# International Journal on Advances in Software













# 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© (4236) by International Academy, Research, and Industry Association (IARIA) Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (4237)

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

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

petre@iaria.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 Web: www.proceedings.com

#### **CONTENTS**

pages: 422 - 434

# Framework for Adaptive Sequential Pattern Recognition Applied on Credit Card Fraud Detection in the Online Games Industry

Michael Schaidnagel, University of the West of Scotland, Scotland Thomas Connolly, University of the West of Scotland, Scotland Fritz Laux, Reutlingen University, Germany

pages: 435 - 445

# Cloud-based Collaborative Software Development: A Concept for Managing Transparency and Privacy based on Datasteads

Roy Oberhauser, Computer Science Dept., Aalen University, Germany

pages: 446 - 455

# A Social Approach for Natural Language Query to the Web of Data

Takahiro Kawamura, University of Electro-Communications, Japan Akihiko Ohsuga, University of Electro-Communications, Japan

pages: 456 - 468

# Agile-User Experience Design: Does the Involvement of Usability Experts Improve the Software Quality? State of the Art and a First Experiment

Lou Schwartz, LIST, Luxembourg

pages: 469 - 485

#### Reuse-Based Test Traceability: Automatic Linking of Test Cases and Requirements

Thomas Noack, Technische Universität Berlin, Daimler Center for Automotive IT Innovations (DCAITI), Germany Steffen Helke, Brandenburg University of Technology Cottbus-Senftenberg, Germany

Thomas Karbe, Technische Universität Berlin, Daimler Center for Automotive IT Innovations (DCAITI), Germany

pages: 486 - 500

# An Analysis of the Implementation of Agile Software Development Practice in Irish Industry Empirical research in a sample of Irish Industry

Trish O'Connell, Galway-Mayo Institute of Technology, Ireland

pages: 501 - 525

#### Aspects of Modelling and Processing Complex Networks of Operations' Risk

Udo Inden, Cologne University of Applied Sciences (CUAS) Cologne, Germany

Despina T. Meridou, School of Electrical and Computer Engineering, National Technical University of Athens, Greece

Maria-Eleftheria Ch. Papadopoulou, School of Electrical and Computer Engineering, National Technical University of Athens, Greece

Angelos-Christos G. Anadiotis, School of Electrical and Computer Engineering, National Technical University of Athens, Greece

lakovos S. Venieris, National Technical University of Athens, Greece

Claus-Peter Rückemann, Westfälische Wilhelms-Universität Münster (WWU) and Leibniz Universität Hannover, Germany

pages: 526 - 538

## Spatial Trajectory Planning based on Visibility Clustering Analysis in Urban Environments

Oren Gal, Technion - Israel Institute of Technology, Israel

Yerach Doytsher, Technion - Israel Institute of Technology, Israel

pages: 539 - 550

# **Combining Association Mining with Topic Modeling to Discover More File Relationships**

Namita Dave, School of Science, Technology, Engineering, and Mathematics, University of Washington Bothell, USA Karen Potts, School of Science, Technology, Engineering, and Mathematics, University of Washington Bothell, USA Vu Dinh, School of Science, Technology, Engineering, and Mathematics, University of Washington Bothell, USA Hazeline U. Asuncion, School of Science, Technology, Engineering, and Mathematics, University of Washington Bothell, USA

pages: 551 - 566

# Smartphone Based 3D Navigation Techniques in an Astronomical Observatory Context: Implementation and Evaluation in a Software Platform

Louis-Pierre Bergé, University of Toulouse & CNRS; UPS; IRIT, France Gary Perelman, University of Toulouse & CNRS; UPS; IRIT, France Adrien Hamelin, University of Toulouse & CNRS; UPS; IRIT, France Mathieu Raynal, University of Toulouse & CNRS; UPS; IRIT, France Cédric Sanza, University of Toulouse & CNRS; UPS; IRIT, France Minica Houry-Panchetti, University of Toulouse & CNRS; UPS; IRIT, France Rémi Cabanac, Télescope Bernard Lyot, Observatoire Midi-Pyrénées, France Emmanuel Dubois, University of Toulouse & CNRS; UPS; IRIT, France

pages: 567 - 580

# A Hybrid Ant Colony and Branch-and-Cut Algorithm to Solve the Container Stacking Problem at Seaport Terminal

Ndèye Fatma Ndiaye, University of Le Havre, France Adnan Yassine, University of Le Havre, France Ibrahima Diarrassouba, University of Le Havre, France

pages: 581 - 589

#### Team Assistance in a Software Engineering Team: A Field Study

Pierre N. Robillatd, Polytechnique Montréal, Canada Sébastien Cherry, Polytechnique Montréal, Canada Francois Chiocchio, University of Ottawa, Canada Carolyne Hass, Université de Montréal, Canada

pages: 590 - 600

#### Development and Evaluation of CSCL System for Large Classrooms Using Question-Posing Script

Taketoshi Inaba, Tokyo University of Technology, Japan Kimihiko Ando, Tokyo University of Technology, Japan

pages: 601 - 616

## A Novel Distributed Database Synchronization Approach with an Application to 3D Simulation

Martin Hoppen, Institute for Man-Machine Interaction, RWTH Aachen University, Germany Juergen Rossmann, Institute for Man-Machine Interaction, RWTH Aachen University, Germany

pages: 617 - 631

## In-Memory Distance Threshold Similarity Searches on Moving Object Trajectories

Michael Gowanlock, Department of Information and Computer Sciences and NASA Astrobiology Institute

University of Hawaii, United States

Henri Casanova, Department of Information and Computer Sciences University of Hawaii, United States

pages: 632 - 641

#### **Automated Feature Construction for Classification of Time Ordered Data Sequences**

Michael Schaidnagel, University of the West of Scotland, Scotland Thomas Connolly, University of the West of Scotland, Scotland Fritz Laux, Reutlingen University, Germany

pages: 642 - 652

# Virtual-BFQ: A Coordinated Scheduler to Minimize Storage Latency and Improve Application Responsiveness in Virtualized Systems

Alexander Spyridakis, Virtual Open Systems, France Daniel Raho, Virtual Open Systems, France Jérémy Fanguède, Virtual Open Systems, France

pages: 653 - 674

# An Analytic Evaluation of the SaCS Pattern Language for Conceptualisation of Safety Critical Systems

André Alexandersen Hauge, Institute for Energy Technology, Norway Ketil Stølen, SINTEF ICT, Norway

pages: 675 - 685

#### Combining Genetic Algorithm and SMT into Hybrid Approaches to Web Service Composition Problem

Artur Niewiadomski, Institute of Computer Science, Siedlce University, Poland Wojciech Penczek, PAN Warsaw and Siedlce University, Poland Jaroslaw Skaruz, Institute of Computer Science, Siedlce University, Poland

pages: 686 - 696

# A Combined Simulation and Test Case Generation Strategy for Self-Adaptive Systems

Georg Püschel, TU Dresden, Germany Christian Piechnick, TU Dresden, Germany Sebastian Götz, TU Dresden, Germany Christoph Seidl, TU Dresden, Germany Sebastian Richly, TU Dresden, Germany Thomas Schlegel, TU Dresden, Germany Uwe Aßmann, TU Dresden, Germany

pages: 697 - 709

# The OM4SPACE Activity Service: A semantically well-defined cloud-based event notification middleware

Marc Schaaf, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland Irina Astrova, Tallinn University of Technology, Estonia Arne Koschel, University of Applied Sciences and Arts Hannover, Germany Stella Gatziu Grivas, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

pages: 710 - 726

#### Efficient Pattern Application: Validating the Concept of Solution Implementations in Different Domains

Michael Falkenthal, University of Stuttgart, Germany Johanna Barzen, University of Stuttgart, Germany Uwe Breitenbücher, University of Stuttgart, Germany Christoph Fehling, University of Stuttgart, Germany Frank Leymann, University of Stuttgart, Germany

pages: 727 - 739

# Introducing a Scalable Encryption Layer to Address Privacy and Security Issues in Hybrid Cloud Environments

Paul Reinhold, Chemnitz University of Technology, Germany Wolfgang Benn, Chemnitz University of Technology, Germany Benjamin Krause, Qualitype GmbH, Germany Frank Goetz, Qualitype, Germany Dirk Labudde, Hochschule Mittweida University of Applied Sciences, Germany

pages: 740 - 751

# **Evaluating Parallel Breadth-First Search Algorithms for Multiprocessor Systems**

Matthias Makulla, Bonn-Rhein-Sieg University, Germany Rudolf Berrendorf, Bonn-Rhein-Sieg University, Germany