australia

cliu@ict.swin.edu.au

**Abstract.** We study and present our findings on two closely related problems on XPATH rewriting using views when both the view and the query are tree patterns involving  $/$ ,  $//$  and  $[]$ . First, given view  $V$  and query  $Q$ , is it possible for  $Q$  to have an equivalent rewriting using  $V$  which is the union of two or more tree patterns, but not an equivalent rewriting which is a single pattern? This problem is of both theoretical and practical importance because, if the answer is no, then, to answer a query completely using the views, we should use more efficient methods, such as the PTIME algorithm of [13], to find the equivalent rewriting, rather than try to find the union of all contained rewritings and test its equivalence to  $Q$ . Second, given a set  $\mathcal{V}$  of views, we want to know under what conditions a subset  $\mathcal{V}'$  of the views are redundant in the sense that for *any query*  $Q$ , the contained rewritings of  $Q$  using the views in  $\mathcal{V}'$  are contained in those using the views in  $\mathcal{V} - \mathcal{V}'$ . Solving this problem can help us to, for example, choose the minimum number of views to be cached, or better design the virtual schema in a mediated data integration system, or avoid repeated calculation in query optimization. We provide necessary and sufficient conditions for the second problem, based on answers to the first problem. When the views produce comparable answers, we extend our findings to include the case where the intersection of views, in addition to the individual views, are used in the rewriting.

## 1 Introduction

Query rewriting using views has many applications including data integration, query optimization, and query caching [6]. A view is an existing query whose answer may or may not have been materialized. Given a new query, the problem is to find another query using only the views that will produce correct answers to the original query. Usually two types of rewritings are sought: *equivalent rewritings* and *contained rewritings*. An equivalent rewriting produces all answers

---

<sup>\*</sup> The work described in this paper was supported by grant from the Research Grant Council of the Hong Kong Special Administrative Region, China (CUHK418205).

<sup>\*\*</sup> Work done while visiting the Chinese University of Hong Kong.