

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

New York University, NY, 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

Tatyana Yakhno (Ed.)

Advances in Information Systems

Third International Conference, ADVIS 2004
Izmir, Turkey, October 20-22, 2004
Proceedings



Springer

Volume Editor

Tatyana Yakhno
Dokuz Eylul University
Computer Engineering Department
Bornova, 35100 Izmir, Turkey
E-mail: yakhno@cs.deu.edu.tr

Library of Congress Control Number: 2004113292

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

ISSN 0302-9743

ISBN 3-540-23478-0 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

springeronline.com

© Springer-Verlag Berlin Heidelberg 2004
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11333784 06/3142 5 4 3 2 1 0

Preface

This volume contains the proceedings of the 3rd International Conference on Advances in Information Systems (ADVIS) held in Izmir, Turkey, 20–22 October, 2004. This was the third conference dedicated to the memory of Prof. Esen Ozkarahan. We are very proud to continue this tradition and keep the memory of this outstanding scientist.

The third conference covered many of the topics of the second one: databases and data warehouses, information systems development and management, information retrieval, distributed and parallel data processing, and evolutionary algorithms. Besides them some of the hot topics related to information systems were included in the scope of this conference, such as data mining and knowledge discovery, Web information systems development, information privacy and security, multimedia information systems, and network management.

This year we received 203 submissions from which the Program Committee selected 61 papers for presentation at the conference.

The success of the conference was dependent upon the hard work of a large number of people. We gratefully acknowledge the contribution of the members of the Program Committee who did their best to review all submitted papers. We also thank all the specialists who helped us in reviewing the papers.

We appreciated the constant support and help from the Rector of Dokuz Eylul University, Prof. Dr. Emin Alici.

I would like to express my personal gratitude to Natalya Cheremnykh and Olga Drobyshevich for their help in producing the camera-ready version of these proceedings.

August 2004

Tatyana Yakhno

Honorary Chair

Irem Ozkarahan, Dokuz Eylul University, Turkey

Program Committee Chair

Tatyana Yakhno, Dokuz Eylul University, Turkey

Program Committee

Sibel Adali, USA	Malcolm Heywood, Canada
Adil Alpkocak, Turkey	Alp Kut, Turkey
Farhad Arbab, Netherlands	Victor Malyshkin, Russia
Frederic Benhamou, France	Eric Monfroy, France
Cem Bozsahin, Turkey	Erich Neuhold, Germany
Fazli Can, USA	Selmin Nurcan, France
Yalcin Cebi, Turkey	Irem Ozkarahan, Turkey
Paolo Ciaccia, Italy	Gultekin Ozsoyoglu, USA
Cihan Dagli, USA	Marcin Paprzycki, USA
Mehmet E. Dalkilic, Turkey	Torben Bach Pedersen, Denmark
Dursun Delen, USA	Dana Petcu, Romania
Oguz Dikenelli, Turkey	Ilias Petronias, UK
Yakov Fet, Russia	Malcolm Rigg, UK
Victor Ganzha, Germany	Ozgur Ulusoy, Turkey
Fabio Grandi, Italy	Krzysztof Wecl, Poland
Ugur Gudukbay, Turkey	Adnan Yazici, Turkey
Cuneyt Guzelis, Turkey	Nur Zincir-Heywood, Canada

Conference Secretary

Emine Ekin, Turkey

Local Organizing Committee

Sedat Yilmaz	Tolga Berber
Serife Sungun	Mustafa Kasap
Berna Simsek	Gokhan Dalkilic

Sponsors

Support from the following institutions is gratefully acknowledged:

- Scientific and Technical Research Council of Turkey (TUBITAK)
- Dokuz Eylul University President’s Office, Izmir, Turkey
- Microsoft

Additional Referees

Ismail Sengör Altingövde	Marc Gelgon	Stefano Rizzi
Pascal André	Gyozo Gidofalvi	Gwen Salaün
Christian Attiogbé	Laurent Granvilliers	Frédéric Saubion
Ceyhun Araz	Ernst W. Grundke	Albrecht Schmidt
Bilge Bilgen	Juan Guillen-Scholten	Onur Tolga Sehitoglu
Lucas Bordeaux	Nazlı İkizler	Anton Selikhov
Sebastian Brand	Joost Jacob	Hasan Selim
Ali Cakmak	Mustafa Kasap	Malik Kemal Sis
Ben Carterette	Ozcan Kilincci	Martin Steinebach
Dave Clarke	Mustafa Kirac	Bent Thomsen
David Costa	Predrag Knezevic	Yasemin Topaloglu
Valerie Cross	Patrick Lehti	Kristian Torp
Martine Ceberio	Valentina Markova	Leon van der Torre
Marc Christie	Pavel Mankevich	Irina Virbitskaite
Panagiotis Chountas	José Martinez	Osman Unalir
Gokhan Dalkilic	Pinar Mizrak	Sedat Yilmaz
Nikolay Diakov	Efendi Nasibov	Meltem Turhan Yondem
Allan G. Jost	Rabia Nuray	Yury Zagorulko
Ozgur Eski	Brice Pajot	Pedrito Maynard-Zhang
Kayhan Erciyes	Evgueni Petrov	Peter Zoeteweij
Riza Cenk Erdur	Christophe Ringeissen	

Table of Contents

Databases and Data Warehouses

Temporality in Databases <i>Abdullah Uz Tansel</i>	1
On Uncertainty and Data-Warehouse Design <i>Panagiotis Chountas, Ilias Petrounias, Christos Vasilakis, Andy Tseng, Elia El-Darzi, Krassimir T. Atanassov, Vassilis Kodigoianis</i>	4
A Data Warehouse Engineering Process <i>Sergio Luján-Mora, Juan Trujillo</i>	14
Aggregation and Analysis of Spatial Data by Means of Materialized Aggregation Tree <i>Marcin Gorawski, Rafal Malczok</i>	24
An Object-Oriented Framework for Reconciliation and Extraction in Heterogeneous Data Federations <i>Herman Balsters, Engbert O. de Brock</i>	34
On Optimising Data Access Via Materialised Methods in Object-Oriented Systems <i>Juliusz Jezierski, Mariusz Masewicz, Robert Wrembel</i>	47
Some Modifications of Bucket-Based Algorithms for Query Rewriting Using Views <i>Qingyuan Bai, Jun Hong, Michael F. McTear</i>	57

Data Mining and Knowledge Discovery

A Data Mining Application on Air Temperature Database <i>T. Tugay Bilgin, A. Yılmaz Çamurcu</i>	68
Incremental Association Rule Mining Using Materialized Data Mining Views <i>Mikołaj Morzy, Tadeusz Morzy, Zbyszko Królikowski</i>	77
Outlier Effects on Databases <i>Ahmet Kaya</i>	88
Finding Maximal Similar Paths Between XML Documents Using Sequential Patterns <i>Jung-Won Lee, Seung-Soo Park</i>	96

Web Information Systems Development

Using Ontologies for Collaborative Information Management:
Some Challenges and Ideas

*Victor Guevara-Masis, Ozgul Unal, Ersin C. Kaletas,
Hamideh Afsarmanesh, Louis O. Hertzberger* 107

The Construction of Domain Ontology and Its Application to
Document Retrieval

Soo-Yeon Lim, Mu-Hee Song, Sang-Jo Lee 117

WetDL: A Web Information Extraction Language

Benjamin Habegger, Mohamed Quafafou 128

Towards Building Knowledge Centres on the World Wide Web

Zsolt T. Kardkovács, Gábor M. Surányi, Sándor Gajdos 139

Navigation Modelling from a User Services Oriented Approach

Paloma Cáceres, Valeria de Castro, Esperanza Marcos 150

Kreios: Towards Semantic Interoperable Systems

*Ismael Navas-Delgado, María del Mar Roldán-García,
José Francisco Aldana-Montes* 161

Adaptive Architecture for Web Server Survivability

*Eunghi Park, Dae-Sik Choi, Eul Gyu Im, Jung-Tack Seo,
Dongkyu Kim* 172

Information Systems Development and Management

Integration and Maintenance of Heterogeneous Applications and Data
Structures

*Elaine Isnard, Enrique Perez, Radu Bercaru, Alexandra Galatescu,
Vladimir Florian, Dan Conescu, Laura Costea, Alexandru Stanciu* ... 181

A Component Language for Hybrid Solver Cooperations

Eric Monfroy, Carlos Castro 192

Non-interleaved Quadtree Node Codification

Mariano Pérez, Marcos Fernández, Ricardo Olanda 203

Parameterized Formatting of an XML Document by XSL Rules

Madani Kenab, Tayeb Ould Braham, Pierre Bazez 213

A Middleware Approach to Storing and Querying XML Documents in
Relational Databases

Zülal Şevkli, Mine Mercan, Atakan Kurt 223

Information Retrieval

On Families of New Adaptive Compression Algorithms Suitable for
Time-Varying Source Data

Luis Rueda, B. John Oommen 234

Text Summarization and Singular Value Decomposition

Josef Steinberger, Karel Ježek 245

Sentence Boundary Detection in Turkish

B. Taner Dinçer, Bahar Karaoğlu 255

Multiple Sets of Rules for Text Categorization

Yaxin Bi, Terry Anderson, Sally McClean 263

Zipf's Law and Mandelbrot's Constants for Turkish Language Using
Turkish Corpus (TurCo)

Gökhan Dalkılıç, Yalçın Çebi 273

Letter Based Text Scoring Method for Language Identification

Hidayet Takcı, İbrahim Soğukpınar 283

Parallel and Distributed Data Processing

Parallel Implementation of a VQ-Based Text-Independent Speaker
Identification

Ruhsar Soğancı, Fikret Gürgen, Haluk Topcuoğlu 291

A Distributed Model of Neuronal Regulators Based on Message-Driven
Software Component Architecture

*Francisco Maciá Pérez, Antonio Soriano Payá,
Jerónimo Mora Pascual, Juan Manuel García Chamizo* 301

Winsim: A Tool for Performance Evaluation of Parallel and
Distributed Systems

Alexander Kostin, Ljudmila Ilushechkina 312

Integrating Distributed Composite Objects into Java Environment

Guray Yilmaz, Nadia Erdogan 322

Content-Based Distribution for Load Sharing in Locally Clustered Web
Servers

Ji Yung Chung, Sungsoo Kim 332

A Study on Grid Partition for Declustering High-Dimensional Data

Tae-Wan Kim, Hak-Cheol Kim, Ki-Joune Li 342

Design and Implementation of a Real-Time Static Locking Protocol for Main-Memory Database Systems

Jin-Ho Kim, Young-Chul Kim, Han-Yang You, June Kim, Soo-Ho Ok 353

Multimedia Information Systems

Integrated Querying of Images by Color, Shape, and Texture Content of Salient Objects

Ediz Şaykol, Uğur Gündükbay, Özgür Ulusoy 363

Trajectory-Based Video Retrieval for Multimedia Information Systems

Choon-Bo Shim, Jae-Woo Chang, Young-Chang Kim 372

Using an Exact Radial Basis Function Artificial Neural Network for Impulsive Noise Suppression from Highly Distorted Image Databases

Pınar Çivicioglu, Mustafa Alçı, Erkan Beşdok 383

A Histogram Smoothing Method for Digital Subtraction Radiography

Aydın Ozturk, Cengiz Gungor, Pelin Güneri, Zuhul Tuğsel, Selin Göğüş 392

Efficient Liver Segmentation Based on the Spine

Kyung-Sik Seo, Lonnie C. Ludeman, Seung-Jin Park, Jong-An Park . 400

Information Privacy and Security

Practical and Secure E-Mail System (PractiSES)

Albert Levi, Mahmut Özcan 410

A Preprocessor Adding Security to and Improving the Performances of Arithmetic and Huffman Codings

Ebru Celikel, Mehmet Emin Dalkılıç 420

Performance Evaluation of Digital Audio Watermarking Techniques Designed in Time, Frequency and Cepstrum Domains

Murat Şehirli, Fikret Gürgen, Serhat İkizoğlu 430

Evolutionary and Knowledge-Based Systems

A Hybrid Genetic Algorithm for Packing in 3D with Deepest Bottom Left with Fill Method

Korhan Karabulut, Mustafa Murat İnceoğlu 441

Multi-objective Genetic Algorithm Based Clustering Approach and Its Application to Gene Expression Data

Tansel Özyer, Yimin Liu, Reda Alhajj, Ken Barker 451

An Application of Support Vector Machine in Bioinformatics: Automated Recognition of Epileptiform Patterns in EEG Using SVM Classifier Designed by a Perturbation Method <i>Nurettin Acır, Cüneyt Güzelış</i>	462
Selection of Optimal Dimensionality Reduction Methods for Face Recognition Using Genetic Algorithms <i>Önsen Toygar, Adnan Acan</i>	472
Performance Comparison of Genetic and Differential Evolution Algorithms for Digital FIR Filter Design <i>Nurhan Karaboga, Bahadır Cetinkaya</i>	482
Kidney Allocation Expert System with Case-Based Reasoning <i>Tatyana Yakhno, Can Yılmaz, Sevinc Gulsecen, Erkan Yılmaz</i>	489
Software Engineering and Business Process Models	
Integrating AI and OR: An Industrial Engineering Perspective <i>Irem Ozkarahan, Seyda Topaloglu, Ceyhun Araz, Bilge Bilgen, Hasan Selim</i>	499
Framework for Knowledge-Based IS Engineering <i>Saulius Gudas, Tomas Skersys, Audrius Lopata</i>	512
Modelling Variability in Requirements with Maps <i>Sondes Bennisri, Carine Souveyet, Colette Rolland</i>	523
Kaliphimos: A Community-Based Peer-to-Peer Group Management Scheme <i>Hoh Peter In, Konstantinos A. Meintanis, Ming Zhang, Eul Gyu Im</i>	533
On the Application of WF-Nets for Checking Hybrid IDEF0-IDEF3 Business Process Models <i>Costin Bădică, Chris Fox</i>	543
Practical Investigation into the Maintainability of Object-Oriented Systems for Mission Critical Business <i>Joa Sang Lim, Seung Ryul Jeong, Min Cheol Whang, Yongjoo Cho</i> ...	554
Network Management	
A New MAC Protocol Design for WATM Networks <i>Celal Ceken, Ismail Erturk, Cuneyt Bayilmis</i>	564
Fuzzy Logic Based Congestion Avoidance in TCP/AQM Networks <i>Mahdi Jalili-Kharaajoo</i>	575

Distributed Group Access Control Architecture for Secure Multicast <i>John Felix C, Valli S</i>	585
Virtual-IP Zone Algorithm in IP Micro Mobility Environments <i>Taehyoun Kim, Bongjun Choi, Hyunho Lee, Hyosoon Park, Jaiyong Lee</i>	595
A Network Management Approach for QoS Evaluation of IP Multimedia Services <i>Yong-Hoon Choi, Beomjoon Kim, Jaesung Park</i>	605
Author Index	615