

LNCS 3936

Mounia Lalmas
Andy MacFarlane
Stefan Rüger
Anastasios Tombros
Theodora Tsikrika
Alexei Yavlinsky (Eds.)

Advances in Information Retrieval

28th European Conference on IR Research, ECIR 2006
London, UK, April 2006
Proceedings

Mounia Lalmas Andy MacFarlane
Stefan Rüger Anastasios Tombros
Theodora Tsikrika Alexei Yavlinsky (Eds.)

Advances in Information Retrieval

28th European Conference on IR Research, ECIR 2006
London, UK, April 10-12, 2006
Proceedings



Springer

Volume Editors

Mounia Lalmas
Anastasios Tombros
Theodora Tsikrika
Queen Mary, University of London
Department of Computer Science
London E1 4NS, UK
E-mail: {mounia,theodora,tassos}@dcs.qmul.ac.uk

Andy MacFarlane
City University
Department of Information Science
Northampton Square, London EC1V OHB, UK
E-mail: andym@soi.city.ac.uk

Stefan Rüger
Alexei Yavlinsky
Imperial College London
Department of Computing
South Kensington Campus, London SW7 2AZ
E-mail: {s.rueger,alexei.yavlinsky}@imperial.ac.uk

Library of Congress Control Number: 2006923244

CR Subject Classification (1998): H.3, H.2, I.2.3, I.2.6-7, H.4, H.5.4, I.7

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

ISSN	0302-9743
ISBN-10	3-540-33347-9 Springer Berlin Heidelberg New York
ISBN-13	978-3-540-33347-0 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 2006
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11735106 06/3142 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

Preface

These proceedings contain the refereed papers and posters presented at the 28th Annual European Conference on Information Retrieval (ECIR 2006), which was held at Imperial College London in South Kensington between April 10 and 12, 2006. ECIR is the annual conference of the British Computer Society's Information Retrieval Specialist Group. The event started its life as a colloquium in 1978 and was held in the UK each year until 1998, when the event took place in Grenoble, France. Since then the venue has alternated between the UK and Continental Europe. In the last decade ECIR has grown to become the major European forum for the discussion of research in the field of information retrieval.

ECIR 2006 received 177 paper and 73 poster submissions, largely from the UK (18%) and Continental Europe (50%), but we had many sub- missions from further afield including America (7%), Asia (21%), Middle East and Africa (2%), and Australasia (2%). In total 37 papers and 28 posters were accepted, and two papers were converted to posters. All contributions were reviewed by at least three reviewers in a double anonymous process and then ranked during a Programme Committee meeting with respect to scientific quality and originality. It is a good and healthy sign for information retrieval in general, and ECIR in particular, that the submission rate has more than doubled over the past three years. The downside, of course, is that many high-quality submissions had to be rejected owing to a limited capacity of the conference.

ECIR has always been popular with research students and established researchers alike, and this year 73% of the accepted papers and 66% of the accepted posters turned out to have a research student as their main author. The 67 accepted publications span a wide range of cutting-edge themes ranging from formal models (5) over document & query representation and text understanding (5), design and evaluation (8), topic identification and news retrieval (3), user interests and workspaces (5), clustering and classification (8), refinement and feedback (4), performance and peer-to-peer networks (4), Web search (3), structure/XML (6), multimedia (8), cross-language retrieval (6) to genomic information retrieval (2).

We are greatly indebted to the reviewers who spent a great deal of their time giving useful feedback, ensuring the high quality and standard of the selected publications and adhering to rather tight deadlines. We thank the Prize Committee for identifying the very best publications. Thanks go to our platinum sponsors EPSRC, European Information Retrieval Specialist Group of CEPIS, Google, and GCHQ; our golden sponsors Microsoft Research Cambridge, Yahoo Research Barcelona, Sharp Laboratories of Europe, Apriorie, and Lemur Consulting; and our silver sponsors the Multimedia Knowledge Management Network, Imperial College London, Queen Mary, University of London, and Elsevier. Together, the sponsors provided a significant amount of money that, amongst

other things, helped more than 40 students to attend the conference. We are immensely grateful to David Hawking, who agreed to come all the way from Canberra, Australia, to give the keynote talk on Enterprise Search. Last, not least, we thank our universities Imperial College London, City University and Queen Mary, University of London, and the countless local helpers at each place who ensured the smooth organization of ECIR 2006.

February 2006

Mounia Lalmas
Andrew MacFarlane
Stefan Rüger
Anastasios Tombros

Organization

ECIR 2006 was jointly organized by Imperial College London; Queen Mary, University of London; and City University under the patronage of the Information Retrieval Specialist Group of the British Computer Society.

Organizing Committee

General Chair	Stefan Rüger, Imperial College London
Programme Chair	Mounia Lalmas, Queen Mary, University of London
Poster Chair	Anastasios Tombros, Queen Mary, University of London
PC Management System	Theodora Tsikrika, Queen Mary, University of London
Web, Sponsorship and Finances Chair	Andrew MacFarlane, City University London
Registration Chair	Alexei Yavlinsky, Imperial College London
Local Organization	Paul Browne, Imperial College London Peter Howarth, Imperial College London Gabriella Kazai, Queen Mary, University of London João Magalhães, Imperial College London Simon Overell, Imperial College London Zoltán Szilávik, Queen Mary, University of London

Programme Committee

Mounia Lalmas, Queen Mary, University of London (Programme Chair)
Anastasios Tombros, Queen Mary, University of London (Poster Chair)
Trond Aalberg, NTNU Norwegian University of Technology and Science,
Norway
Giambattista Amati, Fondazione Ugo Bordoni, Italy
Massih-Reza Amini, LIP6, Paris, France
Leif Azzopardi, University of Strathclyde, UK
Ricardo Baeza-Yates, Universitat Pompeu Fabra,
Spain and Universidad de Chile, Chile
Mark Baillie, University of Strathclyde, UK

VIII Organization

Micheline Beaulieu, University of Sheffield, UK
Catherine Berrut, Université Joseph Fourier - Grenoble I, France
Gloria Bordogna, IDPA CNR, Italy
Theo Bothma, University of Pretoria, South Africa
Mohand Boughanem, Université Paul Sabatier, France
Luis de Campos, University of Granada, Spain
David Carmel, IBM Haifa, Israel
Joe Carthy, University College Dublin, Ireland
You-Jin Chang, Queen Mary, University of London, UK
Stavros Christodoulakis, Technical University of Crete, Greece
Paul Clough, University of Sheffield, UK
Nick Craswell, Microsoft Research Cambridge, UK
Fabio Crestani, University of Strathclyde, UK
Gaël Dias, University of Beira Interior, Portugal
Sándor Dominich, University of Veszprém, Hungary
Antoine Doucet, University of Helsinki, Finland
Juan M. Fernández-Luna, University of Granada, Spain
Ingo Frommholz, University of Duisburg-Essen, Germany
Pablo de la Fuente, University of Valladolid, Spain
Norbert Fuhr, University of Duisburg-Essen, Germany
Patrick Gallinari, LIP6, Paris, France
Eric Gaussier, XEROX Europe, France
Mark Girolami, University of Glasgow, UK
Ayse Göker, Robert Gordon University, UK
Julio Gonzalo, UNED, Spain
Cathal Gurrin, Dublin City University, Ireland
Daniel Heesch, Imperial College London, UK
Andreas Henrich, Bamberg University, Germany
Monika Henzinger, EPFL, Lausanne, Switzerland
Djoerd Hiemstra, University of Twente, The Netherlands
Eduard Hoenkamp, University of Nijmegen, The Netherlands
Gilles Hubert, Université Paul Sabatier, France
Peter Ingwersen, Royal School of Library and Information Science,
Denmark
Gareth Jones, Dublin City University, Ireland
Joemon Jose, University of Glasgow, UK
Jaap Kamps, University of Amsterdam, The Netherlands
Jussi Karlgren, Swedish Institute of Computer Science, Sweden
Gabriella Kazai, Queen Mary, University of London, UK
Jaana Kekäläinen, University of Tampere, Finland
Wessel Kraaij, TNO, The Netherlands
Udo Kruschwitz, University of Essex, UK
Monica Landoni, University of Strathclyde, UK
Birger Larsen, Royal School of Library and Information Science, Denmark
Hyowon Lee, Dublin City University, Ireland

Xuelong Li, Birkbeck College, UK
David Losada, University of Santiago de Compostela, Spain
Andrew MacFarlane, City University London, UK
Massimo Melucci, University of Padova, Italy
Stefano Mizzaro, University of Udine, Italy
Dunja Mladenović, Jožef Stefan Institute, Slovenia
Marie-Francine Moens, Katholieke Universiteit Leuven, Belgium
Christof Monz, Queen Mary, University of London, UK
Josiane Mothe, Université Paul Sabatier, France
Philippe Mulhem, CLIPS-IMAG, Grenoble, France
Michael Oakes, University of Sunderland, UK
Farhad Oroumchian, University of Wollongong Dubai Campus,
United Arab Emirates
Iadh Ounis, University of Glasgow, UK
Gabriella Pasi, ICT CNR, Italy
Daniela Petrelli, University of Sheffield, UK
Nils Pharo, Oslo University College, Norway
Victor Poznanski, Sharp, UK
Andreas Rauber, Vienna University of Technology, Austria
Jane Reid, Queen Mary, University of London, UK
Maarten de Rijke, University of Amsterdam, The Netherlands
Keith van Rijsbergen, University of Glasgow, UK
Ian Ruthven, University of Strathclyde, UK
Michail Salampasis, Technology Education Institute of Thessaloniki,
Greece
Eero Sormunen, University of Tampere, Finland
Jacques Savoy, Université de Neuchâtel, Switzerland
Ralf Schenkel, MPI Informatik, Saarbrücken, Germany
Tomás Skopal, Charles University in Prague, Czech Republic
Barry Smyth, University College Dublin, Ireland
Dawei Song, The Open University, UK
Umberto Straccia, ISTI CNR, Italy
John Tait, University of Sunderland, UK
Ulrich Thiel, Fraunhofer IPSI, Germany
Pertti Vakkari, University of Tampere, Finland
Robert Villa, ITIM CNR, Italy
Jesus Vegas, University of Valladolid, Spain
Anne-Marie Vercoustre, INRIA, France
Arjen de Vries, CWI, Netherlands, The Netherlands
Theo van der Weide, Radboud University Nijmegen, The Netherlands
Thijs Westerveld, CWI, The Netherlands
Hugo Zaragoza, Microsoft Research, UK
Roelof van Zwol, Utrecht University, The Netherlands

Best Student Paper Award Committee

Gareth Jones, Dublin City University, Ireland

David Losada, University of Santiago de Compostela, Spain

Michael Oakes, University of Sunderland, UK

Best Student Poster Award Committee

Mohand Boughanem, Université Paul Sabatier, France

Birger Larsen, Royal School of Library and Information Science, Denmark

Christof Monz, Queen Mary, University of London, UK

Additional Reviewers

Eija Airio

Matjaz Bevk

Janez Brank

Gudrun Fischer

Blaz Fortuna

Leo Galamboš

Franc Grootjen

Juan Huete

Aleks Jakulin

Valentin Jijkoun

Hideo Joho

Heikki Keskustalo

Gary Marchioni

Rudolf Mayer

Vojkan Mihajlović

Gilad Mishne

Ragnar Nordlie

Henrik Nottelmann

Blaz Novak

Georg Pözlzbauer

Andreas Pesenhofer

Georgina Ramírez

Erik Tjong Kim Sang

Dacheng Tao

Miha Vuk

Murat Yakici

Yuan Yuan

Previous Venues of ECIR

2005 Santiago de Compostela, Spain

2004 Sunderland, UK

2003 Pisa, Italy

2002 Glasgow, UK

2001 Darmstadt, Germany

2000 Cambridge, UK

1999 Glasgow, UK

1998 Grenoble, France

1997 Aberdeen, UK

1996 Manchester, UK

1995 Crewe, UK

1994 Drymen, UK

1993 Glasgow, UK

1992 Lancaster, UK

1991 Lancaster, UK

1990 Huddersfield, UK

1989 Huddersfield, UK

1988 Huddersfield, UK

1987 Glasgow, UK

1986 Glasgow, UK

1985 Bradford, UK

1984 Bradford, UK

1983 Sheffield, UK

1982 Sheffield, UK

1981 Birmingham, UK

1980 Leeds, UK

1979 Leeds, UK

Sponsors

Platinum

EPSRC

Engineering and Physical Sciences
Research Council



Go **gle**TM



Golden

Microsoft[®]
Research YAHOO! RESEARCH

SHARP
Laboratories of
Europe Limited

Apriorie
Information Management



Silver

MM KM
<http://www.mmkm.org>

Imperial College
London

 **Queen Mary**
University of London



Lecture Notes in Computer Science

For information about Vols. 1–3835

please contact your bookseller or Springer

Vol. 3939: C. Priami, L. Cardelli, S. Emmott (Eds.), *Transactions on Computational Systems Biology IV*. VII, 141 pages. 2006. (Sublibrary LNBI).

Vol. 3936: M. Lalmas, A. MacFarlane, S. Rüger, A. Tombros, T. Tsikrika, A. Yavlinsky (Eds.), *Advances in Information Retrieval*. XIX, 584 pages. 2006.

Vol. 3934: J.A. Clark, R.F. Paige, F.A. C. Polack, P.J. Brooke (Eds.), *Security in Pervasive Computing*. X, 243 pages. 2006.

Vol. 3933: F. Bonchi, J.-F. Boulicaut (Eds.), *Knowledge Discovery in Inductive Databases*. VIII, 251 pages. 2006.

Vol. 3931: B. Apolloni, M. Marinaro, G. Nicosia, R. Tagliaferri (Eds.), *Neural Nets*. XIII, 370 pages. 2006.

Vol. 3928: J. Domingo-Ferrer, J. Posegga, D. Schreckling (Eds.), *Smart Card Research and Advanced Applications*. XI, 359 pages. 2006.

Vol. 3927: J. Hespanha, A. Tiwari (Eds.), *Hybrid Systems: Computation and Control*. XII, 584 pages. 2006.

Vol. 3925: A. Valmari (Ed.), *Model Checking Software*. X, 307 pages. 2006.

Vol. 3924: P. Sestoft (Ed.), *Programming Languages and Systems*. XII, 343 pages. 2006.

Vol. 3923: A. Mycroft, A. Zeller (Eds.), *Compiler Construction*. XIII, 277 pages. 2006.

Vol. 3922: L. Baresi, R. Heckel (Eds.), *Fundamental Approaches to Software Engineering*. XIII, 427 pages. 2006.

Vol. 3921: L. Aceto, A. Ingólfssdóttir (Eds.), *Foundations of Software Science and Computation Structures*. XV, 447 pages. 2006.

Vol. 3920: H. Hermanns, J. Palsberg (Eds.), *Tools and Algorithms for the Construction and Analysis of Systems*. XIV, 506 pages. 2006.

Vol. 3918: W.K. Ng, M. Kitsuregawa, J. Li, K. Chang (Eds.), *Advances in Knowledge Discovery and Data Mining*. XXIV, 879 pages. 2006. (Sublibrary LNAI).

Vol. 3917: H. Chen, F.Y. Wang, C.C. Yang, D. Zeng, M. Chau, K. Chang (Eds.), *Intelligence and Security Informatics*. XII, 186 pages. 2006.

Vol. 3916: J. Li, Q. Yang, A.-H. Tan (Eds.), *Data Mining for Biomedical Applications*. VIII, 155 pages. 2006. (Sublibrary LNBI).

Vol. 3915: R. Nayak, M.J. Zaki (Eds.), *Knowledge Discovery from XML Documents*. VIII, 105 pages. 2006.

Vol. 3910: S.A. Brueckner, G.D.M. Serugendo, D. Hales, F. Zambonelli (Eds.), *Engineering Self-Organising Systems*. XII, 245 pages. 2006. (Sublibrary LNAI).

Vol. 3909: A. Apostolico, C. Guerra, S. Istrail, P. Pevzner, M. Waterman (Eds.), *Research in Computational Molecular Biology*. XVII, 612 pages. 2006. (Sublibrary LNBI).

Vol. 3907: F. Rothlauf, J. Branke, S. Cagnoni, E. Costa, C. Cotta, R. Drechsler, E. Lutton, P. Machado, J.H. Moore, J. Romero, G.D. Smith, G. Squillero, H. Takagi (Eds.), *Applications of Evolutionary Computing*. XXIV, 813 pages. 2006.

Vol. 3906: J. Gottlieb, G.R. Raidl (Eds.), *Evolutionary Computation in Combinatorial Optimization*. XI, 293 pages. 2006.

Vol. 3905: P. Collet, M. Tomassini, M. Ebner, S. Gustafson, A. Ekárt (Eds.), *Genetic Programming*. XI, 361 pages. 2006.

Vol. 3904: M. Baldoni, U. Endriss, A. Omicini, P. Torroni (Eds.), *Declarative Agent Languages and Technologies III*. XII, 245 pages. 2006. (Sublibrary LNAI).

Vol. 3903: K. Chen, R. Deng, X. Lai, J. Zhou (Eds.), *Information Security Practice and Experience*. XIV, 392 pages. 2006.

Vol. 3901: P.M. Hill (Ed.), *Logic Based Program Synthesis and Transformation*. X, 179 pages. 2006.

Vol. 3899: S. Frintrop, *VOCUS: A Visual Attention System for Object Detection and Goal-Directed Search*. XIV, 216 pages. 2006. (Sublibrary LNAI).

Vol. 3898: K. Tuyls, P.J. 't Hoen, K. Verbeeck, S. Sen (Eds.), *Learning and Adaption in Multi-Agent Systems*. X, 217 pages. 2006. (Sublibrary LNAI).

Vol. 3897: B. Preneel, S. Tavares (Eds.), *Selected Areas in Cryptography*. XI, 371 pages. 2006.

Vol. 3896: Y. Ioannidis, M.H. Scholl, J.W. Schmidt, F. Matthes, M. Hatzopoulos, K. Boehm, A. Kemper, T. Grust, C. Boehm (Eds.), *Advances in Database Technology - EDBT 2006*. XIV, 1208 pages. 2006.

Vol. 3895: O. Goldreich, A.L. Rosenberg, A.L. Selman (Eds.), *Theoretical Computer Science*. XII, 399 pages. 2006.

Vol. 3894: W. Grass, B. Sick, K. Waldschmidt (Eds.), *Architecture of Computing Systems - ARCS 2006*. XII, 496 pages. 2006.

Vol. 3891: J.S. Sichman, L. Antunes (Eds.), *Multi-Agent-Based Simulation VI*. X, 191 pages. 2006. (Sublibrary LNAI).

Vol. 3890: S.G. Thompson, R. Ghanea-Hercock (Eds.), *Defence Applications of Multi-Agent Systems*. XII, 141 pages. 2006. (Sublibrary LNAI).

Vol. 3889: J. Rosca, D. Erdogmus, J.C. Principe, S. Haykin (Eds.), *Independent Component Analysis and Blind Signal Separation*. XXI, 980 pages. 2006.

Vol. 3888: D. Draheim, G. Weber (Eds.), *Trends in Enterprise Application Architecture*. IX, 145 pages. 2006.

Vol. 3887: J.R. Correa, A. Hevia, M. Kiwi (Eds.), *LATIN 2006: Theoretical Informatics*. XVI, 814 pages. 2006.

- Vol. 3886: E.G. Bremer, J. Hakenberg, E.-H.(S.) Han, D. Berrar, W. Dubitzky (Eds.), *Knowledge Discovery in Life Science Literature*. XIV, 147 pages. 2006. (Sublibrary LNBI).
- Vol. 3885: V. Torra, Y. Narukawa, A. Valls, J. Domingo-Ferrer (Eds.), *Modeling Decisions for Artificial Intelligence*. XII, 374 pages. 2006. (Sublibrary LNAI).
- Vol. 3884: B. Durand, W. Thomas (Eds.), *STACS 2006*. XIV, 714 pages. 2006.
- Vol. 3882: M.L. Lee, K.L. Tan, V. Wuwongse (Eds.), *Database Systems for Advanced Applications*. XXI, 923 pages. 2006.
- Vol. 3881: S. Gibet, N. Courty, J.-F. Kamp (Eds.), *Gesture in Human-Computer Interaction and Simulation*. XIII, 344 pages. 2006. (Sublibrary LNAI).
- Vol. 3880: A. Rashid, M. Aksit (Eds.), *Transactions on Aspect-Oriented Software Development I*. IX, 335 pages. 2006.
- Vol. 3879: T. Erlebach, G. Persinao (Eds.), *Approximation and Online Algorithms*. X, 349 pages. 2006.
- Vol. 3878: A. Gelbukh (Ed.), *Computational Linguistics and Intelligent Text Processing*. XVII, 589 pages. 2006.
- Vol. 3877: M. Detyniecki, J.M. Jose, A. Nürnberger, C. J. ' van Rijsbergen (Eds.), *Adaptive Multimedia Retrieval: User, Context, and Feedback*. XI, 279 pages. 2006.
- Vol. 3876: S. Halevi, T. Rabin (Eds.), *Theory of Cryptography*. XI, 617 pages. 2006.
- Vol. 3875: S. Ur, E. Bin, Y. Wolfsthal (Eds.), *Hardware and Software, Verification and Testing*. X, 265 pages. 2006.
- Vol. 3874: R. Missaoui, J. Schmidt (Eds.), *Formal Concept Analysis*. X, 309 pages. 2006. (Sublibrary LNAI).
- Vol. 3873: L. Maicher, J. Park (Eds.), *Charting the Topic Maps Research and Applications Landscape*. VIII, 281 pages. 2006. (Sublibrary LNAI).
- Vol. 3872: H. Bunke, A. L. Spitz (Eds.), *Document Analysis Systems VII*. XIII, 630 pages. 2006.
- Vol. 3870: S. Spaccapietra, P. Atzeni, W.W. Chu, T. Catarci, K.P. Sycara (Eds.), *Journal on Data Semantics V*. XIII, 237 pages. 2006.
- Vol. 3869: S. Renals, S. Bengio (Eds.), *Machine Learning for Multimodal Interaction*. XIII, 490 pages. 2006.
- Vol. 3868: K. Römer, H. Karl, F. Mattern (Eds.), *Wireless Sensor Networks*. XI, 342 pages. 2006.
- Vol. 3866: T. Dimitrakos, F. Martinelli, P.Y.A. Ryan, S. Schneider (Eds.), *Formal Aspects in Security and Trust*. X, 259 pages. 2006.
- Vol. 3865: W. Shen, K.-M. Chao, Z. Lin, J.-P.A. Barthès, A. James (Eds.), *Computer Supported Cooperative Work in Design II*. XII, 659 pages. 2006.
- Vol. 3863: M. Kohlhase (Ed.), *Mathematical Knowledge Management*. XI, 405 pages. 2006. (Sublibrary LNAI).
- Vol. 3862: R.H. Bordini, M. Dastani, J. Dix, A.E.F. Seghrouchni (Eds.), *Programming Multi-Agent Systems*. XIV, 267 pages. 2006. (Sublibrary LNAI).
- Vol. 3861: J. Dix, S.J. Hegner (Eds.), *Foundations of Information and Knowledge Systems*. X, 331 pages. 2006.
- Vol. 3860: D. Pointcheval (Ed.), *Topics in Cryptology – CT-RSA 2006*. XI, 365 pages. 2006.
- Vol. 3858: A. Valdes, D. Zamboni (Eds.), *Recent Advances in Intrusion Detection*. X, 351 pages. 2006.
- Vol. 3857: M.P.C. Fossorier, H. Imai, S. Lin, A. Poli (Eds.), *Applied Algebra, Algebraic Algorithms and Error-Correcting Codes*. XI, 350 pages. 2006.
- Vol. 3855: E. A. Emerson, K.S. Namjoshi (Eds.), *Verification, Model Checking, and Abstract Interpretation*. XI, 443 pages. 2005.
- Vol. 3854: I. Stavarakakis, M. Smirnov (Eds.), *Autonomic Communication*. XIII, 303 pages. 2006.
- Vol. 3853: A.J. Ijspeert, T. Masuzawa, S. Kusumoto (Eds.), *Biologically Inspired Approaches to Advanced Information Technology*. XIV, 388 pages. 2006.
- Vol. 3852: P.J. Narayanan, S.K. Nayar, H.-Y. Shum (Eds.), *Computer Vision – ACCV 2006, Part II*. XXXI, 977 pages. 2006.
- Vol. 3851: P.J. Narayanan, S.K. Nayar, H.-Y. Shum (Eds.), *Computer Vision – ACCV 2006, Part I*. XXXI, 973 pages. 2006.
- Vol. 3850: R. Freund, G. Páun, G. Rozenberg, A. Salomaa (Eds.), *Membrane Computing*. IX, 371 pages. 2006.
- Vol. 3849: I. Bloch, A. Petrosino, A.G.B. Tettamanzi (Eds.), *Fuzzy Logic and Applications*. XIV, 438 pages. 2006. (Sublibrary LNAI).
- Vol. 3848: J.-F. Boulicaut, L. De Raedt, H. Mannila (Eds.), *Constraint-Based Mining and Inductive Databases*. X, 401 pages. 2006. (Sublibrary LNAI).
- Vol. 3847: K.P. Jantke, A. Lunzer, N. Spyrtas, Y. Tanaka (Eds.), *Federation over the Web*. X, 215 pages. 2006. (Sublibrary LNAI).
- Vol. 3846: H. J. van den Herik, Y. Björnsson, N.S. Netanyahu (Eds.), *Computers and Games*. XIV, 333 pages. 2006.
- Vol. 3845: J. Farré, I. Litovsky, S. Schmitz (Eds.), *Implementation and Application of Automata*. XIII, 360 pages. 2006.
- Vol. 3844: J.-M. Bruel (Ed.), *Satellite Events at the MoD-ELS 2005 Conference*. XIII, 360 pages. 2006.
- Vol. 3843: P. Healy, N.S. Nikolov (Eds.), *Graph Drawing*. XVII, 536 pages. 2006.
- Vol. 3842: H.T. Shen, J. Li, M. Li, J. Ni, W. Wang (Eds.), *Advanced Web and Network Technologies, and Applications*. XXVII, 1057 pages. 2006.
- Vol. 3841: X. Zhou, J. Li, H.T. Shen, M. Kitsuregawa, Y. Zhang (Eds.), *Frontiers of WWW Research and Development – APWeb 2006*. XXIV, 1223 pages. 2006.
- Vol. 3840: M. Li, B. Boehm, L.J. Osterweil (Eds.), *Unifying the Software Process Spectrum*. XVI, 522 pages. 2006.
- Vol. 3839: J.-C. Filliâtre, C. Paulin-Mohring, B. Werner (Eds.), *Types for Proofs and Programs*. VIII, 275 pages. 2006.
- Vol. 3838: A. Middeldorp, V. van Oostrom, F. van Raamsdonk, R. de Vrijer (Eds.), *Processes, Terms and Cycles: Steps on the Road to Infinity*. XVIII, 639 pages. 2005.
- Vol. 3837: K. Cho, P. Jacquet (Eds.), *Technologies for Advanced Heterogeneous Networks*. IX, 307 pages. 2005.
- Vol. 3836: J.-M. Pierson (Ed.), *Data Management in Grids*. X, 143 pages. 2006.

Table of Contents

Progress in Information Retrieval <i>Mounia Lalmas, Stefan Rüger, Theodora Tsikrika, Alexei Yavlinsky</i>	1
Enterprise Search — The New Frontier? <i>David Hawking</i>	12
Formal Models	
Frequentist and Bayesian Approach to Information Retrieval <i>Giambattista Amati</i>	13
Using Proportional Transportation Distances for Measuring Document Similarity <i>Xiaojun Wan, Jianwu Yang</i>	25
A User-Item Relevance Model for Log-Based Collaborative Filtering <i>Jun Wang, Arjen P. de Vries, Marcel J.T. Reinders</i>	37
Document and Query Representation and Text Understanding	
Generating Search Term Variants for Text Collections with Historic Spellings <i>Andrea Ernst-Gerlach, Norbert Fuhr</i>	49
Efficient Phrase Querying with Common Phrase Index <i>Matthew Chang, Chung Keung Poon</i>	61
Document Length Normalization Using Effective Level of Term Frequency in Large Collections <i>Soheila Karbasi, Mohand Boughanem</i>	72
Design and Evaluation	
Beyond the Web: Retrieval in Social Information Spaces <i>Sebastian Marius Kirsch, Melanie Gnasa, Armin B. Cremers</i>	84
Evaluating Web Search Result Summaries <i>Shao Fen Liang, Siobhan Devlin, John Tait</i>	96

Measuring the Complexity of a Collection of Documents
 Vishwa Vinay, Ingemar J. Cox, Natasa Milic-Frayling,
 Ken Wood 107

Topic Identification and News Retrieval

Sentence Retrieval with LSI and Topic Identification
 David Parapar, Álvaro Barreiro 119

Ranking Web News Via Homepage Visual Layout and Cross-Site
Voting
 Jinyi Yao, Jue Wang, Zhiwei Li, Mingjing Li,
 Wei-Ying Ma 131

Clustering-Based Searching and Navigation in an Online News Source
 Simón C. Smith, M. Andrea Rodríguez 143

Clustering and Classification

Mobile Clustering Engine
 Claudio Carpineto, Andrea Della Pietra, Stefano Mizzaro,
 Giovanni Romano 155

Improving Quality of Search Results Clustering with Approximate
Matrix Factorisations
 Stanislaw Osinski 167

Adapting the Naive Bayes Classifier to Rank Procedural Texts
 Ling Yin, Richard Power 179

Refinement and Feedback

The Effects of Relevance Feedback Quality and Quantity in Interactive
Relevance Feedback: A Simulation Based on User Modeling
 Heikki Keskustalo, Kalervo Järvelin, Ari Pirkola 191

Using Query Profiles for Clarification
 Henning Rode, Djoerd Hiemstra 205

Lexical Entailment for Information Retrieval
 Stéphane Clinchant, Cyril Goutte, Eric Gaussier 217

Performance and Peer-to-Peer Networks

A Hybrid Approach to Index Maintenance in Dynamic Text Retrieval Systems <i>Stefan Büttcher, Charles L.A. Clarke</i>	229
Efficient Parallel Computation of PageRank <i>Christian Kohlschütter, Paul-Alexandru Chirita, Wolfgang Nejdl</i>	241
Comparing Different Architectures for Query Routing in Peer-to-Peer Networks <i>Henrik Nottelmann, Norbert Fuhr</i>	253
Automatic Document Organization in a P2P Environment <i>Stefan Siersdorfer, Sergej Sizov</i>	265

Web Search

Exploring URL Hit Priors for Web Search <i>Ruihua Song, Guomao Xin, Shuming Shi, Ji-Rong Wen, Wei-Ying Ma</i>	277
A Study of Blog Search <i>Gilad Mishne, Maarten de Rijke</i>	289
A Comparative Study of the Effectiveness of Search Result Presentation on the Web <i>Hideo Joho, Joemon M. Jose</i>	302

Structure/XML

Bricks: The Building Blocks to Tackle Query Formulation in Structured Document Retrieval <i>Roelof van Zwol, Jeroen Baas, Herre van Oostendorp, Frans Wiering</i>	314
Structural Feedback for Keyword-Based XML Retrieval <i>Ralf Schenkel, Martin Theobald</i>	326
Machine Learning Ranking for Structured Information Retrieval <i>Jean-Noël Vittaut, Patrick Gallinari</i>	338

Generating and Retrieving Text Segments for Focused Access to
Scientific Documents
Caterina Caracciolo, Maarten de Rijke 350

Multimedia

Browsing Personal Images Using Episodic Memory (Time + Location)
Chufeng Chen, Michael Oakes, John Tait 362

An Information Retrieval System for Motion Capture Data
*Bastian Demuth, Tido Röder, Meinard Müller,
Bernhard Eberhardt* 373

Can a Workspace Help to Overcome the Query Formulation Problem
in Image Retrieval?
Jana Urban, Joemon M. Jose 385

Cross-Language Retrieval

A Fingerprinting Technique for Evaluating Semantics Based Indexing
Eduard Hoenkamp, Sander van Dijk 397

A Cross-Language Approach to Historic Document Retrieval
Marijn Koolen, Frans Adriaans, Jaap Kamps, Maarten de Rijke 407

Automatic Acquisition of Chinese–English Parallel Corpus from the Web
Ying Zhang, Ke Wu, Jianfeng Gao, Phil Vines 420

Genomic IR

Fast Discovery of Similar Sequences in Large Genomic Collections
Yaniv Bernstein, Michael Cameron 432

Using Concept-Based Indexing to Improve Language Modeling
Approach to Genomic IR
Xiaohua Zhou, Xiaodan Zhang, Xiaohua Hu 444

Posters

The Effects on Topic Familiarity on Online Search Behaviour and Use
of Relevance Criteria
Lei Wen, Ian Ruthven, Pia Borlund 456