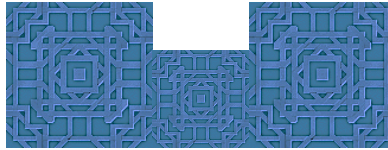




Proceedings



**Japan-China Joint Workshop on
Frontier of Computer Science
and Technology**

FCST 2006

17-18 November 2006 • Aizu-Wakamatsu, Fukushima, Japan

Sponsored by
University of Aizu
Huazhong University of Science and Technology



Los Alamitos, California

Washington • Tokyo

Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number P2721
ISBN-13: 978-0-7695-2721-5
ISBN-10: 0-7695-2721-3
Library of Congress Number 2006932185

Additional copies may be ordered from:

IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, CA 90720-1314
Tel: + 1 800 272 6657
Fax: + 1 714 821 4641
<http://computer.org/cspress>
csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: + 1 732 981 0060
Fax: + 1 732 981 9667
[http://shop.ieee.org/store/
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

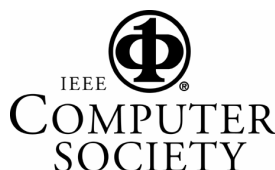
IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: + 81 3 3408 3118
Fax: + 81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: reprints@computer.org

Editorial production by Stephanie Kawada

Cover art production by Joe Daigle/Studio Productions

Printed in the United States of America by Applied Digital Imaging



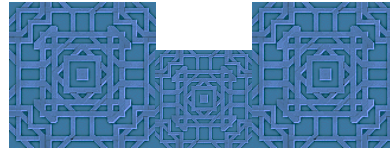
IEEE Computer Society

Conference Publishing Services

<http://www.computer.org/proceedings/>



Proceedings



FCST 2006

Table of Contents

Message from the Workshop Chairs	viii
Program Committee	ix

Networking

AR-TCP: Actively Replicated TCP Connections for Cluster of Workstations	3
<i>Zhiyuan Shao, Hai Jin, and Jie Wu</i>	
SADLBoIB: Self-Adaptive Dynamic Load Balance over InfiniBand.....	11
<i>Yonghao Zhou, Jizhong Han, Jin He, Hongwei Zhang, and Zifeng Xiao</i>	
Towards a Low Power Virtual Machine for Wireless Sensor Network Motes.....	18
<i>Hitoshi Oi and C. J. Bleakley</i>	
On Modelling the Restoration Probability of Active Restoration-Based Optical Networks with Correlation among Backup Routes.....	23
<i>Mohamed Mostafa A. Azim, Xiaohong Jiang, and Susumu Horiguchi</i>	

Storage and Cache Management

I/O Scheduling in Huge Object-Based Storage System.....	39
<i>Dan Feng and Hanbo Liu</i>	
Storage Active Service: Model, Method and Practice	46
<i>Lingfang Zeng, Dan Feng, Fang Wang, Lei Tian, and Zhan Shi</i>	
Data Stream Splicing for Web Proxy Cache Optimization.....	54
<i>Jingli Zhou, Jifeng Yu, and Hongtao Xia</i>	
SRC-Based Cache Coherence Protocol in Chip Multiprocessor	60
<i>Haixia Wang, Dongsheng Wang, and Peng Li</i>	

Security

A New VPN Solution Based on Asymmetrical SSL Tunnels	71
<i>Jingli Zhou, Hongtao Xia, Xiaofeng Wang, and Jifeng Yu</i>	
Network Based Immunization against Computer Virus	79
<i>Lansheng Han, Fan Hong, and Bing Peng</i>	
Analysis and Classification of IPSec Security Policy Conflicts	83
<i>Zhitang Li, Xue Cui, and Lin Chen</i>	
A Directed Graph-Based Authentication Protocol Model and Its Security Analysis	89
<i>Hong-bo Xie, Yuan-chen Wu, and Ming-tian Zhou</i>	

Multimedia

Semantic Analysis and Retrieval of Sports Video.....	97
<i>Jun-qing Yu, Yun-feng He, Kai Sun, Zhi-fang Wang, and Xiang-mei Wu</i>	
“Back-Seat Driver”: Spatial Sound for Vehicular Way-Finding and Situation Awareness.....	109
<i>Michael Cohen, Owen Noel Newton Fernando, Tatsuya Nagai, and Kensuke Shimizu</i>	
Parking Simulation and Guidance in a Model Environment	116
<i>Kamen Kanev, Nikolay Mirenkov, and Akifumi Urata</i>	
A Picture Language Translator	121
<i>Hiroshi Migiyama, Taiichiro Hayashi, and Nikolay Mirenkov</i>	

Query, Search, and Transactions

Efficient Concurrency Control for Mobile Real-Time Transactions in Data Broadcast Environments.....	131
<i>Guohui Li, Bing Yang, and Jixiong Chen</i>	

An Improved Semantic Search Model Based on Hybrid Fuzzy Description Logic	139
<i>Ruixuan Li, Kunmei Wen, Zhengding Lu, Xiaolin Sun, and Zhigang Wang</i>	
Lowering the Barrier of Query Language Skills within Mobile and Web User Interface Environments.....	147
<i>Masaki Hasegawa and Subhash Bhalla</i>	

Ubiquitous Computing and Communications

Trie-Based Observations on the Routing Tables	157
<i>Zhenqiang Li and Yan Ma</i>	
A Tracking Algorithm in RFID Reader Network	164
<i>Wei Jiang, Dan Yu, and Yan Ma</i>	
A Situation-Aware Support Model and Its Implementation	172
<i>Zixue Cheng and Tongjun Huang</i>	
Algorithmic CyberFilm Language.....	178
<i>Yutaka Watanobe, Nikolay N. Mirenkov, and Rentaro Yoshioka</i>	

System Design

Realization of Low-Cost IMU/GPS Integrated Navigation System	189
<i>Min Yu, Hang Guo, and Weiguang Gao</i>	
A Hardware Resource Management System for Adaptive Computing on Dynamically Reconfigurable Devices	196
<i>Toshiyuki Ito, Kazuya Mishou, Yuichi Okuyama, and Kenichi Kuroda</i>	
Independent Component Analysis Based on Learning Updating with Forms of Matrix Transformations and the Diagonalization Principle.....	203
<i>Shuxue Ding</i>	

Author Index	211
---------------------------	-----