



Joint Webinar on
New Trends in Geospatial Data Collections
Sunday, 6 March 2022

Session 1: 9:30-9:45
Presenter: Dr. Farsat Heeto, College of Eng., Surveying Engineering, University of Duhok
Title An overview of the Surveying Engineering Department
Session 1: 9:45-10:00
Presenter: Dr. Farzaneh, School of Surveying and Geospatial Eng., University of Tehran
Title An overview of the School of Surveying and Geospatial Eng.
Session 1: 10:00 - 11:00
Presenter: Dr. Arefi, School of Surveying and Geospatial Engineering, University of Tehran
Title: Photogrammetric point cloud and its application in 3D reconstruction of urban structures
Summary: The high quality and high-density point clouds produced by active and passive photogrammetric sensors are, nowadays, widely available for many internal and interdisciplinary applications. In this short course, at first, we are going to give an overview of recent sensors and techniques to produce 3D point clouds in airborne and close-range photogrammetry. Next, the common process chain for analysis of point clouds from the beginning to the 3D modeling and object reconstructions of the urban elements are explained. The well-known scientific algorithms as well as the existing tools in commercial and open-source software products, including in the aforementioned process chain, will be discussed afterward. The results and final products with respect to the 3D reconstruction and modeling of different urban structures will be given at the end.

Session 2: 11:00-12:00

Presenter Dr. Hasanlou, School of Surveying and Geospatial Eng., University of Tehran

Title Fast and Reliable Change Detection Using Satellite Imagery

Summary: The earth is constantly being changed by natural events and human activities that constantly threaten our environment. Therefore, accurate and timely monitoring of changes at the surface of the earth is of great importance for properly facing their consequences. One of the most important applications of remote sensing is change detection (CD). The accurate detection of changes is of great significance for the optimal management of available resources. This workshop presents an unsupervised 'multiple-change detection' method using multi-temporal newly launched Sentinel-1 and Sentinel-2 satellite image data.

Lunch Break

Session 3: 13:00-14:00

Presenter Dr. Farzaneh, School of Surveying and Geospatial Eng., University of Tehran

Title GNSS Technology and its application

Summary: The four GNSS – GPS (USA), GLONASS (RU), BeiDou (PRC), and Galileo (EU) – will continue to provide navigation services with global coverage for the foreseeable future, with more than 100 GNSS satellites in Medium Earth Orbit (MEO). The GNSS user technology is, now more than ever, experiencing a rapid and exciting evolution, answering to the needs of ubiquity, automation, and secure positioning. This session explores in detail all these new developments, and how they will bring continuous accuracy, integrity, and robustness to the main application domains.

Session 4: 14:00-15:00

Presenter Dr. Saadateserest, School of Surveying and Geospatial Eng., University of Tehran

Title The UAV photogrammetry

Summary: The following topics are covered in this session

1. Aerial UAV mapping and production line: process, practical capabilities, and operational samples.
2. network design for UAV mapping: GP and flight pre-analysis to consider visibility and accuracy issues in complex sites
3. Geometric correction of UAV image: due to non-metric camera instabilities in UAV mapping, aerial triangulation accuracy is low and advanced DSM/orthoimage/stereovision has geometric distortion and inconsistencies.
4. Camera calibration: hardware and software development for geometric and radiometric calibration of UAV cameras and their spatial resolution estimation.
5. Intelligent photogrammetric map-making: automatic feature extraction and 3d reconstruction by deep learning algorithms.
6. 3d city generation: oblique and cross UAV imaging and 3d reconstruction in urban areas
7. Integration of UAV and LIDAR mobile mapping: applications, registration, and data fusion.
8. drone port: design and implementation of algorithms for visual monitoring of complex dynamic sites by UAV. The algorithms include pathfinding, control and navigation of drone, sequential network design, and 3d recognition/reconstruction, and generating monitoring/inspection reports and warnings.

Closing Session: 15:00-15:30