

# International Workshop on Geoinformation Advances

## 7-8 November 2012

### UTM, Johor, Malaysia

The topics of the workshop cover major geoinformation science including:

Close Range Photogrammetry and Remote Sensing, InSAR, Laser Scanning, Point Cloud Data Processing, LiDAR Data Processing, GPS Data Processing, Cadastre and LADM, Multidimensional Geoinformation, Spatial Modelling, 3D City Modelling, 3D Indoor Modelling, CityGML, Spatial Data Structuring, XML Data Bases, Marine Information Management, 3D Geo-Visualization, Spatial Data Infrastructure (SDI), 2D and 3D Map Generalization, Oceanography, Flood Risk Mapping, Unmanned Aerial Vehicle (UAV) Systems

The best papers will be published in the **Springer Lecture Notes in Geoinformation and Cartography (LNG&C)** series. The rest of accepted papers will be included in conference proceedings.

#### Venue

Faculty of Geoinformation and Real Estate  
Universiti Teknologi Malaysia  
81310 UTM Skudai, Johor, Malaysia

#### Registration

Full registration: RM 1,400  
Students: RM 750

The fee includes the Springer book, proceedings, coffee break, lunch and gala dinner.

#### Conference and Program Chairs

Alias Abdul Rahman  
Pawel Boguslawski  
Christopher Gold  
Mohamad Nor Said

More information can be found on the workshop webpage:

**[www.voronoi.com/geoadvances2012/](http://www.voronoi.com/geoadvances2012/)**

Contact: [geoadvances2012@utm.my](mailto:geoadvances2012@utm.my)

## Invited Speakers

Christopher Gold

*From Boats to Buildings: Why Topology Matters*

Thomas Kolbe

*Latest Development in 3D City Modelling and CityGML*

François Anton

*Hybrid scientific computing using Interval analysis, Homotopy and Algebraic Geometry for Photogrammetry, GPS and GIS*

Gurcan Buyuksalih

*Generation of Istanbul 3D City Model Using Airborne Laser Data*

## International Program Committee

Abbas Rajabifard – University of Melbourne

Albert Chong – The University of Southern Queensland

Arthur P. Cracknell – University of Dundee

Clive Fraser – University of Melbourne

Eberhard Gülch – HFT Stuttgart

Fabio Remondino – Bruno Kessler Foundation

François Anton – Technical University of Denmark

Gerhard Groeger – Universität Bonn

Giles Foody – University of Nottingham

Gurcan Buyuksalih – IMP-Bimtas

Hugo Ledoux – Delft University of Technology

Ismail Rakip Karas – Karabuk University

Jane Drummond – University of Glasgow

Jantien Stoter – Delft University of Technology

Jay Hyoun Kwon – University of Seoul

Jiyeong Lee – University of Seoul

Kazimierz Becek – Universiti Brunei Darussalam

Lars Bodum – Aalborg Universitet

Linlin GE – University of New South Wales

Massimo Menenti – Delft University of Technology

Md Latifur Rahman Sarker – UTM

Mohd Ibrahim Seenii Mohd – UTM

P.C. Lai – The University of Hong Kong

Peter van Oosterom – Delft University of Technology

Rahmi Nurhan Celik – Istanbul Technical University

Sahrum Ses – UTM

Shuanggen Jin – Chinese Academy of Sciences

Sisi Zlatanova – Delft University of Technology

Tajul Ariffin Musa – UTM

Thomas H. Kolbe – Technical University Berlin

Umit Isikdag – Beykent University

Volker Coors – HFT Stuttgart

William Cartwright – RMIT University

Xiaoli Ding – The Hong Kong Polytechnic University

Yong-Cheol SUH – Pukyong National University

Researchers are invited to submit full papers describing original and unpublished research. All manuscripts will be subject to the triple blind peer review process. Accepted full papers will be published within the Springer Lecture Notes in Geoinformation and Cartography (LNG&C) series.

# Programme

## International Workshop on Geoinformation Advances UTM, Johor, Malaysia, 7–8 November 2012

Day 1	
08:00 – 09:00	Registration
09:00 – 09:10	Opening ceremony
09:10 – 10:30	<i>Keynote presentations</i>
Chairman: Alias Abdul Rahman	<p><b>François Anton</b> <i>Hybrid Scientific Computing Using Interval Analysis, Homotopy and Algebraic Geometry for Photogrammetry, GPS and GIS</i></p> <p><b>Thomas Kolbe, Tatjana Kutzner</b> <i>Latest Development in 3D City Modelling and CityGML</i></p>
10:30 – 11:00	Coffee break
11:00 – 13:00	<p><b>Medial Axis Approximation of River Networks for Catchment Area Delineation</b>, Farid Karimipour, Mehran Ghandehari and Hugo Ledoux</p> <p><b>The use of Digital Elevation Models for Watershed and Flood Hazard Mapping</b>, Eric Forkuo and Vincent Tsawo</p> <p><b>Surface Reconstruction from Noisy Sample Points by Using Voronoi/Delaunay Based Algorithm</b>, Tang Wei Lun, Halim Bin Setan and Zulkepli Majid</p> <p><b>A Methodology for Processing Raw LIDAR Data to Support Urban Flood Modelling Frameworks</b>, Ahmad Fikri Abdullah, Zoran Vojinovic and Alias Abdul Rahman</p> <p><b>Reliability of a High Accuracy Image-based System for 3D Modelling of the Medial Longitudinal Arch During Gait</b>, Duaa Alshadli, Albert K. Chong, Kevin McDougall, Jasim Al-Baghdadi, Peter Milburn and Richard Newsham-West</p> <p><b>Evaluating the Feasibility of Data Collection via GPS-Enabled Mobile Phones for Passive Household Travel Survey</b>, Feng Mao and Minhe Ji</p>
13:00 – 14:30	Lunch break
14:30 – 16:30	<p><b>CityGML for Architectural Heritage</b>, Erik Costamagna and Antonia Spanò</p> <p><b>Requirements For a Unified 3D Spatial Data Model</b>, Edward Duncan and Alias Abdul Rahman</p> <p><b>New Data Model for 3D Geoinformation in the Information Society</b>, Wan Wen, Erik Kjems and Lars Bodum</p> <p><b>Automatic Generation of 3D Indoor Models: Current State of the Art and New Approaches</b>, Suhaibah Azri, Umit Isikdag and Alias Abdul Rahman</p> <p><b>Utilizing 3D Segmentation in Detecting Changes on 3D City Model Objects</b>, Khairul Hafiz Sharkawi and Alias Abdul-Rahman</p> <p><b>Representing the Dual of Objects in a Four-Dimensional GIS</b>, Ken Arroyo Otori, Pawel Boguslawski and Hugo Ledoux</p>
16:30 – 17:00	Coffee break
17:00 – 18:40	<p><b>Towards Enhancing Geometry Textures of 3D City Elements</b>, Behnam Alizadehashrafi and Alias Abdul Rahman</p> <p><b>Towards Efficient Putrajaya 3D SDI Using Schema-aware Compressor for CityGML</b>, Chengxi Bernad Siew and Alias Abdul Rahman</p> <p><b>Examination of Compatibility Between the Croatian Land Administration System and LADM</b>, Nikola Vučić, Miodrag Roić and Zdravko Kapović</p> <p><b>Resolution Effects on Land-Cover Classification Using Varied Satellite Data</b>, Yi Zhao and Keitarou Hara</p> <p><b>The Application of InSAR Signature Time Series for Landcover Classification</b>, Hye Won Yun, Jung Rack Kim, Yun Soo Choi and Ha Su Yoon</p>
18:40	Dinner

Day 2	
08:00 – 09:00	Registration
09:00 – 10:30 Keynotes Chairman: Alias Abdul Rahman	<p style="text-align: center;"><i>Keynote presentations</i></p> <p><b>Christopher Gold</b> <i>From Boats to Buildings: Why Topology Matters</i></p> <p><b>Gurcan Buyuksalih</b> <i>Developing Istanbul 3D City Model from Point Cloud</i></p>
10:30 – 11:00	Coffee break
11:00 – 13:00 Chairman: Lars Bodum	<p><b>Calibration and Accuracy Assessment of Leica ScanStation C10 Terrestrial Laser Scanner</b>, Mohd Azwan Abbas, Halim Setan, Zulkepli Majid, Albert K. Chong, Khairulnizam M. Idris and Anuar Aspuri</p> <p><b>Unmanned Aerial Vehicle Photogrammetric Results Using Different Real Time Kinematic Global Positioning System Approaches</b>, Khairul Nizam Tahar, Anuar Ahmad, Wan Abdul Aziz Wan Mohd Akib and Wan Mohd Naim Wan Mohd</p> <p><b>Methods for Georeferencing Point Cloud of Building from Static TLS – a Review</b>, Rizka Akmalia, Halim Setan, Zulkepli Majid and Deni Suwardhi</p> <p><b>WorldView-2 Satellite Imagery and Airborne LiDAR Data for Object-Based Forest Species Classification in a Cool Temperate Rainforest Environment</b>, Zhenyu Zhang and Xiaoye Liu</p> <p><b>Potential of Multiscale Texture Polarization Ratio of C-band SAR for Forest Biomass Estimation</b>, Md. Latifur Sarker, Janet Nichol and Ahmad Mubin</p> <p><b>GIS Application and Geodatabase for Archaeological Site Documentation System: Bujang Valley, Malaysia</b>, Erna Warnita Bachad, Zulkepli Majid, Halim Setan, Albert K Chong and Nurul Shahida Sulaiman</p>
13:00 – 14:30	Lunch break
14:30 – 16:10 Chairman: Gurcan Buyuksalih	<p><b>Road Accident Mapping using a Digital Compact Camera and the Data Management System</b>, Nurkhaliesa Balqis Hamzah, Halim Setan and Zulkepli Majid</p> <p><b>Coordinate Monitoring of ISKANDARnet Using Bernese and ConDAS</b>, Mc Lim, Halim Setan and Rusli Othman</p> <p><b>Low-Cost Compact High-Speed Camera for Human Motion Study</b>, Albert Chong and Zulkepli Majid</p> <p><b>An investigation of the 3-Dimensional Surface Capture Techniques of the Human Foot</b>, Jasim Ahmed Al-Baghdadi, Albert K. Chong, Kevin McDougall and Duaa Alshadli Alshadli</p> <p><b>A Review and Conceptual Framework for Generalization of 2D Maps</b>, Siddique Ullah Baig and Alias Abdul Rahman</p>
16:10 – 16:30	Closing ceremony
16:30	Coffee

Presentation Room: Building C04, 1<sup>st</sup> floor, Lecture Room 6

Internet Room: Building C05, 1<sup>st</sup> floor, 3D GIS Lab

Registration and Coffee Break: building C04, 1<sup>st</sup> floor, between the presentation and internet rooms

Lunch and Dinner: please ask at the registration desk

For those staying in hotels in Johor Bahru – a UTM bus from the Puteri Pacific hotel to UTM:

- 1<sup>st</sup> day (Wednesday), 7:30am, return 8:30pm
- 2<sup>nd</sup> day (Thursday), 7:30am, return 6:00pm

**International Workshop  
on Geoinformation  
Advances  
2012  
Proceedings**

**7 - 8 November**

**Universiti Teknologi Malaysia  
Johor Bahru  
Malaysia**





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Printed in Malaysia

# Preface

It is a great pleasure to receive all of you to this Geoinformation Advances 2012 International Workshop which is being held at the Faculty of Geoinformation and Real Estate, Universiti Teknologi Malaysia, Johor Bahru, Malaysia from 7 to 8 November. The main objective is to discuss recent research works on various topics within geoinformation domain especially in 2D, 3D, and 4D spatial data modeling, i.e. multidimensional data models. The workshop received more than 40 full papers. All papers were reviewed by Programme Scientific Committee members, and around 30% of the paper submissions were rejected by the reviewers, and the best will be published as book chapters by Springer. The book should be ready by early 2013. The rest of the papers are published as workshop proceedings.

We would like to thank all reviewers who come from Australia, Canada, China, Denmark, Germany, Korea, Malaysia, Netherland, Poland, Turkey, and United Kingdom. Their excellent efforts in the paper reviewing process are greatly acknowledged.

Last but not least, many thanks go to all local organizing committee members who have contributed significantly to the success of this workshop.

We hope this GeoAdvances 2012 workshop and meeting produces many excellent discussions, academic and research collaborations and networking opportunity.

Enjoy!

Alias Abdul Rahman  
Pawel Boguslaswki  
Chris Gold  
Mohamad Nor Said

Chairs  
GeoAdvances 2012  
Universiti Teknologi Malaysia  
Faculty of Geinformation and Real Estate



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