ICAS 2012

The Eighth International Conference on Autonomic and Autonomous Systems

March 25-28, 2012

St. Maarten, Netherlands Antilles

ICAS 2012 Editors

Freimut Bodendorf, University of Erlangen, Germany
Wendy Powley, Queen's University - Kingston, Canada
# TABLE OF CONTENTS

## ICAS 1: AUTONOMIC COMPUTING:

Comparison of Bio-Inspired and Graph-Theoretic Algorithms for Design of Fault-Tolerant Networks ........................................ 1  
Matthias Becker, Waraphan Sarasupenpor, Helena Szczepicka

A Technique for Measuring the Level of Autonomicity of Self-managing Systems ......................................................... 8  
Thaddeus O. Eze, Richard J. Anthony, Alan Soper, Chris Walshaw

A Framework to Create Multi-domains Autonomic Middleware ................................................................................................. 14  
Mahdi Ben Alaya, Thierry Monteil, Khalil Drira, Om Guerout

State-Space Feedback Control for Elastic Distributed Storage in a Cloud Environment .................................................... 18  
M. Amir Moulavi, Ahmad Al-Shishtawy, Vladimir Vlassov

Towards Autonomic Marketing ......................................................................................................................................................... 28  
Carl Adams, Richard John Anthony, Wendy Powley, David Bell, Chris Whitel, Chun Wu

## ICAS 2: CLOUD COMPUTING AND VIRTUALIZATION:

A Dynamic Load Balancing Model Based on Negative Feedback and Exponential Smoothing Estimation .......................................................... 32  
Di Yuan, Shuai Wang, Xinya Sun

Interactive Rendering of Huge 3D Meshes in Cloud Computing .................................................................................................... 38  
Daeyeong Kim, Haeyoung Lee

Fault Tolerant Approaches in Cloud Computing Infrastructures ....................................................................................................... 42  
Alain Tchana, Laurent Broto, Daniel Hagimont

BtrScript: A Safe Management System for Virtualized Data Center .................................................................................................. 49  
Remy Pottier, Jean-Marc Menaud

## ICAS 3: MONITORING, CONTROL, AND MANAGEMENT:

RFDMon: A Real-time and Fault-tolerant Distributed System Monitoring Approach .................................................. 57  
Rajat Mehrotra, Abhishek Dubey, Sherif Abdelwahed, Krisa W. Rowland

Online Spectrum-based Fault Localization for Health Monitoring and Fault Recovery of Self-Adaptive Systems ............................................. 64  
Eric Piel, Alberto Gonzalez-Sanchez, Hans-Gerhard Gross, Arjan J. C. Van Gemund, Rui Abreu

## ICAS 4: THEORY AND PRACTICE OF AUTONOMOUS SYSTEMS:

Augmenting Reinforcement Learning Feedback with Prediction for Autonomic Management ..................................................... 74  
Khandakar Rashed Ahmed, Raphael Bahati, Michael Bauer

Autonomic Computing in the First Decade: Trends and Direction ................................................................................................. 80  
Thaddeus O. Eze, Richard J. Anthony, Chris Walshaw, Alan Soper

A Deliberative Reasoner for Model-Based Software Health Management .......................................................................................... 86  
Abhishek Dubey, Nagaabhushan Mahadevan, Gabor Karsai

Efficient Alignment of Aerial Images Based on Virtual Forces .......................................................................................................... 93  
Claudius Stern, Christoph Rasche, Lisa Kleinjohann, Bernd Kleinjohann

## ICAS 5: SELF-ADAPTABILITY AND SELF-MANAGEMENT:

Coordinating Energy-aware Administration Loops Using Discrete Control ......................................................................................... 99  
Soguy Mak-Kare Gueye, Noel De Pulma, Eric Ruiten

Action Learning with Reactive Answer Set Programming: Preliminary Report .................................................................................... 107  
Michal Certicky