



13-16 September 2022

Rome, Italy

# Program

Table of contents



2022  
Rome, Italy

Committees	4
Conference Info	6
Exhibition	8
Venue Map	10
At a glance	11
Tuesday, 13	12
Wednesday, 14	19
Thursday, 15	28

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## General chairs

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Paolo Gamba, University of Pavia, Italy

Giorgio Licciardi, Italian Space Agency, Italy

## Program chairs

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Richard Gloaguen, Helmholtz Institute Freiberg for Resource Technology, Germany

Jocelyn Chanussot, Grenoble Institute of Technology, France

## Technical committee

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Touria Bajjouk, IFREMER, France

Eayl Ben Dor, University of Tel Aviv, Israel

Jon Benediktsson, University of Iceland, Iceland

Jérôme Bobin, CEA Saclay - IRFU/CosmoStat, France

Xavier Briottet, The French Aerospace Lab, France

Lorenzo Bruzzone, University of Trento, Italy

Jocelyn Chanussot, Grenoble Institute of Technology, France

Melba Crawford, Purdue University, USA

Yannick Deville, Inst. de Recherche en Astrophysique et Planétologie, France

Peijun Du, Nanjing University, China

Qian Du, Mississippi State University, USA

Tegan Emerson, Pacific Northwest National Laboratory, USA

Chiara Ferrari, Observatoire de la Côte d'Azur, France

Lianru Gao, Aerospace Information Research Inst., Chinese Academy of Sciences

Paolo Gamba, University of Pavia, Italy

Maryvonne Gerin, Observatoire de Paris, France

Pedram Ghamisi, Helmholtz-Zentrum Dresden-Rossendorf, Germany

Richard Gloaguen, Helmholtz Institute Freiberg for Resource Technology

Yanfeng Gu, Harbin Institute of Technology, China

Uta Heiden, German Aerospace Center (DLR)

Danfeng Hong, Chinese Academy of Sciences, China

Xiuping Jia, UNSW Canberra at the Australian Defence Force Academy, Australia

John Kerekes, Rochester Institute of Technology, USA

Bertrand Le Saux, Φ-lab, ESA, Italy

Muhammad Murtaza Khan, NUST-SEECs, Pakistan

Wenzhi Liao, Ghent University, Belgium

Ralf Klessen, Heidelberg University, Germany

Wenzhi Liao, Ghent University, Belgium

Stefan Livens, VITO NV, Belgium

Sebastian Lopez, Universidad de las Palmas de Gran Canarias, Spain

Vineetha Menon, The University of Alabama in Huntsville, USA

Rupert Müller, German Aerospace Center (DLR)

Nasser Nasrabadi, West Virginia University, USA

Mario Parente, University of Massachusetts, USA

Joshua E. G. Peek, Space Telescope Science Institute & Johns Hopkins University, USA

George P. Petropoulos, Agricultural Org. "DEMETER" & Technical Univ. of Crete, Greece

Jérôme Pety, IRAM & Observatoire de Paris, France

Antonio Plaza, University of Extremadura, Spain

Saurabh Prasad, University of Houston, USA

Behnood Rasti, Helmholtz-Zentrum Dresden-Rossendorf, Germany

Stanley Rotman, Ben-Gurion University of the Negev, Israel

Alan Schaum, Naval Research Laboratory, USA

Paul Scheunders, Vision Lab - University of Antwerp, Belgium

Prashant K. Srivastava, Banaras Hindu University, India

James Theiler, BLos Alamos National Laboratory, USA

Miguel Velez-Reyes, University of Texas at El Paso, USA

Domenico Vitulano, Sapienza University, Italy

Naoto Yokoya, The University of Tokyo, Japan

Alina Zare, University of Florida, USA

Bing Zhang, Institute of Remote Sensing & Digital Earth, China

Jun Zhou, School of Information and Communication Tech., Griffith Univ., Australia

Xiaoxiang Zhu, DLR and Technical University of Munich (TUM), Germany

## General chair

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Aoife Gowen, UCD School of Biosystems and Food Engineering, Ireland

Cristina Malegori, Group of Analytical Chemistry and Chemometrics Department of Pharmacy University of Genova, Italy

## Technical committee

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Lidia Esteve Agelet, Senior Scientist-NIR Program Development Mars Global Services, Netherlands

Ryad Bendoula, Research Group ITAP Irstea - SupAgro Information-Technologies-environmental Analysis-agricultural Process, France

Junli Xu, Postdoctoral Research Fellow UCD School of Biosystems and Food Engineering, Ireland

Ana Herrero-Langreo, Post-doctoral Research Fellow UCD School of Biosystems and Food Engineering, Ireland

Ludovic Duponchel, LASIR Lab, University of Lille, France

Jeroen Jansen, Analytical Chemistry, Radboud University, Nijmegen, The Netherlands

Gerrit Polder, Agro Food Robotics group, Wageningen University & Research, The Netherlands

Paul James Williams, Senior Lecturer and Researcher Department of Food Science, Stellenbosch University, Stellenbosch, South Africa

Douglas Fernandez Barbin, Associate Professor Dpt of Food Engineering and Technology School of Food Engineering University of Campinas , Campinas, Brazil

Longhai Guo, College of Material Science and Engineering, Beijing University of Chemical Technology (BUCT), Beijing, China

Zoltan Kovács, International Affairs Advisor of the Institute – full professor, Department of Measurements and Process Control Institute of Food Science and Technology, Hungarian University of Agriculture and Life Sciences, Budapest, Hungary

Vincent Baeten, Head of Unit QAP, Scientific Director Walloon Agricultural Research Centre Quality and Authentication of Products Unit (QAP Unit), Bâtiment Maurice Henseval, Gembloux, Belgium

## HyperMLPA Committees



### General chair

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Sina Keller, Karlsruhe Institute of Technology, Germany

Martin Weinmann, Karlsruhe Institute of Technology, Germany

## Conference Venue

Engineering School, University "Sapienza" of Rome  
 San Pietro in Vincoli  
 Via Eudossiana, 18  
 00184 Roma, Italy

### Taxi

indicate the following address to the taxi driver:  
 Via Eudossiana, 18, 00184 Roma RM.

## Arrival from Airport

There are 2 airports in Rome, Fiumicino and Ciampino. Both have connection to Termini station, where you can get the metro B line.

## Arrival from Train/Metro

You could arrive in Rome at Termini or Tiburtina station, then take the metro B line in direction Laurentina, stop at Cavour.

Cavour stop



Entrance

## Registration Desk

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Tuesday, 13 to Thursday, 15 : from 8:00 to 18:00

Onsite registration : only cash

## Internet

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

## Speaker Preparation

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Software: Each lecture hall is equipped with Office and Acrobat reader.

- File types: We accept .ppt, .pptx or .pdf formats.
- Loading your presentation: Please go to the appropriate lecture hall to upload your presentation BEFORE the start of your session. A Whisperer will be there to assist you as needed.

## Poster Preparation

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Set-up: Please arrive each day at the opening to set-up your poster. Whisperers will be there to assist you.

- Break-down: Please remove your poster at the end of the day.
- Presentation: speaker should be alongside the poster during the coffee breaks.
- Size: max posters size is A0 (841 × 1189 mm). Orientation : portrait, no landscape !

## Visit to ASI Headquarter (Sept. 16th)

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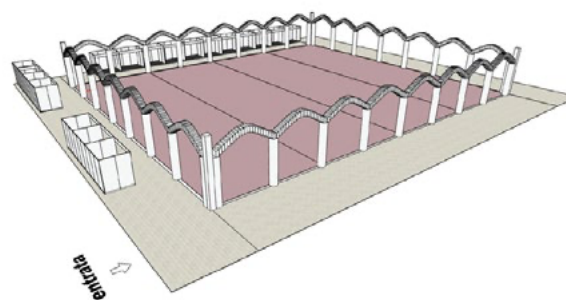
09.00-09.30	- Registration of participants
09.30-10.30	- Visit of the headquarter (Francesco Rea - Responsible for the Agency Institutional Communications)
10.30-10.45	- break
10.45-11.15	- PRISMA data management (Ettore Lopinto - Prisma Program Manager)
11.15-12.30	- EO downstream activities (Alessandro Coletta - Head of the Downstream unit, Deodato Tapete - SAR programmes, Giorgio Licciardi - Hyperspectral programmes)
12.30-13.00	- Q&A
13.00	- End of the visit

Due to Covid constraints we can accept only 30 people that have to provide in advance the number of their ID.

## Exhibitors

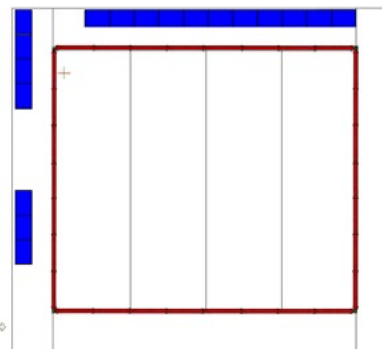
<b>1</b>	<b>INNO SPEC</b>
<b>2</b>	<b>NIREOS</b>
<b>3</b>	<b>PER CLASS</b>
<b>4</b>	<b>HEADWALL</b>

IMEC	HINALEA	RESE	NEO	SPECIM	THEIAX	SPECTRO AG	HYPSTAR	HAIP SOL.	SUPERELECTRIC	
7	16	17	8	9	10	11	12	13	14	15



PIANTA

<b>5</b>	<b>L3 HARRIS</b>
<b>6</b>	<b>CUBERT</b>



**ENTRANCE**

# neo

Norsk Elektro Optikk AS develops state-of-the-art products for an international market through advanced research in electro optics.

# HySpex

by neo

HySpex, NEOs industry leading line of hyperspectral cameras, delivers the highest quality hyperspectral imagers commercially available.

# HERA

VIS-NIR & SWIR  
Hyperspectral Camera

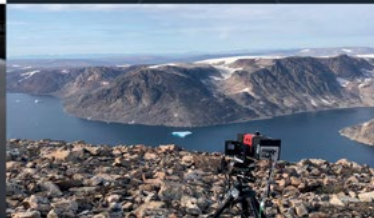
**NIREOS**  
Booth #2

Standard applications for HySpex hyperspectral cameras

## Industry



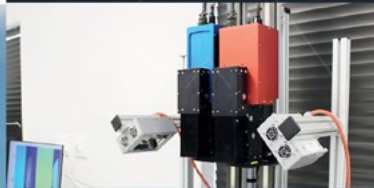
## Field



## Airborne/ UAV

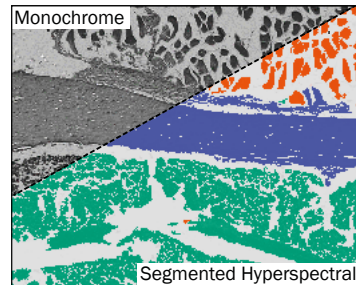


## Laboratory

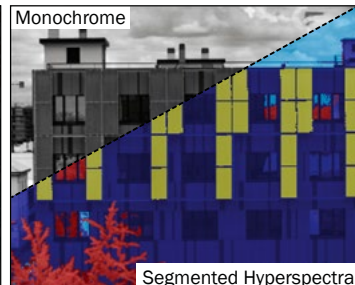


[www.hyspex.com](http://www.hyspex.com)

## Microscopy



## Remote Sensing



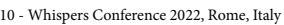
## Main Features

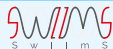

- Stationary Operation Mode  
*No additional moving system required*
- High Spatial & Spectral Resolution
- High Light Throughput
- Easy Coupling with Microscopes



[www.nireos.com](http://www.nireos.com) | Via Durando 39, 20158 Milan (Italy)





Tuesday, 13					Wednesday, 14		All day poster session		Thursday, 15				
8:00					8:30				8:30				
9:00					9:00		Plenary 2		9:00				
Italian Space Agency							SWIIMS		Plenary 3				
room A					room A		room A		The 2 challenges				
10:00					10:00		Coffee Break		10:00				
10:30					10:30		wed-o-1-a		10:30				
Remote sensing of water bodies					SwIImS (1)		Classification		thu-o-1-a				
Vegetation and Precision farming(1)							New Applications (3)		Object tracking-detection				
Super resolution							Atmosphere, gases, clouds		Vegetation and Precision farming(2)				
UAV, Drones									Data Fusion, reconstruction				
11:30									thu-o-1-d				
									Applications				
12:30					12:30				12:30				
Lunch					Lunch				Lunch				
14:00					14:00		wed-o-2-a		14:00				
PRISMA (1)					SwIImS (2)		Unmixing (1)		thu-o-2-a				
Target and Anomaly Detection							New Applications (4)		HyperMLPA (1)				
Data Processing (1)							Data Processing (3)		Data Processing (4)				
New Applications (1)									New sensors new platforms new missions (2)				
15:40					15:40		Coffee Break		15:40				
Coffee Break					Coffee Break				Coffee Break				
16:20					16:20		wed-o-3-a		16:20				
PRISMA (2)					SwIImS (3) roundtable		Unmixing (2)		thu-o-3-a				
Geology and Soils							Change Detection		HyperMLPA (2)				
New Applications (2)							New sensors new platforms new missions (1)		 HyperMLPA				
Data Processing (2)													
18:00					18:00				18:00				
Award Ceremony + Icebreaker					Drinks								
room A room B room C room D					room A room B room C room D				room A room B room C room D				

## Coffee break

10:00

tue-o-1-a	Remote sensing of water bodies	10:50 - 12:30	tue-o-1-b	Vegetation and Precision farming (1)	10:30 - 12:30
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Session chairs : Stéphane Boubanga, TELOPS, Canada  
Esmée Oudijk, Norwegian University of Science and Technology, Norway

\*\*\* Please note this session starts at 10:50 instead of 10:30 \*\*\*

### CAMPAIGN FOR HYPERSPECTRAL DATA VALIDATION IN NORTH ATLANTIC COASTAL WATERS

Adriënné Oudijk, Oliver Hasler, Henning Øveraas, Sabine Marty, David Williamson, Thea Svendsen, Simen Berg, Roger Birkeland, Daniel Halvorsen, Sivert Bakken, Marie Henriksen, Morten Alver, Geir Johnsen, Tor Johansen, Annette Stahl, Pål Kvaløy, Alberto Dallolio, Sanna Majaneva, Glaucia Fragoso and Joseph Garrett

### ANALYZING CLOSE-RANGE HYPERSPECTRAL IMAGES OF COMPLEX CORAL MORPHOLOGIES

Raf Rashid, Jonathan Kok, Katharina Fabricius, Karen Joyce and Stefan Maier

### IMPROVING THE STANDARD PROTOCOL FOR ABOVE-WATER REFLECTANCE MEASUREMENTS FOR THE RETRIEVAL OF OPTICAL WATER QUALITY PRODUCTS

Clémence Goyens and Kevin Ruddick

### HYPERSPECTRAL AUTONOMOUS RADIOMETRY SYSTEMS FOR MONITORING HARMFUL ALGAL BLOOMS IN COASTAL AND INLAND WATERS

Héloïse Lavigne, Clémence Goyens, Kevin Ruddick and Quinten Vanhellemont

### REMOTE QUANTIFICATION OF MARINE EMISSIONS AND CALCULATION OF FUEL SULFUR CONTENT USING THERMAL INFRARED HYPERSPECTRAL IMAGING

Stephane Boubanga-Tombet, Benjamin Saute, Jean-Philippe Gagnon, Pascal Hogan-Lamarre and Martin Lariviere-Bastien

Session chairs : Petra Schumacher, Karlsruhe Institute of Technology, Germany  
Wout Vierbergen, ILVO, Belgium

### RETRIEVING BIOPHYSICAL AND BIOCHEMICAL CROP TRAITS USING CONTINUUM-REMOVED ABSORPTION FEATURES FROM HYPERSPECTRAL PROXIMAL SENSING

Ramin Heidarian Dehkordi, Francesco Nutini, Simone Mereu, Gabriele Candiani, Margherita De Peppo and Mirco Boschetti

### POST-HARVEST QUALITY ASSESSMENT FOR LEEK WITH HYPERSPECTRAL IMAGING AND SYNTHETICALLY CREATED DATA

Wout Vierbergen, Sarah Bossuyt, Jonathan Van Beek, Eva M. Ampe and Wouter Saeys

### QUANTITATIVE EVALUATION OF RICE BLAST DISEASE IN SMALLHOLDER FARMS BY COUPLING THE SCOPE MODEL WITH CONTINUOUS WAVELET TRANSFORM

Long Tian, Bowen Xue, Dong Li, Egor Prikaziuk, Christiaan van der Tol, Xia Yao, Yan Zhu, Weixing Cao and Tao Cheng

### PROBLEM-SPECIFIC OPTIMIZED MULTISPECTRAL SENSING FOR IMPROVED QUANTIFICATION OF PLANT BIOCHEMICAL CONSTITUENTS

Petra Schumacher, Robin Gruna, Thomas Längle and Jürgen Beyerer

### MAIZE YIELD PREDICTION BASED ON MULTI-MODALITY REMOTE SENSING AND LSTM MODELS IN NITROGEN MANAGEMENT PRACTICE TRIALS

Claudia Aviles Toledo, Melba Crawford and Tony Vyn

### IDENTIFICATION OF LEAFROLL AND RED BLOTCH VIRUSES IN GRAPEVINE LEAVES AND CANOPY USING VIS/NIR HYPERSPECTRAL IMAGERY

Eve Laroche-Pinel, Erica Sawyer, Benjamin Corrales, Khushwinder Singh, Kaylah Vasquez, Monica Cooper, Marc Fuchs and Luca Brillante

## Lunch

12:30

## Coffee break

10:00

tue-o-1-c	Super-resolution	10:30 - 12:30	tue-o-1-d	UAV, Drones	10:30 - 12:30
Session chairs :	R. David Dunphy, University of Strathclyde, Glasgow, UK Fabio Del Frate, University of Rome "Tor Vergata", Italy		Session chairs :	Richard Gloaguen, Helmholtz Institute, Germany Prashant K Srivastava, Banaras Hindu University, India	
	SUPER-RESOLUTION HYPERSPECTRAL RECONSTRUCTION WITH MAJORIZATION-MINIMIZATION ALGORITHM AND LOW-RANK APPROXIMATION			A HYPERSPECTRAL PUSH-BROOM SYSTEM IN THE VIS-NIR-SWIR BANDS FOR DRONE-BASED SURVEY	
	Ralph Abi-Rizk, François Orieux and Alain Abergel			Marco Balsi, Paolo Fallavollita and Monica Moroni	
	GENERATIVE ADVERSARIAL NETWORKS WITH SPECTRAL DIMENSIONALITY REDUCTION FOR HYPERSPECTRAL SUPER-RESOLUTION			MAKING LASAGNE WITH SPAGHETTI: GEOMETRIC AND RADIOMETRIC CORRECTIONS FOR HYPERSPECTRAL DATA ACQUIRED OBLIQUELY FROM UAVS	
	R. David Dunphy and Paul Murray			Sam Thiele, Sandra Lorenz, René Booysen and Richard Gloaguen	
	EVALUATING HYPERSPECTRAL IMAGE SUPER-RESOLUTION IN REAL-LIFE SCENARIOS			RADIATIVE TRANSFER MODEL FOR LEAF CHLOROPHYLL CONTENT RETRIEVAL USING VISIBLE/INFRARED SENSORS MOUNTED ON UAV AND HYPERSPECTRAL DATASETS	
	Michal Kawulok, Jakub Nalepa, Pawel Kowaleczko, Maciej Ziája, Daniele Latini, Davide De Santis, Giorgia Salvucci, Ilaria Petracca, Valeria La Pegna and Fabio Del Frate			Dr. Prashant K Srivastava and Prachi Singh	
	SPECTRALLY COARSE-TO-FINE PANSHARPENING FOR HYPERSPECTRAL IMAGES			APPRAISAL OF SENTINEL-2 DERIVED VEGETATION INDICES USING UAV MOUNTED WITH VISIBLE-IR SENSORS	
	Honghao Lai, Lin He and Dahan Xi			Vikas Dugesar and Prashant K Srivastava	
	ADAPTIVE MULTI-STAGE PANSHARPENING CNN FOR HYPERSPECTRAL IMAGES			WHAT KIND OF SPATIAL AND SPECTRAL RESOLUTION OF UAV-BORNE HYPERSPECTRAL IMAGE IS REQUIRED FOR PRECISE CROP CLASSIFICATION WHEN USING DEEP LEARNING	
	Dahan Xi, Lin He and Honghao Lai			Bin Yang and Shunshi Hu	
	A FAST MULTIDIMENSIONAL DATA FUSION ALGORITHM FOR HYPERSPECTRAL SPATIOTEMPORAL SUPER-RESOLUTION				
	Pai-Chuan Chang, Jhao-Ting Lin, Chia-Hsiang Lin, Po-Wei Tang and Yangrui Liu				

## Lunch

12:30

tue-o-2-a	PRISMA (1)	14:00 - 15:40	tue-o-2-b	Target and Anomaly Detection	14:00 - 15:40
<p>Session chairs :     Giorgio Licciardi, Italian Space Agency, Italy  Luigi Ansalone, Italian Space Agency, Italy</p> <p>THE ENVI PRISMA TOOLKIT  Andrea Marchesi and Stefano Gagliano</p> <p>PRISMA_LEARN - ADVANCED MACHINE LEARNING TECHNIQUES FOR PRISMA DATA FUSION AND IMAGE ANALYSIS  Sebastiano Serpico, Francesca Bovolo, Lorenzo Bruzzone, Paolo Gamba and Gabriele Moser</p> <p>GEOLOGIC MAPPING CAPABILITY OF ITALIAN PRISMA HYPERSPECTRAL DATA  Michael Abrams</p> <p>DEEP-LEARNING BASED SPECTRAL UNMIXING FOR THE CHARACTERISATION OF VOLCANIC SURFACE DEPOSIT WITH PRISMA IMAGES  Giorgio Licciardi, Alessandro Coletta, Enrico Flamini, Mario Gaeta and Gian Gabriele Ori</p> <p>TRANSFERABILITY OF CONVOLUTIONAL AUTOENCODER MODEL FOR LOSSY COMPRESSION TO UNKNOWN HYPERSPECTRAL PRISMA DATA  Jannick Kuester, Wolfgang Gross, Simon Schreiner, Wolfgang Middelman and Michael Heizmann</p>			<p>Session chairs :     Bill Basener, University of Virginia School of Data Science, USA  Tegan Emerson, Pacific Northwest National Laboratory, USA</p> <p>TARGET IDENTIFICATION AND BAYESIAN MODEL AVERAGING WITH PROBABILISTIC HIERARCHICAL FACTOR PROBABILITIES  William Basener</p> <p>HYPERSPECTRAL TARGET DETECTION USING SEGMENTED MATCHED FILTER WITH LOCAL COVARIANCE REASSIGNMENT  Haim Elisha and Stanley Rotman</p> <p>LOW-RANK REPRESENTATION WITH MORPHOLOGICAL-ATTRIBUTE-FILTER BASED REGULARIZATION FOR HYPERSPECTRAL ANOMALY DETECTION  Yangrui Liu, Chia-Hsiang Lin and Yu-Chun Kuo</p> <p>DELVE INTO HYPERSPECTRAL ANOMALY DETECTION VIA BAYESIAN GAUSSIAN TENSOR DECOMPOSITION  Jiahao Qi, Xingyue Liu and Ping Zhong</p>		

Coffee break

15:40

tue-o-2-c Data Processing (1) 14:00 - 15:40	tue-o-2-d New Applications (1) 14:00 - 15:40
Session chairs : Behnood Rasti, Helmholtz-Zentrum Dresden-Rossendorf, Germany Mihai Ivanovici, Transilvania University of Brasov, Romania	Session chairs : Margret Fuchs, Helmholtz Institute, Germany Sabrina Verga, Aramis srl, Italy
A FRACTAL DIMENSION ESTIMATOR FOR MULTISPECTRAL IMAGES Mihai Ivanovici	HYPERSPECTRAL IMAGING: WHAT NEXT? Richard Gloaguen, Sandra Lorenz, Margret Fuchs, René Booyesen, Behnood Rasti, Samuel Thiele, Andrea de Lima Ribeiro, Moritz Kirsch and Pedram Ghamisi
A FAST ITERATIVE PROCEDURE FOR ADJACENCY EFFECTS CORRECTION ON REMOTE SENSED DATA Donatella Guzzi, Cinzia Lastrì, Vanni Nardino and Valentina Raimondi	ESTIMATION OF THE LOWER HEATING VALUE OF SOLID RECOVERED FUEL BASED ON SWIR HYPER-SPECTRAL IMAGES AND MACHINE LEARNING Sabrina Verga, Michele Compare, Enrico Zio, Guglielmo Carra, Marco Farina, Ilaria Righetto and Vittorio Sala
HYDE: THE FIRST OPEN-SOURCE, PYTHON-BASED, GPU-ACCELERATED HYPERSPECTRAL DENOISING PACKAGE Daniel Coquelin, Behnood Rasti, Markus Götz, Pedram Ghamisi, Richard Gloaguen and Achim Streit	SMART HYPERSPECTRAL SENSOR INTEGRATION - INSIGHTS FROM THE HELIOS LAB Margret Fuchs, Sandra Lorenz, Yuleika C. Madriz Diaz, Titus Abend, Junaidh Shaik Fareedh, Andrea de Lima Ribeiro, Erik Herrmann, Elias Arbash, Seema Chouhan, Behnood Rasti, Jan Beyer, Christian Röder, Tejas Wakde, Nadine Schüler, Pedram Ghamisi, Kay Dornich, Johannes Heitmann and Richard Gloaguen
OPTIMAL SPATIAL-SPECTRAL INPUT FOR REAL-TIME HYPERSPECTRAL IMAGE CLASSIFICATION Jawad Haidar, Samir Mustapha, Darine Salam and Ali Tehrani	DEVELOPING AN RGB-BASED PCB OBJECTS DETECTOR FOR EVALUATION ANALYSIS GUIDANCE IN A SMART SENSORS NETWORK Elias Arbash, Margret Fuchs, Behnood Rasti, Andréa de Lima Ribeiro, Pedram Ghamisi and Richard Gloaguen
HYPER-SPECTRAL IMAGE COMPRESSION BY JOINT SPATIAL SPECTRAL DIMENSION REDUCTION USING THRESHOLDED PRINCIPAL COMPONENT ANALYSIS Liel Kapah, Noy Weizman, Dima Bykhovsky and Isaac August	REAL-TIME MAPPING OF SKIN PHYSIOLOGICAL PARAMETERS USING HYPERSPECTRAL IMAGING AIDED BY DEEP LEARNING Yaqian Long

Coffee break

15:40

tue-o-3-a PRISMA (2) 16:20 - 18:00	tue-o-3-b Geology and Soils 16:20 - 18:00
<p>Session chairs : Giorgio Licciardi, Italian Space Agency, Italy Luigi Ansalone, Italian Space Agency, Italy</p> <p>DEFECTIVE PIXEL DETECTION AND CORRECTION IN PRISMA HYPERSPETRAL DATA Nicola Acito, Marco Diani, Michael Alibani and Giovanni Corsini</p> <p>MAN-MADE MATERIALS MAPPING USING HYPERSPETRAL PRISMA SATELLITE IMAGERY A COMPARATIVE STUDY FOR PRATO (ITALY) AND SURROUNDING AREAS Andrea Ermini, Luisa Beltramone, Daniele Silvestri, Andrea Rindinella, Ilaria Tabarrani and Riccardo Salvini</p> <p>TRANSFER LEARNING ANALYSIS FOR WILDFIRE SEGMENTATION USING PRISMA HYPERSPETRAL IMAGERY AND CONVOLUTIONAL NEURAL NETWORKS Dario Spiller, Stefania Amici and Luigi Ansalone</p> <p>MAPPING AND DETECTING GACH-E-TURSH OIL AND GAS-SEEPAGES USING PRISMA HYPERSPETRAL DATA SETS: AGHAJARI OIL FIELD, SW IRAN Mohammad H. Tayebi, Carlos Roberto de Souza Filho, Diego Fernando Ducart and Majid H. Tangestani</p> <p>GLACIER ICE SURFACE PROPERTIES IN SOUTH-WEST GREENLAND ICE SHEET: FIRST ESTIMATES FROM PRISMA IMAGING SPECTROSCOPY DATA Niklas Bohn, Biagio Di Mauro, Roberto Colombo, David Thompson, Jouni Susiluoto, Nimrod Carmon, Michael Turmon and Luis Guanter</p>	<p>Session chairs : René Booysen, Helmholtz Institute, Germany Sara Salehi, Geological Survey of Denmark and Greenland, Denmark</p> <p>HELICOPTER-BORNE HYPERSPETRAL IMAGING, A NOVEL APPROACH FOR GEOLOGICAL MAPPING OF INACCESSIBLE REGIONS Sara Salehi and Daniel Schläpfer</p> <p>INNOVATIVE HYPERSPETRAL IMAGING FOR LITHIUM EXPLORATION René Booysen, Samuel Thiele, Sandra Lorenz, Yuleika Madriz, Paul Nex and Richard Gloaguen</p> <p>DEEP LEARNING FOR 3D LITHOLOGICAL POINT CLOUD SEGMENTATION Ahmed J. Afifi, Sam T. Thiele, Sandra Lorenz and Richard Gloaguen</p> <p>MAPPING AND ASSESSING FERTILITY OF AFRICAN SOILS USING HIGH-RESOLUTION REMOTE SENSING AND MACHINE LEARNING APPROACHES Mohammed Hmimou, Ahmed Laamrani and Saïd Khabba</p> <p>A METHODOLOGY FOR ESTIMATING SOIL QUALITY INDICATORS IN AGRICULTURAL SYSTEMS USING UAV AND MACHINE LEARNING Freddy Diaz, José Vuelas, Carlos Correa, Victoria Vellejo and Diego Patino</p>

Award ceremony / Icebreaker

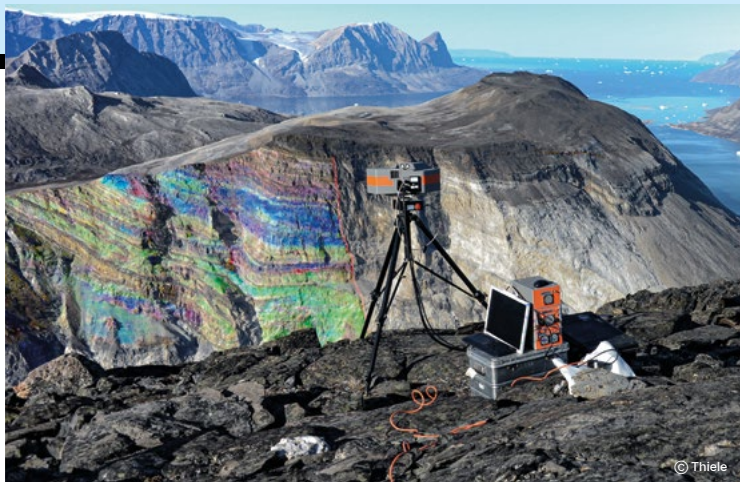
18:00 - 18:30 / 18:30 - 20:00

tue-o-3-c New applications (2) 16:20 - 18:00	tue-o-3-d Data Processing (2) 16:20 - 18:00
<p>Session chairs : Marco Esposito, Cosine, Netherlands and Italy Mathieu Marmion, SPECIM, Finland</p> <p>NEW INSIGHTS INTO HYPERSPECTRAL IMAGING FOR INDUSTRIAL APPLICATIONS: SUCCESS STORIES AND THE NEW SPECIMONE PROCESSING PLATFORM Mathieu Marmion</p> <p>INFLIGHT RESULTS FROM THE HYPERSCOUT VNIR AND TIR SPECTRAL IMAGER AND ROADMAP TOWARDS HIGH RES TIR Marco Esposito</p> <p>CHARACTERIZATION OF CORROSION PRODUCTS ON CARBON STEEL USING HYPERSPECTRAL IMAGING IN SHORT-WAVE INFRARED (SWIR) Zohreh Zahiri, Alfredo Lamberti, Jan Wielant and Paul Scheunders</p> <p>DETECTING AND CHARACTERIZING CORROSION ON HIGH VOLTAGE METALLIC TOWERS USING HYPERSPECTRAL IMAGING Zohreh Zahiri, Hiep Luong, Ljiljana Platisa, Roeland Vandebriel, Murali Jayapala, Frédéric Mangialetto and Paul Scheunders</p> <p>CORROSION MONITORING ON ZINC ELECTROPLATED STEEL USING SHORTWAVE INFRARED HYPERSPECTRAL IMAGING Thomas De Kerf, Zohreh Zahiri, Paul Scheunders and Steve Vanlanduit</p>	<p>Session chairs : Federico Grillini, Norwegian Univ. of Science and Tech., Norway Carolina Blanch-Perez del Notario, imec, Belgium</p> <p>BENEFITS OF MULTI-EXPOSURE FOR HYPERSPECTRAL IMAGING Carolina Blanch Perez Del Notario, Bert Geelen, Kathleen Vunckx, Bart Masschelein and Steven Thijs</p> <p>FILTERING-BASED ENDMEMBER IDENTIFICATION METHOD FOR SNAPSHOT SPECTRAL IMAGES Kinan Abbas, Matthieu Puigt, Gilles Delmaire and Gilles Roussel</p> <p>ON-BOARD CHARACTERIZATION OF HYPERSPECTRAL IMAGE EXPOSURE AND CLOUD COVERAGE BY COMPRESSION RATIO Roger Birkeland, Simen Berg, Milica Orlandic and Joseph Garrett</p> <p>HYPERSPECTRAL VNIR-SWIR IMAGE REGISTRATION: DO NOT THROW AWAY THOSE OVERLAPPING LOW SNR BANDS Federico Grillini, Jean-Baptiste Thomas and Sony George</p> <p>CSSNET: A LEARNING ALGORITHM FOR THE SEGMENTATION OF COMPRESSED HYPERSPECTRAL IMAGES Maud Biquard, Antoine Rouxel, Simon Lacroix, Hervé Carfantan, Antoine Monmayrant and Henri Camon</p>

Award ceremony / Icebreaker

18:00 - 18:30 / 18:30 - 20:00





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wed-p-1 Posters

All day poster session

MONITORING SALINITY STRESS IN QUINOA USING UAV-BASED HYPERSPECTRAL DATA AND A MACHINE LEARNING APPROACH

Victor Angulo-Morales, Kasper Johansen, Yu-Hsuan Tu and Matthew F. McCabe

RETRIEVAL OF MICROPHYSICAL PROPERTIES OF WATER PLUMES EMITTED FROM POWER PLANT COOLING TOWERS USING IMAGING SPECTROSCOPY

Anthony Laybros, Audrey Nicolas and Rodolphe Marion

PARAMETER OPTIMIZATION IN THE NEURAL NETWORK ANALYSIS OF MID-INFRARED HYPERSPECTRAL DATA FOR DIFFERENTIATING SIX KINDS OF BLACK INKS ON PAPER.

Shigeru Sugawara

EVALUATION OF SPACEBORNE AND AIRBORNE HYPERSPECTRAL DATA FOR INLAND WATER APPLICATIONS

Alice Fabbretto, Andrea Pellegrino, Krista Alikas, Federica Braga, Mariano Bresciani, Claudia Giardino and Diana Vaičiūtė

DEVELOPING AN AUTONOMOUS, TASK-DISTRIBUTED DRONE NETWORK FOR THE MAPPING OF REMOTE AND ISOLATED TARGETS

Sandra Lorenz, René Booysen, Yuleika Madriz, Sam Thiele, Moritz Kirsch and Richard Gloaguen

INTERACTIVE HYPERSPECTRAL DATA INSPECTION DURING FIELD OPERATIONS

Dennis Langer, Asgeir Sørensen and Tor Arne Johansen

CHRYSOPILE DETECTION IN SOILS WITH PROXIMAL HYPERSPECTRAL SENSING AND CHEMOMETRICS

Silvia Serranti, Sergio Malinconico, Ivano Lonigro, Riccardo Gasbarrone, Giuseppe Bonifazi and Sergio Bellagamba

SUPPORTING LITHIUM EXPLORATION AND MINING USING HYPERSPECTRAL DATA

I. Cecilia Contreras, Laura Tusa and Richard Gloaguen



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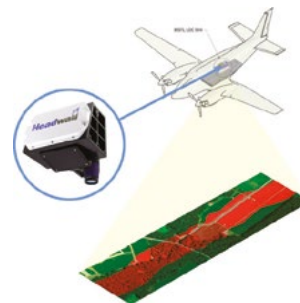
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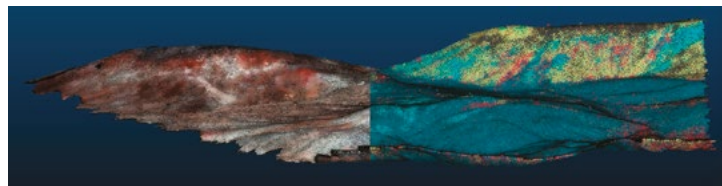
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## Spectroscopic Solutions for Process Analytics

### Meet the hyperspectral experts at booth #6

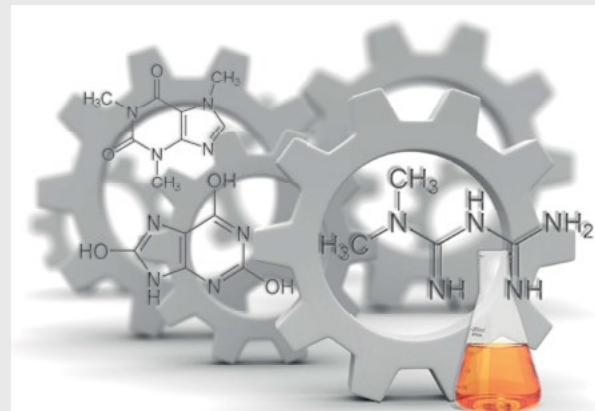
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- **Application and integration support**  
We analyze the feasibility of your project and support the development

Spectroscopy applications for Process Analytics



wed-o-1-a [SwIImS] (1)

10:30 - 12:30

Session chairs : Aoife Gowen, University College Dublin, Ireland  
 Ana Herrero-Langreo, University College Dublin, Ireland

DATA FUSION OF TWO SPECTRAL IMAGING CAMERAS COUPLED WITH DEEP LEARNING FOR IDENTIFICATION OF MULTIPLE BACTERIA  
Junli Xu, Ana Herrero-Langreo, Sakshi Lamba and Aoife Gowen

HYPERSPETRAL IMAGE ANALYSIS OF SCOTS PINE SAPWOOD AFFECTED BY DECAY FUNGI  
Arnoud Jochemsen, Gry Alfredsen and Ingunn Burud

HOW TO ASSESS THE CONFORMITY OF FOOD PRODUCT SAMPLES USING THEIR SPECTRA: COMPARISON OF APPROACHES.  
François Stevens, Tom Fearn, Beatriz Carrasco Gomez, Vincent Baeten and Juan Antonio Fernández Pierna

AN INVESTIGATION INTO THE INFLUENCE OF SAMPLE PRESENTATION IN THE MEASUREMENT OF MILK POWDER USING ATTENUATED TOTAL REFLECTANCE (ATR) MID-INFRARED (MIR) SPECTROSCOPY.  
Áine Ní Fhuaráin

PERSPECTIVES OFFERED BY NEAR INFRARED HYPERSPECTRAL IMAGING APPROACHES TO AGRO-FOOD ANALYSIS  
Juan Antonio Fernández Pierna, François Stevens and Vincent Baeten

HYPERSPETRAL IMAGING ANALYSIS COMBINED WITH HIERARCHICAL MODELING AND VARIABLES SELECTION FOR PLASTIC WASTE RECOGNITION BY POLYMER AND COLOR  
Giuseppe Bonifazi, Silvia Serranti, Giuseppe Capobianco and Paola Cucuzza

CLASSIFICATION OF COMMERCIAL MUESLI INGREDIENTS BY SWIR HYPERSPECTRAL IMAGING  
Gözde Özdoğan and Aoife Gowen

DETECTION OF BIOFILMS AND PSEUDOMONAS AERUGIONSA CELLS IN COMPLEX BIOFILMS ON STAINLESS STEEL SURFACES BY NEAR INFRARED SPECTROSCOPY (NIRS) AND CHEMOMETRICS STUDIES  
Nazan Altun, Marta Sampayo Iglesias, Ana Herrero-Langreo, Natalia Prado Marrón, Martín Hervello Costas, Aoife Gowen, Felipe Lombó and Pelayo González González

wed-o-1-b Classification

10:30 - 12:30

Session chairs : Shailesh Deshpande, Tata Research Dev. and Design Centre, India  
Jing Yao, Chinese Academy of Sciences, China

UNSUPERVISED SPATIAL-SPECTRAL HYPERSPECTRAL IMAGE RECONSTRUCTION AND CLUSTERING WITH DIFFUSION GEOMETRY  
Kangning Cui, Ruoning Li, Sam Polk, James Murphy, Robert Plemmons and Raymond Chan

HIGH-DIMENSIONAL MULTIREOLUTION SATELLITE IMAGE CLASSIFICATION: AN APPROACH BLENDING THE ADVANTAGES OF CONVEX OPTIMIZATION AND DEEP LEARNING  
Chia-Hsiang Lin, Man-Chun Chu and Hone-Jay Chu

MSETRANS: A NETWORK FOR LAND COVER CLASSIFICATION OF OPTICAL AND SAR REMOTE SENSING IMAGES  
Bo Ren, Shibin Ma, Zhao Wang and Biao Hou

SPECTRAL-SPATIAL CLASSIFICATION OF HYPERSPECTRAL IMAGES WITH MULTI-LEVEL CNN  
Koushiky Chhapariya, Krishna Mohan Buddhiraju and Anil Kumar

EXTENSION OF GUIDED FILTER WITH MEMORY FOR PROJECTION ON TRAINING SPECTRUM  
Myoung Hwan Kim and Jun Gi Lee


HYPERSPETRAL IMAGE CLASSIFICATION BASED ON MULTI-LEVEL SPECTRAL-SPATIAL TRANSFORMER NETWORK  
Hao Yang, Haoyang Yu, Danfeng Hong, Zhen Xu, Yulei Wang and Meiping Song

wed-o-1-c	New applications (3)	10:30 - 12:30	wed-o-1-d	Atmosphere, gases, clouds	10:30 - 12:30
Session chairs : Hilda Deborah, Norwegian Univ. of Science and Technology, Norway			Session chairs : Alan Schaum, US Naval Research Lab., Washington DC, USA		
<p><b>HYPER SPECTRAL PIGMENT DATASET</b> Hilda Deborah</p> <p><b>UNVEILING “THE SCREAM” BY EDVARD MUNCH: ITERATIVE FUZZY C-MEANS ANALYSIS OF MACRO XRF MAPPING</b> Maria Lucia Cardinali, Fauzia Albertin, Laura Cartechini, Irina Crina Anca Sandu, Eva Storevik Tveit, Aldo Romani, Chiara Grazia, Renato Pereira de Freitas, Vittoria Bruni, Domenico Vitulano and Francesca Rosi</p> <p><b>THE APPLICATION OF MACHINE LEARNING TO PAINT CONDITION ASSESSMENT USING HYPER SPECTRAL DATA</b> Ayoub Alayoub, Samer Abed El Rahim, Samir Mustapha, Darine Salam, Ali Tehrani and Nguyen Lu Dang Khoa</p> <p><b>CHARACTERIZATION OF SURFACE OXIDES FROM HYPER SPECTRAL MEASUREMENTS</b> Tarek Zenati, Bruno Figliuzzi and Shu Hui Ham</p> <p><b>A SUPERVISED APPROACH FOR THE DETECTION OF SURFACE OXIDES FROM HYPER SPECTRAL MEASUREMENTS</b> Tarek Zenati, Bruno Figliuzzi and Shu Hui Ham</p> <p><b>THE EFFECT OF BIODEGRADABLE EDIBLE BIOPOLYMER COATINGS WITH ANTIMICROBIAL PEPTIDES ON OXIDATION RATE AND COLOR OF FROZEN STORED ATLANTIC MACKEREL</b> Piotr Kulawik, Marzena Zajac, Magdalena Janik, Wondyfrw Tadele, Ewelina Jamróz, Tomas Vlcko and Vedran Milosavljević</p>			<p><b>A UNIFORMLY MOST POWERFUL DETECTOR OF GAS PLUMES AGAINST A CLUTTERED BACKGROUND</b> Alan Schaum</p> <p><b>ENSEMBLE MACHINE-LEARNING ALGORITHMS FOR CLEAR-SKY DETECTIONS IN INFRARED HYPER SPECTRAL OBSERVATIONS: ASSESSMENT AND PHYSICAL INTERPRETABILITY</b> Xianglei Huang, Chongxing Fan and Qing Yue</p> <p><b>HYPER SPECTRAL DEHAZING USING ADMM-ADAM THEORY</b> Po-Wei Tang and Chia-Hsiang Lin</p> <p><b>DEEP LEARNING METHANE RETRIEVAL ALGORITHMS BASED ON SIMULATED E2E SCENES – RISE</b> Johannes Schmidt, Grégoire Kerr, Bernhard Sang and Roger Förstner</p>		



wed-o-2-a [SwIImS] (2)

14:00 - 15:40

Session chairs :  
 Ingunn Burud, Norwegian Univ. of Life Sciences, Norway  
Junli Xu, University College Dublin, Ireland

HYPER SPECTRAL IMAGING APPLIED TO THE RECOGNITION OF CONTAMINANTS IN POST-EARTHQUAKE BUILDING WASTE STREAM  
Giuseppe Bonifazi, Silvia Serranti, Giuseppe Capobianco and Oriana Trotta

EFFECT OF SPECTRAL PRETREATMENTS IN DISTANCE-BASED CLASSIFICATION OF RECYCLABLE MATERIALS THROUGH NEAR INFRARED HYPER SPECTRAL IMAGING  
Ana Herrero-Langreo, Serena Iaconelli and Aoife A. Gowen

HYPER SPECTRAL CHANGE DETECTION: NEW WAY OF EARTH OBSERVATION MONITORING  
Andrea Massi and Antonio Cosentino

HIERARCHICAL COMPRESSED SUBSPACE CLUSTERING OF INFRARED SINGLE-PIXEL MEASUREMENTS  
Miguel Marquez, Jonathan Monsalve, Kevin Arias, Karen Sánchez, Carlos Hinojosa and Henry Arguello

HYPER SPECTRAL IMAGING APPLIED TO ASBESTOS RECOGNITION IN SOILS  
Giuseppe Capobianco, Silvia Serranti, Giuseppe Bonifazi, Sergio Malinconico, Ivano Lonigro and Sergio Bellagamba

DETECTION OF ESCHERICHIA COLI AND SALMONELLA ENETRICA BIOFILMS BY HYPER SPECYRAL IMAGING TECHNIQUE  
Nazan Altun, Ana Herrero-Langreo, Felipe Lombó, Pelayo González González and Aoife Gowen

wed-o-2-b Unmixing (1) :

14:00 - 15:40

Session chairs :  
Daniele Cerra, DLR, Germany  
Danfeng Hong, Chinese Academy of Sciences, China

ON THE CONVERGENCE OF LINEARIZED ADMM FOR SEPARABLE REWEIGHTED SPARSE HYPER SPECTRAL UNMIXING  
Keisuke Ozawa

DLR HYSU—A BENCHMARK DATASET FOR SPECTRAL UNMIXING  
Daniele Cerra, Miguel Pato, Kevin Alonso, Claas Köhler, Mathias Schneider, Raquel de Los Reyes, Emiliano Carmona, Rudolf Richter, Franz Kurz, Peter Reinartz and Rupert Müller

HYPER SPECTRAL SPARSE UNMIXING VIA FIRM THRESHOLDING MAPPING  
Longfei Ren, Danfeng Hong, Xu Sun, Lianru Gao and Min Huang

SHADOW-AWARE NONLINEAR SPECTRAL UNMIXING WITH SPATIAL REGULARIZATION  
Guichen Zhang, Daniele Cerra, Paul Scheunders and Rupert Müller

A NEW MINIMUM VOLUME BASED REGULARISATION FOR HYPER SPECTRAL IMAGE UNMIXING  
Mo Zhang and Bruno Ricard

Coffee break

15:40

wed-o-2-c New Applications (4)

14:00 - 15:40

Session chairs : Stefan Livens, VITO Remote Sensing, Belgium  
Inga Niedermaier, inno-spec GmbH, Germany

HYPERBOT – A BENCHMARKING TESTBED FOR ACQUISITION OF ROBOT-CENTRIC HYPERSPECTRAL SCENE AND IN-HAND OBJECT DATA  
Nathaniel Hanson, Tarik Kelestemur, Joseph Berman, Dominik Ritzenhoff and Taskin Padir

HYPERSPECTRAL IMAGE VISUALIZATION THROUGH NEURAL NETWORK FOR THE FOOD INDUSTRY  
Hyeok Yoon and Jungi Lee

A HIGH SPECTRAL AND SPATIAL RESOLUTION SATELLITE MISSION CONCEPT ENABLING MARINE PLASTICS MONITORING  
Stefan Livens, Els Knaeps, Iskander Benhadj and Mehrdad Mostaghi

INTEGRATED HYPERSPECTRAL AND RAMAN SENSORS FOR FAST CHARACTERIZATION OF PLASTICS IN E-WASTE RECYCLING STREAMS  
Andréa de Lima Ribeiro, Margret Fuchs, Sandra Lorenz, Yuleika Madriz, Erik Herrmann and Richard Gloaguen

FROM CAMERA MANUFACTURE TO INDUSTRIAL APPLICATION – A LONG AND WINDING ROAD  
Inga Niedermaier

wed-o-2-d Data Processing (3)

14:00 - 15:40

Session chairs : Xiuping Jia, The Univ. of New South Wales at Canberra, Australia  
Lianru Gao, Chinese Academy of Sciences, China

SHAPE TRANSFORMATION BASED SIMILARITY METRIC FOR HYPERSPECTRAL DATA  
Shailesh Deshpande, Manish Kausik H and Balamuralidhar P

A CLOSER LOOK AT A SPECTROGRAPHIC WAVELENGTH CALIBRATION  
Marie Bøe Henriksen, Fred Sigernes and Tor Arne Johansen

INCORPORATING ATTENTION MECHANISM AND GRAPH REGULARIZATION INTO CNNs FOR HYPERSPECTRAL IMAGE CLASSIFICATION  
Chu Yang, Ye Minchao and Qian Yuntao

LEARNING FROM NOISY PSEUDO LABELS FOR WEAKLY SUPERVISED REMOTE SENSING IMAGE CLASSIFICATION  
Jue Zhang, Xiuping Jia, Jiankun Hu and Jun Zhou


ITERATIVE SEMI-SUPERVISED MANIFOLD ALIGNMENT FOR HYPERSPECTRAL IMAGE CLASSIFICATION.  
Linghui Zhu, Li Ma and Xingmei Li

Coffee break

15:40



wed-o-3-a [SwIIImS] (3) roundtable 16:20 - 18:00

Session chairs : Cristina Malegori, University of Genova, Italy  
 Manuela Mancini, Polytechnic University of Marche, Italy

LAND COVER CLASSIFICATION BASED ON HYPERSPECTRAL-LIDAR FUSION IN URBAN AREAS: A CASE STUDY

Agnieszka Kuras, Maximilian Brell, Kristian Hovde Liland, Fadi Al Machot, Thomas Thiis and Ingunn Burud

SPECTRAL IMAGING FOR CHARACTERIZATION OF PLASTIC DEGRADATION AND THE RELEASE OF MICRO- AND NANOPLASTICS

Ci-Hang Yang, Jun-Li Xu and Aoife Gowen

Roundtable

wed-o-3-b Unmixing (2) 16:20 - 18:00

Session chairs : Paul Scheunders, University of Antwerp, Belgium  
Rohan Zeng, Carnegie Mellon University, USA

ADDRESSING SPECTRAL VARIABILITY IN HYPERSPECTRAL UNMIXING WITH UNSUPERVISED NEURAL NETWORKS

Yuanhang Lin and Paul Gader

BLIND NONLINEAR UNMIXING FOR INTIMATE MIXTURES USING HAPKE MODEL AND CNN

Behnood Rasti and Bikram Koirala

SPECTRAL UNMIXING AND MAPPING OF CORAL REEF BENTHIC COVER WITH DEEP LEARNING

Rohan Zeng, Eric Hochberg, Alberto Candela and David Wettergreen

HYPERSPECTRAL UNMIXING USING CONVOLUTIONAL AUTOENCODER FOR METAL DETECTION IN LITHIUM-ION BATTERY RECYCLING APPLICATIONS

Seema Chouhan, Behnood Rasti, Pedram Ghamisi, Sandra Lorenz, Margret Fuchs and Richard Gloaguen

Drinks

18:00

wed-o-3-c	Change Detection	16:20 - 18:00	wed-o-3-d	New Sensors, New Platforms New Missions	16:20 - 18:00
Session chairs :	Paolo Gamba, Università di Pavia, Italy Ruoning Li, City University of Hong Kong, Hong Kong		Session chairs :	Giuseppe Ottavianelli, European Space Agency, Italy Fabrizio Preda, CEO at NIREOS SRL, Italy	
SELF-SUPERVISED CONFIDENT LEARNING FOR HYPERSPECTRAL IMAGE CHANGE DETECTION Haonan Wu and Zhao Chen			CSIMBA: ADDED VALUE OF A SMALL HYPERSPECTRAL IOD SATELLITE MISSION Stefan Livens, Dirk Nuyts, Iskander Benhadj and Joris Blommaert		
A SELF-SUPERVISED HIERARCHICAL CLUSTERING NETWORK FORMULTIPLE CHANGE DETECTION IN MULTITEMPORAL HYPERSPECTRAL IMAGES Chengfang Liang and Zhao Chen			A NOVEL HYPERSPECTRAL CAMERA BASED ON A FOURIER-TRANSFORM APPROACH Marta Provera, Alexander Barker, Dario Polli, Renzo Vanna, Antonio Perri and Fabrizio Preda		
SEMI-SUPERVISED CHANGE DETECTION OF SMALL WATER BODIES USING RGB AND MULTISPECTRAL IMAGES IN PERUVIAN RAINFORESTS Kangning Cui, Seda Camalan, Ruoning Li, Victor Pauca, Sarra Alqahtani, Robert Plemmons, Miles Silman, Evan Dethier, David Lutz and Raymond Chan			STATUS OF THE COPERNICUS HYPERSPECTRAL IMAGING MISSION FOR THE ENVIRONMENT (CHIME) AND PRESENTATION OF THE ESA SENTINEL USER PREPARATION (SUP) INITIATIVE. Giuseppe Ottavianelli, Marco Celesti, Ferran Gascon, Yves-Louis Desnos, Gordon Campbell, Diego Fernandez, Guenther Landgraf and Jens Nieke		
HYPERSPECTRAL IMAGE CHANGE DETECTION USING DEEP LEARNING AND BAND EXPANSION Sadia Shammi and Qian Du			BIODIVERSITY – STATUS OF THE FRENCH HYPERSPECTRAL AND HIGH SPATIAL RESOLUTION SPACE MISSION Xavier Briottet and Camille Desjardins		

Drinks

18:00

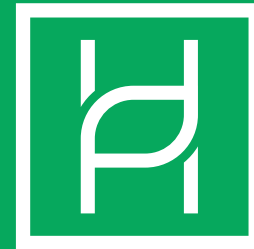


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thu-o-1-a	Object tracking - detection	10:30 - 12:30	thu-o-1-b	Vegetation and Precision farming (2)	10:30 - 12:30
Session chairs :	Jun Zhou, Griffith University, Australia Wouter Charle, imec, Belgium		Session chairs :	Anna Jarocińska, University of Warsaw, Poland Ingunn Burud, Norwegian Univ. of Life Sciences, Norway	
	SPECTRAL VIDEO: THE FAST TRACK TO SCALABLE INDUSTRY SOLUTIONS Wouter Charle			SPECTRAL IMAGING AND MACHINE LEARNING TO DETECT INNER TIPBURN IN LETTUCE Joseph Peller, Ingunn Burud, Sissel Torre and Gerrit Polder	
	SPECTRAL-SPATIAL-AWARE TRANSFORMER FUSION NETWORK FOR HYPERSPECTRAL OBJECT TRACKING Ye Wang, Yuheng Liu, Ge Zhang, Yuru Su, Shun Zhang and Shaohui Mei			CLASSIFYING CROP TYPES USING GAUSSIAN BAYESIAN MODELS AND NEURAL NETWORKS ON GHISACONUS USGS DATA FROM NASA HYPERSPECTRAL SATELLITE IMAGERY William Basener	
	A TRANSFORMER-BASED THREE-BRANCH SIAMESE NETWORK FOR HYPERSPECTRAL OBJECT TRACKING Nan Su, Hongjiao Liu, Chunhui Zhao, Yiming Yan, Jinpeng Wang and Jiayue He			RETRIEVAL OF LEAF AREA INDEX USING INVERSION ALGORITHM Bhagyashree Verma, Rajendra Prasad, Prashant K. Srivastava and Prachi Singh	
	BS-SIAMRPN: HYPERSPECTRAL VIDEO TRACKING BASED ON BAND SELECTION AND THE SIAMESE REGION PROPOSAL NETWORK Shiqing Wang, Kun Qian and Peng Chen			REMOTE SENSING OF BARK BEETLE DAMAGE ON NORWAY SPRUCE BY INVERSE PROSAIL-MODEL Leevi Annala, Eija Honkavaara, Raquel Alves de Oliveira, Roope Näsi, Niko Koivumäki, Päivi Lyytikäinen-Saarenmaa, Mikko Peltö-Arvo and Ilkka Pölönen	
	A FAST HYPERSPECTRAL OBJECT TRACKING METHOD BASED ON CHANNEL SELECTION STRATEGY Yifan Zhang, Xu Li, Feiyue Wang, Baoguo Wei and Lixin Li			HYPERSPECTRAL VS. MULTISPECTRAL DATA: POSSIBILITY OF THE IDENTIFICATION OF NATURA 2000 NON-FOREST HABITATS Anna Jarocińska, Dominik Kopec, Jan Niedzielko and Marlena Kycko	
	DETECTION AND TRACKING OF SEARCH AND RESCUE PERSONNEL UNDER HINDERED LIGHT CONDITIONS USING HYPERSPECTRAL IMAGING Lennert Antson, Arthur Vandenhoeke, Michal Shimoni, Charles Hamesse and Hiep Luong				

Lunch

12:30

thu-o-1-c Data Fusion, reconstruction 10:30 - 12:30	thu-o-1-d Applications 10:30 - 12:30
<p>Session chairs : Gemine Vivone, National Research Council, Italy Behnood Rasti, Helmholtz-Zentrum, Germany</p> <p>MULTISOURCE REMOTE SENSING DATA CLASSIFICATION BASED ON A DUAL ATTENTION FUSION NETWORK Junjie Wang, Wei Li, Mengmeng Zhang and Yunhao Gao</p> <p>BI-TEMPORAL REMOTE SENSING IMAGE FUSION VIA SEMI-COUPLED LOW-RANK TENSOR APPROXIMATION Yinjian Wang, Wei Li, Na Liu and Ran Tao</p> <p>UNSUPERVISED DATA FUSION WITH DEEPER PERSPECTIVE: A NOVEL MULTISENSOR DEEP CLUSTERING ALGORITHM Kasra Rafiezadeh Shahi, Pedram Ghamisi, Behnood Rasti, Paul Scheunders and Richard Gloaguen</p> <p>FAST RECONSTRUCTION OF HYPERSPECTRAL IMAGE FROM ITS RGB COUNTERPART USING ADMM-ADAM THEORY Chia-Hsiang Lin, Tzu-Hsuan Lin, Ting-Hsuan Lin and Tang-Huang Lin</p> <p>DEEPSFN3: DEEP MULTI-SCALE LEARNING MODEL FOR SPATIAL-SPECTRAL FUSION OF SENTINEL-2 AND SENTINEL-3 REMOTE SENSING IMAGES Ahed Alboody, Matthieu Puigt, Gilles Roussel, Vincent Vantrepotte, Cédric Jamet and Trung-Kien Tran</p> <p>HYPERSPECTRAL-MULTISPECTRAL IMAGE FUSION USING NNDIFFUSE: PERFORMANCE ASSESSMENT USING A PIXEL CLASSIFICATION TASK Rey Ducau and David Messinger</p>	<p>Session chairs : Ámbar Pérez-García, Univ. of Las Palmas de Gran Canaria, Spain Rodolphe Marion, CEA, France</p> <p>NDOI, A NOVEL OIL SPECTRAL INDEX: COMPARISONS AND RESULTS Ámbar Pérez-García, José Fco. López Feliciano and Pablo Horstrand Andaluz</p> <p>DETECTION AND CHARACTERIZATION OF POLLUTANTS IN INDUSTRIAL WASTE WATERS BY IMAGING SPECTROSCOPY Louis Zaugg, Rodolphe Marion, Laure Roupioz, Xavier Briottet and Malik Chami</p> <p>USING HYPERSPECTRAL REMOTE SENSING TO ANALYSE SEASONAL VARIABILITY IN CHLOROPHYLL-A SPECIFIC ABSORPTION COEFFICIENT OF NATURAL PHYTOPLANKTON Antoine Dille, Héloïse Lavigne and Clémence Goyens</p> <p>NEURAL NETWORK LEARNING OF CHEMICAL BOND REPRESENTATIONS IN SPECTRAL INDICES AND FEATURES William Basener</p>

Lunch

12:30

thu-o-2-a	HyperMLPA (1)	thu-o-2-b	Data Processing (4)
	14:00 - 15:40		14:00 - 15:40
Session chairs :	Sina Keller, Karlsruhe Institute of Technology, Germany Martin Weinmann, Karlsruhe Institute of Technology, Germany	Session chairs :	Jannick Kuester, Fraunhofer IOSB, Germany Joseph Garrett, Norwegian Univ. of Science and Tech., Norway
	EXPLORING THE COLLABORATION BETWEEN CONVOLUTIONAL NEURAL NETWORKS AND TRANSFORMERS IN HYPERSPECTRAL IMAGE CLASSIFICATION Hongmin Gao, Yiyang Zhang, Zhonghao Chen, Hongyi Wu, Weibo Zhang and Chenming Li		SIMILARITY-BASED HYPERSPECTRAL BAND SELECTION USING DEEP REINFORCEMENT LEARNING Dong Bao, Jun Zhou and Gervase Tuxworth
	EVALUATION OF TRANSFORMERS AND CONVOLUTIONAL NEURAL NETWORKS FOR HIGH-DIMENSIONAL HYPERSPECTRAL SOIL TEXTURE CLASSIFICATION Laura Kühnlein and Sina Keller		IDENTIFICATION OF OPTIMAL ABSORBANCE SPECTRAL BANDS FROM AVIRIS-NG USING STANDARD DERIVATIVE ANALYSIS Prachi Singh, Prashant K. Srivastava, R. K. Mall, Bhagyashree Verma, Rajendra Prasad and Jochem Verrelst
	DEEP LEARNING OF RADIATIVE ATMOSPHERIC TRANSFER WITH AN AUTOENCODER Abigail Basener and Bill Basener		ACCELERATING SUPPORT VECTOR MACHINES FOR REMOTE PLATFORMS BY INCREASING SPARSITY Joseph Garrett, Nitesh Singh, Tor Arne Johansen and Ion Necoara
	WAVELET-GUIDED DEEP NEURAL NETWORK FOR ROBUST ONE-CLASS CLASSIFICATION Omid Ghoshtlou, Miguel Heredia Conde and Mihai Datcu		A TENSOR NON-CONVEX LOW RANK AND SPARSE CONSTRAINED BAND SELECTION SCHEME FOR CLUSTERING OF HYPERSPECTRAL PAPER DATA Jobin Francis, Shanthini K S, Sudhish N George and Sony George
	HYPER-VIT: A NOVEL LIGHT-WEIGHTED VISUAL TRANSFORMER-BASED SUPERVISED CLASSIFICATION FRAMEWORK FOR HYPERSPECTRAL REMOTE SENSING APPLICATIONS Bishwas Praveen and Vineetha Menon		ADVANCES IN IMAGING SPECTROMETER ATMOSPHERIC CORRECTION WITH THE OPEN SOURCE ISOFIT CODEBASE Niklas Bohn, David Thompson, Phil Brodrick, Nimrod Carmon, Kerry Cawse-Nicholson, Adam Chlus, David Connolly, Regina Eckert, Jay Fahlen, Michael Garay, Robert Green, Evan Greenberg, Michelle Gierach, Olga Kalashnikova, Matthew Lebsock, Benjamin Poulter, Ann Raiho, Mark Richardson, Philip Townsend and Alexey Shiklomanov

Coffee break

15:40

thu-o-2-c New sensors, new platforms new missions (2) 14:00 - 15:40	thu-o-2-d Data Processing (5) 14:00 - 15:40
<p>Session chairs : Stéphane Nicolas, NEO, Norway Michal Shimoni, Kuva Space, Finland</p> <p>HIGH ALTITUDE HYPERSPECTRAL IMAGER FOR EARTH MONITORING Stephane Nicolas, Karina Strøm, Magnus Breivik and Trond Løke</p> <p>THE CHIME SPECTROMETERS: STATE OF THE ART DIAMOND TURNED BROADBAND DIFFRACTION GRATING Benoit Borguet, Vincent Moreau, Romain Vandoelaaghe, Gregory Lousberg and Etienne Renotte</p> <p>A LOW-COST MINIATURE MULTISPECTRAL IMAGE SENSOR AND ITS APPLICATIONS IN CONSUMER ELECTRONICS Xinyuan Zhang, Zhongqiu Cui, Zhijie Shen, Wei Wang, Di Jiang, Dalong Zhang and Teng Wang</p> <p>THE CHIME OBSERVATION PERFORMANCE SIMULATOR (OPSI) SOFTWARE SYSTEM: DEVELOPMENT AND STATUS AT PRELIMINARY DESIGN REVIEW Nicolas Lamquin, Romain Sumérot, Alexis Déru, Frédéric Romand, Clarissa Hamann, Filippo Galassi, Stefano Baldacci, Dimitri Serrano-Velarde, Dimitri Lebedeff, Vincent Soullignac, Hugo Monchatre, Claudia Isola, Antonio Gabriele, Adrian Garcia and Anantha Chanumolu</p> <p>A MODULAR HYPERSPECTRAL IMAGE PROCESSING PIPELINE FOR CUBESATS Sivert Bakken, Aksel Danielsen, Kristine Døsvik, Joseph Garrett, Milica Orlandic, Dennis Langer and Tor Arne Johansen</p>	<p>Session chairs : Jon Alvarez Justo, NTNU, Norway Ulrike Pestel-Schiller, Leibniz Universität Hannover, Germany</p> <p>STUDY OF THE GOMP ALGORITHM FOR RECOVERY OF COMPRESSED HYPERSPECTRAL IMAGES Jon Alvarez Justo and Milica Orlandic</p> <p>WRAPPER-BASED PRINCIPAL COMPONENT SELECTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION Arvind Kumar Singh, Renuvenkataswamy Sunkara and Govind R. Kadambi</p> <p>SINGLE-FRAME SUPER-RESOLUTION OF REAL-WORLD SPACEBORNE HYPERSPECTRAL DATA Kavach Mishra and Rahul Dev Garg</p> <p>SEMANTIC SEGMENTATION OF NATURAL AND MAN-MADE FRUITS USING A SPATIAL-SPECTRAL TWO-CHANNEL-CNN FOR SPARSE DATA Ulrike Pestel-Schiller, Ye Yang and Jörn Ostermann</p> <p>COCOSVI: SINGLE SNAPSHOT COMPRESSIVE SPECTRAL VIDEO VIA COVARIANCE MATRIX ESTIMATION Jonathan Monsalve, Miguel Marquez, Karen Sánchez, Carlos Hinojosa, Iñaki Esnaola and Henry Arguello</p>

Coffee break

15:40



thu-o-3-a

HyperMLPA (2)

16:20 - 18:00

Session chairs : Sina Keller, Karlsruhe Institute of Technology, Germany  
 Laura Kühnlein, ci-tec GmbH, Germany

PROBABILISTIC BREAKING TIE: AN ACTIVE LEARNING STRATEGY TO LEVERAGE CLASS HIERARCHY FOR IMPERVIOUS SURFACES CLASSIFICATION  
 Romain Thoreau, Véronique Achard, Laurent Risser, Béatrice Berthelot and Xavier Briottet

AN ENTROPY-BASED SPEED UP FOR HYPERSPECTRAL DATA CLASSIFICATION VIA CNN

Vittoria Bruni, Giuseppina Monteverde and Domenico Vitulano

DEEP SELF-SUPERVISED PIXEL-LEVEL LEARNING FOR HYPERSPECTRAL CLASSIFICATION

Jonathan González-Santiago, Fabian Schenkel, Wolfgang Gross and Wolfgang Middelman

SPECTRAL-SPATIAL SELF-SUPERVISED FEATURE LEARNING AND CLUSTERING FOR HYPERSPECTRAL IMAGERY

Laura Elena Cue La Rosa, Sam Thiele, Pedram Ghamisi and Richard Gloaguen

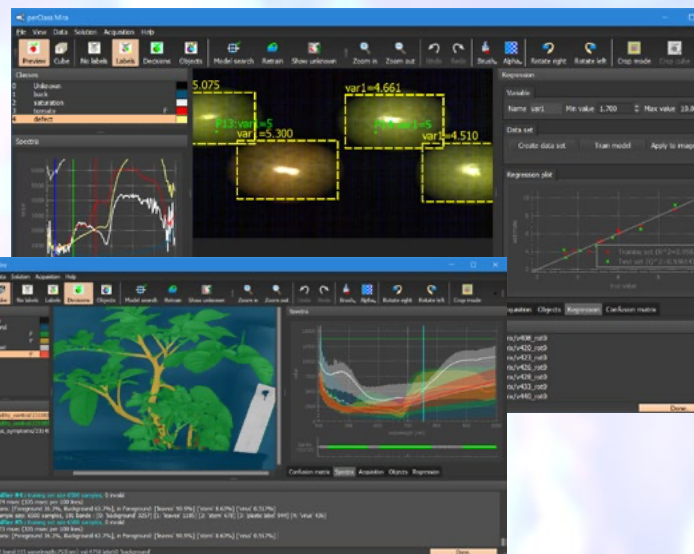
MULTI SPECTRAL-SPATIAL GABOR FEATURE FUSION BASED ON END-TO-END DEEP LEARNING FOR HYPERSPECTRAL IMAGE CLASSIFICATION

Refka Hanachi, Akrem Sellami, Imed Riadh Farah and Mauro Dalla Mura



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