

Lecture Notes in Computer Science 1966
Edited by G. Goos, J. Hartmanis and J. van Leeuwen

Springer

Berlin

Heidelberg

New York

Barcelona

Hong Kong

London

Milan

Paris

Singapore

Tokyo

Subhash Bhalla (Ed.)

Databases in Networked Information Systems

International Workshop DNIS 2000
Aizu, Japan, December 4-6, 2000
Proceedings



Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editor

Subhash Bhalla
University of Aizu, Database Systems Laboratory
Aizu-Wakamatsu City, Fukushima 965-8580, Japan
E-mail: bhalla@u-aizu.ac.jp

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Databases in networked information systems : international workshop ;
proceedings / DNIS 2000, Aizu, Japan, December 4 - 6, 2000. Subhash
Bhalla (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ; Hong Kong :
London ; Milan ; Paris ; Singapore ; Tokyo : Springer, 2000
(Lecture notes in computer science ; Vol. 1966)
ISBN 3-540-41395-2

CR Subject Classification (1998): H.2, H.3, H.4, H.5, C.2

ISSN 0302-9743
ISBN 3-540-41395-2 Springer-Verlag 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-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag Berlin Heidelberg New York
a member of BertelsmannSpringer Science+Business Media GmbH
© Springer-Verlag Berlin Heidelberg 2000
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Steingräber Satztechnik GmbH, Heidelberg
Printed on acid-free paper SPIN: 10781080 06/3142 5 4 3 2 1 0

Preface

Data management systems for large applications seek infrastructural support from database systems and distributed computing systems. These systems improve with the changing requirements of applications. New research efforts are being made to support electronic commerce (EC) applications, and voluminous data handling applications. At the same time, support techniques are being studied in data mining and knowledge discovery, object-relational database management systems, and mobile computing systems. The international workshop on Databases in Networked Information Systems (DNIS) 2000 has been organized to emphasize the research activity on support systems.

DNIS 2000 is being held on 4–6 December 2000 at the University of Aizu in Japan. The workshop program includes research contributions and invited contributions. A view of research activity in evolving data management systems and related research issues has been provided by the session on this topic. The invited contributions have been contributed by Dr. Qiming Chen, Dr. Umeshwar Dayal, and Dr. Meichun Hsu, and by Masaru Kitsuregawa, Takahiko Shintani, Takeshi Yoshizawa, and Iko Pramudiono. The workshop session on database systems includes contributed papers by Dr. Jayant R. Haritsa and by Professor Divyakant Agrawal and Dr. Amr El Abbadi. The session on networked information systems includes the invited contribution by Professor Krithi Ramamirtham, Pavan Deolasee, Amol Katkar, Ankur Panchbudhe, and Prashant Shenoy.

I would like to thank the members of the program committee for their support and all authors who considered DNIS 2000 in making research contributions.

The sponsoring organizations and the organizing committee deserve praise for the support they provided. A number of individuals have contributed to the success of the workshop. I thank Professor P.C.P. Bhatt, Professor J. Biskup, Dr. Carl W. Vilbrand, and Professor M. Kitsuregawa, for providing continuous support and encouragement.

I have received invaluable support from the University of Aizu. Professor Shoichi Noguchi, President, provided encouragement and took interest in the formation of the plan. I thank Professor Shunji Mori, Head of Department of Computer Software, for making the support available. I express my gratitude to the members and chairman of the International Affairs Committee for supporting the workshop proposal. I also thank all my colleagues at the university for their cooperation and support.

September 2000

Subhash Bhalla

Organization

DNIS 2000 international workshop is organized by the Database Systems Laboratory, University of Aizu, Aizu-Wakamatsu City, Fukushima, Japan.

Executive Committee

Program Chair:	S. Bhalla, University of Aizu, Japan
Organizing Chair:	Qun Jin, University of Aizu, Japan
Executive Chair:	N. Bianchi-Berthouze, University of Aizu, Japan

Program Committee

D. Agrawal, University of California, USA
F. Andres, National Center for Science Information Systems, Japan
A. Basu, Vanderbilt University, USA
S. Bhalla, University of Aizu, Japan
P.C.P. Bhatt, Kochi Technical University, Japan
J. Biskup, University of Dortmund, Germany
U. Dayal, Hewlett-Packard Laboratories, USA
S. Grumbach, INRIA, France
O. Hammami, University of Aizu, Japan
J.R. Haritsa, Indian Institute of Science, India
S. Jajodia, George Mason University, USA
Q. Jin, University of Aizu, Japan
M. Kitsuregawa, University of Tokyo, Japan
A. Kumar, University of Colorado, USA
J. Li, University of Tsukuba, Japan
S.K. Madria, Purdue University, USA
G. Mansfield, Tohoku University, Japan
P.K. Reddy, University of Tokyo, Japan
M.V. Sreenivas, Sylantro Systems, USA
N. Terashima, Waseda University, Japan

Additional Reviewers

Lawrence Mutenda, Institute of Industrial Sciences, University of Tokyo, Japan
Tadashi Ohmori, University of Electro-Communications, Chofu, Japan

Sponsoring Institution

International Affairs Committee, University of Aizu,
Aizu-Wakamatsu City, Fukushima P.O. 965-8580, Japan

Table of Contents

Data Management Systems

OLAP-Based Data Mining for Business Intelligence Applications in Telecommunications and E-commerce	1
<i>Qiming Chen, Umeshwar Dayal, Meichun Hsu</i>	
Web Log Mining and Parallel SQL Based Execution	20
<i>Masaru Kitsuregawa, Takahiko Shintani, Takeshi Yoshizawa, Iko Pramudiono</i>	
Data Providers — A Language Experiment	33
<i>John L. Pfaltz</i>	
JAVA Wrappers for Automated Interoperability	45
<i>Ngom Cheng, Valdis Berzins, Luqi, Swapan Bhattacharya</i>	
Issues in Securing GIS Data	65
<i>Pramod Chandra P. Bhatt</i>	
Semantic Conflicts and Solutions in Fuzzy Multidatabase Systems	80
<i>Zongmin M. Ma, Wenjun J. Zhang, Weiyin Y. Ma</i>	

Database Systems : Storage and Retrieval

The Web Is the Database	91
<i>Jayant R. Haritsa</i>	
View Maintenance and Analytical Processing at Data Warehouses	107
<i>Divyakant Agrawal, Amr El Abbadi</i>	
A Design of Parallel R-tree on Cluster of Workstations	119
<i>Shuhua Lai, Fenghua Zhu, Yongqiang Sun</i>	
Graphical Interface for Design of Geometric Data Structures	134
<i>Takashi Hibi, Alexander Pasko</i>	
Similarity-Based Queries for Information Retrieval	148
<i>Ana Isabel Aguilera, Alberto Rafael Subero, Leonid José Tineo</i>	
K-DIME: An Adaptive System to Retrieve Images from the WEB Using Subjective Criteria	157
<i>Nadia Bianchi-Berthouze, Toshikazu Kato</i>	

VIII Table of Contents

Networked Information Systems : Implementation

Dissemination of Dynamic Data on the Internet	173
<i>Krithi Ramamritham, Pavan Deolasee, Amol Katkar, Ankur Panchbudhe, Prashant Shenoy</i>	
Information Retrieval Method for Frequently Updated Information System	188
<i>Nobuyoshi Sato, Takashi Yamamoto, Yoshihiro Nishida, Minoru Uehara, Hideki Mori</i>	
Blocking Reduction in Two-Phase Commit Protocol with Multiple Backup Sites	200
<i>P. Krishna Reddy, Masaru Kitsuregawa</i>	
Inter-agent Cooperation Supported by XML and CORBA in Heterogeneous Information Systems	216
<i>Nacereddine Zarour, Mahmoud Boufaida, Lionel Seinturier, Pascal Estraillier</i>	
Simulation Study on Load Balanced Multiple Home Agents for Mobile IP Networks	228
<i>Adrian Vasilache, Jie Li, Hisao Kameda</i>	
Author Index	247