INFOCOMP 2012

The Second International Conference on Advanced Communications and Computation

October 21-26, 2012
Venice, Italy

INFOCOMP 2012 Editors

Claus-Peter Rückemann, Westfälische Wilhelms-Universität Münster / Leibniz Universität Hannover / North-German Supercomputing Alliance, Germany

Petre Dini, Concordia University - Montreal, Canada / China Space Agency Center - Beijing, China

Wolfgang Hommel, Leibniz Supercomputing Centre - Munich, Germany

Malgorzata Pankowska, University of Economics, Katowice, Poland

Lutz Schubert, High Performance Computing Centre (HLRS) of the University of Stuttgart, Germany
# TABLE OF CONTENTS

## INFOCOMP 1: ADVANCED APPLICATIONS I

On Efficiency of Solutions of Stochastic Optimal Control Problem with Discrete Time
Igor I. Gasanov, Ismailou S. Ragaimov

FlashTKV: A High-Throughput Transactional Key-Value Store on Flash Solid State Drives
Robin Jun Yang, Qiong Luo

Control Software Visualization
Federico Mari, Igor Melatti, Ivano Salvo, Enrico Tronci

## INFOCOMP 2: ADVANCED APPLICATIONS II

Parallel Interference Cancellation in DS-OCDMA System Using Novel Multilevel Periodic Codes
Besma Hammami, Habib Fathallah, Houria Rezig

Using Embedded FPGA for Cache Locking in Real-Time Systems
Antonio Marti Campoy, Francisco Rodriguez-Ballestero, Rafael Ors Carat

Simulation of Blood Flow in Blood Vessels of the Brain (POSTER)
Heeyoung Kim, Minjoong Jeong, Min Sun Yeom

Discovery & Refinement of Scientific Information via a Recommender System
Robert Patton, Thomas Potok, Brian Worley

## INFOCOMP 3: ACCESS TECHNOLOGIES, ALGORITHMS, AND APPLICATIONS

Enabling Dynamical Use of Integrated Systems and Scientific Supercomputing Resources for Archaeological Information Systems
Claus-Peter Rickemann

Identity Federation Models in Service-Oriented Architecture (POSTER)
Ireneusz Jozwiak, Piotr Jozwiak

Nonlinear Transformation’s Impact Factor of Cryptography at Confusion and Cluster Process
Lan Luo, Zehui Qu, Yalan Ye, Tao Lv, Qionghai Dai

Decoupling Modeling From Complexity Based on a Freedom-to-Act Architecture
Udo Inden, Sergej Naimark, Claus-Peter Rickemann

## INFOCOMP 4: BIOMETRY, SECURITY, AND ACCESS TECHNOLOGIES

A Neural Network Ultrasonic Sensor Simulator for Evolutionary Robotics
Christian J. Pretorius, Mathys C. du Plessis, Charnain B. Cilliers

Biometric Security Systems for Mobile Devices Based on Fingerprint Recognition Algorithm
Michal Szczepanik, Ireneusz Jozwiak

3D Measures Computed in Monocular Camera System for Fall Detection
Konstantinos Makantasis, Anastasios Douiamis, Nikolaos Matsatsinis

FlexRay Static Section Scheduling Using Full Model
Rim Bouhouch, Houda Jaouani, Wafa Najjar, Salem Hassaoui

## INFOCOMP 5: LARGE SCALE AND FAST COMPUTATION I

Analyzing the Trade-offs Between Minimizing Makespan and Minimizing Energy Consumption in a Heterogeneous Resource Allocation Problem
Ryan Friese, Tyler Brinks, Curt Oliver, Howard Jay Siegel, Anthony A. Maciejewski

Convergence Resource Management Portal for Brain-Imaging Analysis on HPcN (POSTER)
Jun Weon Yoon, Jae-Hyuck Kwak, Jae Gyouon Hahn, Ji Hoon Jang, Chan Yeol Park

On-demand Virtual Cluster Service for Science Applications using OpenNebula (POSTER)
Oh-kyoung Kwon, Sangwon Kim, Mi Kyung Kim, Jae Gyouon Hahn

Design and Implementation of Context-aware Hadoop Input Format for Large-scale Scientific Dataset
Jae-Hyuck Kwak, Jun Weon Yoon, Soonwook Hwang

Boundaries of Supercomputing
Lutz Schubert, Stefan Wesner
## INFOCOMP 6: LARGE SCALE AND FAST COMPUTATION II

**Design and Implementation of Context-aware Hadoop Input Format for Large-scale Scientific Dataset (POSTER)**

Jae-Hyun Kwak, Jun Woon Yoon, Soonwook Hwang .......................... 96

**Mirroring High Speed SSD Using Slow Hard Disk (POSTER)**

Heon Yeon, Inseon Lee ................................................. 96

**A Framework for Migrating Traditional Web Applications Into Multi-Tenant SaaS**

Eyad Saleh, Nuhad Shaabani, Christoph Meinel .......................... 100

**Bandwidth-Efficient Parallel Visualization for Mobile Devices**

Andreas Helfrich-Schkarbanenko, Vincent Heuveline, Roman Reiner, Sebastian Ritterbusch .......................... 106

## INFOCOMP 7: NETWORK MANAGEMENT

**High-Performance Network Accommodation and Intra-Slice Switching Using a Type of Virtualization Node**

Yasushi Kanada, Kei Shiraishi, Akihiro Nakao .......................... 113

**A First Look at AMI Traffic Patterns and Traffic Surge for Future Large Scale Smart Grid Deployments**

Yaling Nie, Yuanchen Ma ................................................. 120

**A Platform for the Integrated Management of IT Infrastructure Metrics**

Christian Straube, Wolfgang Hommel, Dieter Kranzlmüller .......................... 125

**Design, Development and Implementation of a Hybrid Network with Smart Sensors and Power Line Communication for Monitoring of Underground Electricity Substation**

Paulo Sausen, Airam Sausen, Mauricio de Campos, Camila Gehrke, René Emmel Jr., Fabiano Salvadori .......................... 130

## INFOCOMP 8: EVALUATION CONTEXT

**Computing Individual Mobility Profiles From Mobile Phone Usage Traces**

Miguel Ángel Rodríguez-Crespo, Ana Armenta-López-de-Vicuña, Alberto Martín-Domínguez, Rocío Martínez-López, Rubén Lara-Hernández .......................... 136

**User Involvement and Social Networking for Information System Development**

Malgorzata Pankowska ................................................. 142

**A New Approach To Solve Aircraft Recovery Problem**

Congcong Wu, Meilong Le ................................................. 148

**A Semi-Supervised Approach for Industrial Workflow Recognition**

Eftychios Protopapadakis, Anastasios Doulamis, Konstantinos Makantasis, Athanasios Voulodimos .......................... 155

## INFOCOMP 9: NETWORKS/SYSTEMS COMMUNICATIONS

**Analysis of Network Heterogeneity by Using Entropy of the Remaining Degree Distribution**

Lu Chen, Shin'ichi Arakawa, Masayuki Murata .......................... 161

**Understanding Virtualized Infrastructure in Grid Job Monitoring**

Zdeněk Sastří, Jiří Sitera ................................................. 167

**A Layered Multi-Tree IP Multicast Protocol With Network Coding**

Yiming Li, Jinguo Qian, Xuelei Tan, Hui Li .......................... 171

**Performance Evaluation of a Planar Layout of Data Vortex Optical Interconnection Network**

Qimin Yang ................................................. 176

**An Efficient Scheduling in Consideration of the Signaling Overhead for Relay Networks**

Deokhui Lee, Jaewoo Soo ................................................. 182

**Author Index**