



## XXIVth ISPRS Congress

# Virtual Event of the 2020 presentations

31 August - 2 September 2020

## Presentation Schedule

All hours are provided in Central European Summer Time (CEST).

Live talk sessions are indicated with **(LIVE)**, pre-recorded videos otherwise.

Sessions with pre-recorded videos end with a 10 minute Q&A time slot with available speakers.

All videos will be available on-demand during the Virtual Event and few days before.

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### 31 August 2020

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#### 08:00 - 09:10:

- **MO.1.1.: Mobile Mapping and Location-based Services.**

Moderators: Naser El-Sheimy (University of Calgary, Canada), Chen Wang (Xiamen University, China).

1257: *New algorithm for the merging of geometric entities towards the correct generation of semantic gbXML models.* Otero, Roi (Universidad de Vigo, Spain)

1037: *Characterization of a mobile mapping system for seamless navigation.* Di Pietra, Vincenzo (Politecnico di Torino, Italy)

1538: *Investigation of different low-cost land vehicle navigation systems based on cpd sensors and vehicle information.* Moussa, Mohamed (University of Calgary, Canada)

1043: *Investigation on multi-sensor fusion strategies for improved orientation determination in mobile phone imaging application.* Elias, Melanie (TU Dresden, Germany)

- **MO.2.1.: Spatial Applications for Smart Cities.**

Moderators: Giorgio Agugiaro (Delft University of Technology, The Netherlands), Mila Koeva (University of Twente, The Netherlands).

350: *i-Urban Revitalization: Conceptual modeling, implementation, and visualization towards sustainable urban planning using CityGML.* Akahoshi, Kentaro (Cabinet Office, Japan)

510: *Impact of urban forms on 3d built-up intensity expansion rate from aerial stereo-imagery.* Mwangi, Patricia Wanjiku (Kenyatta University, Kenya)

1851: *Determination of optimal location for setting up cell phone tower in city environment using lidar data.* Bharadwaj, Shruti (Rajiv Gandhi Institute Of Petroleum Technology, India)

1339: *Investigating standardized 3d input data for solar photovoltaic potentials in the Netherlands.* Amiranti, Arsha (University of Twente, The Netherlands)

1141: *3D city models for urban mining: point cloud based semantic enrichment for spectral variation identification in hyperspectral imagery.* Ruben, Pablo Antonio (TU Delft, The Netherlands)

1223: *Towards integration of LADM and CITYGML for the cadastral system of Turkey.* Sürmeneli, Hicret (University of Twente, The Netherlands)

### 09:15 - 10:25:

- **MO.1.2.: LiDAR Processing and Evaluation.**

Moderators: Jan Skaloud (EFPL, Switzerland), Petri Ronnholm (Aalto University, Finland).

1288: *Analysis of systematic errors of mobile LiDAR systems: a simulation approach.* Hassanzadeh, Shahraji Mohsen (Laval University, Canada)

958: *On practical accuracy aspects of unmanned aerial vehicles equipped with survey grade laser scanners.* Nakano, Kazuya (AERO ASAHI CORPORATION, Japan)

723: *Fractal dimension based supervised learning for wood and leaf classification from terrestrial LiDAR point clouds.* Hui, Zhenyang (East China University of Technology, China)

- **MO.2.2.: Simulation, VR and Augmented Reality.**

Moderators: Arzu Çöltekin (FHNW, Switzerland), Sidonie Christophe (Univ. Gustave Eiffel, ENSG, IGN, France).

929: *Geo-locating and visualising historical survey data and plans – a case study for the canning river.* Helmholz, Petra (Curtin University, Australia)

1537: *Visualizing life in an informal settlement of south africa using web maps and story maps.* Mdleleni, Azile (University of Pretoria, South Africa)

1301: *Exploring cultural heritage collections in immersive analytics: Challenges, benefits, and a case study using Virtual Reality.* Çöltekin, Arzu (University of Applied Sciences and Arts Northwestern Switzerland FHNW, Switzerland)

1707: *Behaviour control with augmented reality systems for shared spaces.* Kamalasanan, Vinu (Leibniz University, Hannover, Germany)

1233: *Visualizing 3D climate data in urban 3D models.* Gautier, Jacques (LASTIG, Univ Gustave Eiffel, ENSG, IGN, France)

### 10:30 - 12:00:

- **MO.1.3.: Multi Sensorial Data Processing (LIVE)**

Moderator: Stefan Hinz (KIT, Germany).

1643: *Centimetre-accuracy in forests and urban canyons – combining a high-performance image-based mobile mapping backpack with new georeferencing methods.* Blaser, Stefan (FHNW, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland)

578: *3D online terrain mapping with scanning radar sensors.* Weidinger, Christoph (AIT Austrian Institute of Technology, Austria)

520: *Hybrid georeferencing, enhancement and classification of ultra-high resolution UAV LiDAR and image point clouds for monitoring applications.* Haala, Norbert (University of Stuttgart, Germany)

1592: *Strategies to integrate IMU and LiDAR SLAM for indoor mapping.* Karam, Samer (University of Twente, The Netherlands)

- **MO.2.3.: Spatial Data Management.**

Moderators: Martin Breunig (KIT, Germany), Mulhim Al Doori (University of Fujairah, U.A.E.)

1820: *Building a model for reservoir characterisation in GIS using machine learning.* Singh, Ayush (Rajiv Gandhi Institute of Petroleum Technology, India)

1751: *Chimera: a BIM+GIS system for Cultural Heritage.* Rechichi, Fabrizio (Università degli Studi di Parma, Italy)

386: *Towards intelligent geodatabase support for earth system observation: improving the preparation and analysis of big spatio-temporal raster data.* Mazroob Semnani, Nima (Karlsruhe Institute of Technology, Germany)

806: *Performance matters on identification of origin-destination matrix on big geospatial data.* Coşkun, İhsan Buğra (Hacettepe University, Turkey)

1229: *Cost effective spherical photogrammetry: a novel framework for the smart management of complex urban environments.* Chiappini, Stefano (Università Politecnica delle Marche, Italy)

1678: *Integration of historical GIS data in a HBIM system.* Bruno, Nazarena (University of Parma, Italy)

1984: *Developing an Intelligent Fire Alarming, Monitoring and Rescuing System Using UAV.* Biswas, Susham (Rajiv Gandhi Institute of Petroleum Technology, India)

### 12:10 - 13:40:

- **MO.1.4.: UAS: Concepts and Applications.**

Moderators: Francesco Nex (University of Twente, The Netherlands), Ralf Reulke (DLR, Germany).

670: *Three-dimensional path planning of UAVs imaging for complete photogrammetric reconstruction.* Zhang, Shuhang (Tongji University, China)

1495: *Targetless photogrammetry network simulation for inspection planning in oil and gas industry.* Buschinelli, Pedro (UFSC, Brasil)

1566: *A novel method for estimation of structural changes in potato crops from uav-based digital surface models.* Angulo-Morales, Victor (Universidad Distrital Francisco Jose de Caldas, Colombia)

1225: *Are measured ground control points still required in uav based large scale mapping? Assessing the positional accuracy of an rtk multi-rotor platform.* Teppati Losè, Lorenzo (Politecnico di Torino, Italy)

492: *Preliminary investigation on possibility of super resolution of UAV orthoimages.* Matsuoka, Ryuji (Kokusai Kogyo Co., Ltd., Japan)

1244: *Oblique images and direct photogrammetry with a fixed wing platform: first test and results in Hierapolis of Phrygia (TK).* Sammartano, Giulia (Politecnico di Torino, Italy)

- **MO.2.4.: Advances in Spatial Information Science 1 (LIVE)**

Moderators: Sisi Zlatanova (University of New South Wales, Australia), Marguerite Madden (University of Georgia, USA).

760: *Design and implementation of trajectory data management and analysis technology framework based on spatiotemporal grid model.* Liu, Juqing (China University of Mining and Technology-Beijing, China)

802: *Crowdsource geotagged social media.* Mor, Matan (Technion, Israel)

1476: *Healthcare Critical Infrastructure Stochastic Interdependencies Simulation Model for Smart Cities: Flood Disaster Scenario.* Nukavarapu, Nivedita (Indian Institute of Technology Bombay, India)

337: *Assessing resilience of infrastructures towards exogenous events by using PS-InSAR-based surface motion estimates and machine learning regression techniques.* Fiorentini, Nicholas (University of Pisa, Italy)

### 13:50 - 15:20:

- **MO.1.5.: High Precision Positioning & Mapping (LIVE)**

Moderator: Raul Feitosa (Pontifical Catholic University, Brazil).

1287: *Learning Super-Resolution for Sentinel-2 Images with real ground truth data from a reference Satellite*. Galar, Mikel (Public University of Navarre, Spain)

555: *Incorporating interferometric coherence into LULC Classification of Airborne PolSAR-Images using Fully Convolutional Networks*. Schmitz, Sylvia (Fraunhofer IOSB, Germany)

526: *Survey Accuracy and Spatial Resolution Benchmark of a camera system mounted on a fast flying drone*. Meißner, Henry (German Aerospace Center, Germany)

1868: *Multilateration under flip ambiguity for uav positioning using ultrawide-band*, Park, Kunwoo, York University, Canada)

- **MO.2.5.: Indoor/Outdoor Modelling and Geocomputation.**

Moderators: Zhizhong Kang (China University of Geosciences, China), Lucia Vilarino (University of Vigo, Spain).

1860: *Towards IndoorGML 2.0: Updates and Case Study Illustrations*. Diakite, Abdoulaye Abou (UNSW, Australia)

294: *Transfer learning for indoor object classification: from images to point clouds*. Balado Frías, Jesús (University of Vigo, Spain)

1556: *WiFi RSS Fingerprinting for Indoor Localization using Augmented Reality*. Ahmad, Afnan, York University, Canada)

1695: *DBSCAN optimization for improving marine trajectory clustering and anomaly detection*. Han, Xuyang (York University, Canada)

1686: *Ant colony optimization parameter selection for shortest path problem*. Zarrinpanjeh, Nima (University of Tehran, Iran)

1428: *Transfer of Manure from Livestock Farms to Crop Fields as Fertilizer using an Ant Inspired Approach*. Kamilaris, Andreas (RISE Ltd, Cyprus)

### 15:30 - 17:00:

- **MO.1.6.: Robotics for 3D Mapping and Modelling.**

Moderator: Jonathan Li (University of Waterloo, Canada).

1258: *3D indoor mapping with the Microsoft HoloLens: qualitative and quantitative evaluation by means of geometric features*. Weinmann, Martin (Karlsruhe Institute of Technology, Germany)

1178: *Learning Maps for Object Localization using Visual-Inertial Odometry*. Yilmaz, Alper (The Ohio State University, USA)

549: *Segment-based LiDAR odometry for less structured outdoor scene*. Wu, Weitong (Wuhan University, China)

1906: *UAV mission planning for automatic exploration and semantic mapping*. Dehbi, Youness (University of Bonn, Germany)

318: *Using an low-cost stereo camera for autonomous navigation of a mobile robot*. Chibunichev, Aleksandr (Moscow State University of Geodesy and Cartography, Russia)

- **MO.2.6.: Advances in Spatial Information Science 2 (LIVE)**

Moderators: George Sithole (GeoVariant, South Arrica), Eric Guilbert (Université Laval, Canada).

1235: *Voxel-based indoor reconstruction from hololens triangle meshes*. Hübner, Patrick (Karlsruhe Institute of Technology, Germany)

699: *3DCITYDB4BIM: a system architecture for linking BIM server and 3d citydb for BIM-GIS-integration*. Hijazi, Ihab (Technical University of Munich, Germany)

1211: *VGI visualisation to support participatory lake monitoring: the case study of simile project*. Biraghi, Carlo Andrea (Politecnico di Milano, Italy)

1305: *Telling engaging interactive stories with extended reality (XR): Back to 1930s in Zurich's main train station*. Çöltekin, Arzu (FHNW, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland)

### 17:10 - 18:20:

- **MO.1.7.: Spaceborne Sensing.**

Moderators: Timo Balz (Wuhan University, China), Xinming Tang (National Administration of Surveying, Mapping and Geoinformation, China).

1012: *Calibration and validation plan of the Advanced Land Observing Satellite-3 "ALOS-3"*. Tadono, Takeo (Japan Aerospace Exploration Agency, Japan)

1497: *Fast and accurate multi-frame super-resolution of satellite images*. Anger, Jérémy (ENS Paris-Saclay, France)

1151: *Strategies for PS Processing of Large Sentinel-1 Datasets*. Evers, Madeline (Fraunhofer IOSB, Germany)

517: *Deriving exclusion maps from C-band SAR time-series: an additional information layer for SAR-based flood extent mapping*. Zhao, Jie (Luxembourg institute of science and technology, Luxembourg)

- **MO.2.7.: Collaborative Crowdsourced Cloud Mapping.**

Moderators: Maria Brovelli (Politecnico di Milano, Italy), Cidália Fonte (University of Coimbra, Portugal).

1837: *Collaborative noise mapping using smart phone*. Dubey, Rakesh (Rajiv Gandhi institute of petroleum technology, India)

530: *An open IT infrastructure for green tourism management and promotion: The INSUBRIPARKS project*. Oxoli, Daniele (Politecnico di Milano, Italy)

612: *Mapping the accessibility in OpenStreetMap: a comparison of different techniques*. Stucchi, Lorenzo (Politecnico di Milano, Italy)

1210: *Crowdsourcing water quality with the SIMILE app*. Carrion, Daniela (Politecnico di Milano, Italy)

876: *Early prediction of the patterns of structural damage following a hurricane, using geolocated crowdsourced image posts*. Spasenovic, Katarina (Politecnico di Milano, Italy)

418: *Educational material development on mobile spatial data collection using open source geospatial technologies*. Anbaroğlu, Berk (Hacettepe University, Turkey)

### 18:30 - 19:40:

- **MO.1.8.: Image Enhancement: Technology and Methods.**

Moderators: Rupert Müller (DLR, Germany), Rongjun Qin (OSU, USA).

531: *Super-resolution of multispectral satellite images using convolutional neural networks*. Müller, Markus Uwe (UP42 GmbH, Germany)

1247: *Optical blur disturbs – the influence of optical-blurred images in photogrammetry*. Sieberth, Till (University of Zurich, Switzerland)

- **MO.2.8.: Ontology, Semantics and Spatial Data Analysis.**

Moderators: Margarita Kokla (National Technical University of Athens, Greece), Mahmoud R. Delavar (University of Tehran, Iran).

1231: *Semantically describing urban historical buildings across different levels of granularity.* Colucci, Elisabetta (Politecnico di Torino, Italy)

1552: *World Heritage mapping in a standard-based structured Geographical Information System.* Valese, Maria (TU Delft, The Netherlands)

1890: *Automatic ontology generation of BIM and GIS data.* Usmani, Aman U. (York University, Canada)

1383: *BikeMi bike-sharing service exploratory analysis on mobility patterns.* Toro, Juan Fernando (Politecnico di Milano, Italy)

1370: *Benchmarking of high-resolution land cover maps in Africa.* Bratic, Gorica (Politecnico di Milano, Italy)

1427: *TACK project: Tunnel and bridge Automatic Crack Monitoring using Deep Learning and Photogrammetry.* Belloni, Valeria (University of Rome La Sapienza, Italy)

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## 1 September 2020

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### 08:00 - 09:10:

- **TU.1.1.: Cultural Heritage.**

Moderators: Fulvio Rinaudo (Politecnico di Torino, Italy), Diego Gonzalez-Aguilera (University of Salamanca, Spain).

1251: *Geometric distortion of historical images for 3D visualization.* Paiz Reyes, Evelyn (Univ Gustave Eiffel, ENSG, IGN, France)

1430: *Semantic annotations on heritage models: 2D/3D approaches and future research challenges.* Croce, Valeria (Università di Pisa, Italy)

1524: *Automated digital odontology: measurement data analyses in cases of complicated dental morphology.* Gaboutchian, Armen (Peoples Friendship University of Russia, Russia)

1179: *A benchmark for large-scale heritage point cloud semantic segmentation.* Matrone, Francesca (Politecnico di Torino, Italy)

1023: *Automatic clustering of Celtic coins based on 3D point cloud pattern analysis.* Horache, Sofiane, Mines Paristech, France)

363: *A match-moving method combining AI and SFM algorithms in historical film footage.* Condorelli, Francesca (Politecnico di Torino, Italy)

- **TU.2.1.: Advancements in photogrammetric processing.**

Moderators: Norbert Haala (University of Stuttgart, Germany), Fabio Menna (FBK, Italy).

451: *Dense matching comparison between classical and deep learning based algorithms for remote sensing data.* Xia, Yuanxin (DLR - German Aerospace Center, Germany)

871: *Lock-free multithreaded semi-global matching with an arbitrary number of path directions.* Frommholz, Dirk (DLR - German Aerospace Center, Germany)



316: *Improving disparity estimation based on residual cost volume and reconstruction error volume*. Kang, Junhua (Wuhan University, China)  
1068: *Mitigating image residuals systematic patterns in underwater photogrammetry*. Menna, Fabio (FBK Trento, Italy)  
1390: *Image pre-processing strategies for enhancing photogrammetric 3D reconstruction of underwater shipwreck datasets*. Calantropio, Alessio (Polytechnic University of Turin, Italy)  
1304: *Learning with real-world and artificial data for improved vehicle detection in aerial imagery*. Weber, Immanuel (University of Applied Sciences Koblenz, Germany)

### 09:15 - 10:25:

- **TU.1.2.: Industrial photogrammetry.**

Moderators: Stephen Kyle (UCL, UK), Erica Nocerino (LIS/CNRS, France).

909: *An automatic ICP-based 2D-3D registration method for a high-speed biplanar videoradiography imaging system*. Zhang, Shu (University of Calgary, Canada)  
1142: *A versatile multi-camera system for 3d acquisition and modeling*. Lanz, Oswald (FBK Trento, Italy)  
1240: *Refinements and introduction of photogrammetric elements to an experimental trilateration based optical metrology system*. Heaps, Jonathan (National Physical Laboratory, United Kingdom)  
1767: *Dense 3D Object Reconstruction using Structured-light Scanner and Deep learning*. Mizginov, Vladimir (State Research Institute of Aviation Systems (GOSNIIAS), Russia)  
888: *A comparison of low-cost cameras applied to fixed multi-image monitoring systems*. Bruno, Nazarena (Università degli Studi di Parma, Italy)

- **TU.2.2.: 3D & Semantics.**

Moderators: Franz Rottensteiner (Leibniz Universität Hannover, Germany), Bruno Vallet (Univ. Gustave Eiffel, ENSG, IGN, France).

1809: *An Unsupervised Registration of 3D Point Clouds to 2D Cad Model: A Case Study of Floor Plan*. Alizadeh Naeini, Amin (York University, Canada)  
726: *Fast and Regularized Reconstruction of Building Facades from Street-View Images using Binary Integer Programming*. Hu, Han (Southwest Jiaotong University, China)  
1404: *Road segmentation on low resolution lidar point clouds for autonomous vehicles*. Gigli, Leonardo (Mines ParisTech, France)  
702: *Opacity-based edge highlighting for transparent visualization of 3D scanned point clouds*. Kawakami, Kota (Ritsumeikan University, Japan)  
863: *Wire structure image-based 3d reconstruction aided by deep learning*. Kniaz, Vladimir V. (GosNIIAS, Russia)  
665: *Fused 3D transparent visualization for large-scale cultural heritage using deep learning-based monocular reconstruction*. Pan, Jiao (Ritsumeikan University, Japan)

### 10:30 - 12:00:

- **TU.1.3.: Photogrammetry 2020 - 1 (LIVE)**

Moderator: Takashi Fuse (Tokyo University, Japan).

1376: *Bundle Block Adjustment with Constrained Relative Orientations*. Maset, Eleonora (University of Udine, Italy)  
613: *LR-CNN: Local-aware Region CNN for Vehicle Detection in Aerial Imagery*. Liao, Wentong (Leibniz Universität Hannover, Germany)  
825: *Deep Learning for Monocular Depth Estimation From UAV images*. Madhuanand, Logambal (University of Twente, The Netherlands)

## 12:10 - 13:40:

- **TU.1.4.: Geospatial Machine Learning.**

Moderators: Jan Wegner (ETH Zurich, Switzerland), Ribana Roscher (University of Bonn, Germany).

558: *Supervised classification and its repeatability for point clouds from dense very high resolution tri-stereo satellite image matching using machine learning.* Loghin, Ana-Maria (TU Wien, Austria)

525: *Lake ice monitoring with webcams and crowd-sourced images.* Tom, Manu (ETH Zurich, Switzerland)

698: *Detection of undocumented buildings using convolutional neural network and official geodata.* Li, Qingyu (DLR, German Aerospace Center, Germany)

1114: *Better generic objects counting when asking questions to images: a multitask approach for remote sensing visual question answering.* Lobry, Sylvain (Wageningen University, The Netherlands)

1290: *What Identifies a Whale by its Fluke? On the Benefit of Interpretable Machine Learning for Whale Identification.* Roscher, Ribana (University of Bonn, Germany)

831: *Infrastructure degradation and post-disaster damage detection using anomaly detecting generative adversarial networks.* Tilon, Sofia Matilda (University of Twente, The Netherlands)

1972: *Boundary regularized building footprint extraction from satellite images using deep neural networks.* Kamran, Muhammad (York University, Canada)

- **TU.2.4.: Education, Outreach & Youth Forum 1 (LIVE)**

Moderators: P.L.N. Raju (North Eastern Space Applications Centre, India), Sheryl Rose Reyes (United Nations University Institute for the Advanced Study of Sustainability, Japan).

495: *Investigating the effects of river discharges on submerged aquatic vegetation using UAV and GIS techniques.* Tamondong, Ayin (Tokyo Institute of Technology, Japan)

565: *Delineation and construction of 2D geometries by freehand drawing and geometric reasoning.* Meidow, Jochen (Fraunhofer IOSB, Germany)

1544: *A review of the impact of Google code-in on osgeo.* Green, Cameron Liam (University of Pretoria, South Africa)

1355: *Copernicus knowledge and innovation hubs,* Riedler, Barbara (University of Salzburg, Austria)

## 13:50 - 15:20:

- **TU.1.5.: Photogrammetry 2020 - 2 (LIVE)**

Moderator: Isabella Toschi (FBK, Italy)

623: *Using semantically paired images to improve domain adaptation for the semantic segmentation of aerial images.* Gritzner, Daniel (Leibniz Universität Hannover, Germany)

595: *Assessing the semantic similarity of images of silk fabrics using convolutional neural networks.* Clermont, Dominic (Leibniz University Hanover, Germany)

1168: *Comparison of subaquatic digital elevation models from airborne laser scanning and imagery.* Mulsow, Christian (GWT-TUD, Germany)

1349: *Influence of ranging uncertainty of terrestrial laser scanning on change detection in topographic 3D point clouds.* Winiwarer, Lukas (Heidelberg University, Germany)

- **TU.2.5.: Education, Outreach & Youth Forum 2.**

Moderators: P.L.N. Raju (North Eastern Space Applications Centre, India), Sheryl Rose Reyes (United Nations University Institute for the Advanced Study of Sustainability, Japan).

796: *Using deep learning to digitize road arrow markings from LIDAR point cloud derived images.* Lagahit, Miguel Luis (National Cheng Kung University, China Taipei)



297: *Geospatial valuation of urban farming in improving cities resilience: a case of Malang city, Indonesia*. Atmaja, Tri (The University of Tokyo, Japan)

605: *Refugees stories told by maps: a challenge for students in a scientific olympiad*. Di Maio, Angelica Carvalho (Universidade Federal Fluminense, Brazil)

857: *An elective course, "geoinformation technologies in business": ten-years of educational experience at the Lomonosov Moscow State University Business School*. Pirogov, Andrey (Racurs, Russia)

675: *SemCity Toulouse: A Benchmark for Building Instance Segmentation in Satellite images*. Roscher, Ribana (University of Bonn, Germany)

1052: *ISPRS benchmark on multisensory indoor mapping and positioning*. Wang, Cheng (Xiamen University, China)

528: *A tool to enhance the capacity for deep learning based object detection and tracking with UAV data*. Micheal, Ancy (Anna university, India)

833: *Photomatch: an open-source multi-view feature matching tool for photogrammetric applications*. Gonzalez-Aguilera, Diego (University of Salamanca, Spain)

### 15:30 - 17:00:

- **TU.1.6.: Point cloud processing.**

Moderators: Jan Boehm (UCL, UK), Mathieu Brédif (Univ. Gustave Eiffel, ENSG, IGN, France).

1175: *Smart fusion of mobile laser scanner data with large scale topographic maps*. Oude Elberink, Sander (University of Twente, The Netherlands)

874: *Computed tomography data colouring based on photogrammetric images*. Zhan, Kun (University Stuttgart, Germany)

1373: *Marker-less mobile augmented reality application for massive 3D point clouds and semantics*. Kharroubi, Abderrazzaq (University of Liège, Belgium)

470: *Live extraction of curvilinear structures from lidar raw data*. Even, Philippe (LORIA, France)

1437: *Provably Consistent Distributed Delaunay Triangulation*. Brédif, Mathieu (Université Gustave Eiffel, LASTIG, IGN-ENSG, France)

400: *Semantic segmentation of point clouds with PointNet and KPConv architectures applied to railway tunnels*. Soilán, Mario (University of Vigo, Spain)

253: *Efficient training of semantic point cloud segmentation via active learning*. Lin, Yaping (University of Twente, ITC, The Netherlands)

- **TU.2.6.: Education, Outreach & Youth Forum 3 (LIVE)**

Moderators: Senthil Kumar (Indian Institute of Remote Sensing, India).

1711: *Production of iso-intensity map for Elazig earthquake (24 Jan 2020) using citizen collected geodata*. Yalcin, Ilyas (Bursa Uludag University, Turkey)

1696: *Body of knowledge for the Earth observation and geoinformation sector – A basis for innovative skills development*. Stelmaszczuk-Górska, Martyna A. (Friedrich-Schiller University of Jena, Germany)

325: *Creating immersive and interactive surveying laboratories in virtual reality: a differential leveling example*. Bolkas, Dimitrios (Pennsylvania State University, USA)

1214: *Development of a CitSci and artificial intelligence supported GIS platform for landslide data collection*. Can, Recep (Hacettepe University, Turkey)

### 17:10 - 18:20:

- **TU.1.7.: 3D mapping.**

Moderators: Roderik Lindenbergh (Delft University of Technology, Netherlands), Martin Rutzinger (Austrian Academy of Sciences, Austria).

1969: *Change detection in Photogrammetric point clouds for monitoring of alpine, gravitational mass movement.* Hoegner, Ludwig (Technical University of Munich, Germany)

812: *Use of historical aerial images for 3D modelling of glaciers in the province of Trento.* Poli, Daniela (Vermessung AVT-ZT-GmbH, Austria)

567: *Analysis of filtering techniques for investigating landslide-induced topographic changes in the Oetz valley (Tyrol, Austria).* Gutierrez, Ivan (University of Stavanger, Norway)

903: *Vision-based approaches for quantifying cracks in concrete structures.* Shokri, Parnia (University of Calgary, Canada)

1100: *Development of a fan-shaped distance meter system for measuring moving rotor blades – concept, photogrammetric orientation and first results.* Goering, Martina (Jade University, Germany)

1362: *UAV and close-range photogrammetry to support geo-mechanical analysis in safety road management: the "Vallone d'Elva" road.* Pontoglio, Emanuele (Politecnico di Torino, Italy)

- **TU.2.7.: Education, Outreach & Youth Forum.**

Moderators: Senthil Kumar (Indian Institute of Remote Sensing, India).

1521: *Improving quality and inclusive education on photogrammetry: new teaching approaches and multimedia supporting materials.* Parisi, Erica Isabella (University of Florence, Italy)

1539: *Towards SDG 4: Trade-offs for geospatial open educational resources.* Coetzee, Serena (University of Pretoria, South Africa)

1543: *D3MOBILE metrology world league: training secondary students on smartphone-based photogrammetry.* Tucci, Grazia (University of Florence, Italy)

1270: *The ISPRS-EuroSDR GEOBIM benchmark 2019.* Noardo, Francesca (Delft University of Technology, The Netherlands)

### 18:30 - 19:40:

- **TU.1.8.: Image orientation.**

Moderators: Andrea Fusiello (Università degli Studi di Udine, Italy), Ronny Hänsch (DLR, German Aerospace Center, Germany).

799: *Accurate registration of aerial images and ALS-pointcloud via automated junction matching and planar constraints.* Wan, Yi (Wuhan University, China)

1527: *Towards structureless bundle adjustment with two- and three-view structure approximation.* Rupnik, Ewelina (LaSTIG, IGN-ENSG, Univ. Gustave Eiffel, France)

1022: *Deep learning based feature matching and its application in image orientation.* Chen, Lin (Leibniz Universität Hannover, Germany)

1480: *Guided feature matching for multi-epoch historical image blocks pose estimation.* Zhang, Lulin (LaSTIG, IGN-ENSG, Univ. Gustave Eiffel, France)

759: *A GNSS-free unmanned aerial laser scanning system.* Cortes, Camilo (University of Calgary, Canada)

- **TU.2.8.: Dynamic Scene Analysis.**

Moderators: Alper Yilmaz (OSU, USA), Michael Yang (Twente University, The Netherlands).

889: *Efficient multi-view 3D tracking of arbitrary rock fragments upon impact.* Guccione, Davide Ettore (The University of Newcastle, Australia)

1412: *Deep cascaded neural networks for automatic detection of structural damage and cracks from images.* Yilmaz, Alper (Ohio State University, USA)

868: *Synthetic vision system calibration for conform projection on the pilot's head-up display.* Kozyrev, Mark (GosNIIAS, Russia)

1715: *Stockpile monitoring using linear Shape-from-Shading on PlanetScope imagery*. d'Autume, Marie (ENS Paris Saclay, France)

220: *Robust visual-inertial odometry in dynamic environments using semantic segmentation for feature selection*. Irmisch, Patrick (DLR, German Aerospace Center, Germany)

1743: *Adaptable autoregressive moving average filter triggering convolutional neural networks for choreographic modeling*. Doulamis, Anastasios (National Technical University of Athens, Greece)

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## 2 September 2020

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### 08:00 - 09:10:

- **WE.1.1.: Hyperspectral Image Processing.**

Moderators: Eija Honkavaara (National Land Survey of Finland, Finland), Baoxin Hu (York University, Canada)

1968: *Fusion of LiDAR and hyperspectral data for semantic segmentation of forest tree species*. Tusa, Eduardo (INRAE, France)

821: *A new spectral-spatial subspace clustering algorithm for hyperspectral image analysis*. Rafiezadeh Shahi, Kasra (Helmholtz Institute Freiberg for Resource Technology, Germany)

1546: *Spatio-temporal salinity monitoring of the Ghaghara river using Landsat time-series imagery and multiple regression analysis*. Gašparović, Mateo (Faculty of Geodesy, Croatia)

1510: *Evaluating a convolutional neural network for feature extraction and tree species classification using UAV-hyperspectral images*. Sothe, Camile (McMaster University, Canada)

1508: *An unsupervised labeling approach for hyperspectral image classification*. González-Santiago, Jonathan (Fraunhofer IOSB, Germany)

919: *A simple artificial neural network for fire detection using Landsat-8 data*. Liu, Zhuoran (Beihang University, China)

- **WE.2.1.: Disaster Assessment, Monitoring and Management.**

Moderators: Tullio Tanzi (Institut Mines-Telecom - Telecom ParisTech, France), Jana Viessmann (Chemnitz University of Technology, Germany).

989: *A Voxel-Based Approach to Estimate the Volume of Fuel Load from Point Cloud Data for Hazard Reduction Burning*. Eusuf, Saadmann (UNSW, Faculty of Built Environment Sydney, Australia)

977: *Landslide susceptibility mapping with random forest model for Ordu, Turkey*. Karakas, Gizem (Hacettepe University, Turkey)

1629: *Automated marine oil spill detection using deep learning instance segmentation model*. Yekeen, Shamsudeen Temitope (Universiti Teknologi Petronas, Malaysia)

1365: *Optimum path determination to facilitate fire station rescue missions using ant colony optimization algorithms (case study: city of Karaj)*. Zarrinpanjeh, Nima (University of Tehran, Iran)

1464: *Generative adversarial networks as a novel approach for tectonic fault and fracture extraction in high-resolution satellite and airborne optical images*. Jafrasteh, Bahram (Geoazur, Inria, France)

## 09:15 - 10:25:

- **WE.1.2.: Microwave & Lidar Remote Sensing.**

Moderators: Marco Scaioni (Politecnico Milano, Italy), Zhenhong Li (Newcastle University, UK).

543: *A case study of monitoring maize dynamics in Serbia by utilizing Sentinel-1 data and Growing Degree Days.* Pandžić, Miloš (BioSense Institute, Serbia)

811: *Mining seismic thermal anomalies from massive satellite passive microwave images.* Qi, Yuan (Central South University, China)

2012: *Correlation analysis for tropical forest above ground biomass and vertical reflectivity profile.* Li, Wenmei (Nanjing University of Posts and Telecommunications, China)

584: *Characterization of Land Cover Seasonality in Sentinel-1 Time Series Data.* Dubois, Clémence (Friedrich-Schiller-University Jena, Germany)

1359: *Efficient large-scale Airborne LiDAR data classification via Fully Convolutional network.* Fusiello, Andrea (University of Udine, Italy)

1907: *Relation network for full-waveform LiDAR classification.* Guiotte, Florent (Université Rennes 2, France)

- **WE.2.2.: Planetary Remote Sensing and Mapping.**

Moderators: Jürgen Oberst (DLR, Germany), Irina Karachevtseva (Moscow University of Geodesy and Cartography, Russia).

326: *Coordination of Planetary Coordinate System Recommendations by the IAU Working Group on Cartographic Coordinates and Rotational Elements – 2020 Status and Future.* Archinal, Brent A. (United States Geological Survey, USA)

664: *Validation of the stereo observation strategy of simbio-sys using a virtual simulator.* Re, Cristina (INAF, Italy)

1558: *Millimeter Moon Measurement: 50 Years Since the Start of the Lunar Laser Ranging Experiment by Apollo 11!* Brock, John (Brock Surveys Pty. Ltd., Australia)

368: *Semantic segmentation of Brazilian Savanna vegetation using high spatial resolution satellite data and U-net.* Neves, Alana Kasahara (Leibniz Universität Hannover, Germany)

672: *Explain it to me - Facing Remote Sensing Challenges in the Bio- and Geosciences with Explainable Machine learning.* Roscher, Ribana (University of Bonn, Germany)

## 10:30 - 12:00:

- **WE.1.3.: Planetary Remote Sensing and Mapping (LIVE)**

Moderators: Bo Wu (The Hong Kong Polytechnic University, Hong Kong), Kaichang Di (Institute of Remote Sensing and Digital Earth, China)

1275: *Photogrammetric processing of osiris-rex images of asteroid (101955) bennu.* Edmundson, Kenneth Lee (Independent, USA)

624: *A global shape model for Saturn's moon Enceladus from a dense photogrammetric control network.* Bland, Michael T. (United States Geological Survey, USA)

1266: *Evaluating stereo DTM quality at Jezero crater, Mars with HRSC, CTX, and HiRISE images.* Kirk, Randolph L. (United States Geological Survey, USA)

1937: *A Computer Vision Approach for Detection of Asteroids/Comets in Space Satellite images.* Yekkehkhany, Bahareh (University of Calgary, Canada)

- **WE.2.3.: Remote Sensing Data Fusion.**

Moderators: Wei Yao (The Hong Kong Polytechnic University, Hong Kong), Shihong Du (Peking University, China)

884: *Tree species classification based on neutrosophic logic and Dempster-Shafer theory*. Hu, Baoxin (York University, Canada)

1327: *A fusion approach for flood mapping using Sentinel-1 and Sentinel-2 datasets*. Tavus, Beste (Hacettepe University, Turkey)

681: *Social information fused urban functional zones classification network*. Lu, Weipeng. (Central South University, China)

1310: *Thermal and optical data fusion supporting built heritage analyses*. Spanò, Antonia (Politecnico di Torino, Italy)

1126: *Semi-automatic approach for optical and lidar data integration using phase congruency model at multiple resolutions*. Megahed, Yasmine (Ryerson University, Canada)

218: *Spaceborne GNSS- R retrieving on global soil moisture approached by support vector machine learning*. Lwin, Aung (Yangon Technological University, Myanmar)

1190: *A causal hierarchical Markov framework for the classification of multiresolution and multisensor remote sensing images*. Moser, Gabriele (University of Genoa, Italy)

### 12:10 - 13:40:

- **WE.1.4.: Remote Sensing of Atmospheric Environment.**

Moderators: Lixin Wu (Central South University, China), Kai Qin (China University of Mining & Technology, China)..

944: *Cloud classification for ground-based sky image using random forest*. Wan, Xinrui (Wuhan University, China)

1448: *A sequence-to-sequence temporal convolutional neural network for ionospheric modelling using GNSS observables*. Kaselimi, Maria (NTUA, Greece)

527: *Detection and quantification of methane plume with a SWIR airborne camera and application to satellite data*. Nesme, Nicolas (ONERA, France)

1660: *UHI estimation based on Aster and MODIS satellite imagery: first results on Strasbourg city, France*. Del Pozo, Susana (University of Salamanca, Spain)

1646: *Variations of vegetation net primary productivity and its responses to climate change from 1982 to 2015 in Mongolia*. Purevtseren, Myagmartseren (Institute of Geography and Geoecology, Mongolia)

1802: *Long term air quality analysis in reference to thermal power plants using satellite data in Singrauli region, India*. Romana, Harsimranjit Kaur (IIT Mandi, India)

529: *Lake ice detection from Sentinel-1 SAR with deep learning*. Tom, Manu (ETH Zurich, Switzerland)

- **WE.2.4.: Agriculture and Natural Ecosystems Modelling and Monitoring (LIVE)**

Moderator: Mitsunori Yoshimura (The University of Tokyo, Japan).

412: *Estimation of soil bulk density and carbon using multi-source remotely sensed data*. Pittman, Rory Clifford (York University, Canada)

777: *Automated classification of natural forests with Landsat time series using simplified spectral patterns*. Nguyen, Duong (Institute of Geography, Vietnam)

1088: *Chestnut cover automatic classification through lidar and Sentinel-2 multi-temporal data*. Alonso, L. (University of Vigo, Spain)

### 13:50 - 15:20:

- **WE.1.5.: Thematic Information Extraction - 1 (LIVE)**

Moderator: Xianlian Liang (National Land Survey of Finland, Finland).



1722: *Land Use Classification Using Deep Multitask networks*. Persello, Claudio (University of Twente, The Netherlands)

2094: *Geospatial technology based soil loss estimation for sustainable urban development of Butwal submetropolitan city, Nepal*. Mandal, Umesh Kumar (Tribhuvan University, Nepal)

773: *Land cover classification using convolutional neural network with remote sensing data and digital surface model*. Liu, Bo (Peking University, China)

- **WE.2.5.: Thematic Information Extraction - 2.**

Moderator: Maria Teresa Melis (University of Cagliari, Italy).

2076: *Multi-scale building maps from aerial imagery*. Feng, Yu (Leibniz Universität Hannover, Germany)

212: *Scene classification based on the intrinsic mean of Lie group*. Xu, Chengjun (Wuhan University, China)

1035: *Operational pipeline for a global cloud-free mosaic and classification of Sentinel-2 images*. Swaine, Michael (LUXCARTA TECHNOLOGY, France)

773: *Land cover classification using convolutional neural network with remote sensing data and digital surface model*. Liu, Bo (Peking University, China)

1782: *Land cover / land use monitoring for agriculture features classification*. Guliyeva, Sona (National Aviation Academy, Azerbaijan)

660: *Identification of temporary surface water using Sentinel-1 SAR data. case study: Sentani flash flooding, Indonesia*. Gasica, Torana Arya (Institut Teknologi Sepuluh Nopember, Indonesia)

1638: *Supporting the Management of Humanitarian Operations with Remote Sensing*. Wickert, Lorenz (Fraunhofer IAIS, Germany)

1417: *Characterization of the frost heave deformations in high latitude and deep seasonally frozen soil of Inner Mongolia with Sentinel-1 InSAR observations*. Qu, Tengting (Peking University, China)

### 15:30 - 17:00:

- **WE.1.6.: Remote Sensing Data Quality.**

Moderators: Hussein M. Abdulmuttalib (Dubai Municipality, U.A.E.), Árpád Barsi (Budapest University of Technology and Economics, Hungary).

1785: *Investigations on the global image datasets for the absolute geometric quality assessment of MSG SEVIRI Imagery*. Kocaman, Sultan (Hacettepe University, Turkey)

1598: *Investigating the performance of Random Forest and Support Vector Regression for generation of cloudfree NDVI using Sentinel-1 SAR data*. Mohite, Jayantrao (Tata Consultancy Services, India)

974: *UAS data acquisition protocol for marine habitat mapping: an accuracy assessment study*. Doukari, Michaela (University of the Aegean, Greece)

830: *A jitter detection method based on the integration imaging model*. Ye, Guo (Wuhan university, China)

1573: *Quality inspection of satellite imagery block adjustment without GCP*. Zhao, Ying (National Quality Inspection and Testing Center for Surveying and Mapping Products, China)

- **WE.2.6.: Disaster Assessment, Monitoring and Management (LIVE)**

Moderators: Tullio Tanzi (Institut Mines-Telecom - Telecom ParisTech, France), Jana Viessmann (Chemnitz University of Technology, Germany).

1561: *Data processing architectures for monitoring floods using Sentinel-1*. Wagner, Wolfgang (TU Wien, Austria)

432: *Comparing model performance metrics for landslide susceptibility mapping*. Yordanov, Vasil (NVU Vasil Levski, Bulgaria)



1827: *Glacial lake evolution based on remote sensing time series: a case study of Tsho Rolpa in Nepal*. Peppa, Maria Valasia (Newcastle University, United Kingdom)

178: *Landslide Study Using Terrestrial Laser Scanner (LiDAR) analysis*. Pesántez Cabrera, Pamela Carolina (University of Cuenca, Ecuador)

### 17:10 - 18:20:

- **WE.1.7.: Change Detection & Disaster Management.**

Moderators: Ammatzia Peled (University of Haifa, Israel), Md. Surabuddin Mondal (Wollega University, Ethiopia).

1260: *Domain Adaptation With CycleGAN For Change Detection In The Amazon Forest*. Soto Vega, Pedro (Pontifical Catholic University of Rio de Janeiro, Brazil)

1202: *Evaluation of semantic segmentation methods for deforestation detection in the Amazon*. Costa, Gilson A. O. P. (Rio de Janeiro State University, Brazil)

275: *Identifying land use and land cover (lulc) change from 2000 to 2025 driven by tourism growth in Bali*. Rimba, Andi Besse (United Nation University, Japan)

433: *Evaluation of spatio-temporal aspects of land use and land cover changes in Nagaland, North-East, India*. Hiese, Nesatalu (Nagaland Science & Technology Council, India)

991: *Sensor Fusion, GIS and AI Technologies for Disaster Management*. Kemper, Hannah (University Bonn, Germany)

1967: *Near-realtime flood detection from multi-temporal sentinel radar images using artificial intelligence*. de la Cruz, Roel Mallari (Department of Science and Technology-Advanced Science and Technology Institute (DOST-ASTI), Philippines)

- **WE.2.7.: SAR-based Surface Generation and Deformation Monitoring.**

Moderators: Uwe Soergel (University Stuttgart, Germany), Bahram Salehi (State University of New York, USA).

1914: *On the combination of PsInSAR and GNSS techniques for long-term bridge monitoring*. Abdeljalil, Nahli (Le Mans University / CEMENTYS, France)

448: *Estimating 3D land subsidence from multi-temporal SAR images and GNSS data by weighted least squares*. Susaki, Junichi (Kyoto University, Japan)

1999: *Incorporating Independent Component Analysis and multi-temporal SAR techniques to retrieve rapid post-seismic deformation*. Vajedian, Sanaz (Leibniz Universitaet Hannover, Germany)

1766: *Investigation of the Ground Motion near the Leaning Tower of Bad Frankenhausen Using Sentinel-1 Persistent Scatterer Interferometry*. Dubois, Clémence (Friedrich-Schiller-University Jena, Germany)

1919: *Spatial Processing of Sentinel Imagery for Monitoring of Acacia Forest Degradation in Lake Nakuru Riparian Reserve*. Osio, Anne (Université Bretagne Sud, France)

### 18:30 - 19:40:

- **WE.1.8.: Landuse and Landcover Change Detection.**

Moderator: Yongnian Zeng (Central South University, China).

1872: *Imclass – a user-tailored machine learning image classification chain for change detection or landcover mapping*. Deprez, Aline (A2S, France)

1000: *Automatically generated training data for land cover classification with CNNs using Sentinel-2 images*. Voelsen, Mirjana (Leibniz Universität Hannover, Germany)

1962: *Deep learning based on optical flow estimation for change detection: a case study in Indonesia earthquake*. Qiao, Huijiao (Wuhan university, China)

687: *Specific alpine environment land cover classification methodology: Google Earth Engine processing for Sentinel-2 data*. Belcore, Elena (Politecnico di Torino, Italy)

498: *Medium resolution remote sensing image change detection based vector analysis of midline change*. Ye, Qin (Tongji University, China)

387: *Detection of land cover displacements through time-series analysis of multispectral satellite imagery: Application to desert sand dunes*. Brovelli, Maria Antonia (Politecnico di Milano, Italy)

- **WE.2.8.: Environment and Health.**

Moderators: Fazlay S. Faruque (University of Mississippi Medical Ctr, USA), John B. Malone (Louisiana State University, USA).

642: *Climate changes and landscape responses of China during the past 40 years (1979-2018) under Köppen-Geiger climate classification*. Feng, Yuning (Peking University, China)

535: *Earth Observations as a tool for Detecting and Monitoring potential Environmental Violations and Policy Implementation*. Mallinis, Giorgos (Aristotle University of Thessaloniki, Greece)

656: *Illegal municipal solid waste monitoring system based on Android APP*. Wang, Jianmei (Tongji University, China)

912: *Estimation soil heavy metal using reflectance spectroscopy and fractional order derivative*. Chen, Lihan, (China University of Mining and Technology, China)

1002: *Multi-temporal monitoring of urban river water quality using uav-borne multi-spectral remote sensing*. Zhou, Xiaoteng (Tongji University, China)

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## On-demand Catalogue

31 August - 2 September 2020

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170: *Using scene geometry to resect sensor models for photogrammetric analysis*. Settergren, Reuben (BAE Systems, Inc, USA)

196: *City-scale taxi demand prediction using multisource urban geospatial data*. Yan, Jialin (Wuhan University, China)

205: *City-scale human mobility prediction model by integrating GNSS trajectories and SNS data using Long short-term memory*. Miyazawa, Satoshi (University of Tokyo, Japan)

- 206:** *Geomatics technologies in the framework of multidisciplinary project for integrated management of cultural heritage sites.* Moise, Cristian (University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania)
- 209:** *Binocular visual environment perception technology for unmanned surface vehicle.* Wang, Yexin (CAS, China)
- 221:** *DISIR: deep image segmentation with interactive refinement.* Lenczner, Gaston (ONERA, France)
- 342:** *LOD3 building reconstruction from multi-source images.* Huang, Hai (Bundeswehr University Munich, Germany)
- 362:** *Inferring the scale and content of a map using deep learning.* Touya, Guillaume (Univ. Gustave Eiffel, ENSG, IGN, France)
- 401:** *Study on the application of airborne LiDAR in seismic active faults in the northern rim of Qinling Mountains and the Piedmont of Huashan in China.* Wang, Anni (Aerial Photogrammetry and Remote Sensing Group Co. Ltd of China National Administration of Coal Geology, China)
- 427:** *Sensor evaluation for crack detection in concrete bridges.* Merkle, Dominik (Fraunhofer Institute for Physical Measurement Techniques IPM, Germany)
- 466:** *A GIS-based multi-criteria analysis on cropland suitability in Bornuur Soum, Mongolia.* Natsagdorj, Enkhjargal (Ghent University, Belgium)
- 490:** *A method for estimating the number of households in a region from the number of buildings estimated by deep learning with the adjustment of its number using ancillary datasets: case study in Djakarta.* Ito, Riho (PASCO Corporation, Japan)
- 562:** *Classification of tree species and standing dead trees by fusing UAV-based lidar data and multispectral imagery in the 3D deep neural network PointNet++.* Briechle, Sebastian (Munich University of Applied Sciences, Germany)
- 714:** *An automatic cloud detection method based on generative adversarial networks in remote sensing images.* Li, Jun (Wuhan University, China)
- 768:** *Moving object classification using multilayer laser scanning with space subdivision framework.* Nakagawa, Masafumi (Shibaura Institute of Technology, Japan)
- 832:** *Superpixel segmentation for PolSAR images based on hexagon initialization and edge refinement.* Li, Meilin (National University of Defense Technology, China)
- 869:** *Machine learning for approximating unknown face.* Knyaz, Vladimir A. (St Res Inst of Aviation Systems, Russia)
- 917:** *Moving ship detection and movement prediction in remote sensing videos.* Wang, Yuhao (Beihang University, China)
- 933:** *Updates of 'AW3D30' ALOS global digital surface model with other open access datasets.* Takaku, Junichi (Remote Sensing Technology Center of Japan, Japan)
- 936:** *MINDflow based dense matching of TIR and RGB images.* Zhu, Jingwei (Technische Universität München, Germany)
- 1029:** *Geomatic techniques for the optimization of ski resources.* Grasso, Nives (Politecnico di Torino, Italy)

- 1030:** *Building archaeology documentation and analysis through open source HBIM solutions via Nurbs modelling.* Diara, Filippo (Politecnico di Torino, Italy)
- 1032:** *3D Models of the QH31, QH32 and QH33 tombs in Qubbet el Hawa (Aswan, Egypt).* Mozas-Calvache, Antonio (University of Jaén, Spain)
- 1055:** *Definition of a methodology to derive road network functional hierarchy classes using car tracking data.* Arco, Emere (Politecnico di Torino, Italy)
- 1085:** *Plausible reconstruction of an approximated mesh model for next-best view planning of SfM-MVS.* Moritani, Ryota (Hokkaido University, Japan)
- 1119:** *Policy Driven Application of Remote Sensing in Mitigating Urban Sprawl: A Case Study of a Developing Nation.* Shah, Pooja B (SVNIT, India)
- 1173:** *Classification of UAV-based photogrammetric point clouds of riverine species using machine learning algorithms: a case study in the Palancia river, Spain.* Carbonell-Rivera, Juan Pedro (Universitat Politècnica de València, Spain)
- 1205:** *Object based image analysis and texture features for pasture classification in Brazilian savannah.* Girolamo-Neto, Cesare Di (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Brazil)
- 1246:** *Moving Objects Aware Sensor Mesh Fusion for Indoor Reconstruction from a Couple of 2D LiDAR Scans.* Wu, Teng (Univ. Gustave Eiffel, ENSG, IGN, France)
- 1351:** *Baroque banded vaults: surveying and modeling. The case study of a noble palace in Turin.* Spallone, Roberta (Politecnico di Torino, Italy)
- 1372:** *UAV images and deep-learning algorithms for detecting flavescence doree disease in grapevine orchards.* Musci, Maria Angela (Politecnico di Torino, Italy)
- 1374:** *From archive documentation to online 3D model visualization of no longer existing structures: the Turin 1911 project.* Spreafico, Alessandra (Politecnico di Torino, Italy)
- 1388:** *Multi-Modal Deep Learning with Sentinel-3 Observations for the Detection of Oceanic Internal Waves.* Drees, Lukas (Rheinische Friedrich-Wilhelms-University Bonn, Germany)
- 1396:** *On Laussedat's contribution to the emergence of photogrammetry.* Polidori, Laurent (CNRS, France)
- 1398:** *BreizhCrops: A Time Series Dataset for Crop Type Mapping.* Rußwurm, Marc (Technical University of Munich, Germany)
- 1403:** *Parking occupancy estimation on Sentinel-1 images.* Drouyer, Sébastien Julien Georges (ENS Paris Saclay, France)
- 1436:** *Completion of sparse and partial point clouds of vehicles using a novel end-to-end network.* Xia, Yan (Technical University of Munich, Germany)
- 1462:** *Geomatic contribution for the restoration project of the Valentino Castle Green Room. From data acquisition to integrated documentation.* Patrucco, Giacomo (Politecnico di Torino, Italy)
- 1467:** *Automation of thermal point clouds analysis for the extraction of windows and thermal bridges of building facades.* Macher, Hélène (INSA Strasbourg, France)
- 1484:** *Building outline delineation: from very high resolution remote sensing imagery to polygons with an improved end-to-end learning framework.* Zhao, Wufan (ITC, University of Twente, The Netherlands)
- 1628:** *Remote sensing and multivariate logistic regression model for the estimation of urban expansion (case of Darkhan city, Mongolia).* Myagmartseren, Purevtseren (National University of Mongolia, Mongolia)

**1729:** *Application of remote sensing and google earth engine for monitoring environmental degradation in the Nilgiri biosphere reserve and its ecosystem of western Ghats, India.* Sheik Mohideen (Abdul Rahaman, Bharathidasan University, India)

**1777:** *3D aerodrome obstacle assessment using stereo remote sensing imagery.* Mitsevis, Liudmila (Belgeodesy, Belarus)

**1821:** *Automatic tumuli detection in LiDAR based digital elevation maps.* Németh, Zsófia (Pázmány Péter Catholic University, Faculty of Information Technology and Bionics, Hungary)

**1844:** *Spatio-temporal object stability for monitoring evolving areas in satellite image time series.* Tuna, Caglayan (Universite Bretagne Sud, France)

**1850:** *3D photogrammetric inspection of risers using RPAs and deep learning in oil and gas offshore platforms.* Salazar, Jose Alexander (Universidade federal de Santa Catarina, Brazil)

**1863:** *Different scales of urban traffic noise prediction and modeling.* Zafar, Iltaf (Rajiv Gandhi Institute of Petroleum Technology, India)

**1913:** *Interactive Digital Terrain Model analysis in attribute space.* Guiotte, Florent (Université Rennes 2, France)

**1927:** *Relative radiometric normalization using several automatically chosen reference images for multi-sensor, multi-temporal series.* Hessel, Charles (Centre de Mathématiques et de Leurs Applications, ENS Paris-Saclay, France)

**1936:** *Assessment of gully erosion in a catchment area in olive groves using UAS photogrammetry techniques.* Fernández, Tomás (University of Jaén, Spain)

**1944:** *Noise-tolerant hyperspectral image classification using Discrete Cosine Transform and Convolutional Neural Networks.* Doulamis, Anastasios (University of West Attica, Greece)

**1948:** *An approach for standardization of semantic models for building renovation processes.* Mirarchi, Claudio (Politecnico di Milano, Italy)

**1959:** *Circular-shaped object detection in low resolution satellite images.* Tadros, Antoine (ENS Paris-Saclay, France)

**1963:** *Exploration of Municipal Mobility Using Smartphone GPS data.* Wang, Ce (Purdue University, USA)

**1979:** *Simulation-based data augmentation using physical priors for noise filtering deep neural network.* Jameela, Maryam (York University, Canada)

**1993:** *Holistic Parametric Reconstruction of Building Models from Point Clouds.* Li, Zhixin (Purdue University, USA)

**2003:** *Estimating built-up area change in Ulaanbaatar city, Mongolia.* Myagmartseren, Purevtseren (National University of Mongolia, Mongolia)

**2006:** *Earth observation applications for Goal 14: Improving maritime domain awareness using synthetic aperture radar imaging with automatic identification system in the Philippines.* Vicente, Rocell Nino (DOST-Advanced Science Technology Institute, Philippines)