

ISPRS Society



Call for Book Reviewers

By Prof. Qiming Zhou, ISPRS Book Review Editor,
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ISPRS Highlights is a widely distributed journal among ISPRS members including professionals of surveying, photogrammetry and geospatial information sciences worldwide. From time and time, Highlights publishes reviews on the newly published books, which will provide the most up-to-date information and comments about publications in the discipline.

Your contribution to Highlights is now sought to review titles listed below. The interested reviewer can directly contact Prof. Qiming Zhou (qiming@hkbu.edu.hk) to express his/her interest on reviewing a book on the list, with brief background information about himself/herself (name, position, organization, research interest, etc.) and contact information (telephone number, e-mail address and postal address). If selected, the book will be posted directly to the reviewer and the reviewer will be expected to send me the review (about 2 pages, or 1,000 English words) in one month time from the reception of the book. All review need to be presented in English. After review, the reviewer may keep the title as the complimentary copy.

Your support and contribution is greatly appreciated.

The List of Books to Be Reviewed
August 2005

Atkinson, P.M., Foody, G.M., Darby, S.E., Wu, F. (eds.), 2005, *GeoDynamics*, CRC Press.

Chang, K., 2006, *Introduction to Geographic Information Systems*, 3rd Ed, McGraw-Hill.

Cho, G., 2005, *Geographic Information Science: Mastering the Legal Issues*, John Wiley & Sons.

Feldmeyer-Christe, E., Ghosh, S., Wildi, O., Zimmermann, N.E., Podani, J. (eds.), 2004, *Modern Approaches in Vegetation Monitoring*, Akademiai Kiado.

Li, Z., Zhu, Q. Gold, C., 2005, *Digital Terrain Modelling: Principles and Methodology*, CRC Press.

Longley, P.A., Goodchild, M.F., Maguire, D.J., Rhind, D.W., 2005, *Geographic Information Systems and Science*, 2nd Ed, John Wiley & Sons.

McCoy, R.M., 2005, *Field Methods in Remote Sensing*, The Guilford Press, New York.

Schabenberger, O., Gotway, C.A., 2005, *Statistical Methods for Spatial Data Analysis*, Chapman & Hall/CRC.



Commission VII Scope and Structure

By John van Genderen, President Commission VII, e-mail: genderen@itc.nl

For the period 2004-2008 The Netherlands is hosting the office of ISPRS Technical Commission VII, with John L. van Genderen as commission president and Andrew K. Skidmore as vice-president. The Mid-Term Symposium will be held at the International Institute for Geo-Information Science and Earth Observation (ITC) in Enschede, from 8-11 May 2006, with the theme: 'Remote Sensing: From Pixels to Processes'.

The following Terms of Reference have been established:

- Relationship between spectral, radiometric and temporal properties of objects and surfaces, their physical and chemical properties and their variations.
- Image classification and analysis methodologies.

- Analysis of characteristics of multi-spectral, hyper-spectral, multi-sensor, microwave and multi-temporal image data for extraction of attribute information.
- Methodologies of computer-assisted interpretation and analysis of remotely sensed data.
- Validation of data and information using laboratory and in-situ methodologies.
- Multi-source data fusion and integration techniques.
- Modeling of satellite data derived parameters.
- Global databases and determination of indicators of change for global modeling, monitoring and sustainable development.
- Integration of remote sensing and GIS techniques.

After the Istanbul congress, eight Working Groups were established and confirmed:

- WGVII/1 Fundamental physics and modeling (Chair: Michael Schaepman, The Netherlands, Co-Chair: Shunlin Liang, USA, Secretary: Mathias Kneubuehler, Switzerland).
- WGVII/2 Information extraction from SAR data (Chair: Michael Inggs, South Africa, Co-Chair: Rudiger Gens, USA, Secretary: Wang Changlin, China).
- WGVII/3 Information extraction from hyper-spectral data (Chair: Freek van der Meer, The Netherlands, Co-Chair: Walter Debruyn, Belgium, Secretary: Megan Lewis, Australia).
- WGVII/4 Advanced classification techniques (Chair: Roman Arbiol, Spain, Co-Chair: Zhang Yun, Canada, Secretary: Marie-José Lefevre-Fonollosa, France).
- WGVII/5 Processing of multi-temporal data and change detection (Chair: Gong Jianya, China, Co-Chair: Ben Gorte, The Netherlands, Secretary: Else Swinnen, Belgium).
- WGVII/6 Remote sensing data fusion (Chair: Zhang Jixian, China, Co-Chair: Shan Jie, USA, Secretary: Katarzyna Dabrowski-Zielinska, Poland).
- WGVII/7 Innovative problem solving methodologies for less developed countries (Chair: Olajide Kufoniya, Nigeria, Co-Chair: Norman Kerle, The Netherlands, Regional Coordinators: Myriam Ardila Torres, Colombia, Yan Qin, China, Sultan Al Sultan, Saudi-Arabia, Cigdem Goksel, Turkey).
- ICWGVII/IV Derivation of global data, environmental change and sustainability indicators (Chair: Chris Schmullius, Germany, Co-Chair: Hiromichi Fukui, Japan, Co-Chair: Renchin Tsolmon, Mongolia).

Development of Research Fields

The former Technical Commission VII called 'Resource and Environmental Modeling' had its main research interests focused on the usage of remote sensing data and GIS for the conservation and optimal utilization of natural resources and greater understanding of various ecosystem processes. This Commission has been split up into two Technical Commissions at the ISPRS Congress held in Istanbul, Turkey in July 2004 in order to enlarge the number of international remote sensing researchers that are involved in remote sensing organizations and events. The new Technical Commission VII entitled 'Thematic Processing, Modeling and Analysis of Remotely Sensed Data' will now focus on the science and methodology aspects of remote sensing whilst Technical Commission VIII, named 'Remote Sensing Applications and Policies' deals with the



applications and policies related to earth observation.

One of the resolutions passed in Istanbul for Technical Commission VII related to spectral signature research, especially in the areas of hyper-spectral and microwave sensing. Working Groups 1-3 will be working on these aspects, with WG1 dealing with the fundamental physics; WG2 on SAR-data processing and WG3 on hyper-spectral data. Considering the growing amount of data with a high spatial and temporal resolution further image classification and analysis methods, also including the development of advanced and practical methodologies of Computer Assisted Interpretation (CAI), need to be explored. WG4, WG5, WG6 and WG7 are taking responsible for these aspects, with WG5 having as its main focus advanced classification techniques, WG6 change detection and WG7 data fusion. Since the availability of data and computer technology is not evenly spread over the planet, a special working group (WG8) has been set up to come up with innovative solutions for less developed countries. Finally there is the need for the generation and use of global databases which involves amongst others, the further collaboration with Technical Commission IV and the International Geosphere Biosphere Program (IGBP) which will be the main task of the Inter Commission WG IV/VII.

Commission Activities

In 2005 a number of workshops, predominantly in Asia and the Middle East, but also in other parts of the world, has been organized or attended by the working groups of Technical Commission VII. The main activity for 2006 is the organization of the mid-term symposium entitled 'Remote Sensing: From Pixels to Processes', which will be held from May 8 to May 11 2006 at the ITC in Enschede.



ITC, Enschede

Other planned events for the next year are the SELPER Int. Symposium SIG and Remote Sensing Applied to Natural Risks and Territory Management, to be held at the end of September 2006 in Colombia and the 6th AARSE Conference, to be held in October 2006 in

Egypt and a special session at the 27th Asian Conference on Remote Sensing in Ulaan Baator, Mongolia in early October, 2006. More workshops, training courses, conferences, and meetings, such as the 5th Workshop on Imaging Spectroscopy, scheduled for April 2007 in Belgium, a Workshop on Advanced Classification Techniques in Spain, a Joint workshop on Multi-sensor data fusion and integration for interpretation and information extraction in August 2007 in Canada, a group meeting in China of WG5, the ACRS, held in the Middle East, the Africon2007 in Namibia and the AfricaGIS will be organized by the different working groups.

Along the motto 'Silk Road for Information from Imagery', a team under the leadership of Michael Schaeppman and Mathias Kneubühler is preparing a potential expedition along the Silk Road to Beijing. The idea is to drive by Land Rovers from Europe to China, while stopping at several places on the way and hold specialist workshops on the use of geo-information and remote sensing. The main goal of that is to promote the spirit of ISPRS and finally arrive exactly at the beginning of the next ISPRS Congress in Beijing in July 2008. Potential sponsors and interested persons are invited to contact Michael Schaeppman for more details (e-mail: kneub@geo.unizh.ch).

More information about the missions, terms of references, and activities about commission VII in general and each working group in detail can be found on www.commission7.isprs.org/

WELCOME TO

ISPRS Technical Commission VII Mid-Term Symposium

'Remote Sensing: From Pixels to Processes'
from 8-11 May, 2006
Enschede, The Netherlands

see website:

<http://www.itc.nl/isprsc7/symposium/default.asp>
for submission of abstracts



Xi'an – Ancient Capital of China

Exploring Tourist Cities of China – I

By Chen Jun, Congress Director ISPRS Council 2004 – 2008,

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China is a large country with 5000 years history. There are many places worth visiting, and rich cultures worth appreciating. To help you understand China and enjoy its beauty, I will introduce some of the most attractive tourist cities of China. This time, I am showing you Xi'an, the capital city of Shaanxi.

Xi'an is known as 'the Cradle of Chinese Nationality'. It served as the seat of 13 dynasties' capital for 1120 years. As an ancient capital and the starting point of the 'Silk Road', Xi'an was an important pivot and center in trade and culture exchanges. It enjoys equal fame with Athens, Cairo, and Rome as one of the four major ancient civilization capitals. Its most popular attractions to foreign visitors as follows:

Museum of Terra Cotta Warriors and Horses

The Museum of Terra Cotta Warriors and Horses is praised as 'the eighth major wonder of the world'. In 1974, a group of peasants uncovered some pottery while digging



Terra Cotta
Warriors
and
Horses

for a well. The finding led to the most significant archeological excavation of the 20th century. Underneath the ground, many life size terra cotta warriors and horses were arranged in battle formation. The site is near the mausoleum of the first emperor of China (Qin Shi Huang). Chinese archeologists believed the warriors and horses were made for the dead emperor. The emperor hoped to have his army underground and control the other world after his death. The museum covers an area of 16,300 square meters, divided into three sections: No. 1 Pit, No. 2 Pit, and No. 3 Pit respectively. They were tagged in the order of their discoveries. No. 1 Pit is the largest. There are columns of soldiers, followed by war chariots. It opened to the public in 1979. No. 2 Pit, found in 1976, is 20 meters northeast of No. 1 Pit. It contained over a thousand warriors and 90 chariots of wood. It was unveiled to the public in 1994. Archeologists came upon No. 3 Pit also in 1976, 25 meters northwest of No. 1 Pit. It looked like the headquarters of the armed forces. It went on display in 1989, with 68 warriors, a war chariot and four horses. Altogether over 7,000 pottery soldiers, horses, chariots, and even weapons have been unearthed from these pits. Most of them have been restored to their former grandeur. The Museum of Terra Cotta Warriors and Horses was listed by UNESCO in 1987 as one of the world cultural heritages.

Huaqing Hot Springs

The Huaqing Hot Springs, also named Huaqing Palace, is one of the most famous imperial gardens in China. Its beautiful garden with 3000 years and thermo-springs with



Huaqing Hot Springs

temperature 43_ all year round enjoy world reputation. Its main buildings, including roomy halls, pavilions, the rainbow bridge and winding corridors show the characteristics of northern China in Tang dynasty. Its surrounding buildings and thick forests as well as its zigzag paths suggest the features of southern China in Qing dynasty. The hot springs was first used some 6000 years ago. From Qin through Zhou, Han and Tang dynasties, emperors and empresses bathed there and it became the imperial bath place. The springs are rich in beneficiary minerals to people. It is an ideal place for tourists to relax, enjoy and appreciate the perfect combination of natural scenery and man-made structures.

Old City Wall

The city wall of Xi'an, was constructed in the early Ming Dynasty on the basis of the Imperial City of Chang An (Everlasting Peace) of the Tang Dynasty. Initially, the wall was built of rammed earth. In 1568, it was surfaced with grey bricks.



Old City Wall

The wall now stands 12 meters (40 feet) tall, 12-14 meters wide at the top and 15-18 meters thick at the bottom. It is 13.7 kilometers in length with a surrounding deep moat. Every 120 meters, there is a rampart which extends out from the main wall. All together, there are 98 ramparts on the wall, which were built to defend against the enemy climbing up the wall. Each rampart has a sentry building, in which the soldiers could protect the entire wall without exposing themselves to the enemy. Besides, the distance between every two ramparts is just within the range of an arrow shot from either side, so that they could shoot the enemy. On the outer side of the city wall, there are 5948 crenellations, namely battlements. The soldiers can look out and shoot at the enemy. On the inner side, parapets were built to protect the soldiers from falling off.

The wall is the most complete city wall that has survived in China.

Big Wild Goose Pagoda

Big Wild Goose Pagoda is one of the oldest pagodas in Xi'an and one of the most famous Buddhist pagodas in China. It is a well-preserved ancient building and a holy place for Buddhists.



Big Wild Goose Pagoda

It was built in 652 A.D. to house the Buddhist scriptures — brought back from India by the traveling monk Xuan Zang, the most famous Buddhist monk of China. Originally, the pagoda was 60 meters (197 feet) high, with five stories, it is now 64.5 meters (211.6 feet) high with an additional two stories. It was said that after that addition came the saying-‘Saving a life exceeds building a seven-storied pagoda’. On the walls are engraved fine statues of Buddha by the renowned artist Yan Liben of the Tang Dynasty. Stelae by noted calligraphers also grace the pagoda. Visitors can overlook the panorama of Xian City through the arched windows of the pagoda.

As for the reason why it is called Big Wild Goose Pagoda, there is a legend. According to ancient stories of Bud-

dhist, there was another branch that eating meat was not a taboo. One day, there was not any meat to buy. Upon seeing a group of big wild geese flying by, a monk said to himself: ‘Today we have no meat. I hope the merciful Bodhisattva will give us some.’ At that very moment, the leading wild goose broke its wings and fell to the ground. All the monks were startled and believed that Bodhisattva showed his spirit to order them to be more pious. They established a pagoda where the wild goose fell and gave up eating meat. Hence the pagoda was named ‘Big Wild Goose Pagoda’.

I have to stop here and hope the information is useful for you. I am sure that your personal visit to Xi’an will make you get much more knowledge about it.



Certificate of Platinum Sponsor Issued to Leica Geosystems AG

By Chen Jun, Congress Director ISPRS Council 2004 – 2008,

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Leica Geosystems AG was officially announced Platinum Sponsor of ISPRS 2008 Beijing at a ceremony held on September 22, 2005 in Beijing. Mr. Chen Bangzhu, Director General, State Bureau of Surveying and Mapping of China, and Chairman, National Steering Committee for ISPRS 2008 Beijing, presented the Certificate of Platinum Sponsor to Mr Hans Hess, Chief Executive Officer and Executive Director of the Board, Leica Geosystems AG.



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ISPRS Workshop ‘3D-Arch 2005: Virtual Reconstruction and Visualization of Complex Architectures’

By Emily Whiting, Department of Architecture, MIT, USA, e-mail: ewhiting@mit.edu

Virtual reconstruction of large and complex architectural sites remains a challenging task that faces a wide range of issues, including integration of different data types and techniques, and interactive (real-time) visualization of large models that should be photo-realistic and accurate. Although heritage site documentation has been an application of photogrammetry and surveying techniques for the past few decades, these highly interactive methods may require years for a single project. Efforts are currently being directed to more automated



Discussions during the poster session.



Beginning the social night in Piazza San Marco.

methods such as advanced image-based techniques or direct digitization with laser scanners.

In this context, an ISPRS Workshop was held in Venice-Mestre, Italy, from 22 to 24 August 2005. The aims of the workshop were to bring together scientists from photogrammetry, computer vision and computer graphics in order to discuss recent developments in 3D modeling of complex objects and sites; and to exchange information related to novel visualization and animation concepts and software.

The main focus was the process of creating virtual environments from multiple data sources. A strong program covered topics in image-based modeling, laser scanning of



H. Haggren during an invited paper presentation.

large and complex objects, data registration and integration, automated modeling techniques, accuracy assessment for 3D reconstruction, visualization issues, and applications in cultural heritage.

It was organized by NRC-CNRC National Research Council Canada; the Institute of Geodesy and Photogrammetry, ETH Zurich, Switzerland; IRST – ITC Trento, Italy; and the ISPRS WG V/4 'Virtual Reality and Computer Animation', and CIPA. The organizing committee included Lorenzo Gonzo, Sabry El-Hakim, Fabio Remondino, Jan Bohm and Qingquan Li. An international

technical committee of 25 reviewed all submissions.

The conference opened with an invited paper by Clive Fraser (Melbourne University, Australia). His presentation on 'Network Orientation Models for Image-Based 3D Measurement' focused on developments in analytical close-range photogrammetry during its evolution from film-based to digital image-based technology. The second day of sessions featured applications in photogrammetry and virtualization techniques with two more invited papers: Henrik Haggren (Helsinki University of Technology, Finland) spoke on the photogrammetric documentation and modeling of an archaeological site during the Finnish Jabal Haroun Project in Petra, Jordan; and Marco Gaiani (Milan PolyTechnical, Italy) presented a case study applying VR techniques to the restoration yard of the XVIII century Sala delle Cariatidi in Palazzo Reale, Milan.

Approximately 55 participants, representing 12 different countries, attended the event, which consisted of 33 papers, 5 posters, and several demos. A video theatre session included 10 walkthrough movies and animations showcasing completed projects and case studies in 3D imaging, modeling and visualization techniques. An additional movie presentation was given by Armin Gruen about visualization of Mount Everest.

The proceedings of the workshop are published as International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences (ISSN 1682-1777, Vol. XXXVI, part 5/W17) and are available at: <http://www.commission5.isprs.org/3darch05/>

Before the workshop, a hiking and golfing tour took place in the Obereggen area of the Dolomites. Conference attendees also enjoyed a social night in downtown Venice including a private tour of Basilica San Marco.



International Symposium on Spatio-temporal Modeling, Spatial Reasoning, Spatial Analysis, Data Mining and Data Fusion (STM'05)

Beijing, China from 27- 29 August 2005

By Prof. Dr Tang Xinming, Co-Chair STM'05, Deputy Director of Key Laboratory of Geo-informatics of State Bureau of Surveying and Mapping 16 Chinese Academy of Surveying and Mapping, China, email: tang@casm.ac.cn

The International Symposium on Spatio-temporal Modeling, Spatial Reasoning, Spatial Analysis, Data Mining and Data Fusion (STM'05) has been held smoothly and successfully during 27 - 29 August 2005 at Yingjie Exchange Center, Peking University, China.

This symposium was organized by ISPRS WG II/1, 2, 7 and WG VII/6, jointly with Chinese Academy of Surveying and Mapping, Wuhan University, Peking University, and the Hong Kong Polytechnic University.

The symposium provided an interdisciplinary forum for international scientists and researchers to present their latest research development and share their experiences in GIS and remote sensing. The topics covered Spatio-temporal modeling, Spatial-temporal topology, Space/time query, Spatial-temporal data engine, Ontology for spatial-temporal modeling, Dynamic spatial database, Visualization of dynamic map, Web-based spatial-temporal model and applications and Spatial-temporal applications for mobile, wireless, location-based services networks, Data mining and knowledge discovery, Spatial analysis and simulation models, Spatial reasoning, Multi-sensor, multi-resolution and multi-mode data fusion, Applications of data fusion to object recognition, classification and change detection.

Prof. Cheng Pengfei, vice president of Chinese Academy of Surveying and Mapping (CASM) hosted the opening ceremony. Prof. Zhang Jixian, the chair of ISPRS WG VII/6, acting president of CASM gave the welcome address. Mr Li Weisen - Deputy General Director of State Bureau of Surveying and Mapping, Mr Cao Xuejun - Director of the



Figure 3: Keynote speech sessions hosted by Prof. Tang Xinming and Prof. Liu Yaolin.

Information division of the Department of High and New Technology Development and Industrialization, Prof. Chen Jun - the Congress Director of 21st Congress of the ISPRS, Prof. J.L. van Genderen - the President of ISPRS Commission VII, Academician Tong Qingxi - Director of Institute of RS&GIS of Peking University attended the opening ceremony and gave their addresses to STM'05. The symposium received more than eighty papers. More than 150 representatives participated in the two-day conference. They are from fifteen countries: China, England, Canada, the United States, the Netherlands, Germany, Austria, South Korea, Iran, Australia, Poland, Mongolia, Malayan, India, and Hong Kong District. The symposium has held 2 keynote speech sessions, 10 technical sessions. More than 70 papers were presented orally.



Figure 1: Address by Mr. Li Weisen.



Figure 2: Welcome addresses by Prof. Zhang Jixian.

In keynote speech sessions, seven speakers made the presentations in GIS development trend, spatiotemporal modeling, 3D modeling, fuzzy spatial analysis data mining and knowledge etc. They are Academician Prof. Li Deren, Prof. Michael Goodchild, Prof. Peter Fisher, Prof. Andrew Frank, Prof. Chen Jun, Prof. Shi Wenzhong, and Prof. Martien Molenaar.

The two-day symposium is held smoothly. The presentations are rather fruitful. The discussions are also very warm and enlightened. The



Figure 4: Specialists in keynote speeches.

symposium has provided a platform for all participants to discuss, deliberate, exchange knowledge and experiences and collaborates for benefit of all in the field. The symposium is successful and has achieved the expected achievements.



Figure 5: Specialists and conference staff for the STM'05 symposium.

Prof. Tang Xinming hosted the closing ceremony. As the Co-Chair of STM'05, he announced the best young papers selected from the proceedings by the program committee.

There are two publications for the symposium. The proceeding, as a volume of the International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, has been published on CD-ROM and in paper format. These papers will be fully peer reviewed. Selected papers will be published in the ISPRS Book Series. More information about the symposium can be found at <http://isstm2005.casm.ac.cn/home.htm>.



Joint Workshop of ISPRS and the German Association for Pattern Recognition on 'Object Extraction for 3D City Models, Road Databases, and Traffic Monitoring -Concepts, Algorithms, and Evaluation' (CMRT05)

Vienna, Austria, 29-30 August 2005 (<http://www.gmat.unsw.edu.au/wgiii4/ws05/>)

By Franz Rottensteiner, e-mail: fr@ipf.tuwien.ac.at and Uwe Stilla, e-mail: stilla@bv.tum.de

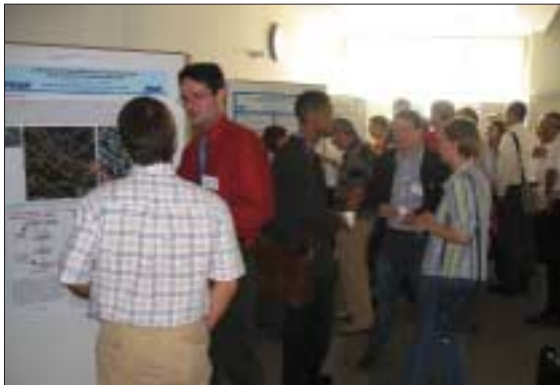


The workshop took place in Vienna from Monday 29th August to Tuesday 30th August 2005. It was hosted by the Institute of Photogrammetry and Remote Sensing at Vienna University of Technology (I.P.F.). The date was chosen so that the workshop preceded the 27th annual meeting of the German Association for Pattern Recognition (DAGM) which was held in Vienna from Wednesday 31st August to Friday 2nd September, to emphasize the close connection between the disciplines of Photogrammetry and Computer Vision. The workshop had the scientific sponsorship of ISPRS and DAGM. It was organized by three ISPRS working groups: WG III / 4 'Automatic Image Interpretation for City-Modeling', WG III / 5 'Road Extraction and Traffic Monitoring', and WG IV / 8 'Spatial Data Integration for Emergency Services'. Staff from both the I.P.F. and the Institute of Photogrammetry and Cartography at TU Munich (I.P.C.) was involved in the organization. The workshop was chaired by Franz Rottensteiner (I.P.F.) and

Uwe Stilla (I.P.C.). The organization committee consisted of the conference chairs, Stefan Hinz (I.P.C.), and Brian Donnelly (University of New South Wales, Sydney). Karl Kraus, the head of the I.P.F., welcomed the participants on behalf of the hosting institute.



A glimpse into the auditorium at the beginning of the workshop.



Discussions during the poster session.



It was the goal of this workshop to bring together researchers from both the Computer Vision and the Photogrammetric communities to present and discuss recent developments, the potential of various data sources, and future trends both with respect to sensors and processing techniques in automatic object extraction. Paper selection was based on a double-blind peer review of full papers. Altogether 40 papers were submitted to that workshop. Based on the results of the reviews, 30 papers from 10 countries were accepted for publication. Of the accepted papers, 18 were selected for oral presentation in six oral sessions. There was also an interactive poster session with 12 posters. The proceedings are available on paper and on CD-ROM as Vol. XXXVI – 3/W24 of the International Archives of the Photogrammetry, Remote Sensing, and Spatial Information Sciences. The workshop was well-attended with 65 registrants from 14 countries.

Of the 14 accepted papers related to WG III / 4, one dealt with the topic of single tree delineation from LIDAR data and one paper presented a theoretical framework for handling constraints in object modeling. All the other papers dealt with some aspects related to building extraction. The methods presented aimed at different levels of detail, ranging from the determination of building outlines from high-resolution satellite, LIDAR, InSAR, or image data via the extraction of roof planes from various data sources, to the reconstruction of façade details such as windows. With respect to LIDAR data, a trend to combine them with image data to achieve better segmentation results or to add texture to the resulting models could be observed. Digital aerial images were used for building detection. In this context, multiple overlaps were shown to give improved classification results. In building reconstruction, aerial images were either used in a semi-automatic environment or in combination with existing 2D

GIS data such as cadastral maps. The potential of SAR data for building extraction was discussed, and one presentation showed how matching between building models and SAR data could be used for geo-referencing.

The 15 papers related to WG III / 5 can be divided into two blocks of topics, namely 'Road extraction' (9) and 'Vehicle detection' or 'Traffic monitoring' (6). For road extraction, approaches were developed for a spectrum of different sensor data like aerial images, image sequences, satellite images, LIDAR data and RADAR data. The presented methods spread from scale-dependent adaptation of object models for road extraction over automatic and semiautomatic road extraction to road database update and automatic quality assessment of GIS road data. For road extraction from RADAR data one approach dealt with a fusion of results from multi aspect SAR data and another approach dealt with the exploitation of GMTI data (Ground Moving Target Indication). For vehicle detection two approaches were presented using thermal infrared video sequences, two approaches used high resolution satellite images, and two presentations were given using SAR data. In some of the approaches for traffic monitoring road data were used, which shows that both topics are inherently connected.

A special theme issue of the ISPRS Journal addressing the topic 'Airborne and Spaceborne Traffic Monitoring' is planned for late autumn 2006. The call can be found on: <http://www.ipk.bv.tum.de/isprs/wgiii5>

Several presentations dealt with the evaluation of algorithms or evaluation techniques themselves. To sum up, the full breadth of topics as indicated by the title of the workshop ('Concepts, Algorithms, and Evaluation') was covered by the presented papers.



Laser Scanning 2005

Enschede, The Netherlands from 12-14 September 2005

By Norbert Pfeifer, Delft University of Technology, The Netherlands,

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The ISPRS workshop Laser scanning 2005 was held in Enschede, the Netherlands, from September 12 to 14. It was jointly organized by the working groups III/3, *Processing of point clouds from laser scanners and other sensors*, III/4, *Automatic image interpretation for 3D city modeling*, and V/3, *Terrestrial laser scanning*, and the host institution ITC, the International Institute for Geo-Information Science and Earth Observation.

In his welcome address George Vosselman, chair of WG III/3 and professor at ITC noted the growth of the laser scanning community and its workshops from the Dresden 2003 meeting, to the Natscan conference 2004 in Freiburg and to Laser scanning 2005 in Enschede with more than 100 registered participants. Martien Molenaar, the rector of the ITC, confirmed in his opening speech that not only the research group is expanding, but also the application domain is growing rapidly with very high expectations on the laser scanning technology. In the second opening speech Hans-Gerd Maas, president of the ISPRS Commission V, *Close-Range Sensing – Analysis and Applications*, made clear that the wide field of laser scanning, reaching from sensor analysis and range data processing to numerous applications, is correctly positioned within the ISPRS.

The workshop featured a full paper double blind peer review. This led to a very high quality of papers and this process will be kept for future WG meetings in this field. Thirty papers were presented orally in the technical sessions, covering the measurement system analysis, relative

orientation (registration) of the measurements from different positions, digital terrain modeling, general 3D modeling, forestry applications, and the first results on full wave-from data processing. Almost all sessions had contributions from terrestrial as well as airborne laser scanning researchers. This confirms that the collaboration of the "laser WGs" in ISPRS, III/3 and V/3, does not only stand to reason, but enables learning from each other and, in fact, stimulated many discussions during the coffee breaks and at the conference dinner.

In the technical sessions on the sensor analysis, models for the calibration of terrestrial laser scanners were presented. The need for this sort of analysis was realized in the airborne community earlier, especially because of bigger errors encountered there. The topic is still a research issue however. At the same time empirical accuracy investigations suggest that precisions of 2mm can be reached for modeled surfaces with terrestrial laser scanners. Algorithms for completely automatic registration of terrestrial scans were presented. Alternatively, terrestrial laser scanners can be equipped with low cost exterior orientation measurement components (e.g. a digital compass and GPS) for providing rough exterior orientation and therefore input for precise scan orientation computed with algorithms such as ICP (iterative closest point) algorithms.

In the session on Digital Terrain Models the second generation of filter algorithms for airborne laser data was presented. They rely on segmentation, using therefore not



Figure 1: Scan acquired with a Z+F scanner of the lecture room with the intensity of the backscattered laser signal. The image shows the typical deformations of equal angle scans mapped onto a rectangular grid. In the foreground the podium can be seen with the presenter on the very right side. Left of the image center the audience is scanned (eye-safe).



Figure 2: The poster session in the entrance hall of ITC.

points but larger constructs as input. Additionally the automated extraction of break lines, helpful for separating ground and off-terrain points, is making progress. From the industry side it was confirmed that filtering is still a big challenge and one of the main bottlenecks in airborne laser scanning data processing. Two presentations showed airborne laser scanning in high altitude alpine areas, where flying with a strip overlap of 50% appears to be a standard. The interaction of the laser ray with the target cross section, especially with low and high vegetation, was investigated empirically by different groups. The effects of mission parameters on the one hand and vegetation characteristics on the other hand were analyzed and presented.

In a few papers the combined use of airborne and terrestrial laser scanning data, and that of laser and image data,

were discussed. Due to the different measurement positions and viewing directions the joint usage of terrestrial and airborne data is still a challenge in general cases and satisfactory results were presented for more special cases (e.g. steep roofs, visible in airborne and terrestrial data). A comparison of algorithms for the combination of airborne laser and image data for the reconstruction of houses was presented by Juha Hyyppä, president of EuroSDR Commission 2, Image analysis and information extraction. He briefly summarized that the degree of automation increases when switching from imagery to laser data, however the quality is inversely proportional to automation. The height component of the extracted houses is, however, not so much dependent on the method. In the poster session (see Figure 2) ten papers were presented, bringing the total number of paper in the workshop to forty.

Ten companies presented their products and services in small booths. Nine of these gave 5-minutes presentations where no time was allowed for questions. New hardware and software developments were shown, including especially advances in airborne and terrestrial laser scanning technology, leading to pulse repetition frequencies beyond 100kHz in the airborne case. The presentation format forced the companies to stick to the main facts and left little time for advertisement. It was therefore very well received by the audience. One manufacturer of a terrestrial laser scanner used the time to make a quick scan of the lecture room shown in Figure 1.

The proceedings are available as IAPRS XXXVI, 3/W19 and already on the web at www.isprs.org.



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7th Conference on Optical 3-D Measurement Techniques

Vienna, Austria, 2005

By Günther Retscher, Vienna, Chairman of the Organizing Committee

The 7th conference on "Optical 3-D Measurement Techniques" was held in Vienna from October 3-5, 2005. It was organized by the Research Group Engineering Geodesy of the Institute of Geodesy and Geophysics of the Vienna University of Technology (Prof. Heribert Kahmen) together with the the Institute of Geodesy and Photogrammetry of the Swiss Federal Institute of Technology, Zurich, Switzerland (Prof. Armin Gruen). The meeting was cosponsored by the ISPRS Commission V, the IAG Sub-Commission 4.2 and the FIG Commissions 5 and 6. It was the seventh conference in a row and the first six conferences were held alternately in Vienna and Zurich in the years 1989, 1993, 1995, 1997, 2001 and 2003. The conference was attended by 151 participants from 27 countries from all over the world. Thereby the largest number of participants was from Germany (41 participants) followed by Austria with 19 participants and Switzerland with 14 participants. From other continents the conference was attended by 18 participants from Asia, 8 participants from Australia and 4 participants from America. About 100 papers were presented in 19 technical sessions and one poster session. Thereby the major topic was Laserscanning where a total number of 30 papers was presented in 5 technical sessions. On the first day four presentations were held in the session "Newest Developments in Optical 3-D Measurement Techniques" after the opening ceremony. Here the use of Laser Scanners for the survey and 3-D modelling of a warship and skeletons of Dinosaurs and the use of Laser Scanners for mapping bullet trajectories in a crime scene as well as the kinematic determination of digital road surface models using mobile mapping systems was presented. Apart from

Laserscanning presentations about "Mobile Mapping" and "Mobile Multi-sensor Systems" were held in 3 sessions on the last day of the conference. Furthermore two sessions on "Face- and Body-Modelling", "Close-range Imaging and Metrology" and "3D-Modelling" were held and one session each on "New (Digital Camera) Developments", "Surface Measurement Techniques", "Measurement and Modelling in "As-built" Applications" and "Calibration Measurement and Modelling in "As-built" Applications". On the first two days of the conference six companies (i.e., Trimble and Geodäsie Austria, Rieg, Zoller and Fröhlich, Aicon and 3dAgency) participated in the technical exhibition held in the entrance hall of the conference centre. On the third day a poster session with 24 presentations was held parallel to the technical sessions. The social events included a reception in the Vienna City Hall on the first day of the conference and a typical dinner at a Viennese Wine Tavern ("Heuriger") on the second day.

The conference proceedings was published in two Volumes and has in total 825 pages. It can be ordered for a prize of Euro 40 (+ Euro 15 for postage and packing for delivery in Europe) by sending an e mail to conf@pop.tuwien.ac.at. The proceedings is also available on CD Rom. Further information can also be found on the website of the conference at <http://info.tuwien.ac.at/ingeo/optical3d/o3d.htm>.

Due to the great success of the conference it was decided to organize the 8th conference on "Optical 3-D Measurement Techniques" in two years and it will be held in Zurich most likely in late September 2007.



ISPRS and The International Council for Science (ICSU)

Ian Dowman, President, ISPRS, e-mail: idowman@ge.ucl.ac.uk

The ISPRS president and Secretary General recently attended the General Assembly of ICSU, which is held every three years. This report is designed to let readers know what ICSU is all about and how it can benefit ISPRS. The report contains information on some interesting initiatives of health and on disaster management from ICSU which could involve and benefit ISPRS members.

What is ICSU?

ICSU is the International Council for Science. It is made up of 27 Scientific Unions and 103 National Science Academies. ICSU has the mission of 'strengthening international

science for the benefit of society', which involves facilitating interaction amongst scientists of all disciplines and promoting the participation of all scientists in international scientific endeavour. The day to day management of ICSU is carried out by a secretariat, located in Paris, and governance is by an Executive Board. ICSU is the voice of science in international fora and prepares input to international summits such as WSSD (World Summit on Sustainable Development), and WSIS (World Summit on Information Society). It sponsors interdisciplinary bodies such as COSPAR, IGBP, the Global Observing Systems (GCOS, GOOS, GTOS, IGOS) and the Federation of Astronomical

and Geophysical Data Analysis Services (FAGS) and is involved in the Group on Earth Observation (GEO). It also publishes position papers on topics such as sustainable development, access to data, and biodiversity.

What role does ISPRS play in ICSU?

ISPRS is Union member of ICSU which means that we can fully participate in ICSU activities. In practice this means attending the General Assembly, which is held every three years, commenting on ICSU reports and policy statements and involvement in relevant ICSU Union activities which has included the GeoUnions Group and the ICSU Health initiative.

How does ISPRS Benefit from ICSU?

ISPRS can make other scientific disciplines aware of the benefits which can accrue from collecting data on a global scale (Earth observation) through to 3D measurement at microscopic scales (close range photogrammetry), and hence be able to involve our members into multidisciplinary programmes. An example of this is science for health and well being. ICSU is launching a programme on science for health and well being, and earth observation is recognised as a key component of that. The programme may attract significant funding which could benefit our members. ICSU also has a grant programme which is open to interdisciplinary applications, and this can be used as leverage for additional funding from other bodies.

ISPRS can (and has) made useful contacts with other Unions, through the GeoUnions Group, such as the International Union for Geodesy and geophysics, (IUGG), the International Geographical Union (IGU) and the International Union for Geological Science, (IUGS), which can lead to collaborative programmes such as workshops, capacity building, and give us greater exposure.

Members of ISPRS can, in some cases, get the national academy of sciences, or equivalent, to pay their subscription to ISPRS.

ICSU has a regional office in Africa and is setting up 3 more in Asia and the Pacific, South and Central America and the Middle East. Members can work through Regional Offices to obtain funds, develop projects and organise meetings in the region. ISPRS has established contacts with the African Office and will build on this to organise workshops and capacity building activities and to promote a GeoUnions project on GeoScience in Africa.

ICSU will/may support representations from Unions to international policy forming bodies and add its name to policy statements or press releases.

What role can TCs and WGs play in ICSU?

Technical Commissions and Working Groups can identify individuals to participate in science programmes and nominate experts to ICSU panels and committees. They can also participate in programmes sponsored by ICSU. WGs



VIII/8 and VIII/8 are active respectively in the Health initiative and the International Polar Year.

Highlights of ICSU General Assembly, October 2005-10-17

- Subscriptions to be quoted in Euro and increase in future in line with inflation.
- The Regional Offices will be developed for the benefit of members.
- The Executive Board (EB) noted the need for better communication between secretariat and Unions.
- EB proposed that FAGS no longer be an ICSU interdisciplinary body - this proposal was rejected by the GA.
- Approved a Strategic Plane for 2006-2011, which includes:
 - An ICSU involvement in GEO;
 - An ICSU programme on human health;
 - The International Polar Year in 2007-2008;
 - A new programme on Natural and Human Induced Hazards which will focus on translating research findings into policies which are effective in minimising human and economic costs of hazards and disasters.
- The ICSU grants programme will be suspended in 2007 because of financial problems created by changes in exchange rates. The programme will be reviewed by the Executive Board.
- The GeoUnions presented a common front on many issues and stressed the importance of Earth Science and Earth Observation, particularly in the areas of the initiatives on health and disasters.
- International Union of Forest Research Organisations (IUFRO) and International Union of Quaternary Science (INQUA) elected as Union members. INQUA will join GeoUnions group.

Conclusions

The meeting of the General Assembly was stimulating and interesting. ICSU has much to offer ISPRS if opportunities are taken. We made many useful contact and new ideas were generated. Council will be looking to develop some of these with TCPs and members.