

9th ISCA International Conference on Parallel and Distributed Computing Systems 1996

**Dijon, France
25-27 September 1996**

Volume 1 of 2

Editors:

**K. Yetongnon
S. Hariri**

ISBN: 978-1-61839-817-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (1996) by the International Society for Computers and Their Applications
All rights reserved. Reproduction in any form without the written consent of ISCA is prohibited.

Original ISBN: 1-880843-17-X (Out of Print)
Reprint ISBN: 978-1-61839-817-8

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the International Society for Computers and Their Applications
at the address below.

International Society for Computers and Their Applications
975 Walnut Street, Suite 132
Cary, NC 27511-4216

Phone: (919) 467-5559
Fax: (919) 467-3430

isca@ipass.net

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

INTERNATIONAL SOCIETY FOR COMPUTERS AND THEIR APPLICATIONS

9th International Conference on Parallel and Distributed Computing Systems

September 25 - 27, 1996
Palais des Congrès, Dijon, France

TECHNICAL PAPER INDEX

VOLUME I: GENERAL SESSIONS

SESSION S1: PARALLEL AND DISTRIBUTED ALGORITHMS

1.	<i>An Efficient Termination Protocol for Asynchronous Iterative Algorithms</i> Didier El Baz (LAAS du CNRS)	1
2.	<i>Partially Authenticated Algorithms for Byzantine Agreement</i> Malte Borcherding (University of Karlsruhe)	8
3.	<i>Massively Parallel and Distributed Dictionaries on AVL and Brother Trees</i> J. Gabarró and X. Messeguer (Univ. Politècnica de Catalunya)	14
4.	<i>Application of a Termination Detection Scheme to Distributed Sorting</i> S. Rönn (Swedish School of Economics)	18

SESSION S2: DISTRIBUTED SYSTEMS - OPERATING SYSTEM SUPPORT

1.	<i>Design of an Object MMS Application Programming Interface</i> F. Weis (Conservatoire National des Arts et Métiers)	21
2.	<i>Towards Flexible I/O Support in Parallel and Distributed Systems</i> Frank Matthijs, Yolande Berbers, Wouter Joosen, Johan Van Oeyen, Bert Robben, Pierre Verbaeten (K. U. Leuven)	25
3.	<i>Schooner: An Object-Oriented Run-time Support for Distributed Applications</i> Nathalie Furmento, Françoise Baude (INRIA)	31
4.	<i>A Discussion of Distributed System Environments and Distributed Operating Systems</i> X. Jia, J. Cao, W. Jia and C. H. Lee (City University of Hong Kong)	37

SESSION S3: DISTRIBUTED APPLICATION - IMAGE PROCESSING I

1.	<i>Document Skew Elimination on a Massively Parallel Architecture</i> F. Meunier, D. Millot (Institut National des Télécommunications) and M. Slusarek (Jagiellonian University)	43
2.	<i>Distributed Load Balancing Strategies for Parallel Ray Tracing</i> M. Krajecki, Z. Habbas, F. Herrmann and Y. Gardan (Laboratoire de Recherche en Informatique de Metz)	50
3.	<i>Parallel Gaussian Elimination over Small Finite Fields</i> M. Weller (University of Essen)	56

SESSION S4: PARALLEL ARCHITECTURE

1. Improved Systolic Architecture for Transpose Heuristic Jean Frédéric Myoupo and Ahmad Wabbi (Université de Picardie Jules Verne)	64
2. Parallel Selection on a Pipelined TDM Optical Bus Yueming Li and S. Q. Zheng (Louisiana State University)	69
3. Incorporating Caches into Hybrid Multithreaded Computer Architecture Dae J. Hwang and Tai M. Chung (Sung Kyun Kwan University)	74
4. Simulating Switch Caches in MIN-Based Multiprocessors Mazin S. Yousif (IBM Corporation) and Huang Yong (Ericsson Inc.)	82

SESSION S5: CONCURRENCY AND PARALLELISM I

1. Flexible Distributed Replay in a Message Server Network Environment Xavier Bonnaire and Daniel Prun (Université Pierre et Marie Curie)	88
2. Dynamic Scheduling in an Implicit Parallel System Haruyasu Ueda (Fujitsu Laboratories Ltd.) and Johan Montelius (Swedish Institute of Computer Science)	94
3. Optimizing Parallel Programs on Machines with Fast Communication Wolff Löwe, Jörn Eisenbiegler and Wolf Zimmermann (Universität Karlsruhe)	100
4. The Influence of Resource Dependencies on Distributed Scheduling Policies for Load Sharing Craig E. Wills (Worcester Polytechnic Institute) and Pete F. Bastien (M.I.T. Lincoln Laboratories)	104

SESSION S6: CONCURRENCY AND PARALLELISM II

1. Massively Parallel Programming Languages - A Classification of Design Approaches Wolfgang Gellerich (University of Stuttgart) and Michael M. Gutzmann (University of Jena)	110
2. Bounded Timestamps for Causal Ordering Protocols Achour Mostefaioui (IRISA)	119
3. A Suite of Formal Definitions for Consistency Criteria in Distributed Shared Memories Michel Raynal (IRISA) and André Schiper (EPFL)	125
4. Concurrent Scalable Distributed Data Structures Shang-Sheng Tung, Hongyuan Zha and Thomas Keefe (The Pennsylvania State University)	131

SESSION S7: CONCURRENCY AND PARALLELISM III

1. Formal Verification of Time Constrained Communications Joël Toussaint, Luis Vega and Françoise Simonot-Lion (ENSEM)	138
2. Implementation and Validation Methods Applied to SSCOP Julian Harris and Jan Madsen (EPFL)	144
3. A Type System for the Derivation of Data Redistributions Thomas Rauber, Gudula Rünger (Universität des Saarlandes)	150
4. A Complete Set of Satisfaction Rules for Property Detection in Distributed Computations Michel Hurfin (IRISA) and Masaaki Mizuno (Kansas State University)	156

SESSION S8: DISTRIBUTED AND PARALLEL COMPUTING I

1. Designing an Open-ended Distributed File System in Aster V. Issarny, C. Bidan and T. Saridakis (IRISA)	163
2. Support for Collaborative Object-Oriented Development Boris Magnusson (Lund University) and Rachid Guerraoui (École Polytechnique Fédérale de Lausanne)	169
3. Communication Object Group for Reliable Distributed Computing Weijia Jia, Chan H. Lee and Xiaohua Jia (City University of Hong Kong)	175
4. Charlotte: Metacomputing on the Web Arash Baratloo, Mehmet Karaal, Zvi Kedem and Peter Wyckoff (New York University)	181

SESSION S9: DISTRIBUTED COMPUTING II

1. Data-Parallel Programming on Helios, Parallel Environment and PVM Cevat Sener (Middle East Technical University), Yakup Paker (University of London) and Ayse Kiper (Middle East Technical University)	189
2. A High Performance Fortran Programming Environment on the World-Wide Virtual Machine Kivanc Dincer and Geoffrey C. Fox (Syracuse University)	193
3. A Distributed Multipoint Multimedia Conference Environment Ayman M. El-Geneidy, Anup Kumar and Alok Srivastava (University of Louisville)	199
4. JAVA-Based Distributed Conferencing for Heterogeneous Systems Mohamed Y. El-Refaie, Anup Kumar and Adel S. Elmaghreby (University of Louisville)	205

SESSION S10: PERFORMANCE ANALYSIS OF PARALLEL & DISTRIBUTED SYSTEMS I

1. Mini-Statecharts: A Compositional Way to Model Parallel Systems Peter Scholz (Technische Universität München), Dieter Nazareth (BMW AG) and Franz Regensburger (Siemens AG)	211
2. Modeling and Timing Performance Analysis of Deterministic Clock Synchronization Algorithms Zoubir Mammeri and Jiying He (CRIN Nancy)	219
3. Multiprocessor Performance Evaluation of Billing Gateway Systems for Telecommunication Applications Lars Lundberg (University of Karlskrona/Ronneby)	225
4. Modeling Parallel Structures with Stochastic Operators Tahany A. Fergany and Ehab Abdel Maksoud (Cairo University) and Reda A. Ammar (University of Connecticut)	232

SESSION S11: PERFORMANCE ANALYSIS OF PARALLEL & DISTRIBUTED SYSTEMS II

1. MILE: An Open Environment for Interconnection Networks Performance Evaluation Belkacem Zerrouk and Abdelhafid Bouaraoua (UPMC)	238
2. Heuristic Scheduling Algorithms to Access the Critical Section in Shared Memory Environment Reda A. Ammar (University of Connecticut), Tahany A. Fergany (Cairo University), Ali I. El-Desouky and Mohamed M. Hefeeda (Mansoura University)	244

3.	<i>LoadBuilder: A Tool for Generating and Modeling Workloads in Distributed Workstation Environments</i>	248
	<i>O. Dalle (University of Nice-Sophia Antipolis)</i>	
4.	<i>The HIMAP Modeling Environment</i>	254
	<i>Govindarajan Krishnamurthi, Anju Gupta and Arun K. Somani (University of Washington)</i>	

SESSION S12: PERFORMANCE ANALYSIS OF PARALLEL & DISTRIBUTED SYSTEMS III

1.	<i>An Empirical Comparison of Area-Universal and Other Parallel Computing Networks</i>	260
	<i>Ronald I. Greenberg (Loyola University) and Lee Guan (University of Maryland)</i>	
2.	<i>Time Sharing Systems that Use a Partitioning Algorithm on Mesh-Connected Parallel Computers</i>	268
	<i>Kuniyasu Suzuki, Hitoshi Tanuma, Satoshi Hirano and Yuuji Ichisugi (Electrotechnical Laboratory)</i>	
3.	<i>An Overview of Hierarchical Modeling for Parallel/Distributed Software Applications</i>	276
	<i>Brian MacKay, Howard Sholl and Reda Ammar (University of Connecticut)</i>	
4.	<i>Performance Testing of Distributed Systems Using TTCN</i>	280
	<i>C. H. Lee and S. H. Chiu (City University of Hong Kong)</i>	

SESSION S13: PARALLEL AND DISTRIBUTED SYSTEMS - NETWORKING I

1.	<i>A Structured Approach to Network Backbone Traffic Estimation</i>	286
	<i>Mojca Ciglaric, Tone Vidmar (University of Ljubljana)</i>	
2.	<i>Alias Analysis for Parallelization</i>	292
	<i>R. Parimaladevi and R. K. Subramanian (Universiti Sains Malaysia)</i>	
3.	<i>Structure and Performance of the MDX (Multi-Dimensional X'bar): A Network Class for Large Scale Multiprocessors</i>	296
	<i>Atsushi Murata (Kyoto Prefectural University), Taisuke Boku and Tomoki Harada (University of Tsukuba), and Hideharu Amano (Keio University)</i>	
4.	<i>On Multistage Interconnection Networks with Unit Step Buffering (USB) Scheme</i>	304
	<i>Hee Yong Youn and Hyunseung Choo (The University of Texas at Arlington)</i>	

SESSION S14: PARALLEL AND DISTRIBUTED SYSTEMS - NETWORKING II

1.	<i>MINC: Multistage Interconnection Network with Cache Control Mechanism</i>	310
	<i>Toshihiro Hanawa, Hideki Yasukawa, Katsunobu Nishimura and Hideharu Amano (Keio University)</i>	
2.	<i>An Application-oriented Communication Protocol for ATM Networks</i>	318
	<i>Eyas Al-hajery (King Abdulaziz City for Science and Technology) and Salim Hariri (Syracuse University)</i>	
3.	<i>A Modular Multiprocessor System Based on Hypercube and Torus</i>	324
	<i>Khald Al-Tawil, Feroze Daud and Mostafa Abd-El-Barr (King Fahd University of Petroleum and Minerals)</i>	

SESSION S15: TASK ALLOCATION AND WORKLOAD BALANCING I

1.	<i>Scheduling of Parallel Applications on Heterogeneous Workstation Clusters</i>	330
	<i>B. Schnor, S. Petri, R. Oleyniczak and H. Langendörfer (TU Braunschweig)</i>	
2.	<i>Mapping Algorithms into Multiprocessors</i>	338
	<i>Mohammed Nour, Ehsan Abed and Nadia Hegazi (Electronics Research Institute)</i>	

3.	Adaptive Load Balancing and Multithreading	
	<i>N. Melab, M. P. Lecouffe, N. Devesa and B. Tournel (Université des Sciences et Technologies de Lille1)</i>	343
4.	A Min-Max Algorithm for Data Assignment in Parallel Computation	
	<i>Julius Dichter (University of Bridgeport) and Howard Sholl (University of Connecticut)</i>	349

SESSION S16: TASK ALLOCATION AND WORKLOAD BALANCING II

1.	Supporting Irregular Data Distribution for Heterogeneous Clusters	
	<i>M. Cermele, M. Colajanni (Università di Roma "Tor Vergata")</i>	355
2.	Comparison of Task Allocation Methods for Mesh-Connected Parallel Computers Considering Task Orientation and Size Limitation	
	<i>Kuniyasu Suzuki, Hitoshi Tanuma, Satoshi Hirano and Yuuji Ichisugi (Electrotechnical Laboratory)</i>	362
3.	Performance of Hierarchical Load Sharing in Heterogeneous Distributed Systems	
	<i>Michael Lo and Sivarama P. Dandamudi (Carleton University)</i>	370
4.	A Load Balancing of O(NlogN) N-Body Algorithm on Message-Passing Architectures	
	<i>Abdullah I. Meajil (The George Washington University)</i>	378

SESSION S17: REAL TIME DISTRIBUTED SYSTEMS I

1.	Pure Dynamic Task Scheduling in Hard Real-Time Distributed Systems	
	<i>Bradley R. Swim, Mohamed Benmaiza, Murat Tayli (King Saud University)</i>	384
2.	A Validation of Distributed Hard Real-Time Applications by Scheduling Analysis	
	<i>S. Saad-Bouzefrane, F. Cottet and J. P. Babau (LISI/ENSMA)</i>	393
3.	Design and Analysis of MetaRing^{**}: An Efficient Protocol for Supporting Real-time Distributed Systems	
	<i>M. Conti, S. Ghezzi, and E. Marcacci (CNR - Instituto CNUCE)</i>	399
4.	Efficient Synchronisation, Atomic Broadcast and Membership Agreement in a TDMA Protocol	
	<i>Henrik Lönn and Rolf Snedsbøl (Chalmers University of Technology, Sweden)</i>	405

SESSION S18: REAL TIME DISTRIBUTED SYSTEMS II

1.	End-To-End Response Times in Real-Time Distributed Systems	
	<i>Jean-François Hermant and Marco Spuri (INRIA)</i>	413
2.	Towards Fault Tolerant and Synchronous Multicast Protocols for Distributed Systems	
	<i>Wilson C. H. Cheng (Royal Melbourne Institute of Technology), Swamy Kuttii (Deakin University) and Xiaohua Jia (City University of Hong Kong)</i>	418
3.	Task Partitioning of Incompletely Specified Real-Time Distributed Processing Systems	
	<i>Sidharth H. Shah and Howard A. Sholl (University of Connecticut)</i>	426
4.	Mean Time to Failure Computation of Real Time Distributed Programs	
	<i>Yunxia Hu, Xuan Liu and Anup Kumar (University of Louisville)</i>	432

SESSION S19: PARALLEL AND DISTRIBUTED APPLICATIONS I

1.	Towards Trasparent Parallelization of Connectionist Systems G. Kock (GMD FIRST), M. Endler, M. D. Gubitsos and S. W. Song (Universidade de São Paulo)	438
2.	Parallel Implementation of the FeedForward Back-Propagation Algorithm on Pyramid Networks Sidi Ali Maelainin and Abdelghani Bellaachia (AlAkhwayan University in Ifrane)	444
3.	An NCⁱ Algorithm for the Persistency Problem in Bipartite Graphs J. Lakhal and L. Litzler (Institut National des Télécommunications)	450
4.	Improved Multimessage Multicasting Approximation Algorithms T. F. Gonzalez (University of California)	456

SESSION S20: FAULT TOLERANT DISTRIBUTED COMPUTING I

1.	Self-Stabilizing Torus Orientation J. Beauquier, S. Kekkonen, O. Debas, B. Rozoy (Université de Paris-Sud)	462
2.	Fault-Tolerant Simulation of a Ring on Torus Networks S. Latifi (University of Nevada, Las Vegas) and S. Q. Zheng (Louisiana State University)	468
3.	An Efficient Multithreaded Message Passing Tool for ATM-based Distributed Computing Environments Sung-Yong Park, Ilkyeon Ra, Mario Joa Ng, Somin Park and Salim Hariri (Syracuse University)	473

SESSION S21: DISTRIBUTED AND PARALLEL COMPUTING III

1.	RSOS: A Replicated Shared Object System for Groupware Applications Tonghyun Lee, Chee-hang Park (Electronics and Telecommunication Research Institute)	477
2.	A Framework for Distributed Diagnostic Reasoning Ralph F. Grove (Indiana University of Pennsylvania)	481
3.	pPVM on Multiple FDDIs Shubhangi Kelkar, Kurt Maly and Mohammad Zubair (Old Dominion University)	487
4.	Metasystem: Integrating a Parallel Computer and a Heterogeneous Workstation Cluster Vikram A. Salelore and Tony F. Neff (Oregon State University)	493

SESSION S22: PERFORMANCE ANALYSIS OF PARALLEL & DISTRIBUTED SYSTEMS IV

1.	Performance Analysis of Periodic and Aperiodic Real-Time Message Transmission in FIP Networks YeQiong Song (Univ. Henri Poincaré Nancy I)	499
2.	Performance Impact of I/O on Sender-Initiated and Receiver-Initiated Load Sharing Policies in Distributed Systems Sivarama P. Dandamudi (Carleton University) and Hamid Hadavi (Bell Northern Research)	507
3.	On the CPU Utilization of Multiprocessor with Shared Cache T. H. Hsu and G. M. Chaudhry (University of Missouri - Columbia)	515
4.	Simulation Study of the Performance of a Cluster-Based Hypercube Multicomputer Morrison S. Obeng, Imad Mahgoub and Mohammad Ilyas (Florida Atlantic University)	521

SESSION S23: PARALLEL AND DISTRIBUTED APPLICATIONS II

1. Calculating Hamming Streams Walter Dosch (Universität Augsburg)	529
2. Parallelizing and Optimizing a Simulator Kernel on a Multi-DSP Architecture A. Riel and E. Brenner (Graz University of Technology, Austria)	535
3. Generalized Profiling of Dependence Vectors Shau-Yin Tseng and Chung-Ta King (National Tsing-Hua University)	542
4. A Massively Parallel Particle-in-Cell Technique for Three-Dimensional Simulation of Plasma Phenomena S. Hosni Al-Sharaeh, B. Earl Wells, Nagendra Singh (University of Alabama in Huntsville)	548

SESSION S24: FAULT TOLERANT DISTRIBUTED COMPUTING II

1. A Checkpointing Facility for an Heterogeneous DSM System Luis Moura Silva and João Gabriel Silva (Universidade de Coimbra)	554
2. Dynamic Checkpoint Scheduling for Distributed Systems Taesoon Park (Sejong University) and Junguk L. Kim (Hyundai Electronics Industries Co.)	560
3. Using Beliefs for Faults Identification in the Byzantine Framework L. Ben Romdhane and B. El Ayeb (University of Sherbrooke)	567
4. Hybrid Periodic Checkpointing and Incremental State Saving in Time Warp Distributed Simulation Hussam M. Soliman (King Saud University) and Adel S. Elmaghreby (University of Louisville)	575

SESSION S25: DISTRIBUTED APPLICATION - IMAGE PROCESSING II

1. Data Dependant Algorithms with Process Farming: Two Topological Approaches R. Dapoigny (University Lyons I) and P. Bolon (LAMI University of Savoie)	581
2. Design of Linear Array Processors with Content Addressable Memory for Intermediate Level Vision Eril Mozef, Serge Weber, Jamal Jaber, and Etienne Tisserand (University of Nancy I)	585
3. Fast Parallel Image Identification in Distributed Computing Environments J. You, H. Shen (Griffith University) and E. Pissaloux (Université Paris XI)	589

VOLUME II: SPECIAL SESSIONS ON HETEROGENEOUS DATABASE INTEROPERABILITY AND PARALLEL DATABASES

Special Session S1b: Interoperable Information Systems I

1. Towards Cooperative Databases: The DOK Approach Z. Tari, W. Cheng (Royal Melbourne Institute of Technology), K. Yetongnon (University of Bourgogne) and I. Savnik (University of Ljubljana)	595
2. Some Principles to Coordinate Information Systems Charles François Ducateau (I.U.T. Descartes) and Monique Picavet (Université des Sciences et Technologies de Lille - LIFL)	601
3. Data Models Translation in Heterogeneous CIS Christophe Nicolle, Nadine Cullot (Université de Bourgogne)	605
4. Mobile Computing Architecture for Heterogeneous Medical Databases Omran Bukhres, Heng Goh, Peng Zhang (Purdue University at Indianapolis) and Elmahdi A. Elhammas (Ohio State University Medical Center)	611

Special Session S2b: Distributed Query Processing

1. Correctness of Parallel Executions in Multidatabase Systems Ruled by Strict 2 Phase Locking Jérôme Besancenot (University of Versailles), Michèle Cart, Jean Ferrié, Claire Morpain, Jean-François Pons (University of Montpellier II), and Philippe Pucheral (University of Versailles)	618
2. Optimization of Query Postprocessing in Heterogeneous Distributed Multidatabase Systems S. M. Sedighi, J. R. Getta (University of Wollongong)	626
3. A Calibration Mechanism Identifying the Optimization Technique of a Multidatabase Participant Myra Spiliopoulou (Humboldt-Universität zu Berlin)	633
4. Global Query Processing and Optimization in the CORDS Multidatabase System Qiang Zhu (University of Michigan - Dearborn) and Per-Ake Larson (University of Waterloo)	640

Special Session S3b: Interoperable Information Systems II

1. Multidatabase Interoperability Through Conceptual Schema Mapping in an Object Oriented Model Cora H. F. Pinto Ribeiro, José Palazzo M. de Oliveira (Universidade Federal do Rio Grande do Sul)	647
2. A Persistence Metaobject Protocol for Interoperability S. Demphlous (CERMICS/INRIA)	653
3. Detecting Data Inconsistency for Multidatabases Ke Wang (National University of Singapore) and Weining Zhang (University of Lethbridge)	657
4. An Object-Oriented Coordination Model Based on Multiset Rewriting J.-P. Bodeveix, C. Percebois, S. Majoul (IRIT, Université Paul Sabatier)	664

Special Session S4b: Distributed Information Systems I

1. Performance Modeling of Deadlock Detection Methods in Multidatabase Systems Roberto Baldoni and Silvio Salza (Università di Roma "La Sapienza")	672
2. Performance Evaluation of Database Cache Management in Mobile Computing Environments Yuji Wada (Mitsubishi Electric Corporation) and Tadanori Mizuno (Shizuoka University)	678
3. A Fast and Robust Failure Recovery Scheme for Shared-Nothing Gigabit-Networked Databases Sujata Banerjee and Panos K. Chrysanthis (University of Pittsburgh)	684
4. An Analysis of Deadlock Detection Schemes in Multidatabase Systems Inseon Lee, Hyogun Lee, Joonwon Lee (Korea Advanced Institute of Technology) and Heon Y. Yeom (Seoul National University)	690

Special Session S5b: Distributed Information Systems II

1. Distributing C[*] Objects Amr El-Kadi, Hany Ramadan, Hisham El-Zahhar, Sherif Gamaleldin, Tarek Madkour (The American University in Cairo)	696
2. Multi-Agents Based Dynamic Request Placement Strategies in Distributed Information Systems L. Chen, F. Ramos, M. Bui, D. Donsez (University De Technologie de Compiègne/Gradient) and P. Faudemay (UPMC)	701
3. Representing Temporal Knowledge in Connectionist Expert Systems Ferda N. Alpaslan (Middle East Technical University) and Kathleen M. Swigger (University of North Texas)	709
4. An Indexing Scheme for Inherited Nested Objects in a Distributed Environment A. Vreto, T. Tsuji and T. Hochin (Fukui University)	713

Special Session S6b: Distributed Databases

1. Performance Evaluation of Distribution in OODBMS: A Case Study Using O₂ Fernanda Lima and Marta L. Q. Mattoso (Federal University of Rio de Janeiro)	720
2. Efficient Distributed Information Retrieval Techniques with the Vector Space Model B. Tampakas, K. Antonis, B. Mamalis, V. Papakostas, P. Spirakis, A. Stamoulis (Computer Technology Institute)	726
3. Using Structural Schema Information as Heuristics for the Design of Distributed Object Oriented Databases Marinette Savonnet, Marie-Noëlle Terrasse, and Kokou Yélongnon (Université de Bourgogne)	732
4. Inverted File Partitioning for Distributed Query Processing in Information Retrieval Systems Jeeraporn Srisawat, Nikitas Alexandridis, and Malachy O'Connell (The George Washington University)	738

Special Session S7b: Integration and Federation of Information Systems

1. The VORTEL Approach to Application Integration in Distributed Systems R. Günthör, G. Krause, M. Zimmermann, M. Bever (IBM ENC Heidelberg), A. Bapat, J. M. Haake (GMD-IPSI)	744
2. Schema Integration and View Derivation by Resolving Intensional and Extensional Overlaps Ingo Schmitt and Gunter Saake (Otto-von-Guericke-Universität Magdeburg)	751
3. Schema Integration Engineering in Cooperative Database Systems Yann Dupont, Stefano Spaccapietra (Swiss Federal Institute of Technology)	759
4. On Schema Levels for Federated DB Systems F. Saltor (Universitat Politècnica de Catalunya), B. Campderrich (Universitat Rovira I Virgili), E. Rodríguez and L. C. Rodríguez (Universitat Politècnica de Catalunya)	766

Special Session S8b: Interoperability of Geographic Information Systems

1. **Conflicts in Spatial Database Integration**
Christine Parent, Stefano Spaccapietra (Swiss Federal Institute of Technology) and Thomas Devogele (French National Geographic Institute) 772
2. **Java as a Software System for Distributed and Interoperable Geoprocessing**
Andrej Vckovski (University of Zürich) 779
3. **Spatial Multidatabase Indexing and Topological Continuity of Fragmented Geographic Objects**
Robert Laurini (Université Claude Bernard Lyon I) 784

Special Session S9b: Transaction Management

1. **On the Concept of Transaction Atomicity in Distributed Temporal Relational Databases**
Cristina De Castro (University of Bologna) 788
2. **Managing Transaction Identifiers in the Peer-to-Peer Distributed Transactional Environment**
George Samaras (University of Cyprus, IBM Corporation), Stavros D. Nikolopoulos (University of Cyprus), Kathryn Britton, Andrew Citron (IBM Corporation) 796
3. **The Implicit-Yes Vote Commit Protocol with Delegation of Commitment**
Yousef J. Al-Houmaily and Panos K. Chrysanthis (University of Pittsburgh) 804

POSTER SESSION

1. **Implementing A Causal Distributed Shared Memory on CHORUS**
V. Thiebold, T. Cornilleau, E. Gressier-Soudan (CEDRIC-CNAM), and M. I. Ortega (Chorus Systemes) 811
2. **Parallel Implementation of Pattern Recognition Algorithm**
Fan Yang, Michel Paindavoine and Hervé Abdi (University of Burgundy, LIENSIB) 813
3. **Time Warp Calendar Queues**
Stefan Schöf (OFFIS) 815
4. **Distributed-Thread Scheduling Based upon Page Access Information**
Yoshiaki Sudo, Shigeo Suzuki and Shigeki Shibayama (Canon Inc.) 817
5. **Two Optimal Parallel Algorithms for Generating P-sequences**
Vincent Vajnovszki (Université de Bourgogne) and Chris Phillips (University of Newcastle) 819
6. **A Distributed Object Architecture for Interoperable GIS**
Éric Leclercq, Djamel Benslimane, and Kokou Yétongnon (Université de Bourgogne) 822
7. **MPV: A Multi-SHARC™ DSPs Architecture Dedicated to a MultiPlatform Video Processing Card**
Serge Nicolle, Thierry Tixier (LISA,CNRS) and Patrick Butler (Analog Devices - France) 824