



whispers

#13th Workshop on Hyperspectral Image and Signal Processing:
Evolution in Remote Sensing



ATHENS, GREECE

Oct. 31 - Nov. 02 - 2023



Editorial

“In life, nothing is to be feared, everything is to be understood. It is time to understand more, so that we may fear less.”

- Marie Curie

“Science is a collaborative effort; the best discoveries are made when minds come together in pursuit of knowledge.”

- Chandrashekhara Venkata Râman

“Through the kaleidoscope of hyperspectral imaging, we seize not just colors but the concealed soul of objects, unraveling a world teeming with subtleties and prospects.”

- ChatGPT-4

“Colors are deeds of light, deeds and sufferings.”

- Johann Wolfgang von Goethe

2023

Dear Whisperers,

With open arms and immense enthusiasm, we extend a warm welcome to Athens, Greece, for the 13th edition of the WHISPERS 2023 workshop. We are thrilled to host this year's event in this iconic city, steeped in history and culture. Athens, with its ancient ruins, vibrant neighborhoods, and rich traditions, provides the perfect backdrop for our exploration of the captivating world of hyperspectral data processing.

Our team has meticulously crafted a program designed to exceed your expectations. Our foremost goal is to offer you an intellectually stimulating and scientifically

rewarding experience. Throughout WHISPERS 2023, we aim to facilitate your journey of discovery in the dynamic realm of hyperspectral technology.

We would like to express our heartfelt gratitude to all those who have contributed to the success of this event. Our Organizing Committee, Scientific and Technical Committees, General and Program Chairs, and countless others have worked tirelessly to ensure a seamless and enriching experience for each participant.

We also extend our appreciation to our exhibitors and sponsors. Your unwavering support and presence are instrumental in making WHISPERS a thriving platform for knowledge exchange and innovation.

We envision this conference as an opportunity for fostering meaningful connections, continuous learning, and the spark of inspiration that ignites future breakthroughs. Throughout the program, you will have the chance to engage with leading experts, explore cutting-edge research, and gain insights that will shape the future of hyperspectral data processing.

Welcome to WHISPERS 2023. We invite you to immerse yourself in this extraordinary experience and savor the beauty and culture of Athens during your stay.



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01. Whispers Committees

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Sindy Sterckx, VITO, Belgium

Program Chairs

Danfeng Hong, Aerospace Information Research Institute,
Chinese Academy of Sciences, China
Behnood Rasti, Helmholtz-Zentrum Dresden-Rossendorf, Germany

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02. Venue

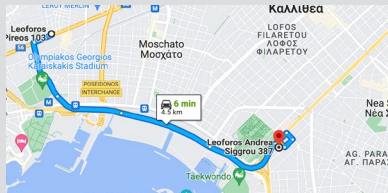


EUGENIDES FOUNDATION

ADDRESS

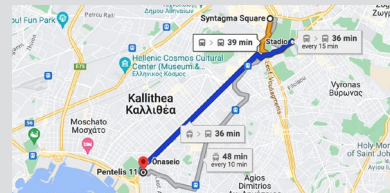
387, Syggrou Ave. - 17564, P. Faliro
(Entrance from 11 Pentelis str.)

By car Via Leoforos Athinon

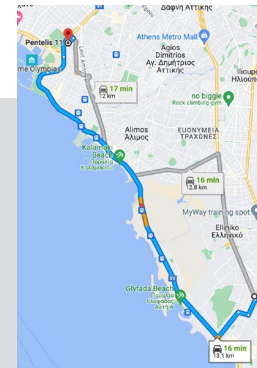


- Leof. Athinon-Pireos 103, Pireas 185 41
- 📍 Leof. Andrea Siggrou 387, Paleo Faliro 175 64

By car Via Syntagma Square



- Syntagma Square, Athina 105 63
- 📍 Pentelis 11, Paleo Faliro 175 64



By car Via Glyfada

- Glyfada
- 📍 Pentelis 11, Paleo Faliro 175 64

By the Public Transport **The bus lines that serve the Eugenides Foundation are:**

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>550 (P.Faliro-Kifissia) *Eugenides/Planetarium stop (Kifissia-P.Faliro) *Onaseio stop</p> <p>B2 (Agios Kosmas-Akadimia) *Eugenides/Planetarium stop (Akadimia – Agios Kosmas) *Onaseio stop</p> <p>A2 (Akadimia – Voula, via Amfitheas) *Iasonos stop (Voula-Akadimia, via Amfitheas) *Iasonos stop</p> | <p>126 (P.Faliro-Syngrou/Fix metro station) *Trapeza stop</p> <p>229 (Piraeus – Ag.Dimitrios – Dafni metro station) **Onaseio stop (Ag.Dimitrios-Dafni metro station-Piraeus) **Iasonos stop</p> <p>E90 (Panepistimioupoli - Peiraias) * Chrisaki stop (Peiraias - Panepistimioupoli) *** Chrisaki stop</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The trolley line that serves the Eugenides Foundation is:

- 10** (Halandri – Tzitzifies) *Chrisaki stop (Tzitzifies – Halandri) * Chrisaki stop

*Above lines are served by Syngrou-Fix metro station

**Above line is served by Dafni metro station

***Above lines are served by HSAP N. Falirou train station

03. Practical Information

WELCOME DESK - REGISTRATION

Day 1 - Tuesday, October 31 from 8:00 am to 9:00 am

Day 2 - Wednesday, November 1 from 8:30 am to 9:30 am

Day 3 - Thursday, November 2 from 8:30 am to 9:30 am

A minimum presence is guaranteed throughout the day outside these hours

GENERAL GUIDELINES

ONSITE ORAL PRESENTATION:

- Prepare a 15-minute talk followed by a 5-minute Q&A session.
- Upload your presentation in PDF format on a USB key.
- Please note that personal computers will not be allowed during your presentation.
- A computer will be set up in the room and a staff member will be in charge of the room to download your presentation onto the PC and test it.
- You must be in the conference room at least 10 minutes before your scheduled session.
- A Whisperer will be there to assist you as needed.

ONSITE POSTER PRESENTATION:

- Ensure your poster adheres to size A0 with a portrait orientation.
- There will be no possibility to print your poster onsite.
- We have all-day poster sessions: please arrive each day at the opening to set-up your poster. Whisperers will be there to assist you (logistical issues) and materials for hanging posters on panels will be provided.
- Authors must be present for Q&A on their poster for at least 45 minutes during the poster sessions.

INTERNET

Free Wi-Fi is available in the whole building. Access codes will be given on-site.

- Speaker should be alongside the poster even during the coffee breaks.
- Break-down: Please remove your poster at the end of the day.
- A room will be available to store your poster if needed (ask at the reception desk upon your arrival).
- Authors must be present for Q&A on their poster for at least 45 minutes during the poster sessions.

ONLINE POSTER PRESENTATIONS:

- A 5-minute video will be broadcast, the presenter must be online during the designated Q&A session.

ONLINE ORAL PRESENTATIONS:

- A 15-minute slot is planned.
- The choice between presenting live or playing a pre-recorded video is at the author discretion.
- However, the presenter will be online and available to answer questions following the presentation.

04. Exhibitors and Sponsors

HySpex
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VIDEO SPECTROSCOPY

NIREOS

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SPECTRICON

EUFR
European Facility
for Airborne Research

Spectroscopy
SOLUTIONS FOR MATERIALS ANALYSIS

remote sensing
an Open Access Journal by MDPI

05. Program at a Glance - Day 1

WHISPERS 2023 - DAY 1 - OCTOBER 31, 2023			
Time	Conference room A	Conference room B	Conference room C
8:00-9:00	REGISTRATION		
9:00- 9:30	Welcome		
9:30-10:15	Plenary 1-A In Memoriam: An Overview of the Contributions of José Bioucas-Dias to Remote Sensing and Hyperspectral Imaging		
10:15-11:00	Plenary 1-B NASA's New Orbital Imaging Spectrometers		
11:00-11:40	Break (Poster Presentation 1)		
11:40-13:20	Classification	Water, Ice and Cloud	Precision Agriculture and Crop Mapping
13:20-14:20	LUNCH		
14:20-15:00	Poster Presentation 2		
15:00-16:40	Unmixing 1	UAV/ Drone	Forest and Vegetation
16:40-17:20	Break (Poster Presentation 3)		
17:20-19:00	Denosing/ Restoration/Enhancement	Geology and Soil	Data Processing and Advanced Algorithms 1
19:00-20:00	ICEBREAKER		

05. Program at a Glance - Day 2

WHISPERS 2023 - DAY 2 - NOVEMBER 1, 2023			
Time	Conference room A	Conference room B	Conference room C
8:30- 9:30	REGISTRATION		
9:30-10:15	Plenary 2-A AI-Driven Acquisition of Spaceborne Hyperspectral Data		
10:15-11:00	Plenary 2-B Hyperspectral Image Intelligent Processing and Application		
11:00-11:40	Break (Poster Presentation 1)		
11:40-13:20	Object Tracking / Challenge 2	Deep Learning for Analysis of Hyperspectral Data	Segmentation/ Clustering
13:20-14:20	LUNCH		
14:20-15:00	Poster Presentation 2		
15:00-16:40	Emerging Topics in Industrial Applications	Unmixing 2	Urban Remote Sensing
16:40-17:20	Break (Poster Presentation 3)		
17:20-19:00	Mineralogy and Mining Industry	Spectral Imaging and 3D Technologies	Machine Learning for Analysis of Hyperspectral Data
19:00-20:00	AWARD CEREMONY AND NETWORKING		

05. Program at a Glance - Day 3

WHISPERS 2023 - DAY 3 - NOVEMBER 2, 2023			
Time	Conference room A	Conference room B	Conference room C
8:30- 9:15	REGISTRATION		
9:15-10:00	Plenary 3 5 Years of The Spaceborne Hyperspectral DESIS Mission – A Growing Archive for Monitoring The Earth		
10:00-11:00	DESIS Mission Details	Cultural Heritage With Hyperspectral Sensing	Biomedical Applications
11:00-11:40	Break (Poster Presentation 1)		
11:40-13:20	DESIS for Soils, Night Lights and Snow	Fusion	Target/Anomaly Detection
13:20-14:20	LUNCH		
14:20-15:00	Poster Presentation 2		
15:00-16:40	DESIS for Ecological Mapping and Monitoring	Data Processing and Advanced Algorithms 2	PRISMA
16:40-17:20	Break (Poster Presentation 3)		
17:20-18:20	DESIS for Agriculture	Challenge 1	Online Posters 1
18:20-19:30	Online Posters 2	Online Posters 3	Online Posters 4
19:30-20:00			



Mário A. T. Figueiredo

Instituto de Telecomunicações - Instituto Superior Técnico - University of Lisbon, Portugal

In Memoriam: An Overview of the Contributions of José Bioucas-Dias to Remote Sensing and Hyperspectral Imaging

Abstract: José Manuel Bioucas-Dias was an outstanding researcher who made many contributions to signal and image processing, with a special emphasis on remote sensing and hyperspectral imaging. His contributions have been extremely influential in many different topics, namely phase estimation and unwrapping, convex optimization, and Bayesian inference for imaging inverse problems, with a focus on applications to remote sensing, including synthetic aperture radar, and hyperspectral unmixing, fusion, super-resolution, classification, and segmentation.

In this talk, I will provide an overview of his outstanding contributions to these fields.

Mário Figueiredo received his PhD (1994) in Electrical and Computer Engineering from Instituto Superior Técnico, University of Lisbon, where he is an IST distinguished Professor and holder of the Feedzai Chair on Machine Learning. He is a senior researcher and group leader at Instituto de Telecomunicações. His research areas include machine learning, signal processing, and optimization. He received several honors and awards, namely: Fellow of the Institute of Electrical and Electronics Engineers (IEEE), Fellow of the International Association for Pattern Recognition (IAPR), Fellow of the European Association for Signal Processing (EURASIP), W. R. G. Baker Award (IEEE), EURASIP Technical Achievement Award, member of the Portuguese Academy of Engineering, member of the Lisbon Academy of Science. He has co-authored more than 40 papers with José Bioucas-Dias.

06. Plenaries DAY 1, 10H15-11H00 – PLENARY 1-B



David R. Thompson

Jet Propulsion Laboratory, California Institute of Technology

NASA's New Orbital Imaging Spectrometers

Abstract: Remote imaging spectroscopy is entering a renaissance, with new orbital instruments providing global coverage to address pressing Earth science questions. Simultaneously, data quality has advanced with improved instrument alignment, radiometric sensitivity, and atmospheric correction methods. We describe these advances in the context of NASA's EMIT mission launched to the International Space Station in July 2022. We present EMIT's on-orbit performance, data analysis, and validation. We close with a discussion of future missions such as NASA's Surface Biology and Geology investigation slated to launch late in the decade. SBG will provide global coverage at a regular cadence, approaching the density of today's Landsat or Sentinel programs. New orbital missions, with open source analyses and license-free global datasets, promise to revolutionize the way we view the Earth from space.

David R. Thompson is a Senior Research Scientist at the Jet Propulsion Laboratory, where he is a Technical Lead in the JPL Imaging Spectroscopy Group. His research advances the algorithms and practice of imaging spectroscopy for characterizing Earth and other planetary bodies. David is Instrument Scientist for NASA's EMIT mission, NASA's SBG mission, and NASA's Lunar Trailblazer mission. He is Investigation Scientist for NASA's Airborne Visible Infrared Imaging Spectrometer (AVIRIS) project. He has received the NASA Exceptional Technology Achievement Medal, the Lew Allen Award for Excellence, and the NASA Early Career Achievement Medal.



Michal Shimoni

Head of Analytics and Applications - Kuva Space, Finland

AI-Driven Acquisition of Spaceborne Hyperspectral Data

AI learning techniques have been widely applied in hyperspectral imaging to enhance the extraction of valuable information and improve the performance of various tasks. With the advent of commercial companies offering hyperspectral imaging and analysis from space, AI became a game changer in automating the acquisition and streamlining the process of capturing hyperspectral data.

This talk provides insights into how AI and deep learning models are used to analyse real-time data and environmental conditions for adjusting parameters such as exposure time, integration time, and sensor settings to optimise the acquisition process, reduce the need for manual intervention and ensure optimal data quality. Furthermore, it illustrates how explainable AI can optimise the sampling strategy by identifying the most informative locations or spectral bands for capturing hyperspectral data in a way that maximises information gain and minimises redundancy. The presentation concludes with a demonstration of how lightweight deep learning models can be used to process hyperspectral data in orbit, reducing the need for large-volume data transmissions. This onboard processing capability enables rapid decision-making and can be particularly useful in applications where real-time insights are critical, such as hazard monitoring or surveillance.

Dr Michal Shimoni is an awarded scientific expert in the field of hyperspectral. She has extensive experience implementing spectral imaging in a variety of applications, including defence, environment, precision agriculture, water quality, natural and anthropogenic hazards, and urban landuse mapping. Through her extensive knowledge of machine learning, multi-sensor imaging, 3D and physical modelling, and sensor integration into airborne and spaceborne platforms, she has become an expert in several research and development programs of the European Commission, NATO, and the European Defence Agency. Michal is currently employed as the Head of Analytics and Applications for Kuva Space, where she coordinates the development of products and services.

06. Plenaries DAY 2, 10H15-11H00 – PLENARY 2-B



Sen Jia

College of Computer Science and Software Engineering - Shenzhen University, China

Hyperspectral Image Intelligent Processing and Application

Abstract: Hyperspectral imaging is a powerful technique capable of obtaining both spatial and spectral information from a target by combining conventional machine vision and point spectroscopy methods. With the rapid development of satellite and unmanned aerial vehicle technology, hyperspectral images have witnessed a huge growth in data and have found numerous successful applications in daily life. Regarding the massive amount of hyperspectral data available, the need for methods to process and interpret hyperspectral images automatically, efficiently, and accurately, presents a significant challenge in the research and application of hyperspectral images. Recently, artificial intelligence technologies, such as machine learning and deep learning, develop prosperously, showing a promising perspective in overcoming the challenges in hyperspectral image processing.

This talk presents a comprehensive overview of intelligent hyperspectral image processing and an application of hyperspectral images in tree species identification. First, we give a brief introduction to the characteristics and applications of hyperspectral images. Then, we introduce some classic and advanced techniques for the intelligent processing of hyperspectral images, including techniques for hyperspectral image enhancement, feature extraction, and interpretation. Finally, we present an application of hyperspectral images with multi-source data such as multispectral images, unmanned aerial vehicle LiDAR data, backpack LiDAR data, and in-situ data, in tree species identification, which is of vital importance for accurate calculation of carbon sink in urban areas.

Sen Jia received the B.E. and Ph.D. degrees from the College of Computer Science, Zhejiang University, Hangzhou, China, in 2002 and 2007, respectively. He is currently a Distinguished Professor at College of Computer Science and Software Engineering, Shenzhen University, China, and he has been with Shenzhen University since 2008. He was elevated to IEEE Senior Member status in 2017. His research interests include artificial intelligence, machine learning and hyperspectral image processing. Prof. Jia is an Associate Editor for the IEEE Transactions on Geoscience and Remote Sensing (since 2022) and was an Associate Editor for the IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2017-2020). He was distinguished as a Best Reviewer of the IEEE Transactions on Geoscience and Remote Sensing twice (2017 and 2019), and also a Best Reviewer of the IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (in 2014).



Uta Heiden

German Aerospace Center (DLR), Remote Sensing Technology Institute (IMF)

5 Years of the Spaceborne Hyperspectral DESIS Mission – A Growing Archive for Monitoring the Earth

The DLR Earth Sensing Imaging Spectrometer (DESIS) instrument completed five years of operations onboard the International Space Station (ISS). DESIS has been acquiring data worldwide for both scientific and commercial users. The continuously growing data archive supports methodical and application developments for the monitoring of the Earth's surface. One of the major objectives of the mission is preparing the ground for the upcoming hyperspectral operational mapping missions from ESA (CHIME) and NASA (SBG).

In this talk, we give, first, a short introduction to the mission development, operations and specifications. Priority will be on the growing data archive that is characterized by multitemporal acquisitions of many sites with varying observation and illumination conditions, an issue that requires specific consideration within the processors, especially the atmospheric correction, in order to meet the requirements regarding data quality. This enables novel scientific fields such as investigating the suitability of DESIS data for quantifying plant photosynthesis and deriving advanced data products for lakes and coastal areas. Another important aspect is the suitability of DESIS to be used synergistically with other multispectral and hyperspectral optical sensors. This field is still underrepresented in research and thus, the talk will discuss the suitability of DESIS for such approaches. DESIS is currently operating in nominal conditions, further expanding its multitemporal data archive, which holds great value for a wide range of applications and serves as a database for recent and upcoming hyperspectral Earth-observing missions.

Uta Heiden received her Ph.D. in urban spectroscopy from the Technical University of Berlin and GFZ German Research Centre for Geosciences in 2003. Currently, she is the Science Coordinator for the hyperspectral DESIS mission and is with The Remote Sensing Technology Institute of the German Aerospace Center (DLR). She has more than 20 years of experience in the field of imaging spectroscopy using airborne and spaceborne systems in the fields of urban surfaces, spectral libraries, spectral unmixing and recently, on the functions of soils in agricultural and degrading ecosystems. Uta Heiden has been Associate Editor of the IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (IEEE JSTARS) and General Chair WHISPERS Conference 2019. Currently, she is Associate Editor of the IEEE Journal Transactions on Geoscience & Remote Sensing, Guest Editor of the Remote Sensing of Environment special issue and member of the EnMAP Science Advisory Group. In 2021, she received the DLR Senior Scientist Award.

07. ■ →

Conferences

DAY 1

• CLASSIFICATION	P.20	• FOREST AND VEGETATION	P.22
• WATER, ICE AND CLOUD	P.20	• DENOISING/ RESTORATION/ENHANCEMENT	P.23
• PRECISION AGRICULTURE AND CROP MAPPING	P.21	• GEOLOGY AND SOIL	P.23
• UNMIXING	P.21	• DATA PROCESSING AND ADVANCED ALGORITHMS 1	P.24
• UAV / DRONE	P.22		

DAY 2

• OBJECT TRACKING/CHALLENGE 2	P.25	• UNMIXING 2	P.27
• DEEP LEARNING FOR ANALYSIS OF HYPERSPECTRAL DATA	P.25	• URBAN REMOTE SENSING	P.28
• SEGMENTATION/ CLUSTERING	P.26	• MINERALOGY AND MINING INDUSTRY	P.28
• EMERGING TOPICS IN INDUSTRIAL APPLICATIONS	P.26	• SPECTRAL IMAGING AND 3D TECHNOLOGIES	P.29
		• MACHINE LEARNING FOR ANALYSIS OF HYPERSPECTRAL DATA	P.29

DAY 3

• DESIS MISSION DETAILS	P.30	• DESIS FOR ECOLOGICAL MAPPING AND MONITORING	P.32
• CULTURAL HERITAGE WITH HYPERSPECTRAL SENSING	P.30	• DATA PROCESSING AND ADVANCED ALGORITHMS 2	P.33
• BIOMEDICAL APPLICATIONS	P.30	• PRISMA	P.33
• DESIS FOR SOILS, NIGHT LIGHTS AND SNOW	P.31	• DESIS FOR AGRICULTURE	P.34
• FUSION	P.31	• CHALLENGE 1	P.34
• TARGET/ANOMALY DETECTION	P.31		

CLASSIFICATION

11:40 - 13:20

Conference Room A

Session chairs: Pedram Ghamisi & Frédéric Schmidt

Attention Based Dual-Branch Complex Feature Fusion Network for Hyperspectral Image Classification

Mohammed Alkhatib, Mina Al-Saad, Nour Aburaed, Mohammad Sami Zitouni and Hussain Al Ahmad

Cross-Domain Heterogeneous Hyperspectral Image Classification Based on Meta-Learning with Task-Adaptive Loss Function

Yuheng Jin and Minchao Ye

Fully Tensorized Convolutional Long Short-Term Memory for Hyperspectral Image Classification

Tian-Yu Ma, Heng-Chao Li, Yu-Bang Zheng and Qian Du

Attention Aware Generative Adversarial Network for Hyperspectral Image Classification ★

Chiranjibi Shah and Qian Du

Explainability in Hyperspectral Image Classification: A Study of XAI Through the SHAP Algorithm ★

Amir Hosein Oveis, Elisa Giusti, Giulio Meucci, Selenia Ghio and Marco Martorella

WATER, ICE AND CLOUD

11:40 - 13:20

Conference Room B

Session chairs: Dennis D. Langer & Leslie Garza

The ENMAP L2A Water Processor: Operational Performance and Application of ENMAP Dedicated Water Reflectance Products

Maximilian Langheinrich and Raquel de Los Reyes

Investigating Minerology and Water-Ice Content of Lunar Regolith Simulants Using Hyperspectral Imagery

Benjamin A. Lange, T. Dylan Mikesell, Taeheon Kim and Luke Griffiths

Characterizing Spatio-Temporal Variability of Bio-Physical Sea Ice Properties Using an Underwater Hyperspectral Imager

Benjamin Lange, Ilkka Matero, Evgenii Salganik, Karley Campbell, Janina Osanen, Christian Katlein, Philipp Anhaus, Jessie Gardner, Rolf Gradinger, Clara J M Hoppe, Eva Leu, Oliver Muller, Marcel Nicolaus, Lasse M Olsen, Maria Van Leeuwe and Mats Granskog

An Open Hyperspectral Dataset with Sea-Land-Cloud Ground-Truth from the HYPPO-1 Satellite

Jon A. Justo, Joseph Garrett, Dennis D. Langer, Marie B. Henriksen, Radu T. Ionescu and Tor A. Johansen

Hyperspectral Imaging of Lake Sediment Cores to Reconstruct Past Environments

Hamid Ghanbari, Alexandre Baud, Candice Aulard, David Zilkey, John P. Smol, Irene Gregory-Eaves and Dermot Antoniadis

PRECISION AGRICULTURE AND CROP MAPPING

11:40 - 13:20

Conference Room C

Session chairs:

Jiaqi Zou & Michal Shimoni

Development of an Object-Based Spectral Library and Automated Crop Mapping Using Deep Learning

Harsha Chandra and Rama Rao Nidamanuri

SPAGHYTI - Development of Crop Applications Based on Hyperspectral Satellite Imagery

Louise Leclère, Yannick Curnel, Philippe Vermeulen, François Stevens, Benoît Scaut, Damien Malice, Maxime Troiani, Nicolas Chamberland, Vincent Baeten and Viviane Planchon

Enhancing Field-Level Forecasting of Crop Growth Status by Incorporating the Analytically Estimated System Uncertainties into a Data Assimilation Procedure

Dong Wang, Paul Struik, Lei Liang and Xinyou Yin

Active Learning-Enhanced Plant-Level Crop Mapping with Drone Hyperspectral Imaging and Evolutionary Computing

Anagha S. Sarma and Rama Rao Nidamanuri

Automatic Object-Based Plant-Level Crop Segmentation in Drone-Based Hyperspectral Imagery

K. C. Indu, C. V. S. S. Manohar Kumar, S. Pankaj Dhanya and Nidamanuri Rama Rao

UNMIXING 1

15:00 - 16:40

Conference Room A

Session chairs:

Paul Scheunders & Julia Lascar

FASUN: Fast Semi-Supervised Unmixing Using Alternating Direction Method of Multipliers

Behnood Rasti

SUSHI: Learning-Based Hyperspectral Image Unmixing with Spectral Variabilities

Julia Lascar, Jérôme Bobin and Fabio Acero

Spectral Unmixing in Generative Space: 3D-GAN Based Approach

Soorya Suresh and Arun P. V.

Spectral-Spatial Hyperspectral Unmixing Using Double-Constraints Convolutional Autoencoder ★

Zhiqing Zhu, Yuanchao Su, Mengying Jiang, Bin Pan, Jinying Bai and Pengfei Li

Spatial-Spectral Weighted Sparse Multi-Layer Nonnegative Matrix Factorization for Hyperspectral Image Unmixing ★

Jiming Tang, Wenxing Bao, Bingbing Lei, Kewen Qu and Wei Feng

Tuesday, 31

07-1. DAY 1

UAV / DRONE

15:00 - 16:40

Conference Room B

Session chairs: Ulrike Pestel-Schiller & Michiel Vlamincq

Gain Adapted Quantization in HEVC Coding Applied to Drone Remote Sensing

Ulrike Pestel-Schiller, Johannes Busch and Jörn Ostermann

Real-Time Plastic Litter Detection Using Hyperspectral Sensing on Drone

Marco Balsi, Soufyane Bouchelaghem, Livio Conti, Monica Moroni and Riccardo Scalia

Automatic Object-Based Plant-Level Crop Segmentation in Drone-Based Hyperspectral Imagery

K. C. Indu, C. V. S. S. Manohar Kumar, S Pankaj Dhanya and Nidamanuri Rama Rao

Drone-Based Corrosion Detection on High-Voltage Transmission Towers Using Hyperspectral Imaging

Michiel Vlamincq, Zakaria Bnoulkacem, Gonzalo Luzardo, Hamed Zivariadab, Zohreh Zahiri, Bikram Koirala, Frédéric Mangialetto, Irid Bufi, Ljiljana Platasa, Murali Jayapala, Paul Scheunders and Hiep Luong

Hyperspectral Image Denoising: A Comparative Study on UAV-Based Vegetation Data ★

Adduru U. G. Sankararao, Saikiran K. and Rajalakshmi Pachamuthu

FOREST AND VEGETATION

15:00 - 16:40

Conference Room C

Session chairs: Anne Schucknecht & David R. Thompson

HyperBlend: Hyperspectral Vegetation Simulation from Microalgae to Forest Canopies

Kimmo Riihihaho, Leevi Lind, Pauliina Salmi and Ilkka Pölonen

Invasive Plant Species Detection in Airborne Hyperspectral Imagery Over Complex Forest Landscape

B. R. Aarsha, C. V. S. S. M. Kumar, S. Pankaj Dhanya and N. Rama Rao

Influence of Canopy Structure and Illumination Geometry on Spectral Anisotropy of Aquatic Vegetation in Ultra-High Resolution Hyperspectral Imagery

Erika Piaser, Andrea Berton, Michele Caccia, Francesca Gallivanone, Giovanna Sona and Paolo Villa

Remote Sensing in Svalbard for Animal and Vegetation Monitoring: Challenges and Perspectives

Steven Le Moan, Jean-Baptiste Thomas, Marie-Anne Blanchet, Virve Ravolainen and Puneet Sharma

Testing Textural Information Based on LiDAR and Hyperspectral Data for Mapping Wetland Vegetation: A Case Study of Warta River Mouth National Park (Poland)

Anna Jarocińska, Jan Niedzielko, Dominik Kopeć, Justyna Wylazłowska, Bozhena Omelianska and Jakub Charyton

DENOISING / RESTORATION / ENHANCEMENT

17:20 - 19:00

Conference Room A

Session chairs:

Ye Wang & Behnood Rasti

SimPINNs: Simulation-Driven Physics-Informed Neural Networks for Enhanced Performance in Non-linear Inverse Problems

Sidney Besnard, Frederic Jurie and Jalal Fadili

SWUNET: SWIN Transformer-Based UNET for Hyperspectral Reconstruction

Sadia Hussain and Brejesh Lal

Eigenimage2Eigenimage (E2E): A Self-Supervised Deep Learning Network for Hyperspectral Image Denoising ★

Lina Zhuang, Michael Ng, Lianru Gao, Joseph Michalski and Zhicheng Wang

A New Hyperspectral Multi-Level Synthetic Hazy Image Dataset for Benchmark of Dehazing Methods ★

Bilge Yazıcı, Yücel Çımtay and Bedrettin Çetinkaya

Hyperspectral Image Denoising via Cosine Transform-Based Tensor Subspace Representation ★

Peizeng Lin, Xinru Jiang and Lei Sun

GEOLOGY AND SOIL

17:20 - 19:00

Conference Room B

Session chairs:

Gabor Kereszturi & Ilkka Pölonen

Deep-Learning-Based Latent Space Encoding for Spectral Unmixing of Geological Materials

Arun P. V., Maitreya Mohan Sahoo, Alok Porwal and Arnon Karnieli

Modelling Spectral Unmixing of Geological Mixtures: An Experimental Study Using Rock Samples

Maitreya Mohan Sahoo, R. Kalimuthu, Arun P.V., Alok Porwal and Shibu K. Mathew

Sub-Pixel Discrimination of Soil and Crop in Drone-Based Hyperspectral Imagery

Manohar Kumar C. V. S. S., Rama Rao Nidamanuri and Vinay Kumar Dadhwal

Soil Moisture Content Estimation from Hyperspectral Remote Sensing Data

Ketaki Vinay Jambhali, Bikram Koirala, Zakaria Bnoulkacem and Paul Scheunders

Estimation Soil Organic Matter Using Airborne Hyperspectral Imagery ★

Lihan Chen, Kun Tan, Xue Wang and Chen Pan

Tuesday, 31

07-1. DAY 1

DATA PROCESSING AND ADVANCED ALGORITHMS 1

17:20 - 19:00

Conference Room C

Session chairs:

Zohreh Zahiri & Stefan Livens

Self-Supervised AI Techniques for Versatile Near Lossless Compression of Hyperspectral Satellite Data

Bart Beusen, Marian-Daniel Iordache, Xenia Ivashkovych, Stefan Livens, Dirk Nuyts and Tanja Van Achteren

Comparison of Spectral Characteristics and In Vivo Classification of Organs in Rabbits with Hyperspectral Imaging

Dragos Manea and Mihaela Antonina Calin

Fast Zero-Phase Line Enhancer for Quasi-Periodic Signal Processing

Chanki Park, Seungyoon Nam, John Lorenzo Bautista and Hyunsoon Shin

Geometric Correction of the KAUST-SAT Hyperspectral CubeSat: Preliminary Assessment and Results

Dario Scilla, Victor Angulo, Kasper Johansen and Matthew McCabe

A New Approach for Spectral Adjustment and White Balancing of the Outdoor Hyperspectral Images

Zohreh Zahiri, Steven Thijs, Carolina Blanch and Wouter Charle

OBJECT TRACKING / CHALLENGE 2

11:40 - 13:20

Conference Room A

Session chairs: Fengchao Xiong & Wouter Charle

HSPTRACK: Hyperspectral Sequence Prediction Tracker with Transformers

Ye Wang, Yuheng Liu, Mingyang Ma, Yuru Su and Shaohui Mei

Multi-Band Hyperspectral Object Tracking: Leveraging Spectral Information Prompts and Spectral Scale-Aware Representation ★

Hongjiao Liu, Jiayue He, Jinpeng Wang, Nan Su, Chunhui Zhao, Yiming Yan, Shou Feng, Ze Liu, Jianfei Liu and Zilong Zhao

HELIOS: Hyperspectral Hindsight Object Tracker

Rafał Muszyński and Hiep Luong

Visual Prompt For Hyperspectral Object Tracking ★

Simiao Lai, Dong Wang and Huchuan Lu

DEEP LEARNING FOR ANALYSIS OF HYPERSPECTRAL DATA

11:40 - 13:20

Conference Room B

Session chairs: Jue Zhang & Samuel Boyle

Exploration of Deep Learning for Cloud Segmentation in Multispectral and Hyperspectral Satellite Imagery

Yunus Emre Koc, Cameron Penne, Joseph Garrett and Milica Orlandic

An Improved Adaptive Weighted Deep Belief Network Autoencoder for Hyperspectral Images

Aksel Gundersen, Samuel Boyle and Milica Orlandic

Hyperspectral Band Selection based on Spectra Division and Deep Convolutional Neural Network ★

Arvind Kumar Singh, Renuvenkataswamy Sunkara and Prof.Kadambi Govind R

Deep Fair Partition for Hyperspectral Image Classification ★

Miao He, Fangfang Xia and Rick Stevens

Revealing Uncertainty in Deep Learning-based Predictions of Plant Properties from Hyperspectral Imagery

Eya Cherif, Teja Kattenborn and Hannes Feilhauer

Wednesday, 1

07-2. DAY 2

SEGMENTATION/ CLUSTERING

11:40 - 13:20

Conference Room C

Session chairs: Gulsen Taskin & Kasra Rafiezadeh Shahi

A Scalable Unsupervised Feature Selection with Orthogonal Graph Representation for Hyperspectral Images

Gulsen Taskin, E. Fatih Yetkin and Gustau Camps

The Application of Multi-Scale Deep Clustering Network for Flood Mapping Using Sentinel-1 SAR Data

Kasra Rafiezadeh Shahi, Jeremy Eudarc, Andrés Camero and Heidi Kreibich

ICSS: Semantic Segmentation of Remote Sensing Images Based on Image Inpainting and Contrast Self-Supervised

Xiao Li, Hengyou Wang and Lian-Zhi Huo

Real-Time Semantic Segmentation Using Hyperspectral Images for Unstructured and Unknown Environments

Anant Bhamri, Anthony Medellin, Reza Langari and Swaminathan Gopalswamy

Masking Hyperspectral Imaging Data With Pretrained Models

Elias Arbash, Andréa de Lima Ribeiro, Sam Thiele, Nina Gnnann, Behnood Rasti, Margret Fuchs, Pedram Ghamisi and Richard Gloaguen

EMERGING TOPICS IN INDUSTRIAL APPLICATIONS

15:00 - 16:40

Conference Room A

Session chairs: Philippe Monnoyer & Anna-Maria Raita-Hakola

Towards Optical Skin Biopsy - Lessons Learned from Developing Spectral 3D Imager for Skin Cancer Detection

Anna-Maria Raita-Hakola, Heikki Saari, Annamari Ranki and Ilkka Pöhlönen

Letter Vol. 46, No. 22 / 15 November 2021 / Optics Letters 5533 Active Hyperspectral Imager Using a Tunable Supercontinuum Light Source Based on a MEMS Fabry-Perot Interferometer

Teemu Kääriäinen and Timo Dönsberg

Bridging the Spectrum: Making Hyperspectral Imaging Accessible to All

Philippe Monnoyer

Hyperspectral Imaging and Self-Supervised Machine Learning in Laboratory Controlled Food Science Research

L. Annala, A. Klami, F. Widjaja, P. Steensma, K. Zitkova and K. S. Mikkonen

A White-Box Workflow for the Prediction of Food Content from Near-Infrared Data Based on Fourier-Transformation *

Ronny Schubert, Lynn V. Reuss, Daniel Staps, Marika Kaden, Thomas Villmann, Robert Hasler, Robin Herz, Till Tiemann and Wolfram Richardt

Active Pushbroom Hyperspectral Camera

Jussi Soukkamaki

UNMIXING 2

15:00 - 16:40

Conference Room B

Session chairs: Alp Ertürk & Bikram Koirala

A Multi-Tasks Autoencoder Hyperspectral Unmixing Model with Information Gain Based on Graph Network

Jia Chen, Jun Li and Paolo Gamba

An Unmixing-Based BRDF Correction in Spectral Remote Sensing Data

Fadi Kizel and Yulia Vidro

Local Sparsity Blocks and Tensor Low Rank Regularized Sparse Unmixing

Xinru Jiang, Lei Sun and Peizeng Lin

Describing Intimate Mixtures by Bézier Surfaces

Bikram Koirala, Behnood Rasti, Zakaria Bnoulkacem and Paul Scheunders

Unmixing with Spectral Variability for Marine Mucilage Analysis

Çağatay Esi, Alp Ertürk and Moussa Sofiane Karoui

Wednesday, 1

07-2- DAY 2

URBAN REMOTE SENSING

15:00 16:40

Conference Room C

Session chairs: Tahraoui Ahmed & Parth Naik

Solid Waste Detection and Waste-Material Characterization in Urban Environment at Subpixel Level in Airborne Hyperspectral Imagery

P Nijitha, C. V. S. S. Manohar Kumar, S Pankaj Dhanya and Nidamanuri Rama Rao

A Hyspec-Unet Deep Learning Model for Segmentation of Urban Micro-Climate Essential Class Features from Hyperspectral Data

Parth Naik and Daniele Vettorato

Sustainable Agricultural Lands Management by Analyzing and Predicting Urban Growth—A Case Study of Mitidja Plain, Algeria

Tahraoui Ahmed, Radja Kheddad and Aichouche Belhadj Aissa

Ongoing Collection of Hyperspectral, LiDAR, and Growth Stage Fundamental Signatures for Vegetation Phenotyping and Large-Scale Urban Planning

W. Basener, J. Preston, M. Yang, M. Luegering and A. Basener

Identification of Urban Surface Materials Using the Urbisphere Hyperspectral Library for EnMap and PRISMA in the City of Heraklion, Greece

Giannis Lantzanakis, Dimitris Poursanidis, Nektarios Chrysoulakis, Andreas Christen, Sue Grimmond and Joern Birkmann

MINERALOGY AND MINING INDUSTRY

17:20 - 19:00

Conference Room A

Session chairs: Richard Gloaguen & Christos Rossos

Open Geology Database (OGD): An Integrated Platform for Geological, Mining, and Seismic Datasets for Open Research

Samiran Das, Pedram Ghamisi and Richard Gloaguen

Review of Currently Available Multispectral and Hyperspectral Imaging Spectroscopy Satellite Sensors for Critical Minerals Exploration

Carsten Laukamp, Matilda Thomas and Ian C. Lau

Practical Applications of Mineral Detection Through Remote Sensing

Anders Karlsen and Hans Vebjørn Nordhagen

An Interpretable Open-Set Framework for Mapping Minerals Using CRISM Hyperspectral Data

Sandeepan Dhoundiyal, Arun P. V., Alok Porwal and Guneshwar Thangjam

Mineralogy Analysis Using Linear Unmixing Under Group Constraint

Frédéric Schmidt, Sébastien Bourguignon, Joanna Gurgurewicz, Gaspard Salomon and Daniel Mège

SPECTRAL IMAGING AND 3D TECHNOLOGIES

17:20 - 19:00

Conference Room B

Session chairs: Markus Sebastian &
Jonathan González-Santiago

Deep Self-Supervised Image Denoising for Joint Hyperspectral-LiDAR Classification

Jonathan González Santiago, Wolfgang Gross, Fabian Schenkel and Wolfgang Middelmann

Transformer-Based Models for Hyperspectral Point Cloud Segmentation

Aldino Rizaldy, Ahmed J. Afifi, Pedram Ghamisi and Richard Gloaguen

Semantic-Guided Point Cloud Upsampling Method for Visual Localization

Songxiang Yang, Lin Ma and Danyang Qin

Pixel-Based Vertex Clustering for Spectral Data Enrichment of Planar Point Clouds

Markus Sebastian Storeide and Sony George

Multispectral Point Cloud Classification Network Based on Multilateral Attention *

Bangyan Hu, Xian Li and Tianzhu Liu

MACHINE LEARNING FOR ANALYSIS OF HYPERSPECTRAL DATA

17:20 - 19:00

Conference Room C

Session chairs: Salma Haidar & Mihai Ivanovici

Hyperspectral Characterization of Soil Matrix Effects by Coupling Physical Models and Machine Learning Methods

Corentin Feray, Stéphane Jacquemoud and Paul Honeine

Assessing Wheat Yield and Grain Protein Content with Machine Learning and Satellite Hyperspectral Data: Multi-Year Explorative Analysis

Marina Ranghetti, Mirco Boschetti, Francesco Nutini, Micol Rossini and Gabriele Candiani

Chlorophyll Estimation on HYPISO-1 Using Ensemble Machine Learning

Alvaro Flores-Romero, Steven Le Moan, Joseph Garrett and Sivert Bakken

Bacteria Gram Staining Differentiation Using Hyperspectral Imaging and Machine Learning

Arthur Ricardo Sousa Vitória, Arlindo Rodrigues Galvão Filho, Clarimar Coelho, Raylane Pereira Gomes and Lilian Carla Carneiro

Harnessing the Potential of Synthesized Soil Spectral Library for Estimation of Total Nitrogen: A Machine Learning Approach *

Bonthu Sandeep Reddy and Shwetha Hassan Rangaswamy

Wednesday, 1

07-2. DAY 2

DESIS MISSION DETAILS

10:00 - 11:00 Conference Room A

Session chairs:
Daniele Cerra, Derek Rogge

Calibration of the DESIS Instrument

Emiliano Carmona, Martin Bachmann, Raquel de Los Reyes, Uta Heiden, David Marshall and Rupert Müller

Operational Quality Control for Spaceborne Hyperspectral Sensors - On the Spectral and Radiometric Quality of Hyperspectral Data Products and the Related Influences on Higher-Level Processing

Martin Bachmann, Emiliano Carmona, Uta Heiden, Stefanie Holzwarth, David Marshall, Miguel Pato, Raquel de Los Reyes and Rupert Müller

Inter-Comparison of DESIS L2A BOA Surface Reflectance in Overpasses with Sentinel-2, Landsat, and CalVal Sites

R. de Los Reyes, M. Langheinrich, K. Alonso, M. Bachmann, E. Carmona, U. Heiden and R. Müller

CULTURAL HERITAGE WITH HYPERSPECTRAL SENSING

10:00 - 11:00 Conference Room B

Session chairs:
Hilda Deborah & Lucian Ratoiu

Unsupervised Clustering for Works of Art Using Hyperspectral Imaging: A Case Study on Edvard Munch's Self-Portrait (1905)

Dipendra Jee Mandal, Hilda Deborah, Sony George and Jon Yngve Hardeberg

An Expert-Inspired Multimodal Methodology for Pigment Identification in Art Paintings*

Jizhen Cai, Clotilde Boust and Alamin Mansouri

Estimating the Color Palette of Ortellius' Atlas: A Case Study of Hyperspectral Imaging for Rapid Pigment Screening

Hilda Deborah, Chiara Palandri and Giulia Oretti

BIOMEDICAL APPLICATIONS

10:00 - 11:00 Conference Room C

Session chairs:
Silvia Seidlitz & Dragos Manea

Shedding Light on Hidden Factors: Unveiling Biases in Medical Hyperspectral Images

Silvia Seidlitz, Alexander Studier-Fischer, Maximilian Dietrich, Ayca Elise von Garrel, Katharina Hölzl, Felix Nickel, Markus Alexander Weigand and Lena Maier-Hein

Quality Control Based on Species Classification of Herbal Medicines Using Hyperspectral Imaging and Machine Learning

Arlindo Rodrigues Galvão Filho, Laryssa Rosset Provensi, Lucimar Pinheiro Rosseto and Clarimar José Coelho

Hyperspectral Imaging Classification of Fungal Species Using Machine Learning

Adriel Mori, Arthur Vitória, Arlindo Rodrigues Galvão Filho and Clarimar Coelho

DESIS FOR SOILS, NIGHT LIGHTS AND SNOW

11:40 - 13:20

Conference Room A

Session chairs:

Martin Bachmann, Uta Heiden

Temporal Compositing Using the Hyperspectral DESIS Image Archive

Paul Karlshöfer, Xiangyu Zhao and Uta Heiden

Estimating Soil Parameters from DESIS Images Using Deep Learning

Xiangyu Zhao, Uta Heiden, Paul Karlshoefer, Zhitong Xiong and Xiao Xiang Zhu

Assessing Machine Learning Models for Soil Property Prediction Using Resampled Spectral Data: Implications for Hyperspectral Spaceborne Imaging

Theodoros Tsatsoulis, Nikolaos Tsakiridis, Konstantinos Karyotis and George Zalidis

Hyperspectral Moderate Resolution Night Light Observations Using DESIS

Robert Ryan, Mary Pagnutti, Kara Burch, Heath Lester, Hannah Ryan and Kimberly Manriquez

Detection of Snow Pollution in the Chilean Andes Using DESIS Hyperspectral Data

Sebastian Roessler, Andreas Dietz, Laura Obrecht and Francisco Cereceda-Balic

FUSION

11:40 - 13:20

Conference Room B

Session chairs:

Minghua Wang
& Konstantinos Karantzas

Multimodal Fusion Methods with Vision Transformers for Remote Sensing Semantic Segmentation

Veronica Grazia Morelli, Mirko Paolo Barbato, Flavio Piccoli and Paolo Napoletano

Novel Cross-Resolution Feature-Level Fusion for Joint Classification of Multispectral and Panchromatic Remote Sensing Images

Hui Zhao, Sicong Liu and Qian Du

A Feature Fusion-Based Transformer Network for Hyperspectral Super-Resolution

Minghua Wang, Bing Zhang, Jiaxin Li, Longfei Ren and Jocelyn Chanussot

Exact Solution for Multispectral and Hyperspectral Fusion via Hessian Inversion

Dan Pineau, François Orieux and Alain Abergel

A New Unsupervised Network for Hyperspectral and Multispectral Image Fusion ✦

Jiaxin Li, Ke Zheng, Li Ni and Lianru Gao

Thursday, 2

07-3. DAY 3

TARGET/ANOMALY DETECTION

11:40 - 13:20

Conference Room C

Session chairs:

Longfei Ren & Nathaniel Hanson

Hyperspectral Anomaly Detection via Nonconvex Low-Rank Representation

Longfei Ren, Minghua Wang, Xu Sun, Lianru Gao and Min Huang

CiDAR-Former: Cosine-Weighting Deep Abundance Reconstruction Transformer for Fast Unsupervised Hyperspectral Anomaly Detection

Si-Sheng Young, Chia-Hsiang Lin and Jhao-Ting Lin

BockNet: Blind-Block Reconstruction Network with a Guard Window for Hyperspectral Anomaly Detection

Degang Wang, Lina Zhuang, Lianru Gao, Xu Sun, Min Huang and Antonio Plaza

Tuning to Real for Single-Spectrum Hyperspectral Target Detection ★

Xiaolin Han, Yijie Wei, Huan Zhang, Qizhi Xu and Weidong Sun

A Distributed Hyperspectral Target Detection Algorithm Based on Background Reconstruction for Cloud Platforms ★

Lidan Xu, Zebin Wu, Jin Sun, Yi Zhang and Zhihui Wei

DESIS FOR ECOLOGICAL MAPPING AND MONITORING

15:00 - 16:40

Conference Room A

Session chairs:

Emiliano Carmona, Teodoros Tsatsoulis

From Pixels to Microbes: Harnessing Image Spectroscopy DESIS Data and eDNA for Forest Microbiome Mapping

Andrew Skidmore, Haidi Abdullah, Andjin Siegenthaler, Devara P Adiningrat, Yiwei Duan, Mélody Rousseau, Alejan-dra Torres Rodriguez, Roshanak Darvishzadeh, Tiejun Wang and Arjen Groot

From Pixels to Species: Empowering Forest Tree Species Mapping with DESIS Hyperspectral Images Using Deep Learning

Yang Mu, Muhammad Shahzad and Xiao Xiang Zhu

A Comparison of Fractional Vegetation Cover in Camarena, Spain from DESIS and EnMAP Observations

David Marshall, Kevin Kühl, Uta Heiden, Martin Bachmann and Thomas Schmid

Forest Species Classification and Identification Using DESIS Data ★

Meenakshi Kumari and Dr. Dericks Praise Shukla

Linear Spectral Unmixing for Large Spaceborne Hyperspectral Datasets - Challenges and Solutions for the Automated DLR FCover Chain

Martin Bachmann, David Marshall, Frederic Schwarzenbacher and Sarah Asam

DATA PROCESSING AND ADVANCED ALGORITHMS 2

15:00 - 16:40

Conference Room B

Session chairs: Sindy Sterckx & Carolina Blanch

FPGA Implementation of SGA Based on Recursive Orthogonal Projection

Lin Wang and Zhiwei Gong

Bayesian Gaussian Process for Correcting Artifacts from Atmospheric Correction and Sensor Noise - A Performance Evaluation

William Basener and Wesley Basener

Ensuring Data Quality and Consistency in Spaceborne Hyperspectral Missions: Introducing CalibrEO

Sindy Sterckx, Iskander Benhadj, Stefan Adriaensens, Joris Blommaert, Jan Dries, Tom Van Roey and Stefan Livens

CORATHYP: A New Atmospheric Correction Tool for Satellite Hyperspectral Imaging

Xavier Lenot, Thierry Erudel, Bruno Lafrance, Sophie Cous-tance, Camille Desjardins, Damien Rodat and Aimé Meygret

Hyperspectral Narrowband Data Propel Giantic Leap in Earth Remote Sensing

Prasad Thenkabail, Itiya Aneece, Pardhasaradhi Teluguntla and Adam Oliphant

PRISMA

15:00 - 16:40

Conference Room C

Session chairs: Giorgio Licciardi & Irma Caraballo Alvarez

PRISMA Based Study of Nidar Ophiolites as Martian Analogues for Serpentinization

Mamta Chauhan, Giorgio Antonino Licciardi and Tapete Deodato

Advancing PRISMA Pansharpener: A Deep Learning Approach with Synthetic Data Pretraining and Transfer Learning

Riccardo Musto, Alessia Tricomi, Roberta Bruno and Giorgio Pasquali

Assessment of Resourcesat-2A LISS-3 Radiometric Calibration Accuracy with Near Simultaneous PRISMA Data over Niger-2

B Santhisree, N Raghavender, P K Saritha, Licciardi Giorgio, Sacco Patrizia and Tapete Deodato

Monitoring Methane Emissions from Landfills Using PRISMA

Alvise Ferrari, Giovanni Laneve, Rajesh Vanguri and Simone Saquella

Exploiting PRISMA Hyperspectral Data to Support CRISM Measurements on Paleo-Hydrological Environments on Mars ★

Paola Manzari, Veronica Camplone, Angelo Zinzi, Eleonora Ammannito, Francesco Zucca, Giuseppe Sindoni and Gianluca Polenta

Thursday, 2

07-3. DAY 3

DESIS FOR AGRICULTURE

17:20 - 18:20

Conference Room A

Session chairs:

Uta Heiden and Daniele Cerra

Assessing the Potential of DESIS Hyperspectral Data to Discriminate Cropping Patterns ★

Mbali Mahlayeye, Roshanak Darvishzadeh and Andy Nelson

Nutrient Assessment in Almond Orchards from the Spaceborne DESIS Imaging Spectrometer ★

Yue Wang, Lola Suarez, Dongryeol Ryu, Peter Moar and Pablo Zarco-Tejada

DESIS L2A ARD Data Discovery and Access via Geoservice STAC API ★

Felix Feckler

CHALLENGE 1

17:20 - 18:20

Conference Room B

Session chairs:

Danfeng Hong & Jocelyn Chanussot

MMGLOTS: Multi-Modal Global-Local Transformer Segmentor for Remote Sensing Image Segmentation


Yuheng Liu, Ye Wang, Yifan Zhang and Shaohui Mei

Multimodal Unsupervised Domain Adaptation for Remote Sensing Image Segmentation

Jiaqi Zou, Zhuohong Li, Fangxiao Lu, Wei He and Hongyan Zhang

Multimodal Remote Sensing Network ★

Huilin Zhao, Chuan Chen and Cong Xia

08 

Posters

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

01 Multi-Modal Sorting in Plastic and Wood Waste Streams

Fotios Konstantinidis, Savvas Sifnaios, George Arvanitakis, Georgios Tsimiklis, Spyridon G. Mouroutsos, Angelos Amditis and Antonios Gasteratos

02 Hyperspectral Imaging as a Tool for In Vivo Delineation of Skin Carcinomas

Mihaela Antonina Calin, Dragos Manea and Sorin Viorel Parasca

03 Application of Large Colour Checker for Calibration of Remote Sensing Imagery

Steven Le Moan and Ivar Oveland

04 Agile Smallsat Operation Tool-Chain Development: HYPSON-1 Hyperspectral Earth Observation Experiences

Dennis Langer, Simen Berg, Joseph Garrett, Roger Birkeland, Sivert Bakken, Tor Arne Johansen and Asgeir Sørensen

05 UV-Hyperspectral Imaging as a Tool for the Rapid Non-Destructive Quality Inspection of Produce

Martine Lussier and Michaela Skulinova

06 Assessment of the TROPOMI Tropospheric NO₂ Product Based on Recurrent Airborne Campaigns

Frederik Tack, Alexis Merlaud, Thomas Ruhtz, Anca Nemuc, Dirk Schuettemeyer and Michel Van Roozendael

07 Non-Invasive Investigations of a 17th Century Mercator Hand-Coloured Engraved Map

Lucian Ratoiu and Luminita Ghervase

08 Predicting Food Insecurity in Africa from MODIS Imagery, Demographics, Economic Factors, Climate, and Supply Chain Information

Jade Preston and William Basener

09 The EnMAP Ground Segment User Services and Products

Emiliano Carmona, Martin Habermeyer, Helmut Muehle, Miguel Pato and Nicole Pinnel

10 Band Relevance Study of SWIR Hyperspectral Imaging for Material Recycling and Reuse

Carolina Blanch-Perez-del-Notario, Steven Thijs and Murali Jayapala

11 Hyperspectral Technologies for Site Assessment and Remediation

Irma Caraballo Alvarez, Christian Haselwimmer and Toni Miao

12 Multispectral Fractal Image Analysis for Soil Roughness Estimation at Various Altitudes

Kamal Marandskiy, Mihai Ivanovici, Stefan Corcodel and Sabina Costache

13 A Superspectral Smallsat Mission for Marine Litter Monitoring

Stefan Livens and Els Knaeps

14 A New Advanced Single Detector VIS-SWIR Spectrometer for Scientific and Commercial Use

Fabrizio Tadina and Jason Howsee

ONLINE POSTERS - APPLICATION 1

15 Hyperspectral Band Clustering for Visualization

Steven Le Moan

16 FFN: Fountain Fusion Net for Arbitrary-Oriented Object Detection

Tianwei Zhang, Xu Sun, Lina Zhuang, Lianru Gao and Bing Zhang

17 DHFN: A Dual-Branch Network with Hybrid Fusion for Spatial-Aware Hyperspectral Object Tracking

Yuqing Ji, Hailong Wu, Xinyi Liang, Hangyun Liu, Ding Zhu and Jiaojiao Li

18 Multi-Modality Siamese Feature Fusion Transformer Tracker for Object Tracking from Hyperspectral Videos

Mohammad Aminul Islam, Wangzhi Xing and Jun Zhou

19 Cross-Domain Feature Learning for Hyperspectral Object Tracking

Songling Zhu, Yinan Wu and Ronghua Shang

20 Information Retrieval with Chessboard-Shaped Topology for Hyperspectral Target Detection

Xiaotong Sun, Lina Zhuang, Lianru Gao, Hongmin Gao, Xu Sun and Bing Zhang

ONSITE POSTERS - DATA PROCESSING AND ADVANCED ALGORITHMS 1

08-1. DAY 1

Tuesday, 31

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

21 Model Adjusted Generalized Tests for Methane Plume Detection on Hyperspectral Images

Elyes Ouerghi, Thibaud Ehret, Gabriele Facciolo, Enric Meinhardt, Jean-Michel Morel, Carlo de Franchis and Thomas Lauvaux

22 Finding Fairies at the Bottom of Your Garden

Neil Pendock and Vitaly Vidavskiy

23 Adaptive Hyperspectral Siamese Network in Transformer

Chang Liu, Jiawei Zhou and Yanni Dong

24 Sentinel-2 Image Generation via StyleGAN3 Model

Michael Alibani, Nicola Acito and Giovanni Corsini

25 A Contrastive Learning Method for Multi-Label Predictors on Hyperspectral Images

Salma Haidar and José Oramas

26 Compression of Particle Images for Inspection of Microgravity Experiments by Means of a Symmetric Structural Autoencoder

Daniel Staps, Marika Kaden, Jan Auth, Florian Zaussinger and Thomas Villmann

27 Tensor Decomposition Learning for Compression of Multidimensional Signals

Grigorios Tsagakatakis

28 Deep Learning-Based Architectures for Multimodal Instance Segmentation

Md Omar Faruk, Behnood Rasti, Margret Fuchs, Richard Gloaguen and Pedram Ghamisi

29 Intra-Class Variability: Approximation of Radiative Transfer for Surface Spectral Features

Frédéric Schmidt

30 A Critical Comparison of Linear and Non-linear Unmixing for Intimate Mixtures

Bikram Koirala, Samiran Das, Behnood Rasti, Pedram Ghamisi, Richard Gloaguen and Paul Scheunders

- 01 Analysis of Spectral Library Variation Using Manifold Learning**
Meesun Yang and William Basener
- 02 Evaluating Hyperspectral Secchi Depth Retrieval Through Hybrid Modeling and Regression**
Sivert Bakken, Kelly Luis, Geir Johnsen and Tor Arne Johansen
- 03 Independent Component Analysis: A Tool for Algal Bloom Detection**
Cameron Penne, Joseph Garrett, Tor Arne Johansen, Milica Orlandić and Ragna Heggebo
- 04 Investigating Minerology and Water-Ice Content of Lunar Regolith Simulants Using Hyperspectral Imagery**
Benjamin A. Lange, T. Dylan Mikesell, Taeheon Kim and Luke Griffiths
- 05 Harmful Algal Bloom Detection Using Remote Sensing Data**
Leslie Garza
- 06 Quantitative Assessment of Hayward Kiwi Soluble Solids Content Prediction Using Hyperspectral Imaging**
Jobin Francis, Binu Melit Devassy, Sudhish N George and Sony George
- 07 A Study on the Development of a Quality Estimation Model for 'Hongro' Apples Using HSI (Hyper-Spectral Imaging) Technology**
Han-Ryul Seo, Hae-Chan Jeon, Il-Ryong Kweon and Seung-Wook Song
- 08 Evaluation of Canopy Function and Productivity by Combining Field Proximal and Space-Borne Reflectance Time Series**
Petya Campbell, K. Fred Huemmrich, Petr Lukes, Christopher Neigh, Benjamin Poulter and Sean McMahon
- 09 NDVI Computation from Hyperspectral Images**
Ioana Cristina Plajer, Alexandra Baicoianu, Luciana Majercsik and Mihai Ivanovici

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

- 11 Towards the Retrieval of Plant Traits in Grasslands with Hyperspectral EnMAP Data**
Anne Schucknecht, Sophie Reiner mann, Ralf Kiese and Anita Bayer
- 12 CLEXIDRA Project: Soil Moisture Retrieval Over Agricultural Areas by Integration of C-, L-, X-Band SAR Data**
D. Tapete, F. Lenti, M. Virelli, P. Sacco, V. Gentile, N. Pieroni, A. Ciappa, M. Frezzotti, L. Pietranera, G. Anconitano, N. Pierdicca, D. Comite, C. Vittucci, L. Guerriero, S. Mokrane Siad, L. Giuliano Papale, R. Casa, L. Marrone, D. Cillis, M. Campi, A. Tricomi and C. Sciarretta
- 13 Hydrothermally Influenced Rock Strength and Porosity – New Insights Using VNIR-SWIR-MWIR-LWIR Spectroscopy**
Gabor Kereszturi, Michael Heap, Sam Thiele, Lauren Schaefer, Maia Kidd and Richard Gloaguen
- 14 A Spectral and Spatial Comparison of Airborne and Satellite-Based Hyperspectral Sensors for Carbonatite Mapping**
Rupsa Chakraborty, Imane Rachdi, Samuel Thiele, René Booyens, Sandra Lorenz, Moritz Kirsch and Richard Gloaguen
- 15 Fluorescence Detection of Bacteria**
Ayoub El Hassani and Michaela Skulinova
- 16 Evaluation the Impact of the Flood Event in Changing Morphological Parameters and Land Use/Land Cover of the Area, in Aqqala, Iran**
Akram Mahan
- 17 MOVIQ: Shaping the Future of Hyperspectral Earth Observation Through AI and Onboard Intelligence**
Tanja Van Achteren, Bart Beusen, Jaro De Roose, Pieter-Jan Demeyer, Bavo Delauré and Peter Matthijs
- 18 Onboard Hyperspectral Classification Enables Georeferencing**
Corrado Chiatante, Dennis D. Langer, Joseph L. Garrett, Roger Birkeland, Simen Berg and Milica Orlandic
- 19 Hyperspectral Classification Onboard the HYPSON-1 CubeSat**
Jonas Roysland, Dennis Langer, Simen Berg, Milica Orlandic and Joseph Garrett

20 A Vision for Cleaner Rivers: Harnessing Snapshot Hyperspectral Imaging to Detect Macro-Plastic Litter

Nathaniel Hanson, Ahmet Demirkaya, Deniz Erdogan, Aron Stubbins, Taskin Padir and Tales Imbiriba

21 Transferability of Machine Learning Models for Soil Properties on LUCAS Topsoil Spectral Libraries

Theodoros Tsatsoulis, Nikolaos Tsakiridis, Konstantinos Karyotis and George Zalidis

22 Prediction of Wet Gluten Content in Wheat Kernels by Spectral Imaging

Gozde Ozdogan and Aoife Gowen

23 GAN-Based Hyperspectral Classification with Spectral Prior

Zhou Fang, Lin He and Wenrui Liang

24 A Wavelet-Based Band Selection Method for Hyperspectral Image Classification

Giuseppina Monteverde, Vittoria Bruni, Domenico Vitulano, Alessandro Paglialunga and Gianpiero Maiello

25 Hyperspectral Classification Using Heterologous Feature Alignment and Fusion

Yunhao Gao, Wei Li, Mengmeng Zhang and Ran Tao

26 Modeling Uncertainty in Hyperspectral Image Classification Using Neural Networks with Bayesian Monte Carlo Dropout

Jade Preston and William Basener

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

- 01 Illumination Correction for Very High Spatial Resolution Hyperspectral Images Using Spectral Invariants and Random Forest**
Olli Ihalainen, Yunseon Lee, Theresa Sandmann and Matti Möttöus
- 02 Image-Based BRDF Measurement**
Shachaf Weil-Zattelman and Fadi Kizel
- 03 Correction of Radiometric Steps at Dual-Sensor Imaging Spectrometer Detector Joints**
Simon A. Trim and Daniel Schläpfer
- 04 Material Identification in Complex Environments: Neural Network Approaches to Hyperspectral Image Analysis**
Jason Brown, Bohan Chen, Harris Hardiman-Mostow, Adrien Weihs, Andrea Bertozzi and Jocelyn Chanussot
- 05 Comparing Filters for Correction of Second Order Diffraction Effects in Hyperspectral Imagers**
Marie Bøe Henriksen, Fred Sigernes and Tor Arne Johansen
- 06 New Performance Criterion for Hyperspectral Cameras**
Stephane Nicolas and Andrei Fridman
- 07 Band Selection Using Dilation Distances**
Geetika Barman, B. S. Daya Sagar, Aditya Challa and Sravan Danda
- 08 Self-Adaptive Differential Evolution in Band Subset Selection for Hyperspectral Imagery**
Lin Wang, Shijia Cao, Qinyan Tan and Heng Yang
- 09 An Adaptive Deep Denoising Approach for Chandrayaan-2 IIRS Data with SURE Loss**
Samrat B, Nithish Reddy Banda, Akhil Galla and Arun Pv
- 10 Hyperspectral Image Super-Resolution via Denoising Diffusion Models**
Sadia Hussain and Brejesh Lal

11 A Hyperspectral Super Resolution Dataset for the Validation of Super Resolution Methods

Thomas De Kerf, Alexander Ulrichsen, Paul Scheunders, Paul Murray and Steve Vanlanduit

12 The Application of Non-Destructive Analytical Techniques for the Characterization of Modern Artistic Materials: A Case Study on the Works of N G Pentzikis

Nick Tachmazidis, George Karagiannis, Stamatios Amanatiadis and Eleni Pavlidou

ONSITE POSTERS - DATA PROCESSING AND ADVANCED ALGORITHMS 2

13 Exploring a New Hyperspectral Imaging Technology: HERA, a Hyperspectral Camera Based on Fourier Transform Approach

M. Ghirardello, L. Vinco, A. Barker, D. Polli, A. Perri and F. Preda

14 A Compact and Rugged Hyperspectral Camera for Remote Sensing Based on Fourier Transform Spectrometry

M. Corti, B. Ardin, G. Cerullo, A. Perri, F. Preda and C. Manzoni

15 Why HyperScout Is Not CHIME

Luca Maresi

16 Accuracy of a Slew Maneuver for the HYPSO-1 Hyperspectral Imaging Satellite — In-Orbit Results

Bjorn Andreas Kristiansen, Dennis Langer, Joseph Garrett, Simen Berg, Jan Tommy Gravdahl and Tor Arne Johansen

17 Advancements in Hyperspectral Imaging for High-Altitude Missions

Karina Strøm, Stephane Nicolas, Magnus Breivik and Trond Løke

18 HyTI: High Spectral Resolution Thermal Imaging from a 6U CubeSat

Robert Wright

ONSITE POSTERS - SENSORS, MISSIONS, DATA

08-3. DAY 3

Thursday, 2

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

19 Bigger Is Better, but Smaller Is Smarter

Marco Esposito and Luca Maresi

20 A New Dual-Scale Hyperspectral Dataset

Maximilian Czech, Steven Le Moan and Jon Yngve Hardeberg

21 Hyper-Drive: Visible-Short Wave Infrared Hyperspectral Imaging Data Sets for Robots in Unstructured Environments

Nathaniel Hanson, Benjamin Pyatski, Samuel Hibbard, Charles DiMarzio and Taskin Padir

22 The KAUST-SAT Hyperspectral CubeSat: Overview of the Concept and Commissioning

Victor Angulo, Dario Scilla, Kasper Johansen and Matthew McCabe

23 Assessing Spectral Accuracy of the HyperScape50 Imaging Modes Onboard the KAUST-SAT 6U CubeSat Mission

Ana-Mia Louw, Jacu Vos, Victor Angulo, Dario Scilla, Kasper Johansen and Matthew McCabe

24 Identification and Mapping of Himalayan Medicinal Plants Using PRISMA Hyperspectral Remote Sensing and In-Situ Data Using Random Forest Technique

Kishor Chandra Kandpal and Amit Kumar

25 Estimating Nutrient Concentrations in Crop Grains Using PRISMA Images

Keltoum Khechba, Ahmed Laamrani and Abdelghani Chehbouni

26 Analysis of Fusion Techniques for Enhancing Spatial Resolution of PRISMA Hyperspectral Data Using Sentinel-2 Data

Rajesh Vanguri, Giovanni Laneve and Alvisè Ferrari

27 PRISMA & ENMAP Comparison in the Context of Wheat Nitrogen Status Assessment

Maxime Troiani, Jean Bouchat, Louise Leclère, Yannick Curnel, Philippe Vermeulen, François Stevens, Benoit Scaut, Damien Malice, Vincent Baeten, Nicolas Chamberland, Viviane Planchon and Pierre Defourny

11:00 - 11:40 / 14:20 - 15:00 / 16h40 - 17h20

Poster Area

28 Palaeoproterozoic Talc and Clay Mapping Using Spaceborne Imaging Spectrometer PRISMA Data Through Derived Spectral Indices

Dr. Ronak Jain

29 PRISMA Data-Based Delineation of Blue-Dust Rich Zone Within Banded Hematite Quartzite – A Study in the Bolani Area, Odisha, India

Arindam Guha, Debasis Singh, Deodato Tapete, Suparn Pathak, Rajeev Jaiswal, Licciardi Giorgio and Sacco Patrizia

30 Spatial Mapping of Soil Elements Using PRISMA Satellite Data and Feature Selection Learning

Khalil Misbah, Ahmed Laamrani and Raffaele Casaa

ONSITE POSTERS - SENSORS, MISSIONS, DATA

08-3. DAY 3

Thursday, 2

17:20 - 18:20

Conference Room C

Session chairs:

Behnood Rasti & Sindy Sterckx

- 01 Endmember Variable Mineral Mapping with Bayesian Convolutional Unmixing Network Using PRISMA Hyperspectral Imagery**
Yuan Fang, Alexander De Souza, Linlin Xu, Xinwei Chen and David A. Clausi
- 02 Asymmetric-Scale Arbitrary Resolution Pan-sharpening CNN for Hyperspectral Images**
Hanghui Ye and Lin He
- 03 Hyperspectral Image Super-Resolution Based on a Linear and Intimate Mixing Model**
Zha Yuchen and Liu Hongyi
- 04 A Novel Contrastive Regularized Bipartite Network for Unsupervised Change Detection**
Ling Hu, Ran Meng, Qichao Liu, Jia Liu and Liang Xiao
- 05 Unsupervised Domain Adaptation for One-Stage Detector in Remote Sensing Imagery**
Sihao Luo, Li Ma and Xingmei Li
- 06 Spatial-Spectral Cross-Domain Attention Network for Unsupervised Hyperspectral Image Classification**
Bing Qi and Xiaoyan Luo
- 07 Detecting Adversarial Examples for Hyperspectral Image Classification via Mutation Testing**
Yang Hao, Zhifei Chen and Liang Xiao
- 08 Hyper Spectral Image Classification Using Spectral and Spatial Dimension Reduction**
R. Aruna Florence, B. Rupa and A. Negi
- 09 Hyperspectral Image Classification Method Based on Narrowing Semantic Gap Convolutional Neural Network**
Shufang Xu, Sijie Geng, Tingting Fan, Chenming Li and Hongmin Gao

01 A Spectral-Spatial Classification Network for Hyperspectral Images Using a Residual Attention Network

Koushikey Chhapariya, Dr. Emmett J. Ientilucci, Dr. Krishna Mohan Buddhiraju and Dr. Anil Kumar

02 Full Range Feature Extraction Network for Hyperspectral Image Classification

Wenxiang Zhu, Yinghui Quan, Na Li and Yongxu Liu

03 Efficient Implementation for Composite CNN-Based HSI Classification Algorithm with Huawei Ascend Framework

Kai Shi, Qichao Liu, Liang Xiao and Zhizhong Zheng

04 Hyperspectral Image Prediction Using a Linear Model in Different Illumination Conditions

Shalom Hai Kobi, Mor David, Isaac August and Dima Bykhovsky

05 Triplet-Loss Driven Optimization for Improved Methane Leak Detection

Karan Owalekar, Shailesh Deshpande and Arpan Pal

06 Bhitarkanika Mangrove Species Change Detection Using Hyperspectral Remote Sensing and Field Survey

Aby Mathai, Alex Mathew and Gnanappazham Lakshmanan

07 Locality Preserved MLP for Hyperspectral Image Classification

Yun Cheng, Yang-Jun Deng, Wei-Ye Wang, Chen-Feng Long and Xing-Hui Zhu

08 SAM-SAM – A Novel Approach to Hyperspectral-Based Image Semantic Segmentation

A. Medellin, D. Grabowsky, D. Mikulski and R. Langari

09 Hyperspectral Video Tracker Based on Anomaly Suppression and Multi-Feature Integration

Huihui Guo, Yang Xu, Zebin Wu and Zhihui Wei

10 Final Design and Performance of the CHIME Spectrometer Unit

Vincent Moreau, Benoit Borguet, Etienne Renotte, Gregory Lousberg, Aikatarini Radioti and Roberto Di Paola

18:20 - 19:30

Conference Room B

Session chairs:

Konstantinos Karantzas & Sindy Sterckx

- 01 Efficient Graph Formulation and Latent Space Integration for Lunar Hyperspectral Image Classification**
Akhil Galla, Samrat B, Nithish Reddy Banda, Arun Pv and Alok Porwal
- 02 Nitrogen Retrieval by Spectral Sensing in Almonds**
Momtanu Chakraborty, Damian Oswald, Sirapoom Peanusaha, Alireza Pourreza, Patrick Brown and Sat Darshan S Khalsa
- 03 HHTrack: Hyperspectral Object Tracking Based on Hybrid Attention**
Yuedong Tan, Wenfang Sun, Jieran Yuan, Wenwang Du, Zhe Wang, Nan Mao and Beibei Song
- 04 RawTrack: Toward Single Object Tracking on Mosaic Hyperspectral Raw Data**
Zhaoxu Li, Gaowei Guo, Xu He, Qingyu Xu, Wei Wang, Qiang Ling, Zaiping Lin and Wei An
- 05 VP-HOT: Visual Prompt for Hyperspectral Object Tracking**
Shaoxiong Xie, Jia Li, Lin Zhao, Wenjing Hu, Guoyun Zhang, Jianhui Wu and Xinpin Li
- 06 Forensic Document Analysis Using Hyperspectral Imaging and Deep Convolutional Spectral Clustering**
Binu Melit Devassy and Sony George
- 07 QECM-2: A Novel Visualization of the Influence of Earth's Precession Index Variations on the Insolation, Precipitation, and Photosynthetic Activity Experienced by Equatorial Regions**
Rishika Porandla
- 08 Estimation of Leaf Nitrogen Content with Leaf Spectrometer in Potatoes**
Prabhar Ravichandran, Keshav Singh, Coralie Scissons, Keshav Dahal and Hongquan Wang

18:20 - 19:30

Conference Room B

Session chairs:

Konstantinos Karantzas
& Sindy Sterckx

09 Multi-Scale Feature Attention and Transformer for Hyperspectral Image Classification

Zhe Meng, Qian Yan, Feng Zhao and Miaomiao Liang

10 Hybrid Spectral-Spatial Convolutional Network and Transformer with Mixup Regularization for Hyperspectral Image Classification

Boao Qin, Chunhui Zhao, Shou Feng, Maoyang Chen, Hongzhe Zhang and Bobo Xi

11 Digital Imaging System for High-Throughput Plant Phenotyping Using Raspberry Pi Computers

Keshav Singh, Manoj Natarajan, Kamal Gill, Prabahar Ravichandran, Hongquan Wang and Charles M. Geddes

ONLINE POSTERS 3

18:20 - 19:30

Conference Room C

Session chairs:

Danfeng Hong & Jocelyn Chanussot

01 Options for Solid Point Target Detection in Hyperspectral Data

Eliad Yurkovetsky and Stanley Rotman

02 Indoor Sign Recognition System for Visually Impaired People

Halal Abdulrahman Ahmed and Fattah Alizadeh

03 A Dedicated Network for Hyperspectral Image Classification Based on Multi-Objective Evolutionary Search

Fan Zhang, Yuting Wan and Pei Liu

04 Deep Unrolling Network with Active Dictionary Learning for Hyperspectral Anomaly Detection

Zhaoyue Wu, Xuanwen Tao, Mercedes E. Paoletti, Juan M. Haut, Rafael Pastor-Vargas and Antonio Plaza

05 Hyperspectral Bioindicators of Pollination in Oilseed Rape to Track and Mitigate Pollination Deficits

Catherine Parry, Richard Gill, Colin Turnbull and Laura Barter

ONLINE POSTERS 4

Thursday, 2

08-3. DAY 3

17:20 - 18:20

Conference Room C

Session chairs:

Danfeng Hong & Jocelyn Chanussot

- 06 Hyperspectral Image Classification with Dynamic Spatial-Spectral Attention Network**
Zhe Meng, Qian Yan, Feng Zhao and Miaomiao Liang
- 07 Learning Discriminative Features with Attention-Based Dual-Stream Decoder for Weakly Supervised Solar Panel Mapping**
Jue Zhang, Jiankun Hu and Xiuping Jia
- 08 FY-3E HIRAS-II Channel Selection for Temperature and Humidity Profile Retrieval Using Principal Component Analysis and Weighting Functions**
Li-Hao Han and Geng-Ming Jiang
- 09 Spectral Unmixing Using Shape-Driven Blind Deconvolution in Convolutional Autoencoder**
Nithish Reddy Banda, Akhil Galla, Samrat B, Mrinmoy Ghorai and Dr. Arun Pv
- 10 Quantifying Plant Moisture and Desiccant Response in Lentils (*Lens Culinaris*) Using Multi-Spectral Imagery**
Prabahar Ravichandran, Keshav D. Singh, Breanne Tidemann, Eric Johnson, Steve Shirtcliffe, Charles M. Geddes, Thomas K. Turkington and Manoj Natarajan
- 11 Estimate Canopy Height and Biomass from UAV-Based Multispectral Images**
Hongquan Wang, Keshav Singh, Hari Poudel, Prabahar Ravichandran, Manoj Natarajan and Brandon Eisenreich

09 → Award Ceremony Program

19:00 - 19:10

José Bioucas-Dias Outstanding Paper Award

- Introduced by Jocelyn Chanussot

19:10 - 19:20

Paul Gader Outstanding Student Paper Award

- Introduced by Jocelyn Chanussot

19:20 - 19:30

Challenge #1 Award

- Introduced by Danfeng Hong

19:30 - 19:40

Challenge #2 Award

- Introduced by Jun Zhou and Wouter Charle

19:40 - 20:00

Drinks and celebration

Wednesday, 1

09. DAY 2 - AWARD CEREMONY



w h i s p e r s

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