# Conference Agenda

## Session Overview

### Date: Wednesday, 10/Sept/2025

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| **8:00am - 8:45am** | **Registration - Day 1** |
| **8:45am - 9:00am** | **Opening Ceremony**<br>Location: **Kaleva** |
| **9:00am - 9:30am** | **Key1: Keynote: Prof. Fu Zhang University of Hong Kong, Hong Kong S.A.R. (China)**<br>Location: **Kaleva**<br><br>**Keynote**<br><br>**A LiDAR-centric approach for reliable UAV navigation**<br><br>**Fu Zhang** |
| **9:30am - 10:30am** | **Technical Program - UAVG1: Cutting-Edge UAV Robotics: Navigation, Mapping, and Autonomy 1**<br>Location: **Kaleva**<br><br>**9:30am - 9:45am**<br><br>ISPRS Annals Submission<br><br>**Multi-sensor Fusion SLAM from the Nadir View for UAV Localization and Mapping**<br><br>Yawen Li, George Vosselman, Francesco Nex<br><br>**9:45am - 10:00am**<br><br>ISPRS Annals Submission<br><br>**Fast Point Ranking - Robust Cloud Voxelization and Denoising for Lidar Odometry and Mapping in Adverse Weather Conditions**<br><br>Eugeniu Vezeteu, Heikki Hyyti, Ville Kyrki, Juha Hyyppä<br><br>**10:00am - 10:15am**<br><br>ISPRS Archives Submission<br><br>**Evaluating the performance of a lidar-based autonomous flying system for flying inside forest**<br><br>Aleksi Viljami Karhunen, Teemu Hakala, Väinö Karjalainen, Eija Honkavaara<br><br>**10:15am - 10:30am**<br><br>ISPRS Annals Submission<br><br>**Low-cost Extrinsic Calibration Between LIDAR and Thermal Camera for Indoor Mapping**<br><br>Benjamin Ronald van Manen, Ville Lehtola, Abeje Yenehun Mersha, Francesco Nex |
| **10:30am - 11:00am** | **Coffee Break - Day 1**<br>Location: **Kaleva Hall** |
| **11:00am - 11:30am** | **Key2: Keynote: Prof. Pablo J. Zarco-Tejada Spanish Council for Scientific Research (CSIC), Spain**<br>Location: **Kaleva**<br><br>**Keynote**<br><br>**Physiological assessment of vegetation using airborne platforms: 25 years of progress in hyperspectral methods**<br><br>Pablo J. Zarco-Tejada |
| **11:30am - 12:30pm** | **Technical Program - UAVG2: Intelligent UAVs for Forests and Agriculture 1**<br>Location: **Kaleva**<br>Chair: **Raquel Alves de Oliveira**<br><br>**11:30am - 11:45am**<br><br>ISPRS Archives Submission<br><br>**Hyperspectral drone images indicate that green shoulder indices are robust in pre-emergence detection of spruce bark beetle infestation across spatial and temporal scales**<br><br>Luiz Henrique Elias Cosimo, Eva Lindberg, Henrik Persson, Jonas Bohlin, Langning Huo<br><br>**11:45am - 12:00pm**<br><br>ISPRS Archives Submission<br><br>**Deriving structural and biochemical crop traits from one UAV sensor: Investigating a multiband VNIR/SWIR imaging system for crop trait monitoring**<br><br>Alexander Jenal, Andreas Bolten, Hubert Hüging, Jens Bongartz, Georg Bareth |

**12:00pm - 12:15pm**

ISPRS Annals Submission

**Mapping individual spruces with multispectral drone**

Jere Johannes Kaivosoja, Samuli Launiainen

**12:15pm - 12:30pm**

ISPRS Archives Submission

**Differentiating Acute and Chronic Stress in Norway Spruce Using Hyperspectral and Thermal Remote Sensing in Experimental Plots.**

Rastislav Jakus, Miroslav Blazenec, Matus Pivovar, Jana Maresova, Vivek Singh, Aleksandr Karpov, Natalie Korolyova

| 12:30pm - 1:30pm | **Lunch - Day 1**<br>Location: **Kaleva Hall** |
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| 1:30pm - 3:30pm | **Coffee and Posters - Day 1; POS1: Poster session and Industrial exhibition**<br>Location: **Kaleva Hall** |
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ISPRS Archives Submission

**Detecting Root Rot Infected Norway Spruce Trees Using Multispectral and LiDAR UAV Data**

Gustav Boman, Basam Dahy, Esra Sengun, Johanna Witzell, Johan E.S. Fransson

ISPRS Archives Submission

**Chlorophyll-a and Turbidity estimation using UAV imagery and machine learning in a tropical eutrophic reservoir**

Daniel H. C. Salim, Caio C. S. Mello, Gabriel Pereira, Raian V. Maretto, Frederico S. Machado, Camila C. Amorim

ISPRS Archives Submission

**A Multiview UAV Imagery-Based Method for Assessing Spruce Tree Health at the Individual Tree Level**

Alva Selina Anttonen, Axel Päivänsalo, Emma Turkulainen, Raquel Alves de Oliveira, Kirsi Karila, Niko Koivumäki, Roope Näsi, Eija Honkavaara

ISPRS Archives Submission

**Determining the Amount of Crop Residue Cover Using Image Analysis**

Mikael Aleksi Änäkkälä, Roope Rantanen, Antti Lajunen

ISPRS Archives Submission

**Applying UAV-based crop height to monitor biomass, N-concentration, and N-uptake in winter wheat**

Georg Bareth, Christoph Hütt, Alexander Jenal, Andreas Bolten, Nora Tilly, Hubert Hüging

ISPRS Archives Submission

**Mapping Boreal Forest Vitality Using Drone-Based Multispectral Time-Series and Object-Based Classification**

Basam Dahy, Esra Sengun, Johanna Witzell, Johan E.S. Fransson

ISPRS Archives Submission

**Evaluation of forage grass biomass estimation models using multispectral drone imaging across multiple sites**

Raquel Alves de Oliveira, Roope Näsi, Jonas Edström, Joel Pitkänen, Panu Korhonen, Oiva Niemeläinen, Niko Koivumäki, Jere Kaivosoja, Eija Honkavaara

ISPRS Archives Submission

**UAV-assisted Multi-Object Tracking and Segmentation of Apples under Occlusions in Orchard**

Kaiwen Wang, Lammert Kooistra, Wensheng Wang, João Valente

ISPRS Archives Submission

**Remote Sensing Upside Down: Exploring the Potential of Ground-Based Multispectral Cameras for Tree Crown Monitoring**

Mona Goebel, Lukas Wolf, Federik Packwitz, Dorota Iwaszczuk

ISPRS Archives Submission

**UAV and AI for large-scale monitoring of the effects of climate change on mountain lake areas: the ACLIMO cross-border cooperation project**

Chiara Graziani, Andrea Maria Lingua, Francesca Matrone, Alessandra Spadaro

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ISPRS Annals Submission

**Geospatial information based on UAV for socio-environmental problems in an urban river**

Andrea N. Escobedo Tamez, Fabiola D. Yépez-Rincón, Yadira Z. Antonio Durán, Mariana Pérez Martínez, Rogelio Aguilar Cruz, Milena Mesa Lavista, David Clemente Pérez, Nelly L. Ramírez Serrato, Carlos J. Ábrego Góngora

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ISPRS Archives Submission

**Marine Debris Monitoring on Uninhabited Islands Using UAV-Based 3D Modeling**

Sung-Joo Yoon, Tae-Ho Kim

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ISPRS Annals Submission

**Assessment of smoothing and scale change effects on aquatic emergent vegetation in high spatial resolution image segmentation**

Leticia Mayumi Matsuda, Nilton Nobuhiro Imai, Adilson Berveglieri

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| 3:30pm - 5:00pm | **Technical Program - UAVG3: Intelligent UAVs for Forests and Agriculture 2**<br>Location: **Kaleva** |
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**3:30pm - 3:45pm**

ISPRS Archives Submission

**Integrating UAS, Computer Vision and AI for Targeted Management of Invasive Insect Pests in Vineyards**

Andrea Maria Lingua, Alessio Martino, Francesca Gallitto, Stefania Manca, Paolo Maschio, Valeria Longhi, Filiberto Chiabrando, Marco Grella

**3:45pm - 4:00pm**

ISPRS Archives Submission

**Optimizing high-resolution multi-view drone imaging for detecting foreign grains in gluten-free oat production fields**

Roope Näsi, Raquel Alves de Oliveira, Stefan Rua, Ehsan Khoramshahi, Axel Päivänsalo, Oiva Niemeläinen, Eija Honkavaara, Markku Niskanen

**4:00pm - 4:15pm**

ISPRS Annals Submission

**Comparative Analysis of YOLOv8 and YOLOv11 on Tree Detection Using UAV RGB and Laser Scanning Data**

Esra Sengun, Samet Aksoy, Elif Sertel, Johan E.S. Fransson

**4:15pm - 4:30pm**

ISPRS Archives Submission

**Individual Tree Species Classification in a Mediterranean Ecosystem using UAV-Acquired Multispectral Images and Machine Learning**

Alessandra Spadaro, Andrea Maria Lingua, Filiberto Chiabrando

**4:30pm - 4:45pm**

ISPRS Annals Submission

**Tree stem diameter estimation using inexpensive UAV photogrammetric data and Monte Carlo methods**

Borja García-Pascual, Carlos Martín-Cortés, Xin Zhou, Evgeny Lopatin, Mauricio Acuna, Kalle Kärhä

**4:45pm - 5:00pm**

ISPRS Archives Submission

**Assessment of tree detection and segmentation pipelines using Terrestrial Laser Scanning data in orange orchards**

Letícia Ferrari Castanheiro, Mariana Batista Campos, Matheus Ferreira Silva, Rahuan Miguel Silva, Renato César Santos, Mauricio Galo, Antonio Maria Garcia Tommaselli

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| 6:00pm | **Ice Breaker** |
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| 8:00am - 9:00am | **Registration - Day 2** |
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| 9:00am - 9:30am | **Key3: Keynote: Prof. Antonios Tsourdos Cranfield University, United Kingdom**<br>Location: **Kaleva**<br><br>Keynote<br>**Autonomous BVLOS UAV Operations: From Research to Large-Scale Real-World Deployment**<br>Antonios Tsourdos |
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| 9:30am - 10:30am | **Technical Program - UAVG4: Towards Safe and Scalable Wide-Area BVLOS Operations**<br>Location: **Kaleva**<br>Chair: **Eija Honkavaara**<br><br>**9:30am - 9:45am**<br><br>Keynote<br>**Hydrogen-Powered Autonomy: Scaling BVLOS UAV Operations in Practice**<br>**Kelluu Oy**<br><br>**9:45am - 10:00am**<br><br>ISPRS Archives Submission<br>**Swarm Intelligence and Systems Thinking: Finding Common Ground for the Engineering of Drone Swarms Solutions**<br>Hannu Karvonen, Marjoriikka Ylisiurua, Arto Wallin, Fabrice Saffre, Hanno Hildmann, Vadim Kramar, Sebastian Coffeng<br><br>**10:00am - 10:15am**<br><br>ISPRS Archives Submission<br>**How the engineering of Swarming Behaviors could be drawing on Social Sciences**<br>Hanno Hildmann, Regina Nockerts, Sebastian Coffeng, Hannu Karvonen, Johan van der Heuvel, Ricardo van der Pluijm, Fabrice Saffre<br><br>**10:15am - 10:30am**<br><br>ISPRS Archives Submission<br>**A Collaborative GIS for Planning of Urban Drone Launch and Landing Site Locations**<br>Miloš Mladenović, Atiullah Saif, Eija Honkavaara, Pyry Kettunen, Mikko Rönneberg, Anssi Jussila, Leo Niemi, Miia Farstad |
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| 10:30am - 11:00am | **Coffee Break - Day 2**<br>Location: **Kaleva Hall** |
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| 11:00am - 12:30pm | **Technical Program - UAVG5: Drone Applications in the Built Environment**<br>Location: **Kaleva**<br><br>**11:00am - 11:15am**<br><br>ISPRS Annals Submission<br>**Drone based analysis of nocturnal light pollution**<br>Görres Grenzdörffer<br><br>**11:15am - 11:30am**<br><br>ISPRS Annals Submission<br>**Cold Region Building Inspection using UAV-based Three-dimensional Reconstruction**<br>Nicholas Chodura, Derek Boase, Joshua Woods, Melissa Greeff<br><br>**11:30am - 11:45am**<br><br>ISPRS Annals Submission<br>**IDENTIFICATION OF WASTE MATERIALS IN SEMI-CONTROLLED TEST SITE USING UAV THERMAL AND MULTISPECTRAL IMAGES**<br>Hassan Ali Makkawi Gassim, Vincenzo Di Pietra, Marco Piras<br><br>**11:45am - 12:00pm**<br><br>ISPRS Archives Submission<br>**Exploring the Potential of Super-Resolution for Crack Analysis in UAV Facade Orthomosaics of Small Bridges**<br>Dahye Jang, Hyunsoo Park, Euiik Jeon |
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**12:00pm - 12:15pm**

ISPRS Annals Submission

**An UAV for 3D Tree Surveying Method as an Improvement for Dam Construction Environmental Impact Manifestation in Mexico**

Kevin D. Rodríguez González, Fabiola D. Yépez-Rincón, Jacinto Treviño Carreón, Ivone Zapata Wah, Adrián L. Ferriño Fierro, Carlos C. Aguilar Treviño, Aylet Vega Aguilar, Roberto Huerta García, Yadira Zulema Antonio Durán

**12:15pm - 12:30pm**

ISPRS Archives Submission

**ResQDrone: Autonomous Indoor Quadcopter for Multi-Layered Mapping in Crisis and Disaster Management Scenarios**

Marco Cella, Jürgen Biber, Pierrick Bournez, Jules Salzinger, Verena Widhalm, Francesco d'Apolito, Felix Bruckmüller, Christoph Sulzbachner, Phillipp Fanta-Jende

| 12:30pm - 1:30pm | **Lunch - Day 2**<br>Location: **Kaleva Hall** |
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| 1:30pm - 2:00pm | **Industry keynote: CTO Arttu Soininen, Terrasolid Oy, Breaklines and Mass Points**<br>Location: **Kaleva** |
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| 1:30pm - 3:30pm | **Coffee and Posters - Day 2**<br>Location: **Kaleva Hall** |
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ISPRS Archives Submission

**Addressing GNSS Vulnerabilities in AAM: A Multi-Modal UAV Testbed for Redundant and Reliable Navigation**

Felix Rocco Matzke, Tushar Jayesh Barot, Shreeja Sridharan, Nikolaus Ammann, Christoph Kessler, Hans-Gerd Maas, Frank H. P. Fitzek, Anette Eltner

ISPRS Archives Submission

**Smart Drones, Smarter Learning: Federated Self-learning Minimal Learning Machine Classifier for Real-Time Hyperspectral Image Classification**

Anna-Maria Raita-Hakola, Xinying Kilpi-Chen, Ilkka Pölönen

ISPRS Archives Submission

**Under-canopy UAV Solutions for Forest Inventory – Challenges and Opportunities**

Xinlian Liang, Guangzu Liu, Xintong Dou

ISPRS Archives Submission

**Autonomous Drone Navigation in Forest Environments Using Deep Learning**

Guglielmo Del Col, Väinö Karjalainen, Teemu Hakala, Eija Honkavaara

ISPRS Archives Submission

**Precise georeferencing of RGB and multispectral drone images without ground control points**

José Gonçalves, Ana Bio, Manuel Meyer

ISPRS Archives Submission

**Under-Canopy UAV Global Path Planning for Tree DBH Estimation Using LiDAR**

Yang Chen, Shuhang Zhang, Qian Sun, Hao Xiong, Wuming Zhang

ISPRS Archives Submission

**ORBIT: Optimized Routing for Bridge Inspection Toolkit. An open-source UAS flight path planning tool for comprehensive bridge inspections under realistic constraints**

Erkki Tobias Bartczak, Maarten Bassier, Maarten Vergauwen

ISPRS Archives Submission

**On Voxel-Based Sampling of Planar Surface Areas from Photogrammetric UAV Data**

Petri Rönnholm, Matti T. Vaaja

ISPRS Archives Submission

**An Automated Framework for Cadastral Parcel Adjustment Using UAV Orthophotos, SAM, and ICP**

Deni Suwardhi, Muhammad Ihsan, Ratri Widyastuti, Nabila Sofia Eryan Putri, Sella Lestari Nurmaulia, Andri Hernandi

**ISPRS Archives Submission**

**UAS for Landscape and Architectural Survey: An Innovative Interdisciplinary Approach of Learning by Doing in the Bachelor Programs at Politecnico di Torino**

Alessio Martino, Filiberto Chiabrando, Andrea Maria Lingua

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**ISPRS Archives Submission**

**Bimodal MorphoCopter for Wildfire Suppression: Transforming Quadcopters to All-Terrain-Vehicles (ATV)**

Osman ACAR, Eija HONKAVAARA, Selahattin SEFACI

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**ISPRS Archives Submission**

**Real time solar panels heat point's detection with EDGE ViTs using thermal drone imagery**

Mouad Jabrane, Imane Sebari, Kenza Ait El Kadi

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**ISPRS Annals Submission**

**Application of UAV orthophoto and thermal imaging for municipal solid waste landfills monitoring**

Olga Brovkina, Lukáš Fajmon, Miroslav Pikl, František Zemek

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| 3:30pm - 5:00pm | **Technical Program - UAVG6: Novel UAV Computer Vision Systems and Algorithms**<br>Location: **Kaleva** |

**ISPRS Annals Submission**

**Real-Time Bundle Adjustment for Ultra-High-Resolution UAV Imagery Using Adaptive Patch-Based Feature Tracking**

Selim Ahmet Iz, Francesco Nex, Norman Kerle, Henry Meissner, Ralf Berger

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**ISPRS Annals Submission**

**A Robust Integrated Approach for Near Real-Time Seamless Orthomosaic Generation Using Off-the-Shelf UAVs for Ultra-High Resolution Mapping Applications**

Muhammad Farhan Humayun, Ali Salmasi, Jiaqiang Zhang, Tomi Westerlund, Jukka Heikkonen

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**ISPRS Archives Submission**

**Robust UAV Image Mosaicking Using SIFT and LightGlue**

Sung Hyeon Kim, Taejung Kim

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**ISPRS Annals Submission**

**Distortion Invariant Optical Calibration for Lightweight Airborne Imaging Spectrometry**

Julien Burkhard, Jesse Lahaye, Laurent Valentin Jospin, Jan Skaloud

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**ISPRS Annals Submission**

**Systematic Error Reduction in UAV-Based Laser Scanning by Using RTS**

André Cornelißen, Ansgar Dreier, Felix Esser, Gereon Tombrink, Lasse Klingbeil, Heiner Kuhlmann

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**ISPRS Archives Submission**

**Misalignment estimation of a lightweight laser scanning system with static calibration**

Marcela Vale Machado, Antonio Maria Garcia Tommaselli, Letícia Ferrari Castanheiro, Thaisa Aline Correia Garcia, Thiago Tiedtke Reis

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| 7:00pm | **Conference Dinner** |

## Date: Friday, 12/Sept/2025

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| **8:00am - 9:00am** | **Registration - Day 3** |

**9:00am - 9:30am**

**Key4: Keynote: Prof. Vincent Lepetit ENPC, France**
Location: **Kaleva**

Keynote

**Beyond the Next-Best-View: Machine Learning and Computer Vision for the Exploration and 3D Mapping of Large Scenes**
**Vincent Lepetit**

**9:30am - 10:30am**

**Technical Program - UAVG7: Cutting-Edge UAV Robotics: Navigation, Mapping, and Autonomy 2**
Location: **Kaleva**

**9:30am - 9:45am**

ISPRS Annals Submission

**Autonomous UAV 3D Reconstruction using Prediction-Based Next Best View**
<u>Ziwen Wang</u>, Bashar Alasdik, Francesco Nex

**9:45am - 10:00am**

ISPRS Archives Submission

**Combining soft robotics and active-laser induced fluorescence for environmental monitoring: Evaluating the drone-scenario of the I-Seed project**
Lammert Kooistra, Hasib Mustafa, Domantas Girzidas, Chenglong Zhang, Berry Onderstal, Harm Bartholomeus

**10:00am - 10:15am**

ISPRS Annals Submission

**SMARTNav: A Visual-Inertial Dataset for Reliable Robotic State Estimation**
<u>Hojat Mirtajadini Goki</u>, Abeje Mersha, Mohammad Aldibaja

**10:15am - 10:30am**

ISPRS Annals Submission

**Integrating Pre-Harvest UAV Scans to Enhance Harvester Tree Localization Accuracy**
Evgeny Lopatin, Kari Väätäinen, Harri Kaartinen, Heikki Hyyti, Lauri Sikanen, Yrjö Nuutinen, Mauricio Acuna

**10:30am - 11:00am**

**Coffee Break - Day 3**
Location: **Kaleva Hall**

**11:00am - 12:15pm**

**Technical Program - UAVG8: Uncrewed Remote Sensing Systems for Aquatic Environments**
Location: **Kaleva**

**11:00am - 11:15am**

ISPRS Annals Submission

**Novel robotic mapping system for freshwater environments**
<u>Jukka Matias Mäki-Leppilampi</u>, Heikki Hyyti, Harri Kaartinen

**11:15am - 11:30am**

ISPRS Archives Submission

**Comparative Analyses for Determining Shallow Water Bathymetry from UAVs: a Case Study in the Adriatic Sea**
Tea Duplančić Leder, Nenad Leder

**11:30am - 11:45am**

ISPRS Annals Submission

**Performance Evaluation of Drone Operated Dual Waveform Bathymetric LiDAR**
Joonas Kousa, Teemu Hakala, Antero Kukko, <u>Harri Kaartinen</u>

**11:45am - 12:00pm**

ISPRS Annals Submission

**Phenological and Species-Level Classification of Aquatic Invasive Plants Using UAV Multispectral Imagery and Machine Learning**
Daniel H. C. Salim, Caio C. S. Mello, Gabriel Pereira, Raian V. Maretto, Frederico S. Machado, Camila C. Amorim

**12:00pm - 12:15pm**

**ISPRS Annals Submission**

**UAV for flooding risk assessment in a new Dam Construction in Northeast Mexico**

Aylet Aguilar Vega, Fabiola D. Yépez-Rincón, Kevin D. Rodríguez Gonzalez, Dariela Vázquez, Adrián L. Ferriño Fierro, Víctor H. Guerra Cobián

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| 12:15pm - 1:15pm | **Lunch - Day 3** |

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| 1:15pm - 2:45pm | **Technical Program - UAVG9: Next-Generation AI for UAVs**<br>Location: **Kaleva** |

**1:15pm - 1:30pm**

**ISPRS Archives Submission**

**Advancements on Semantic Real-Time UAV Mapping**

Marc David Haubenstock, Jules Salzinger, Michael Schwingshackl, Felix Bruckmüller, Christoph Sulzbachner, Phillipp Fanta-Jende

**1:30pm - 1:45pm**

**ISPRS Annals Submission**

**Implementing real-time wildfire detection using lightweight object-detection models and machine vision sensor on Raspberry Pi 5: Fireframe, a practical framework**

Jukka Joutsalainen, Maxim Vitikainen, Juuso Lehrbäck, Alexander Goldhill, Anna-Maria Raita-Hakola

**1:45pm - 2:00pm**

**ISPRS Annals Submission**

**An End-to-End UAV–Cloud–AI Pipeline for Infrared-Based Real-Time Person Detection in SAR Missions**

Seunghyun Kim, Jeonghyo Oh, Younggon Oh, Impyeong Lee

**2:00pm - 2:15pm**

**ISPRS Annals Submission**

**The End of Overfitting for UAV Applications - Self-Supervised Pretraining on Multispectral UAV Data**

Jurrian Doornbos, Önder Babur

**2:15pm - 2:30pm**

**ISPRS Archives Submission**

**Domain Generalization in Deep Learning for Forest Health Monitoring Using Multispectral UAS Data**

Emma Jenni Johanna Turkulainen, Raquel Alves de Oliveira, Niko Koivumäki, Päivi Lyytikäinen-Saarenmaa, Roope Näsi, Mikko Pelto-Arvo, Johanna Tuviala, Eija Honkavaara

**2:30pm - 2:45pm**

**ISPRS Archives Submission**

**Tree Species Classification Using Majority Voting Approach on UAV Raw Images**

Tomohiro Mizoguchi, Daisuke Tsukano, Hideki Ogawa

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| 2:45pm | **Closing Ceremony** |