

INFORMATION PROCESSING

&

MANAGEMENT

An International Journal

Editor-in-Chief: **Tefko Saracevic**
Rutgers University

LIST OF CONTENTS AND
AUTHOR INDEX
VOLUME 28 (1992)



Pergamon Press
New York • Oxford • Seoul • Tokyo

INFORMATION PROCESSING & MANAGEMENT

—An International Journal—

(Incorporating *INFORMATION TECHNOLOGY*)

Editor-in-Chief

Tefko Saracevic
School of Communication, Information and
Library Studies
Rutgers University
4 Huntington St.
New Brunswick, NJ 08903, USA

Associate Editors

Harold Borko
Graduate School of Library and Information
Science
University of California
405 Hilgard Ave
Los Angeles, CA 90024-1520, USA

W. Bruce Croft
Department of Computer and
Information Science
University of Massachusetts
Amherst, MA 01003, USA

Associate Editor (Europe)

C. J. van Rijsbergen
Department of Computing Science
Lillybank Gardens
The University
Glasgow, G12 8QQ Scotland

Associate Editor (Book Reviews)

Trudi Bellardo
School of Library and Information Science
Catholic University of America
620 Michigan Ave., N.E.
Washington, D.C. 20064, USA

Editorial Board

Maristella Agosti
Padova University
Via Gradenigo, 6/A
35131 Padova, Italy

Setsuo Arikawa
Research Institute of
Fundamental Information
Science
Kyushu University 33
Fukuoka, 812, Japan

Nicholas J. Belkin
School of Communication, Information
and Library Studies
Rutgers University
4 Huntington St.
New Brunswick, NJ 08903, USA

David C. Blair
Computer and Information Systems
Graduate School of Business
University of Michigan
Ann Arbor, MI 48109-1234, USA

Abraham Bookstein
Center for Information and
Language Studies
The University of Chicago
Chicago, IL 60637, USA

Gilda Maria Braga
Graduate Program in
Information Science
School of Communication
Federal University of Rio de Janeiro
Rio de Janeiro
RJ 22290, Brazil

Michael Buckland
School of Library and
Information Studies
University of California
Berkeley, CA 94720, USA

Yves Chiaramella
University of Grenoble
LGI-IMAG
BP53X
38041 Grenoble Cedex, France

Beth Krevitt Eres
Information Technology Markets
P.O.B. 16133
Tel Aviv 61161, Israel

Raya Fidel
Graduate School of Library and
Information Science
University of Washington
Seattle, WA 98195, USA

Edward A. Fox
Department of Computer Science
Virginia Polytechnic Institute &
State University
Blacksburg, VA 24061-0106, USA

H. P. Frei
Informationssysteme
ETH Zurich
8092 Zurich, Switzerland

Donald T. Hawkins
AT&T Bell Laboratories,
4th Floor
400 Atrium Drive
Somerset, NJ 08873, USA

Roland Hjerpe
LIBLAB-Library and Information
Science Laboratory
Department of Computer and
Information Science
Linköping University
S-581 83 Linköping, Sweden

Peter Ingwersen
The Royal School of Librarianship
6 Birketinget
Copenhagen, Denmark 2300 S

Kalervo Jarvelin
Department of Library & Info. Science
University of Tampere
P.O. Box 607
SF-33101 Tampere, Finland

Jin H. Kim
Computer Science Department
Korea Advanced Institute of Science
and Technology
KooSung-Dong 373, YooSung-Ku
Taejon, Korea

Gehard Knorz
Department of Computer Science
FG Datenverwaltungssysteme I
Technische Hochschule Darmstadt
Alexanderstrasse 10
6100 Darmstadt, Germany

Rainer Kuhlen
Universität Konstanz
Fachgruppe Informationswissenschaft
Postfach 5560
D-7750 Konstanz 1, Germany

M. F. Lynch
Postgraduate School of Librarianship
and Information Science
Department of Information Studies
Western Bank
Sheffield S10 2TN, United Kingdom

Richard S. Marcus
Laboratory for Information and
Decision Systems
Massachusetts Institute of Technology
Cambridge, MA 02139, USA

A. J. Meadows
Head of Department
Department of Library and
Information Studies
Loughborough University of Technology
Loughborough
Leicester LE11 3TU, United Kingdom

Michel J. Menou
Information Science Consultant
129 Av. P. Vaillant Couturier
94250 Gentilly, France

Jessica L. Milstead
The JELEM Company
P.O. Box 5063
Brookfield, CT 06804, USA

Desai Naramsimhalu
Institute of Systems Science
National University of Singapore
Heng Mui Keng Terrace
Kent Ridge
Singapore 0511

Fausto Rabitti
Istituto di Elaborazione
dell' Informazione
Consiglio Nazionale delle Ricerche
Via S. Maria, 46 56100 Pisa, Italy

Roy Rada
Department of Computer Science
University of Liverpool
Liverpool L69 3BX, United Kingdom

Tadeusz Radecki
919 G Street, Apt. 7
Lincoln, NE 68508, USA

Edie M. Rasmussen
School of Library and
Information Science
University of Pittsburgh
Pittsburgh, PA 15260, USA

Naomi Sager
Courant Institute of Mathematical
Sciences
New York University
New York, NY 10012, USA

Jorge Reina Schement
School of Communication, Information
and Library Studies
Rutgers University
4 Huntington Street
New Brunswick, NJ 08903, U.S.A.

William M. Shaw
School of Library Science
University of North Carolina
at Chapel Hill
CB #3360, 100 Manning Hall
Chapel Hill, NC 27599-3360, USA

Karen Sparck Jones
University of Cambridge
Computer Laboratory
New Museums Site
Pembroke Street
Cambridge CB2 3QG, United Kingdom

Jean M. Tague
School of Library and
Information Science
University of Western Ontario
London, Ontario N6G 1H1, Canada

Miroslav Tudjman
University of Zagreb,
Faculty of Philosophy
Department of Information
Dj. Salaja 3
41000 Zagreb, Croatia, Yugoslavia

Editorial Office: School of Communication, Information and Library Studies, Rutgers University, 4 Huntington Street, New Brunswick, NJ 08903, U.S.A.

Publishing, Subscription, and Advertising Offices: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A., INTERNET "PPI@PERGAMON.COM"; and Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Published Bimonthly. *Annual institutional subscription rate* (1992): £255.00 (US\$465.00); *Two-year institutional subscription rate* (1992/93): £485.50 (US\$883.50); *Personal subscription rate* for those whose library subscribes at the regular rate (1992): £74.00 (US\$118.00). Sterling prices are definitive. US dollar prices are quoted for convenience only, and are subject to exchange rate fluctuation. Prices include postage and insurance and are subject to change without notice. Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Pergamon Press. Subscription rates for Japan are available on request.

LIST OF CONTENTS

Vol. 28, No. 1, 1992

Special Issue: Informetrics

Contents

- | | | |
|--|-----|--|
| Jean Tague-Sutcliffe | 1 | An Introduction to Informetrics |
| H.S. Sichel | 5 | Anatomy of the Generalized Inverse Gaussian-Poisson Distribution with Special Applications to Bibliometric Studies |
| Quentin L. Burrell | 19 | The Gini Index and the Leimkuhler Curve for Bibliometric Processes |
| L. Egghe | 35 | Duality Aspects of the Gini Index for General Information Production Processes |
| Ronald Rousseau | 45 | Two Remarks on the Preceding Paper by L. Egghe |
| Wolfgang Glänzel | 53 | On Some Stopping Times of Citation Processes. From Theory to Indicators |
| Albert N. Tabah | 61 | Nonlinear Dynamics and the Growth of Literature |
| Abraham Bookstein Edward O'Neill Martin Dillon David Stephens | 75 | Application of Loglinear Models to Informetric Phenomena |
| Esther Green Bierbaum Terrence A. Brooks Robert M. Brooks | 89 | Subject Control of the Literature of Acquired Immunodeficiency Syndrome (AIDS) |
| Miranda Lee Pao | 99 | Global and Local Collaborators: A Study of Scientific Collaboration |
| Susan Bonzi | 111 | Trends in Research Productivity Among Senior Faculty |
| Dietmar Wolfram | 121 | Applying Informetric Characteristics of Databases to IR System File Design, Part I: Informetric Models |

- Dietmar Wolfram** 135 Applying Informetric Characteristics of Databases to IR System File Design, Part II: Simulation Comparisons
- I Software Survey Section
- Vol. 28, No. 2, 1992
- Nassrin Tavakoli** 153 A New Signature Approach for Retrieval of Documents from Free-Text Databases
Alan Ray
- Stefan Sitter** 165 Modeling the Illocutionary Aspects of Information-Seeking Dialogues
Adelheit Stein
- Timo Niemi** 181 Advanced Query Formulation in Deductive Databases
Kalervo Järvelin
- L. Egghe** 201 Citation Age Data and the Obsolescence Function: Fits and Explanations
I.K. Ravichandra Rao
- Nicholas V. Findler** 219 SHRIF, A General-Purpose System for Heuristic Retrieval of Information and Facts, Applied to Medical Knowledge Processing
Sarita Maini
Albert F.M. Yuen
- Zorana Ercegovac** 241 Design and Implementation of an Experimental Cataloging Advisor – Mapper
Harold Borko
- Zorana Ercegovac** 259 Performance Evaluation of Mapper
Harold Borko
- Li D. Xu** 269 An Information Systems Approach to the Intervention and Prevention of AIDS
Ling X. Li
- Book Reviews*
- Elaine G. Toms** 281 *The Basics of Systems Analysis and Design for Information Managers* by J.E. Rowley, and *Managing Change in Libraries and Information Services* by P.G. Underwood
- Lisa Ann LoVullo** 282 *Information and Libraries in the Developing World. 1. Sub-Saharan Africa* by M. Wise and A. Olden (Eds.)
- Fabian A. Ehihamenor** 283 *New Horizons in Information Retrieval* by D. Ellis
- Peter Chauvette** 284 *Formalism in AI and Computer Science* by P. Leith
- Harold Borko** 285 *From Documentation to Information Science: The Beginnings and Early Development of the American Documentation Institute – American Society for Information Science* by I. Farkas-Conn

| | | |
|----------------------------|-----|---|
| Pauline A. Cochrane | 286 | <i>Indexing and Abstracting in Theory and Practice</i> by F.W. Lancaster |
| | 289 | Announcement |
| | I | Software Survey Section |

Vol. 28, No. 3, 1992

| | | |
|--|-----|---|
| Peter Bollmann Vijay V. Raghavan Gwang S. Jung Lih C. Shu | 291 | On Probabilistic Notions of Precision as a Function of Recall |
| Gerda Ruge | 317 | Experiments on Linguistically Based Term Associations |
| Forbes J. Burkowski | 333 | An Algebra for Hierarchically Organized Text-Dominated Databases |
| Paraic Sheridan Alan F. Smeaton | 349 | The Application of Morpho-Syntactic Language Processing to Effective Phrase Matching |
| M. Agosti G. Gradenigo P.G. Marchetti | 371 | A Hypertext Environment for Interacting with Large Textual Databases |
| Jacques Savoy | 389 | Bayesian Inference Networks and Spreading Activation in Hypertext Systems |
| | | <i>Trends in . . . A Critical Review</i> |
| Jessica L. Milstead | 407 | Methodologies for Subject Analysis in Bibliographic Databases |
| | | <i>Opinion Paper</i> |
| Michael E.D. Koenig | 433 | How Close We Came |
| | 437 | Announcements |
| | I | Software Survey Section |

Vol. 28, No. 4, 1992

Special Issue: Evaluation Issues in Information Retrieval

| | | |
|----------------------|-----|--|
| Donna Harman | 439 | Evaluation Issues in Information Retrieval |
| Gerard Salton | 441 | The State of Retrieval System Evaluation |

Opinion Paper

- | | | |
|---|-----|---|
| Robert Ledwith | 451 | On the Difficulties of Applying the Results of Information Retrieval Research to Aid in the Searching of Large Scientific Databases |
| S.E. Robertson M.M. Hancock-Beaulieu | 457 | On the Evaluation of IR Systems |
| Jean Tague-Sutcliffe | 467 | The Pragmatics of Information Retrieval Experimentation, Revisited |
| E. Michael Keen | 491 | Presenting Results of Experimental Retrieval Comparisons |
| Louise T. Su | 503 | Evaluation Measures for Interactive Information Retrieval |
| Philippe Aigrain Véronique Longueville | 517 | Evaluation of Navigational Links between Images |
| | | <i>Book Reviews</i> |
| Michael Buckland | 529 | <i>Library Orthodoxies: A Decade of Change</i> by B. Cronin |
| Trudy Downs | 529 | <i>Human Resource Management in Libraries: Theory and Practice</i> by R. Rubin |
| Bryce Allen | 531 | <i>Automation and Organizational Change in Libraries</i> by P. Johnson |
| Lisa Swei | 532 | <i>How to Write and Present Technical Information</i> by C.H. Sides |
| Yves Khawam | 533 | <i>Libraries and Expert Systems</i> by C. McDonald and J. Weckert (Eds.) |
| Condict Gaye Stevenson | 534 | <i>The Serials Directory: An International Reference Book</i> by EBSCO Publishing Staff |
| John W. Head | 534 | <i>Keyguide to Information Sources in Online and CD-ROM Database Searching</i> by J. Cox |
| Deirdre C. Stam | 535 | <i>Opportunities for Reference Services: The Bright Side of Reference Services in the 1990s</i> by B. Katz (Ed.) |
| Il-Yeol Song | 536 | <i>Introduction to Object-Oriented Databases</i> by W. Kim |
| Ingrid Hsieh-Yee | 537 | <i>MARC Manual: Understanding and Using MARC Records</i> by D. Byrne |
| L.V. Green | 538 | <i>Information Policies: A Sourcebook</i> by I. Rowlands and S. Vogel |

- Christinger Tomer** 539 *Advances in Librarianship* by I. Godden (Ed.)
- John M. Budd** 541 *Alternative Sources of Revenue in Academic Libraries* by M.J. Lynch
- Frederick J. Stielow** 542 *Surveillance in the Stacks: The FBI's Library Awareness Program* by H. Foerstel
- Karl R. Schneider** 543 *Social Intelligence* by Blaise Cronin (Ed.)
- John C. Broderick** 545 *Early Bindings in Paper: A Brief History of European Hand-Made Paper-Covered Books with a Multilingual Glossary* by M.V. Cloonan
- Anne Kelly** 546 *Automating Literacy: A Challenge for Libraries* by L. Main and C. Whitaker

Vol. 28, No. 5, 1992

- F. Rabitti**
P. Savino 547 Automatic Image Indexation to Support Content-Based Retrieval
- Eric Andonoff**
Michel Canillac
Catherine Mendiboure
Gilles Zurfluh 567 OHQL: A Hypertext Approach for Manipulating Object-Oriented Databases
- Chin-Chen Chang**
Tzong-Chen Wu 581 Retrieving the Most Similar Symbolic Pictures from Pictorial Databases
- Mahmoud Mhashi**
Roy Rada
Eevi Beck
Antonios Michailidis
Akmal Zeb 589 Computer-Supported Discussion and Annotation
- Marc Cavazza**
Pierre Zweigenbaum 609 Extracting Implicit Information from Free Text Technical Reports
- Robert Burgin** 619 Variations in Relevance Judgments and the Evaluation of Retrieval Performance
- Florence E. DeHart** 629 Monographic References and Information Science Journal Literature
- Quentin L. Burrell** 637 A Simple Model for Linked Informetric Processes
- J. Christopher Westland** 647 Economic Incentives for Database Normalization
- Book Reviews*
- George R. Thoma** 663 *SAA Image Processing* by M. Killen

| | | |
|--|----------------------|--|
| John Erkkila | 664 | <i>Information Intensive Britain: A Critical Analysis of the Policy Issues</i> by N. Moore and J. Steele |
| Daniel Callison | 665 | <i>Library Trends: Toward Information Literacy—Innovative Perspectives for the 1990s</i> by M. Huston (ed.) |
| Ingrid Hsieh-Yee | 667 | <i>Full Text Databases</i> by C. Tenopir and J. Soon Ro |
| Delia Neuman | 668 | <i>Library Services for Disabled Individuals</i> by R. S. Karp (Ed.) |
| Frederick J. Stielow | 669 | <i>A Sourcebook of Standards Information: Education, Access & Development</i> by S. Spivak and K. Winsell (Eds.) |
| | 671 | Errata |
| | 673 | Announcement |
| | Vol. 28, No. 6, 1992 | |
| Abraham Bookstein James A. Storer | 675 | Data Compression |
| Pamela C. Cosman Eve A. Riskin Robert M. Gray | 681 | Combining Vector Quantization and Histogram Equalization |
| Oscal T.-C. Chen Bing J. Sheu Wai-Chi Fang | 687 | Image Compression on a VLSI Neural-Based Vector Quantizer |
| Tassos Markas John Reif | 707 | Quad Tree Structures for Image Compression Applications |
| Jianhua Lin James A. Storer Martin Cohn | 723 | Optimal Pruning for Tree-Structured Vector Quantization |
| Abraham Bookstein Shmuel T. Klein | 735 | Models of Bitmap Generation: A Systematic Approach to Bitmap Compression |
| Paul G. Howard Jeffrey Scott Vitter | 749 | Analysis of Arithmetic Coding for Data Compression |
| Paul G. Howard Jeffrey Scott Vitter | 765 | New Methods for Lossless Image Compression Using Arithmetic Coding |
| Craig Nevill Timothy Bell | 781 | Compression of Parallel Texts |
| Abraham Bookstein Shmuel T. Klein D. A. Ziff | 795 | A Systematic Approach to Compressing a Full-Text Retrieval System |

Book Reviews

- Charles T. Meadow** 807 *Systems that Support Decision Makers: Description and Analysis* by M. Silver
- James D. Anderson** 808 *The Bibliographic Record and Information Technology, 2nd Edition* by R. Hagler
- Ingrid Hsieh-Yee** 809 *Descriptive Cataloging for the AACR2R and USMARC: A How-To-Do-It-Workbook* by L. Millsap and T. E. Ferl
- William E. McGrath** 811 *Basic Research Methods for Librarians, 2nd Edition* by R. Powell
- Deirdre C. Stam** 812 *The Design of Bibliographies; Observations, References and Examples* by E. Berger
- Jessica Foster** 814 *Library Trends: Intellectual Freedom, Parts I & II* by D. Woodward (Issue Ed.)
- I List of Contents and Author Index

AUTHOR INDEX

- Agosti, M., 371
Aigrain, P., 517
Allen, B., 531
Anderson, J. D., 808
Andonoff, E., 567
- Beck, E., 589
Bell, T., 781
Bierbaum, E. G., 89
Bollmann, P., 291
Bonzi, S., 111
Bookstein, A., 75, 675,
735, 795
Borko, H., 241, 259, 285
Broderick, J. C., 545
Brooks, R. M., 89
Brooks, T. A., 89
Buckland, M., 529
Budd, J. M., 541
Burgin, R., 619
Burkowski, F. J., 333
Burrell, Q. L., 19, 637
- Callison, D., 665
Canillac, M., 567
Cavazza, M., 609
Chang, C.-C., 581
Chauvette, P., 284
Chen, O. T.-C., 687
Cochrane, P. A., 286
Cohn, M., 723
Cosman, P. C., 681
- DeHart, F. E., 629
Dillon, M., 75
Downs, T., 529
- Egghe, L., 35, 201
Ehikhamenor, F. A., 283
Ercegovac, Z., 241, 259
Erkkila, J., 664
- Fang, W.-C., 687
Findler, N. V., 219
Foster, J. 814
- Glänzel, W., 53
Gradenigo, G., 371
- Gray, R. M., 681
Green, L. V., 538
- Hancock-Beaulieu, M. M.,
457
Harman, D., 439
Head, J. W., 534
Howard, P. G., 749, 765
Hsieh-Yee, I., 537, 667,
809
- Järvelin, K., 181
Jung, G. S., 291
- Keen, E. M., 491
Kelly, A., 546
Khawam, Y., 533
Klein, S. T., 735, 795
Koenig, M. E. D., 433
- Ledwith, R., 451
Li, L. X., 269
Lin, J., 723
Longueville, V., 517
LoVullo, L. A., 282
- Maini, S., 219
Marchetti, P. G., 371
Markas, T., 707
McGrath, W. E., 811
Meadow, C. T., 807
Mendiboure, C., 567
Mhashi, M., 589
Michailidis, A., 589
Milstead, J. L., 407
- Neuman, D., 668
Nevill, C., 781
Neimi, T., 181
- O'Neill, E., 75
- Pao, M. L., 99
- Rabitti, F., 547
Rada, R., 589
Raghavan, V. V., 291
Rao, I. K. R., 201
- Ray, A., 153
Reif, J., 707
Riskin, E. A., 681
Robertson, S. E., 457
Rousseau, R., 45
Ruge, G., 317
- Salton, G., 441
Savino, P., 547
Savoy, J., 389
Schneider, K. R., 543
Sheridan, P., 349
Sheu, B. J., 687
Shu, L. C., 291
Sichel, H. S., 5
Sitter, S., 165
Smeaton, A. F., 349
Song, I.-Y., 536
Stam, D. C., 535, 812
Stein, A., 165
Stephens, D., 75
Stevenson, C. G., 534
Stielow, F. J., 542, 669
Storer, J. A., 675, 723
Su, L. T., 503
Swei, L., 532
- Tabah, A. N., 61
Tague-Sutcliffe, J., 1,
467
Tavakoli, N., 153
Thoma, G. R., 663
Tomer, C., 539
Toms, E. G., 281
- Vitter, J. S., 749, 765
- Westland, J. C., 647
Wolfram, D., 121, 135
Wu, T.-C., 581
- Xu, L. D., 269
- Yuen, A. F. M., 219
- Zeb, A., 589
Ziff, D. A., 795
Zurfluh, G., 567
Zweigenbaum, P., 609