KGK
SPACE RESOURCES CONFERENCE

SPACE TECHNOLOGY CENTRE AGH UNIVERSITY

PRE-CONFERENCE WORKSHOPS

"REMOTE SENSING SOLUTIONS FOR EARTH OBSERVING"

20-22.05.2024

Venue: Novotel Kraków City Centre

INTRODUCTION TO IMAGE DATA ACQUISITION

- Discussion on various sources of image data, including satellite and drone imagery;
- Overview of data collection technologies, such as multispectral and hyperspectral scanners, and cameras;
- Selection of suitable platforms and sensors depending on the goals of the analysis.

DATA ACQUISITION FROM DIFFERENT SOURCES

- Practical skills in acquiring data from different platforms, including satellites and drones;
- Methods for efficiently collecting data, considering temporal, spatial, and spectral aspects.

TOOLS AND TECHNOLOGIES

- Introduction to popular tools and platforms used in the industry.

PREPROCESSING OF DATA

- Familiarization with tools for preprocessing image data.
- Techniques for improving image quality, noise elimination, and color correction.
- Automation of preprocessing processes for the efficient handling of large datasets.

DATA ANALYSIS AND INTERPRETATION

- Training in image analysis techniques, including segmentation, classification, and object detection.
- Application of machine learning algorithms for automatic pattern recognition.
- Interpretation of data analysis results and their translation into specific information.

PRACTICAL ASPECTS

- Conducting case studies related to real challenges in the field of image data acquisition and analysis.
- Examples and implementation of practical projects where participants can apply acquired skills to solve specific problems.
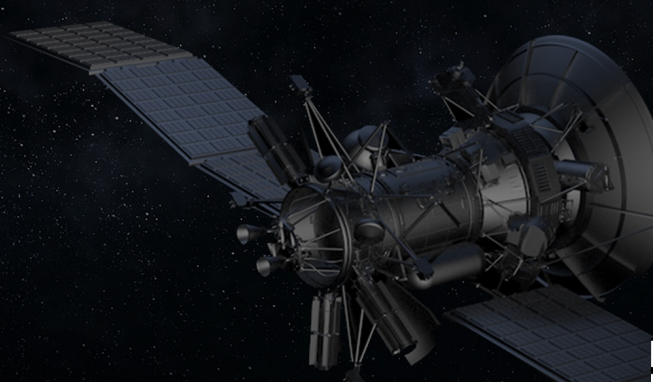
INTERNATIONAL SPACE UNIVERSITY · ISU

UNIVERSEH

Co-funded by the Erasmus+ Programme of the European Union

EUROPEAN SPACE FOUNDATION

EUROPEAN UNIVERSITIES · Université de Toulouse · AGH UNIVERSITY OF KRAKOW · mi.lu UNIVERSITY OF LUXEMBOURG · LULEÅ UNIVERSITY OF TECHNOLOGY · hhu Heinrich Heine Universität Düsseldorf · TOR VERGATA UNIVERSITÀ DEGLI STUDI DI ROMA · UNIVERSITÉ DE NAMUR

KGK
SPACE RESOURCES CONFERENCE

SPACE TECHNOLOGY CENTRE AGH UNIVERSITY

WORKSHOPS' AGENDA

DAY 1

Working with satellite images captured in the visible, near-infrared, and thermal infrared spectra (images from sample satellites: Sentinel, Landsat, and others).

Conducting several analyses related to practical applications such as:

- Monitoring climate changes
- Environmental research
- Urban change monitoring
- Agriculture
- Land surface tracking

DAY 2

Working with Digital Elevation Models (DEM). Creating and analyzing related to DEM. Measurements of ground settlement using radar interferometry.

Sample analyses:

- Monitoring terrain deformations
- Application in mining
- Research in wetland areas
- Assessment of natural hazards
- Restoration of areas after exploitation

DAY 3

Workshops on software for processing model data.

-
- Loading point clouds, 3D models (CityGML, IFC, OBJ), options for display, application settings, and project saving
- Integration with ULDK (Cadastral Data System) and WMS data
- Cross-sections, measurements,
- and markers
- Document module
- Exporting point clouds, transforming clouds between coordinate systems
- Cutting cube
- Manual classification of point clouds

Utilizing software in practical applications:

- Analysis of changes in a selected area over the years
- Utilization in urban planning – average building height
- Maximum building height, roof pitch angle

INTERNATIONAL SPACE UNIVERSITY · ISU

UNIVERSEH

Co-funded by the Erasmus+ Programme of the European Union

EUROPEAN SPACE FOUNDATION

EUROPEAN UNIVERSITIES · Université de Toulouse · AGH AGH UNIVERSITY OF KRAKOW · uni.lu UNIVERSITY OF LUXEMBOURG · LULEÅ UNIVERSITY OF TECHNOLOGY · hhu Heinrich Heine Universität Düsseldorf · TOR VERGATA UNIVERSITÀ DEGLI STUDI DI ROMA · UNIVERSITÉ DE NAMUR