REGISTRATION FORM

School of Surveying & SIS

Name:
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Postal address:
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Phone (BH).....

Phone (AH).....

Fax ……

Email: .....

Employer (optional):
.....

Course interested in – Day 1 or Days 1 & 2:
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Special Requirements
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For further information regarding registration, course information, accommodation, etc, contact: Maria Ponce
Phone: (02) 9385-4182
Mailing address: m.ponce@unsw.edu.au

For further information on this course please contact John Trinder on 0414 385920 or j.trinder@unsw.edu.au. For information on other courses offered by the School of Surveying and SIS contact: Maria Ponce at m.ponce@unsw.edu.au .

Program

DAY 1

DEMS - definitions, acquisition and processing

Introduction to lidar and applications

Technologies for data acquisition

Operational tasks for lidar data

The view from the industry

Practical experiences with lidar

DAY 2

Errors and calibration

Processing and filtering of lidar data for DEMs

Information extraction for buildings, forestry and other applications

Lidar software

Use of software and wrap-up

Institution of Surveyors CPD
Date: 22 Feb 10 Event Code:
6 Survey Practice Points
Date: 23 Feb 10 Event Code:
6 Survey Practice Points

School of Surveying &

Spatial Information Systems

UNSW
THE UNIVERSITY OF NEW SOUTH WALES

presents

Lidar Data Acquisition and Processing

Monday 22 & Tuesday 23 February 2010

Lidar Data Acquisition and Processing

In Lidar (Light Detection And Ranging) or airborne laser scanning (ALS), a laser scans the terrain at right angles to the flight direction of an aircraft. The measured distance from the aircraft to visible points on the terrain surface will enable the position and elevation of points to be determined. A lidar includes the following equipment:

- The laser scanner
- GPS to determine the location of the aircraft based on kinematic measurements
- IMU (Inertial Measuring Unit) to continuously determine the tilts of the aircraft.

A dense set of elevation posts (XYZ coordinates), or point cloud, is determined at intervals of typically about 1m, representing a digital surface model (DSM) of the visible terrain surface, that is, the terrain surface, but also objects such as buildings and trees cars etc. The accuracy of the elevation posts is of the order of 0.1m to 0.2m, but the accuracy of the determination of plane surfaces is higher. The equipment used for acquiring lidar data and the characteristics of the data will be described in the workshop. As well, some recent developments in lidar scanners will be described.

The economics of lidar equipment require it to be used over large areas, and hence GBytes of data are likely to be acquired in a single mission (250,000 points may be recorded in a few seconds). Therefore, it is essential that automatic processes are developed for the extraction of terrain information from the lidar data. There are multiple errors sources in lidar data, due to the laser scanner, the GPS/IMU and coordinate transformations that must be calibrated.

Essential processing of lidar data for determining DEMs of the terrain surface includes filtering or the classification of terrain features to eliminate elevations measured on non-terrain features. While no method will eliminate all errors, methods exist for eliminating the majority of errors. .

Course Information

Date: 22nd and 23rd February, 2010

Location: Law 101 (F8 UNSW Map)

Cost: Day 1: $450 (GST included)
Days 1 & 2: $900 (GST included)

Payment: Cheque made payable to the 'School of Surveying & SIS' or Bank card (Visa & Master card)

Registration required by:

8 February 2010

Morning Tea, Lunch and Afternoon Tea will be provided

Required Background for full course

- A qualification in a spatial information profession at tertiary level.

Please note, the University reserves the right to cancel this workshop if there is not enough interest. Please do not make non-refundable hotel or airplane booking until you have received course confirmation. Course confirmation will occur shortly after the registration required by date

The course will also include the determination of terrain form; extraction of features such as buildings; and estimation of forest characteristics. Some existing software will also be described and demonstrated in the workshop. Applications of lidar data are increasing and typical examples will be given in the course.

Day 1 will provide an introduction and typical applications of lidar, and should be suitable for managers and decision makers requiring a general knowledge of lidar technologies and its potentials.

Days 1 and 2 will provide an introduction as well as theory and practical knowledge on lidar on issues such as calibration, error sources, and extraction of information, and should be suitable for practitioners wishing to understand the characteristics of lidar and its use in practice.

Target audience

Surveyors, remote sensing experts, photogrammetrists, geographers, foresters and spatial information professionals who have acquired lidar data and/or who wish to process the data for determining digital elevation models, 3D city models, forestry parameters, and other derived products.

Presented By

Visiting Emeritus Professor John Trinder completed both undergraduate and his Ph.D. at the University of New South Wales. He also has a M.Sc Photo.Eng. from ITC, Netherlands. He was the President of the International Society for Photogrammetry and Remote Sensing (ISPRS) from 2000-2004 and First Vice President of ISPRS from 2004-2008, after serving as Treasurer from 1992-1996 and Secretary General from 1996-2000.

His current research interests include: Determination of Digital Elevation Models (DEMs), filtering of lidar data, and automatic information extraction from lidar and image data.