



# **GEOProcessing 2016**

The Eighth International Conference on Advanced Geographic Information  
Systems, Applications, and Services

April 24 - 28, 2016

Venice, Italy

## **GEOProcessing 2016 Editors**

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

Yerach Doytsher, Technion - Israel Institute of Technology, Haifa, Israel

**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© (4238) by International Academy, Research, and Industry Association (IARIA)  
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (4238)

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

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

[petre@iaria.org](mailto: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: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## GEOPROCESSING 1: GEO-MODELING I

<b>Evaluation of CASE Tools with UML Profile Support for Geographical Database Design</b> .....	1
<i>T. Ferreira, J. Lisboa-Filho, S. Stempliac</i>	
<b>Impact of DEM Processing on the Geotechnical Instability Analysis of Waste Heaps in Wallonia</b> .....	7
<i>O. Close, N. Stephenne, C. Frippiat</i>	
<b>Uncovering User Profiles in Location-Based Social Networks</b> .....	14
<i>S. Mohamed, A. Abdelmoty</i>	
<b>Modelling Urban Expansion: A Multiple Urban-Densities Approach</b> .....	22
<i>A. Mustafa, I. Saadi, M. Cools, J. Teller</i>	

## GEOPROCESSING 2: GEO-MODELING II

<b>Spatial Regression in Health: Modelling Spatial Neighbourhood of High Risk Population</b> .....	26
<i>S. Bertazzon</i>	
<b>On Improving Data Quality and Topology in Vector Spatial Data</b> .....	32
<i>N. Solomakhina, T. Hubauer, S. Becher</i>	
<b>Identification of Areas with Potential for Flooding in South America</b> .....	38
<i>S. Rosim, J. Oliveira, A. Jardim, L. Namikawa, C. Almeida</i>	
<b>A Common Land-Use Change Model for Both the Walloon and Flanders Regions in Belgium</b> .....	43
<i>B. Beaumont, N. Stephenne, E. Hallot, L. Poelmans, O. Close</i>	

## GEOPROCESSING 3: GEO-SPATIAL DOMAIN APPLICATIONS

<b>Brokered Approach to Federating Data using Semantic Web Techniques</b> .....	46
<i>J. Fa, G. West, D. McMeekin, S. Moncrieff</i>	
<b>Underground Monitoring Systems using 3D GIS for Public Safety</b> .....	56
<i>K. Kim, D. Park, J. Lee, I. Lee</i>	
<b>Image Based-Localization on Mobile Devices Using Geometric Features of Buildings</b> .....	58
<i>H. Ramanana, A. Rahajaniaina, J. Jessel</i>	

## GEOPROCESSING 4: SPECIFIC GEO-DATA PROCESSING

<b>A Method for Calculating Shape Similarity among Trajectory of Moving Object Based on Statistical Correlation of Angular Deflection Vectors</b> .....	63
<i>A. Melo, G. Scheibel, F. Baldo, F. Braz</i>	
<b>Advanced Association Processing and Computation Facilities for Geoscientific and Archaeological Knowledge Resources Components</b> .....	69
<i>C. Ruckemann</i>	
<b>Differential Morphological Profile for Threat Detection on Pipeline Right-of-Way: Heavy Equipment Detection</b> .....	76
<i>K. Stankov, B. Tolton</i>	

## GEOPROCESSING 5: MANAGING GEO-SPATIAL DATA

<b>SOLAP Frame: A Framework for SOLAP using Heterogeneous Data Sources</b> .....	78
<i>T. Silva, D. Leite, C. Baptista</i>	
<b>Geographic Metadata Searching with Semantic and Spatial Filtering Methods</b> .....	85
<i>T. Reed, E. Gulland, G. West, D. McMeekin, S. Moncrieff</i>	
<b>A Linear Approach for Spatial Data Integration</b> .....	93
<i>A. Noskov, Y. Doytsher</i>	

## **GEOPROCESSING 6: GIS**

<b>BIM/GIS-based Data Integration Framework for Facility Management</b> .....	100
<i>T. Kang, S. Park, C. Hong</i>	
<b>Context-aware Indoor-Outdoor Detection for Seamless Smartphone Positioning</b> .....	106
<i>N. Kroll, M. Jager, S. Stuß</i>	
<b>A Raster SOLAP for the Visualization of Crime Data Fields</b> .....	109
<i>J. Kasprzyk, J. Donnay</i>	

## **GEOPROCESSING 7: GEO-SPATIAL WEB SERVICES**

<b>Comparative Evaluation of Alternative Addressing Schemes</b> .....	118
<i>K. Clemens</i>	
<b>Geospatial Content Services in the Digital Government: CASE: National Data Exchange Layer in the Finnish National Architecture for Digital Services</b> .....	121
<i>L. Lehto, P. Latvala, T. Sarjakoski, J. Reini</i>	

## **GEOPROCESSING 8: EARTH GEO-OBSERVATION**

<b>Mission Exploitation Platform PROBA-V</b> .....	126
<i>J. Dries, E. Goor, D. Daems</i>	
<b>On Feasibility to Detect Volcanoes Hidden under Ice of Antarctica via their “Gravitational Signal”</b> .....	128
<i>J. Klokocnik, A. Bezdek, J. Kostecky</i>	
<b>We Need to Rethink How We Describe and Organize Spatial Information: Instrumenting and Observing the Community of Users to Improve Data Description and Discovery</b> .....	131
<i>B. Adams, M. Gahegan</i>	

## **GEOPROCESSING 9: GEO-SPATIAL FUNDAMENTALS**

<b>Improving Spatial Data Supply Chains: Learnings from the Manufacturing Industry</b> .....	137
<i>L. Arnold</i>	
<b>Spatial Data Supply Chain Provenance Modelling for Next Generation Spatial Infrastructures Using Semantic Web Technologies</b> .....	146
<i>M. Sadiq, D. McMeekin, L. Arnold</i>	
<b>Geographical General Regression Neural Network (GGRNN) Tool For Geographically Weighted Regression Analysis</b> .....	154
<i>M. Irfan, A. Koj, H. Thomas, M. Sedighi</i>	
<b>Author Index</b>	