

5-7 December 2011
Ho Chi Minh City, Vietnam

PROCEEDING

The Thirteenth International Conference of Information Integration
and Web-based Applications & Services
(iiWAS2011)



David Taniar, Eric Pardede, Hong-Quang Nguyen, Wenny Rahayu,
Ismail Khalil

iiWAS2011

The 13th International Conference on Information Integration and Web-based Applications & Services

December 5-7, 2011
Ho Chi Minh City, Vietnam



Association for
Computing Machinery

**The Association for Computing Machinery
2 Penn Plaza, Suite 701
New York, New York 10121-0701**



**Association for
Computing Machinery**

Copyright © 2010 by the Association for Computing Machinery, Inc (ACM). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permission to republish from: Publications Dept. ACM, Inc. Fax +1-212-869-0481 or E-mail permissions@acm.org.

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Notice to Past Authors of ACM-Published Articles

ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that was previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform permissions@acm.org, stating the title of the work, the author(s), and where and when published.

ACM ISBN: 978-1-4503-0784-0

Table of Contents

Proceedings of iiWAS2011

TABLE OF CONTENTS

PREFACE	xiv
THE COMMITTEES	xv
iiWAS	
KEYNOTES	
New Challenges for Universities in the Knowledge Triangle <i>Gabriele Kotsis (Johannes Kepler Universität Linz, Austria)</i>	1
Cloud Architecture: A Preliminary Look <i>Won Kim (Kyungwon University, South Korea)</i>	2
How the Cloud Computing Paradigm Could Shape the Future of Enterprise Information Processing <i>Amin Anjomshoaa, A Min Tjoa (Vienna University of Technology, Austria)</i>	7
Data Integration in a Collaborative Decision Support System: a three-way collaboration effort between University, Industry, and International Standard Body <i>J. Wenny Rahayu (La Trobe University, Australia)</i>	11
WEB DATA PROCESSING	
A Workload-aware Approach for Optimizing the XML Schema Design Trade-off <i>Rebeca Schroeder (Univ. Fed. do Paraná, Brazil), Denio Duarte (Univ. Fed. da Fronteira Sul, Brazil), Ronaldo S. Mello (Univ. Fed. de Santa Catarina, Brazil)</i>	12
Research History Generation Using Maximum Margin Clustering of Research Papers Based on Metainformation <i>Manh Cuong Nguyen, Daichi Kato, Taiichi Hashimoto, Haruo Yokota (Tokyo Institute of Technology, Japan)</i>	20
A Framework of Faceted Navigation for XML Data <i>Takahiro Komamizu, Toshiyuki Amagasa, Hiroyuki Kitagawa (University of Tsukuba, Japan)</i>	28
Hypergraph-based Multidimensional Data Modeling towards On-demand Business Analysis <i>Duong Thi Anh Hoang, A Min Tjoa (Vienna University of Technology, Austria), Torsten Priebe (Teradata GmbH, Austria)</i>	36
Feeding the World: A Comprehensive Dataset and Analysis of a Real World Snapshot of Web Feeds <i>Sandro Reichert, David Urbansky, Klemens Muthmann, Philipp Katz, Matthias Wauer, Alexander Schill (Institute of Systems Architecture, Germany)</i>	44

DATA MINING TECHNIQUES FOR INFORMATION REPRESENTATION AND INTEGRATION

- A Web Content Mining Approach for Tag Cloud Generation
Muhammad Abulaish, Tarique Anwar (King Saud University, Saudi Arabia) 52

- Decision Forest for Multivariate Time Series Analysis
Nine He, Osamu Yoshie (Waseda University, Japan), Leyang Li (Shanghai Mobile Technology Company, China) 60

- Words-of-Wisdom Search based on Multi-dimensional Sentiment Vector
Kouichi Takaoka, Akiyo Nadamoto (Konan University, Japan) 66

- Evidence Theory Based Knowledge Representation
R. Mohamed (University Tun Hussein Onn, Malaysia), J. Watada (Waseda University, Japan) 74

- Relationship Extraction Methods Based on Co-occurrence in Web Pages and Files
Qiang Song, Yousuke Watanabe, Haruo Yokota (Tokyo Institute of Technology, Japan) 82

WEB SERVICES: INVOCATION AND COMPOSITION

- Multi-Agent Selection of Multiple Composite Web Services based on CBR Method and Driven by QoS
Fatma Siala, Soufiane Lajmi, Khaled Ghedira (University of Tunis, Tunisia) 90

- Architecting end-to-end convergence of Web and Telco services
Gerard Nicolas, Karim Sbata (Orange Labs, France), Elie Najm (Télécom ParisTech, France) 98

- A Multi-Perspective Approach for Web Service Composition
Maha Driss, Yassine Jamoussi, Henda Hajjami Ben Ghézala (University of Manouba, Tunisia), Jean-Marc Jézéquel (University of Rennes I, France) 106

- Security-Aware Web Service Composition Approaches: State-of-the-Art
Homa Movahednejad, Suhaimi Bin Ibrahim, Harihodin Bin Selamat (Universiti Teknologi Malaysia, Malaysia), Mahdi Sharifi (Islamic Azad University, Iran), Sayed Gholam Hassan Tabatabaei (Isfahan University of Technology, Iran) 112

- Active XML (AXML) Intensional Data Exchange
Binh Viet Phan, Eric Paredede (La Trobe University, Australia) 122

MULTIMEDIA APPLICATIONS

- Integrating Multimedia Data Processing Parts in Cloud into Folder Programming Environment
Hiroki Akama, Masashi Yamamuro, Takashi Menjo (NTT Cyber Space Labs, Japan), Tetsuji Satoh (University of Tsukuba, Japan) 130

- The Wavelet Multilayer Perceptron for the Prediction of Earthquake Time Series Data
Ashikin Ali, Rozaida Ghazali, Mustafa Mat Deris (Universiti Tun Hussein Onn Malaysia, Malaysia) 138

- MonArch: Digital Archives for Cultural Heritage
Alexander Stenzer, Claudia Woller, Burkhard Freitag (University of Passau, Germany) 144

Extraction and Visualization of the Repetitive Structure of Music in Acoustic Data —Misual Project— <i>Bartłomiej Puzo'n (AGH University of Science and Technology, Poland), Naoko Kosugi (NTT Communication Science Laboratories, Japan)</i>	152
ONTOLOGY FOR INFORMATION INTEGRATION	
The Opportunities of Cloud Computing for Managing Competences and Learning Paths in Pharmacy <i>Juha Puustjärvi (University of Helsinki, Finland), Leena Puustjärvi (The Pharmacy of Kaivopuisto, Finland)</i>	160
Appropriate Global Ontology Construction: A Domain-Reference-Ontology Based Approach <i>Cheikh Niang, Béatrice Bouchou, Yacine Sam (Université François Rabelais, France), Moussa LO (Université Gaston Berger de Saint-Louis, Sénégal)</i>	166
An Integration-oriented Ontology Development Methodology to Reuse Existing Ontologies in an Ontology Development Process <i>Nelson K. Y. Leung, Sim Kim Lau, Joshua Fan (University of Wollongong, Australia), Nicole Tsang (RMIT International University Vietnam, Vietnam)</i>	174
Making Workflows Situation Aware —An Ontology-driven Framework for Dynamic Spatial Systems <i>Stefan Mitsch, Wolfgang Gottesheim Franz Hermann Pommer, Birgit Pröll, Werner Retschitzegger, Wieland Swinger (Johannes Kepler University Linz, Austria), Robert Hutter (Prologics IT GmbH, Austria), Gustavo Rossi (Universidad Nacional de La Plata, Argentina), Norbert Baumgartner (Team Communication Technology Management GmbH, Austria)</i>	182
TODWEB: Training-less Ontology based Deep Web Source Classification <i>Umara Noor (International Islamic University, Pakistan), Zahid Rashid (School of Electrical Engineering and Computer Science, Pakistan), Azhar Rauf (University of Peshawar, Pakistan)</i>	190
Semantically Enhanced Matchmaking of Consumers and Providers: A Canadian Real Estate Case Study <i>Freddy Poon, Thomas Chin, Matt Bentrovato, Omair Shafiq, Alan Chen, Jon Rokne, Reda Alhajj (University of Calgary, Canada), Reda Alhajj (Global University, Lebanon), Flouris Triant, Reda Alhajj (Hellenic American University, USA)</i>	198
INFORMATION INTEGRATION FOR ADVANCED APPLICATIONS	
Modelling and Analysis of Shipping Networks from Online Maritime Schedules <i>Deepen Doshi, Baljeet Malhotra, Stéphane Bressan (National University of Singapore, Singapore)</i>	206
Integrating open data and generating travel itinerary in semantic-aware tourist information system <i>Tuan-Dung Cao, Quang-Minh Nguyen, Anh-Duc Nguyen, Tan-Hung Le (Hanoi University of Science and Technology, Vietnam)</i>	214
Mashup Services to Daily Activities – End-user Perspective in Designing a Consumer Mashups <i>Zhenzhen Zhao, Sirsha Bhattacharai, Ji Liu, Noel Crespi (Télécom SudParis, France)</i>	222

An Implicit Approach for Building Communities of Web Service Registries <i>Mohamed Sellami, Walid Gaaloul, Samir Tata (TELECOM SudParis, France)</i>	230
SECURITY AND PRIVACY ISSUES ON ADVANCED APPLICATIONS	
Preserving Privacy on the Searchable Internet <i>Ruxia Ma, Xiaofeng Meng (University of China, China), Zhongyuan Wang (Microsoft Research Asia, China)</i>	238
On the Privacy and Utility of Anonymized Social Networks <i>Yi Song, Sadegh Nobari, Xuesong Lu, Panagiotis Karras, Stéphane Bressan (National University of Singapore, Singapore)</i>	246
Private Notes: Encrypted XML Notes Synchronization and Sharing with Untrusted Web Services <i>Paul Klingelhuber, Rene Mayrhofer (University of Applied Sciences Upper Austria, Austria)</i>	254
Towards Scalability of Reputation and QoS Based Web Services Discovery Using Agents and Ontologies <i>Rohallah Benaboud (University of Tebessa, Algeria), Ramdane Maamri, Zaïdi Sahoun (University of Mentouri, Algeria)</i>	262
Performance Evaluation of Security Techniques in Web Services <i>Douglas Rodrigues, Daniel F. Pigatto, Júlio C. Estrella, Kalinka R. L. J. C. Branco (University of São Paulo, Brazil)</i>	270
DATABASE APPLICATIONS AND DATA MINING	
NoSQL Databases: a step to database scalability in Web environment <i>Jaroslav Pokorny (Charles University, Czech Republic)</i>	278
A Cloud-Based Framework for QoS-Aware Service Selection Optimization <i>Peter Paul Beran, Erich Schikuta (University of Vienna, Austria), Elisabeth Vinek (CERN, Switzerland)</i>	284
Ontology-based proximity search <i>Tuan M.V. Le, Tru H. Cao (HCMC University of Tech. and John von Neumann Institute, Vietnam), Son M. Hoang (Ho Chi Minh City University of Technology, Vietnam), Junghoo Cho (UCLA, USA)</i>	288
Enhancing Information Retrieval to Automatically Trace Requirements and Design Artifacts <i>Yoshihisa Udagawa (Polytechnic University, Japan)</i>	292
Simple and Effective Behavior Tracking by Post Processing of Association Rules into Segments <i>Alan Chen, Tamer N. Jarada, Omar Zarour, Jon Rokne (University of Calgary, Canada), Kostas F. Xylogiannopoulos, Panagiotis Karampelas (Hellenic American University, USA), Reda Alhajj (Global University, Lebanon)</i>	296
Using the Structure of B+-Trees for Enhancing Logging Mechanisms of Databases <i>Peter Kieseberg, Sebastian Schrittweiser, Lorcan Morgan, Martin Mulazzani, Markus Huber, Edgar Weippl (SBA Research, Austria)</i>	301

WEB INFORMATION SYSTEMS DEVELOPMENT

- Software Security for Small Development Teams – A Case Study
Michael Kainerstorfer (Aumayr GmbH, Austria), Johannes Sametinger, Andreas Wiesauer (Johannes Kepler University, Austria) 305
- The Mashup Component Description Language
Saeed Aghaee, Cesare Pautasso (University of Lugano, Switzerland) 311
- MDE Approach for the Generation and Verification of SCA Model
Soumaya Louhichi, Mohamed Graiet, Mourad Kmimech, Mohamed Tahar Bhiri (MIRACL, Tunisia), Walid Gaaloul (Télécom SudParis, France), Eric Cariou (Université de Pau et des pays de l'Adour, France) 317
- Key Design Considerations for Recommendation Systems
Andrea Barraza-Urbina, Angela Carrillo Ramos (Pontificia Universidad Javeriana, Colombia) 321
- Towards Task-Based Development of Enterprise Mashups
Vincent Tietz, Stefan Pietschmann, Gregor Blichmann, Klaus Meißner (Technische Universität Dresden, Germany), Alexander Casall, Bernd Grams (Saxonia Systems AG, Germany) 325
- Engineering Web Information Systems: A Content Management System-based Approach
Jurriaan Souer (GX Software, USA), Thijs Urlings, Remko Helms, Sjaak Brinkkemper (Utrecht University, Netherlands) 329
- Performance Impact of Virtualization on web-based MORPG System
Masaki Kohana, Shusuke Okamoto (Seikei University, Japan) 333

- Implementation and Evaluation of Consumer-Oriented Lifelog Service Using Daily Receipts
Seiki Tokunaga, Shinsuke Matsumoto, Masahide Nakamura (Kobe University, Japan) 337

WEB SERVICES AND APPLICATIONS

- New approach for collecting high quality parallel corpora from multilingual Websites
Cong Phap Huynh (Danang University of Technology, Vietnam) 341
- Building a Geographical Ontology by Using Wikipedia
Quoc Hung-Ngo (University of Information Technology, Vietnam), Son Doan (National Institute of Informatics, Japan), Werner Winiwarter (University of Vienna, Austria) 345
- Towards a Transformation of Composite Web Service with QoS Extension into ACME\Armani
Raoudha Maraoui, Amel Mhamdi, Mohamed Graiet, Mourad Kmimech, Mohamed Tahar Bhiri (MIRACL, Tunisia), Walid Gaaloul (Télécom SudParis, France), Eric Cariou (Université de Pau et des pays de l'Adour, France) 349
- A Taxonomy of Trust Oriented Approaches for Services Computing
Mahdi Sharifi, Azizah Abdul Manaf, Haslina Md Sarkan (Universiti Teknologi Malaysia, Malaysia), Homa Movahednejad (Islamic Azad University, Iran), Sayed Gholam Hassan Tabatabaei (Isfahan University of Technology, Iran) 353

- Annotations on Access Controls in Wikis: A Proposal
Chikashi Fuchimoto, Masayoshi Aritsugi (Kumamoto University, Japan) 359

- Exploring Political Activities in the Saudi Twitterverse
Hend S. Al-Khalifa (King Saud University, Saudi Arabia) 363

CONTEXT AWARE CONCEPTS AND APPLICATIONS

- Explicitly Context-Aware Publish/Subscribe with Context-Invariant Subscriptions
David Lizcano, Sebastian Ortega, Javier Soriano, Sergio Vavassori (Universidad Politécnica de Madrid, Spain) 367
- An Incremental and User Feedback-based Ontology Matching Approach
Fernando Wagner, Jose A. F. Macedo (Universidade Federal do Ceará, Brazil), Bernadette Lóscio (Universidade Federal de Pernambuco, Brazil) 371
- Characterizing User Habituation in Interactive Voice Interface – Experience Study on Home Network System
Noriyuki Matsubara, Shinsuke Matsumoto, Masahide Nakamura (Kobe University, Japan) 375
- An Ontology-based IT Student Model in an Educational Social Network
Cuong Duc Nguyen, Khoi Duy Vo, Dang Bach Bui, Dung Tien Nguyen (International University, Vietnam) 379
- A Wide-area Context-awareness Approach for Android
Darren Carlson, Andreas Schrader (University of Lübeck, Germany) 383
- A Design Framework for Recommender System by Incorporating Sequential Information
Rajhans Mishra, Pradeep Kumar, Bharat Bhasker (Indian Institute of Management, India) 387

CONTEMPORARY ISSUES IN ADVANCED APPLICATIONS

- Liquid Decision Making: An Exploratory Study
Stephan Leutenmayr (Bauhaus Luftfahrt, Germany), François Bry (Ludwig-Maximilians-Universität München, Germany) 391
- UBI-REGI: Service Registry for Discovering Service Resources in Ubiquitous Network
Hideharu Seto, Shinsuke Matsumoto, Masahide Nakamura (Kobe University, Japan) 395
- A Decision Tree Using CUDA GPUs
Chun-Chieh Chiu, Guo-Heng Luo (National Chiao-Tung University, Taiwan), Shyan-Ming Yuan (Providence University, Taiwan) 399

EMERGING RESEARCH PROJECTS APPLICATIONS SYMPOSIUM (ERPAS)

- The Social Context of Broadband Infrastructure Sharing
Sharol Sibongile Mkhomazi, Tiko Iyamu (Tshwane University of Technology, South Africa) 403
- Egobile: Where Social Networks Go Mobile
Hung Q. Tao, Yen-Vy L. Nguyen, Hieu M. Nguyen, Viet H. Huynh, Tuan A. Nguyen (University of Information Technology, Vietnam) 408
- Preference-based User Rate Correction Process for Interactive Recommendation Systems
Dosam Hwang, Xuan Hau Pham, Jason J. Jung (Yeungnam University, Korea) 412
- Social Network Privacy and Trust Concerns
Maha Faisal, Asmaa Alsumait (Kuwait University, Kuwait) 416
- The Design of Activity-Oriented Social Networking: Dig-Event
Zhenzhen Zhao, Ji Liu, Noel Crespi (Télécom SudParis, France) 420

The Intelligent Integrated Computer-Assisted Language Learning (iiCALL) Environment – Work in Progress <i>Harald Wahl (University of Applied Sciences Technikum Wien, Austria), Werner Winiwarter (University of Vienna, Austria)</i>	426
The Time-based Data Partitioning Method for XML Query Optimization <i>Majed Abdullah Algarni (Technical and Vocational Training Corporation, Saudi Arabia)</i>	430
Distributed data integration and mining <i>Viet Tran, Ondrej Habala, Branislav Simo, Ladislav Hluchy (SAS, Slovakia)</i>	435
Enhancing Data Integration and Discovery with ad hoc Registries <i>Mifan Careem, Damith Karunaratne (University of Colombo, Sri Lanka)</i>	439
Another Architecture Style for A Product Line Architecture <i>I Made Murwantara (Universitas Pelita Harapan, Indonesia)</i>	443
Deep Web Integrated Systems: Current Achievements and Open Issues <i>Boutros R. El-Gamil, Werner Winiwarter (University of Vienna, Austria), Bojan Božić (Austrian Institute of Technology, Austria), Harald Wahl (University of Applied Sciences Technikum Wien, Austria)</i>	447
Exogenous Transformation from SCA to Wright ADL <i>Wided Ben Abid, Mohamed Graiet, Mourad Kmimech, Mohamed Tahar Bhiri (MIRACL, Tunisia), Walid Gaaloul (Télécom SudParis, France), Eric Cariou (Université de Pau et des pays de l'Adour, France)</i>	451
Model Driven Design for E-Applications: The Meta Model Approach <i>Dimitris Karagiannis (University of Vienna, Austria), Vedran Hrgovcic, Robert Woitsch (BOC Asset Management GmbH, Austria)</i>	455
Development of Mobile Government Websites: A Functional Design Approach <i>Hend S. Al-Khalifa (King Saud University, Saudi Arabia)</i>	459
Session Initiation Protocol Improvement Using Inter-Asterisk eXchange <i>Octavio J. Salcedo Parra, Neil Orlando Diaz Martinez (Universidad Distrital Francisco Jose de Caldas, Colombia), Gustavo López Rubio (Universidad Pontificia de Salamanca Campus de Madrid, España)</i>	463
IPV6 and IPV4 QoS Mechanisms <i>Octavio J. Salcedo Parra, Angela Patricia Rios (Universidad Distrital Francisco Jose de Caldas, Colombia), Gustavo López Rubio (Universidad Pontificia de Salamanca Campus de Madrid, España)</i>	467
Automatic two way synchronization between server and multiple clients for HVAC system <i>Ashikin Ali, Maxim Shcherbakov (Volgograd State Technical University, Russia), Adriaan Brebels (Katholieke Hogeschool Kempen, Belgium)</i>	471
Using WS-Coordination and Semantic Messaging in Implementing Reverse Combinatorial Auctions <i>Juha Puustjärvi (University of Helsinki, Finland)</i>	475
AWS-WSDL: A WSDL Extension to Support Adaptive Web Service <i>Chiraz EL Hog, Raoudha Ben Djemaa, Ikram Amous (MIRACL, Tunisia)</i>	481

Towards Scalable Agent-based Web Service Systems: Performance Evaluation <i>Quang-Dung Vu, Ba-Binh Pham, Dinh-Hieu Vo, Viet-Ha Nguyen (University of Engineering and Technology, Vietnam)</i>	485
Bakabs: Managing Load of Cloud-based Web Applications from Mobiles <i>Carlos Paniagua, Satish Narayana Srirama, Huber Flores (University of Tartu, Estonia)</i>	489
Visualization and Modeling of Dengue Fever Surveillance with SIR Endemic Model <i>Hendry, Yessica Nataliani (Satya Wacana Christian University, Indonesia)</i>	495
Representing Multiple Levels for Objects in Three-Dimensional GIS Model <i>Tuan Anh N.G, Vu T.P, Sy A.T (University of Science, Vietnam), Phuoc Tran Vinh, Dang Van Pham (University of Information Technology, Vietnam)</i>	499
Emotional video ranking based on user comments <i>Naomichi Murakami, Eisuke Ito (Kyushu University, Japan)</i>	503
Implementing and Evaluating Life-Log Mashup Platform Using RDB and Web Services <i>Akira Shimojo, Shinsuke Matsumoto, Masahide Nakamura (Kobe University, Japan)</i>	507
Information Modelling for Sustainable Buildings <i>Matija König, Vlado Stankovski (University of Ljubljana, Slovenia) Hong-Linh Truong (Vienna University of Technology, Austria)</i>	511
Position Paper: Applying Model-Driven Engineering for Linking Web Service and Context Models <i>Georgia M. Kapitsaki, Achilleas Achilleos (University of Cyprus, Cyprus)</i>	515
Verifying Dynamic Reconfiguration of Composite Service with Event-B <i>Lazhar Hamel, Mohamed Graiet, Mourad Kmamech, Mohamed Tahar Bhiri (MIRACL, Tunisia), Walid Gaaloul (Télécom SudParis, France)</i>	519
Vizier: A Generic and Multidimensional Agent-Based Recommendation Framework <i>Andrea Barraza-Urbina, Angela Carrillo Ramos (Pontificia Universidad Javeriana, Colombia)</i>	523
Integrating Explicit Semantic Analysis for Ontology-based Resource Selection <i>Matthias Wauer, Daniel Schuster, Alexander Schill (TU Dresden, Germany)</i>	527
An UML _AD-To-Event_B Refinement Based Approach for Specifying and Verifying Workflow Applications <i>Ahlem Ben Younes, Leila Jemni Ben Ayed (ESSTT, Tunisia)</i>	531
MASTER AND DOCTORAL COLLOQUIUM (MDC)	
A proposed Indoor Navigation System for Blind Individuals <i>Mai A. Al-Ammar, Hend S. Al-Khalifa, AbdulMalik S. Al-Salman (King Saud University, Saudi Arabia)</i>	535
Preliminary Experimentation about Interactive Spiral Knowledge Mining based on Conjoint Analysis <i>Castel Dennis, Tsuji Hiroshi (Osaka Prefecture University, Japan)</i>	539

ManetPRO: a Protocol Evaluation Testbed over m-Platforms <i>Hai Ha-Son, Quan Le-Trung, Minh Son Nguyen (International University, Vietnam)</i>	543
Information extraction and ontology model for a ‘Call for paper’ manager <i>Laurent Issertial, Hiroshi Tsuji (Osaka Prefecture University, Japan)</i>	547
A Proposed Sentiment Analysis Tool for Modern Arabic Using Human-Based Computing <i>Afnan A. Al-Subaihin, Hend S. Al-Khalifa, AbdulMalik S. Al-Salman (King Saud University, Saudi Arabia)</i>	551
Temperature Forecasting with a Dynamic Higher-Order Neural Network Model <i>Noor Aida Husaini, Rozaida Ghazali, Lokman Hakim Ismail, Norhamreeza Abdul Hamid, Mustafa Mat Deris, Nazri Mohd Nawi (UTHM Malaysia, Malaysia)</i>	555
Natural language information retrieval system using phrase structure grammar analysis for English <i>Tuyen Thi-Thanh Do (UIT, Vietnam), Chinh Trong Nguyen (Lac Hong University, Vietnam)</i>	560

Author Index

Index	564
-------	-----