13th International Conference on Computer Applications in Industry and Engineering 2000

Honolulu, Hawaii, USA 1 - 3 November 2000

Editors:

N. Debnath

ISBN: 978-1-61839-531-3

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© (2000) 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: 1-880843-35-8 (Out of Print)

Reprint ISBN: 978-1-61839-531-3

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

Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

INTERNATIONAL SOCIETY FOR COMPUTERS AND THEIR APPLICATIONS

13th International Conference on Computer Applications in Industry and Engineering

November 1 - 3, 2000 Sheraton Princess Kaiulani Hotel, Honolulu, Hawaii USA

TECHNICAL PAPER INDEX

INFORMATION SYSTEMS AND DATABASES

1.	A Rough Set Approach in Choosing Partitioning Attributes Lawrence J. Mazlack, Aijing He, Yaoyao Zhu and Sarah Coppock (University of Cincinnati)	1
2.	Software Quality Assurance in a Reengineering Project Based on Rapid Evolutionary Prototyping Methodology Narayan C. Debnath (Winona State University), Roberto Uzal, Adriana Echeverria (Universidad de Buenos Aires), Daniel Riesco, Germán Montejano (Universidad Nacional de San Luis, Universidad Nacional de Rio Cuarto), Aristides Dasso, Ana Funes (Universidad Nacinal de San Luis)	5
3.	Multiversion Post Ordering: A New Concurrency Control Method Tanya Jane Harris, William Perrizo and Qin Ding (North Dakota State University)	9
4.	Transaction Acceleration in Secure Database Systems Ramzi A. Haraty and Roula C. Fany (Lebanese American University)	13
5.	Organizing a Network for Integrating Shared Care Management of Obesity and Type 2 Diabete's Monique Picavet (University of Lille 1 and CERIM), Jean François Kulik (CERIM, Faculty of Medicine, Lille) and Monique Romon (Faculty of Medicine, Lille)	17
6.	Performance Evaluation in a Reengineering Project based on Rapid Evolutionary Prototyping Methodology N. Debnath (Winona State University), R. Uzal (Universidad Nacional de San Luis), A. Echeverríal (Universidad de Buenos Aires), D. Ríesco, G. Montejano, A. Dasso, A. Funes (Universidad Nacional de San Luis)	21

COMPUTING PRACTICES AND APPLICATIONS

1.	Numerical Simulation of High-Speed Flows over a Complex Vehicle Geometry: An Investigation of Plume Induced Flow Separation Damon K. Jeffries, F. Ferguson, S. Chandra (N.C. A&T State University)	. 25
2.	Specifying an ADC for an Implant Medical Transmitter Albert Peng (Central Michigan University)	. 28
3.	A Parallel Approach for Solving Multiple Machine Job Scheduling Problem M. Chen (Concordia University), C. N. Zhang and J. Li (University of Regina)	. 32
1.	Model Building of a 3-D Object from Multiple Views with the Aid of a Calibration Plate Jui-Man Chiu (Chung Kuo Institute of Technology and Commerce)	. 36
SC	OFTWARE ENGINEERING AND CASE	
1.	A Software Development Model based on Quality Measurement Wen C. Pai, Chun C. Wang and Ding J. Jiang (Kuang Wu Institute of Technology)	40
2.	RAISE Formalization of UML Class Associations G. Montejano, D. Riesco, A. Dasso, A. Funes, R. Uzal (Universidad Nacional de San Luis) and L. Favre (Universidad Nacional del Centro)	44
3.	A Comparison of the Lexical and Nonlexical Metrics Narayan C. Debnath, K. M. Golam Rabby (Winona State University), Roger Y. Lee (Central Michigan University) and Hamid R. Abachi (Monash University)	48
4 .	Using Formal Methods in Modelling of Processes D. Riesco, G. Montejano, R. Uzal, A. Dasso, A. Funes (Universidad Nacinal de San Luis), and L. Favre (Universidad Nacional del Centro de la Provincia de Buenos Aires)	52
5.	Incremental Development Based on Architectural Reuse and Usage-Oriented Design Yadran Eterovic and Sergio Maturana (Catholic University of Chile)	56
6.	Automatic Generation of Objects from the Problem Domain Roger Lee, Thomas Ahlswede, and Young Choi (Central Michigan University), Narayan Debnath (Winona State University)	62
7.	UML Class Structure Interpretation using RAISE Abstract Applicative Specification D. Riesco, G. Montejano, A. Dasso, A. Funes, R. Uzal (Universidad Nacional de San Luis) and L. Favre (Universidad Nacional del Centro)	67
IN"	TELLIGENT SYSTEMS	
1.	Toward Case-Based Internetwork Information Systems Carl G. Looney, Han Yu and Minghua Cai (University of Nevada, Reno)	71
2.	Intelligent Interfaces for Computer-Supported Collaborations Kathleen M. Swigger and Robert Brazile (University of North Texas)	75

3.	Non-Linear Neural Networks in Clinical Informatics - The Needs of the Clinician in the Health-Care Delivery System Joseph Tritto (Saint-Louis Hospital, Paris)	. 79
4.	Extension of Chaotic Techniques to Electroencephalogram Analysis M. E. Cohen (California State University, Fresno and University of California, San Francisco) and D. L. Hudson (University of California, San Francisco)	. 82
5.	Building Clinical Information Systems Using Evidence-Based Medicine D. L. Hudson (University of California, San Francisco) and M. E. Cohen (California State University, Fresno and University of California, San Francisco)	. 86
6.	An Intelligent Approach to Stock Cutting Optimization Adel S. Elmaghraby (University of Louisville), Ehab Abdelhafiz (University of Louisville and Cairo University), and Mohamed F. Hassan (Cairo University)	. 90
7.	A Neuro-statistical Approach to Ultrasound Speckle Modeling Renata Smolikova, Mark P. Wachowiak, Adel S. Elmaghraby and Jacek M. Zurada (University of Louisville)	. 94
8.	A Trainable License Plate Recognition System Kap Kee Kim, Jong Bae Kim, Kwang In Kim, and Hang Joon Kim (Kyungpook National University)	. 98
9.	Pulse Induction Sensors for Locating Buried Utility Lines Brian Handlon, Steven J. Lorenc, Leonhard Bernold and Gordon Lee (North Carolina State University)	102
IM)	AGE PROCESSING	
1.	Motion Estimation and Segmentation Using Genetic Algorithms Heung Soo Kim, Kwang Jae Sim, Eun Yi Kim, and Hang Joon Kim (Kyungpook National University)	106
2.	A Texture-based Dynamic Selection Scheme for Palmprint Identification W. X. Li (The Hong Kong Polytechnic University and Peking University), D. Zhang (The Hong Kong Polytechnic University), J. You (The Hong Kong Polytechnic University and Griffith University), and Z. Q. Xu (Peking University)	110
3.	A New Gray Level Edge Thinning Method Jung-Me Park, Hui-Chuan Chen (University of Alabama, Tuscaloosa), and Shu T. Huang (University of Alabama, Birmingham)	114
4.	Online Fingerprint Verification System using Direct Minutiae Extraction In-gu Bae, Byung-ho Cho, Jeung-seop Kim, Jae-hyung Bae, Kee-young Yoo (Kyungpook University)	120
5.	Printed Circuit Board Inspection Using Support Vector Machine Kwang Jae Sim, Tae Soo Yun, Heung Soo Kim and Hang Joon Kim (Kyungpook National University)	124
6.	Robust OCR System for Reading Optically Partially Damaged Characters Apiwat Saengdeejing, Zhihua Qu (University of Central Florida) and David Huibregse (Microtronic Inc.)	128
7.	Watermarking and Selective Encryption Algorithms for JPEG Images Chang N. Zhang (University of Regina), Jiesheng Xie (China Agriculture University), and Shoucheng Li (Shanghai University)	132
8.	DCT Coding of Images Using Adaptive Block Sizes S. R. Subramanya, Filiz Bunyak, and Chaman Sabharwal (University of Missouri-Rolla)	137

Programmer of the company of the common the second of the second of the second of the second of the second of

COMPUTER MODELING AND SIMULATION

1.	Mathematical Modeling and Simulation of Turbulent Flow Karan S. Surana (University of Kansas), Masoud Bagheri and Suresh Chandra (North Carolina A&T State University)	142
2.	A New Discrete-Time Simulation Method for Switched Systems Using Averaging Mohammed S. Al-Numay (King Saud University)	148
3.	A Compiler Driven Simulation Technique for the Analysis of Digital Logic Circuit Anwar Sadat (Bangladesh Open University) and Morshed U. Chowdhury (Deakin University)	153
4 .	A Multibody Dynamics Approach to the Modelling of Nonlinear Cable Systems B. Fox, L. S. Jennings, A. Y. Zomaya (The University of Western Australia)	157
AL	GORITHM DEVELOPMENT	
1.	Reposting Algorithms for Request Order Concurrency Control Shian Zhang, William Perrizo and Qin Ding (North Dakota State University)	. 161
2.	A New GA Approach for the Vehicle Routing Problem Juay-Chin Ang, Wee-Kit Ho, Andrew Lim (National University of Singapore)	. 165
3.	Parallel Modular Mutiplication Algorithm in Residue Number System Hyun-Sung Kim, Chang-Hyun Ham, Jung-Mee Lee and Kee-Young Yoo (Kyungpook National University)	170
4.	An Algorithmic Framework for a Mathematical Tool Joyati Debnath and Narayan C. Debnath (Winona State University)	174
6.	DIJKSTRA's Algorithm for Shortest Path Problem using the Bucket-Heap Data Structure Andrew Lim and Oon Wee Chong (National University of Singapore)	179
6.	An Efficient Sequential Algorithm for the k-LCS Problem David Semé (Université de Picardie Jules Verne)	185
10.	Study on Statistical Measure of Spectral Signature Separability in Unsupervised Training Algorithms Chih-Cheng Hung (Southern Polytechnic State University) and Sung Y. Shin (South Dakota State University)	189
INŢ	ERNET ENVIRONMENT	
1.	Performance Comparison of Multicasting Policies Parimal Patel, Harish Maiya (The University of Tiexas at San Antonio)	193
2.	A Web Based Approach to Monitoring, Control and Data Analysis T. Philip, S. Kanthaswamy, and R. Vasudev (Mississippi State University)	199
3.	Web Application Middleware for XML-Based Monitoring of Distributed Systems R. Schimkat, M. Häuber, W. Küchlin (University of Tübingen) and R. Krautter (debis Systemhaus Industry GmbH)	203

COMPUTERS IN EDUCATION

1.	Internet Technology for Instruction In and Out of Classroom Thomas Philip (Mississippi State University)	208
2.	Develop an Integrated Computer Graphics Learning System by Bezier, B-spline and NURBS Algorithms - in the VR and Web Environment Wen-Chai Song (National Central University), Ding-Qi Wang (Lee-Ming Institute of Technology), Song-Rong Shiau (National Taipei University of Technology) and Shih-Ching Ou (National Central University)	212
3.	An Intelligent Agent for Student Guidance in Web-Based Courses Bülent Özdemir and Ferda N. Alpaslan (Middle East Technical University)	216
OF	PERATING AND DISTRIBUTED SYSTEMS	
1.	Dynamic Process Scheduling in Linux for Mobile Computing Hee Yong Youn, Hyunseung Choo (Sungkyunkwan University), Young Hee Lee, Jae-Hwa Lee, Jun-Ho Jung, Bum-Ho Kim, and Seung-Hun Lee (Information and Communications University)	220
2.	An Agent-Based, Distributed Prototyping System for Software Interoperability Study Jun Ge, Valdes Berzins, Mantak Shing (Naval Postgraduate School)	224
3.	Data Specification and Implementation for Industrial Systems Using STEP Technology Claudia Raibulet, Claudio Demartini (Politecnico di Torino) and Ovidiu Constantin (iPlanet – Sun-Netscape Alliance)	228
CC	OMPUTER ARCHITECTURE AND VLSI	
1.	VHDL Modeling of Overcurrent Relays Mahmoud A. Manzoul and Saravanan Padmanaban (Southern Illinois University)	234
2.	Instruction Reordering Unit Design to Improve Performance of a Superscalar Processor Parimal Patel, Kong Lai (The University of Texas at San Antonio)	238
3.	Designing a Single Pulser Walter Dosch (Medical University of Lübeck)	244
4.	Parallel Processing Modelling Methodology in Computer Engineering H. Abachi, R. P. Lisner (Monash University) and N. C. Debnath (Winona State University)	250
AG	SENT BASED SYSTEMS	
1.	Autonomous Agent Architectures for Cooperating Air Vehicles Kendall E. Nygard (North Dakota State University)	255
2	Agents Supporting E-Commerce: A Case Study Karl M. Goschka, Paul Smutny, Wolfgang Radinger (Vienna University of Technology)	260

3.	Multi-Agent Based Cooperative Information System using Knowledge Level Sung Hee Kang, Seung Soo Park (Ewha Womans University)	264
4.	Agent Based Information Retrieval in Electronic Business Networks Freimut Bodendorf and Oliver Hofmann (University of Erlangen-Nuremberg)	268
VIS	SUALIZATION	
1.	An Interactive and Dynamic GUI for Chaos Systems Li Zhao and Gongzhu Hu (Central Michigan University)	272
2.	TechDraw: Editor and Processor for Circuit of Logic and Blocks of Mathematics Function Evi Hairani (Bandung Institute of Technology)	276
3.	Neural Networks for Visual Cryptography - with Examples for Complex Access Schemes Suchen Chiang and Tai-Wen Yue (Tatung University)	281
NE	URAL NETWORKS AND FUZZY LOGIC	
1.	Software Tool for Visualization of Neural Network Gaps Mehmed M. Kantardzic, Anna Goldenberg and Hazem M. Hamdan (University of Louisville)	287
2.	Fuzzy-Neuro Technique-based Intelligent Fault Diagnosis in Electrical Motor Systems X. Z. Gao and S. J. Ovaska (Helsinki University of Technology)	292
3.	Text Detection in Digital Video Frame Using Support Vector Machine C. S. Shin, K. I. Kim, Y. C. Lee, H. J. Kim (Kyungpook National University)	298
4.	Temperature Control Method of a Car Air Conditioning System Considering Passenger's Comfort Keiichi Watanuki (Saitama University), Tadao Murata (University of Illinois at Chicago) and Hideyuki Ohtaki (Saitama University)	302
СО	MPUTER NETWORKS	
1.	Methods for Comparing the Reliability of Advanced Distributed Computer Networks Hamid Abachi, J. Walker (Monash University) and Narayan Debnath (Winona State University)	307
2.	Effects of Optimization on Length and Fault Coverage of Protocol Test Sequences Anthony Chung (DePaul University), Howard Motteler and Deepinder Sidhu (University of Maryland - BC)	311
3.	Vehicle-Bus Interface for Data Collection David C. Pheanis and Jeffrey A. Tenney (Arizona State University)	319
4.	An Efficient Checkpointing Scheme for Mobile Computing Systems Richard C. Gass and Bidyut Gupta (Southern Illinois University)	323
5.	Selecting the Transmission Architecture for Backbone Networks G. K. Webb (San Jose State University)	329
6.	The Design of a Network Management Tool for Monitoring ATM Networks C. Gizelis, D. Vergados, J. Soldatos, E. Vayias and P. Stathopoulos (National Technical University of Athens)	332

MULTIMEDIA APPLICATIONS

1.	Supporting Multimedia Applications with Internet QoS Chi-Cheng Lin (Winona State University)	336
2.	A Scheme for the Classification of Audio Data S. R. Subramanya, Chaman Sabharwal, Palaniappan Subbiah, and Narayan Vishwanathan (University of Missouri-Rolla)	340
3.	Text Location in Complex Image using Cluster-based Templates Dong Youp Kwak, Eun Yi Kim (Kyungpook National University), Chang Woo Lee (Pohang College), and Hang Joon Kim (Kyungpook National University)	345
4.	Video Segmentation using Spatiotemporal Markov Random Field Sang Won Hwang, Eun Yi Kim, Tae Soo Yun, Hang Joon Kim (Kyungpook National University)	349
5 .	MCP: Design of a Multimedia Calendar & Project Planner Yang Lee (LEAD Technologies) and Roger Lee (Central Michigan University)	353
6.	GA-Based Motion Optimization for Overlapped Block Motion Compensation Kyung Mi Lee, Dong Youp Kwak, Eun Yi Kim (Kyungpook National University), Chang Woo Lee (Pohang College), Hang Joon Kim (Kyungpook University)	357