

ISPRS WG VI/5 & SC SUMMER SCHOOL
»THEORY AND APPLICATION OF LASER SCANNING«
Ljubljana, Slovenia, 1 – 7 July, 2007

FINAL PROGRAM

Monday, 2 July 2007

9:15-10:00	Opening of the summer school <i>Festive room, 2nd floor</i>
10:00-11:30	REQUIREMENTS FOR GENERATING A GEOMETRICALLY CORRECT POINT CLOUD – 1st part Lecturer: Peter Frieß <i>Lecture room, II/6, 2nd floor</i> Contents of the 1st and 2nd part: <ol style="list-style-type: none"> 1. Introduction: Principle of airborne laser mapping (ALM), Characteristics of ALM (e.g. multiple returns, density, intensity, wave form), Products and product quality (e.g. laser point accuracy, DTM accuracy) 2. Mathematical model for laser point computation: Functional model (basic), Stochastic model (error propagation), Lab calibration, Effects of model (calibration) parameters on laser points, Extended functional model 3. Laser point block adjustment: Description/definition, Mathematical model, Parameter determinability, Empirical results 4. Summary/Conclusions
11:30-12:00	Refreshment break
12:00-13:30	REQUIREMENTS FOR GENERATING A GEOMETRICALLY CORRECT POINT CLOUD – 2nd part <i>Lecture room, II/6, 2nd floor</i>
13:30-14:30	Lunch <i>Faculty canteen, 2nd floor</i>
14:30–16:00	AIRBORNE LIDAR SENSING - APPLICATIONS & OPERATION WITH LATEST GENERATION OF SCANNERS Lecturer: Arthur Rohrbach <i>Lecture room, II/6, 2nd floor</i> Contents: typical applications, flight planning, execution & evaluation, costing, examples of projects (using features & possibilities offered by latest generation of Airborne LIDAR)
19:00–22:00	Welcome party <i>Faculty entrance hall</i> Contents: Cultural program, dinner, music & dancing

Tuesday, 3 July 2007

8:30-10:00	AIRBORNE LASER SCANNING DATA PROCESSING TUTORIAL – 1st part Lecturer: Charles Lemaire <i>Computerroom, I/ 5, 1st floor</i> Contents of the 1st and 2nd part: Tutorial about processing lidar data using the INPHO products line: DTM master /DTMMaster stereo and SCOP++ LIDAR package
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10:00-10:30	Refreshment break
10:30-12:00	AIRBORNE LASER SCANNING DATA PROCESSING TUTORIAL – 2nd part <i>Computerroom, I/ 5, 1st floor</i>
12:00-13:00	Lunch <i>Faculty canteen, 2nd floor</i>
13:30–21:00	Technical visit and trip Contents: Departure from the hostel Vič; visit to FlyCom Enterprise in Lesce airport: helicopter and lidar equipment, presentation of some projects; trip to Bled - a famous tourist resort, walk around the lake; dinner in Žirovnica

Wednesday, 4 July 2007

8:30-10:00	DSM/DTM FILTERING Lecturer: Norbert Pfeifer <i>Lecture room, II/6, 2nd floor</i> Contents: DSM/DTM; Problem definition; Approaches to ALS data filtering, exemplified by implemented algorithms
10:00-10:30	Refreshment break
10:30-12:00	INFORMATION EXTRACTION FROM AIRBORNE LASER SCANNING DATA – 1st part Lecturer: Georg Vosselman <i>Lecture room, II/6, 2nd floor</i> Contents of the 1st and 2nd part: 1) Segmentation of point clouds: Methods for extracting smooth surfaces, Methods for extracting parameterised surfaces 2) Detection of buildings: Usage of segmentation for building detection, Usage of multiple echoes for building detection, Change detection 3) 3D modelling of buildings: Model based approaches, Data driven approaches, Map guided approaches 4) 3D modelling of roads: Reconstruction of smooth road surfaces, Combining roads, trees and buildings in a city model, Modelling of complex road junctions
12:00-13:00	Lunch <i>Faculty canteen, 2nd floor</i>
13:00–14:30	INFORMATION EXTRACTION FROM AIRBORNE LASER SCANNING DATA – 2nd part <i>Lecture room, II/6, 2nd floor</i>
14:30-15:00	Refreshment break
15:00–16:30	APPLICATIONS OF LASER SCANNING IN FORESTRY Lecturer: Cristoph Straub <i>Lecture room, II/6, 2nd floor</i> Contents: 1. Introduction to the Application of Airborne Laserscanning in Forestry 2. Applications of Laserscanning 2.1 Single Tree Delineation 2.2 Forest Stand Mapping 2.3 Estimation of Forest Characteristics 3. Software Demonstration
16:30–19:00	Free afternoon
19:00	Dinner in hostel (for hostel guests)

Thursday, 5 July 2007

8:30-10:00	OVERVIEW OF TERRESTRIAL LASER SCANNING SYSTEMS, OVERALL PROCESSING AND APPLICATIONS – 1st part
	Lecturer: Norbert Pfeifer
	<i>Lecture room, II/6, 2nd floor</i>
	Contents of the 1st and 2nd part: Overview of terrestrial laser scanning technology: range measurement and beam deflection, Relative and absolute orientation of laser scanning point clouds, Overview on modeling approaches with real world examples, Overview on applications with selected examples
10:00-10:30	Refreshment break
10:30-12:00	OVERVIEW OF TERRESTRIAL LASER SCANNING SYSTEMS, OVERALL PROCESSING AND APPLICATIONS – 2nd part
	<i>Lecture room, II/6, 2nd floor</i>
12:00-13:00	Lunch
	<i>Faculty canteen, 2nd floor</i>
13:00–14:30	POINT CLOUD CO-REGISTRATION
	Lecturer: Devrim Akca
	<i>Lecture room, II/6, 2nd floor</i>
	Contents: The laser scanning is one of the major data acquisition methods of the 3D modeling tasks. While high density pointcloud data in very short acquisition time is the main advantage of the method, the post-processing needs skilled operators and specialized software. This lecture puts the emphasis on the pointcloud co-registration, which is the first step of the whole processing chain. The methods in the literature are briefly touched. An algorithmic extension of the 2D image matching to the 3D case is explained in detail. Different examples and applications including the change detection and accuracy analysis studies are given.
14:30-15:00	Refreshment break
15:00–16:30	3D MODELLING, TEXTURING AND APPLICATIONS IN CULTURAL HERITAGE
	Lecturer: Devrim Akca
	<i>Lecture room, II/6, 2nd floor</i>
	Contents: This lecture is application oriented. 3D surface meshing and texture capabilities of the available commercial software packages are discussed. Some cultural heritage examples, carried out by ETH Zurich, and gained experiences are given. Two mostly used 3D modeling software (PolyWorks and Geomagic) are compared in a practical work and the capabilities are addressed.
17:30–22:00	Ljubljana tour
	Contents: old center, Ljubljana castle, along Ljubljanica river, dinner

Friday, 6 July 2007

8:30-10:00	PRACTICAL ASPECTS OF TERRESTRIAL LASER SCANNING – 1st part
	Lecturer: Nikolas Studnicka
	<i>Lecture room, II/6, 2nd floor, and outdoor measurements</i>
	Contents of the 1st and 2nd part: Outdoor laser scanning, processing of data; examples of different application (e.g. mobile laser scanning, forensic applications, archaeology)

10:00-10:30	Refreshment break
10:30-12:00	PRACTICAL ASPECTS OF TERRESTRIAL LASER SCANNING – 2nd part
	Lecturer: Nikolas Studnicka
	<i>Lecture room, II/6, 2nd floor</i>
12:00-13:00	Lunch
	<i>Faculty canteen, 2nd floor</i>
13:00 –14:30	STUDENT SESSION: Oral presentations of young author papers
	Session chair-person: Ms. Anka Lisec
	<i>Lecture room, II/6, 2nd floor</i>
	Presenters and papers: M. Alshawa: ICL: <i>Iterative closest line, a novel point cloud registration algorithm based on linear features</i> A. S. Woodget: <i>Estimation of growth rates at Kielder forest using airborne laser scanning</i> G. Józków: <i>Moving polynomial in filtering of airborne scanning laser data</i> C.Ó. Kivilcim: <i>An undergraduate project with terrestrial laser scanner for purpose of architectural survey</i> M. Bitenc: <i>Analysis of airborne laser scanning data and products in the Neusiedler see project</i>
14:30-15:00	Refreshment break
15:00– 16:30	TLS PRACTICAL EXERCISE
	Lecturer: Gregor Bilban
	<i>Lecture room, II/6, 2nd floor</i>
	Contents: Demonstration of laser scanning, processing of data; examples of projects
16:30-17:00	Refreshment break
17:00– 18:00	STUDENT CONSORTIUM ASSEMBLY AND FINAL DISCUSSION
	<i>Lecture room, II/6, 2nd floor</i>
	Session moderators: Mojca K. Fras (WG VI/5 chair), Anka Lisec (WG VI/5 secretary), Emmanuel Baltsavias (ISPRS Second Vice President), Student Consortium representative
19:00-22:00	Dinner and social evening in hostel Vič

Saturday, 7 July 2007

7:00-23:00	TOURIST VISIT TO SLOVENIAN KARST AND COASTAL REGION
	<i>departure from the hostel Vič</i>
	Contents: Postojna karst cave, Piran, dinner in Sečovelje