



# **FUTURE COMPUTING 2012**

The Fourth International Conference on Future Computational Technologies and Applications

July 22-27, 2012

Nice, France

## **FUTURE COMPUTING 2012 Editors**

Dietmar Fey, University Erlangen-Nuremberg, Germany

Jaime Lloret Mauri, Polytechnic University of Valencia, Spain

**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© (2012) by International Academy, Research, and Industry Association (IARIA)  
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (2012)

International Academy, Research, and Industry Association (IARIA)  
412 Derby Way  
Wilmington, DE 19810

Phone: (408) 893-6407  
Fax: (408) 527-6351

[petre@aria.org](mailto:petre@aria.org)

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## FUTURE COMPUTING 1: LARGE-SCALE COMPUTING STRATEGIES

<b>Hardware Accelerator for Low-Latency Privacy Preserving Mechanism</b> .....	1
<i>Junichi Sawada, Hiroaki Nishi</i>	
<b>Distributed-Shared CUDA: Virtualization of Large-Scale GPU Systems for Programmability and Reliability</b> .....	7
<i>Atsushi Kawai, Kenji Yasuoka, Kazuyuki Yoshikawa, Tetsu Narumi</i>	
<b>Parallel Approaches for Mining Fuzzy Orderings based Gradual Patterns</b> .....	13
<i>Malaquias Quintero Flores, Federico Del Razo, Anne Laurent, Nicolas Sicard</i>	
<b>Paper Recommendation System: A Global and Soft Approach</b> .....	21
<i>Siwipa Pruitikanee, Lisa Di Jorio, Anne Laurent, Michel Sala</i>	

## FUTURE COMPUTING 2: COMPUTATIONAL INTELLIGENCE STRATEGIES I

<b>Balancing Communication and Execution Technique for Parallelized Sparse Matrix-Vector Multiplication</b> .....	28
<i>Seiji Fujino, Takeshi Nanri, Ken'itiro Kusaba</i>	
<b>Implementation and Evaluation of Recurrence Equation Solvers on GPGPU Systems using Rearrangement of Array Configurations</b> .....	32
<i>Akiyoshi Wakatani</i>	
<b>Statistical Analysis of Cost of Energy Due to Electricity Outages in Developing Countries</b> .....	39
<i>Venkat Natarajan, Amit S. Closepet</i>	
<b>The Ontological Programming Paradigm</b> .....	45
<i>Valeriya Gribova, Alexander Kleshev</i>	
<b>JION: A JavaSpaces Implementation for Opportunistic Networks</b> .....	49
<i>Abdulkader Benchi, Pascale Launay, Frederic Guidec</i>	

## FUTURE COMPUTING 3: COMPUTATIONAL INTELLIGENCE STRATEGIES II

<b>Semantic Numerical Operations on Strings</b> .....	55
<i>Taeho Jo</i>	
<b>Normalized Table Matching Algorithm for Classifying News Articles</b> .....	61
<i>Taeho Jo</i>	
<b>A Dynamic (m,k)-firm Constraint to Avoid Dynamic Failures in a Real-Time DBMS</b> .....	67
<i>Sami Limam, Leila Baccouche, Henda Ben Ghezala</i>	
<b>Multiple Trajectory Search for the Resource-Constrained Project Scheduling Problem</b> .....	74
<i>Lin-Yu Tseng, Kuan-Cheng Lin</i>	
<b>Feature Selection for Clustering by Exploring Nearest and Farthest Neighbors</b> .....	80
<i>Chien-Hsing Chen</i>	

## FUTURE COMPUTING 4: COMPUTING TECHNOLOGIES

<b>Fuzzy Computer Architecture Based on Memristor Circuits</b> .....	84
<i>Martin Klimo, Ondrej Such</i>	
<b>Simulation of Carry Protocol (c-protocol) for MANET Network</b> .....	88
<i>Ahmed Alghamdi, John Dedourek, Przemyslaw Pocheć</i>	
<b>Using Symbolic Substitution Logic as an Automated Design Procedure for QCA Arithmetic Circuits</b> .....	94
<i>Dietmar Fey, Bruno Kleinert</i>	
<b>Author Index</b>	