Satellite Workshops at the 2023 IEEE International Conference on Acoustics, Speech and Signal Processing

Maria Sabrina Greco *(University of Pisa)* & ***Gerasimos Potamianos*** *(University of Thessaly)*

Program – Monday June 5th

Morning	Afternoon
W04 Signal Processing and Machine Learning to Foster Accessibility in Cultural Environments	**W07** IWCIM 2023: The Eleventh International Workshop on Computational Intelligence for Multimedia Understanding
W05 HMM-QoE 2023: Humans, Machines and Multimedia - Quality of Experience and Beyond	**W08** EEG Workshop - EEG Signal Processing for the Future: Integrating Insights Across Domains
W06 OISAC: Opportunistic Integrated Sensing and Communication (ISAC) of Weather	**W09** SDPNGS 2023: Signal and Data Processing for Next Generation Satellites
	W18 Workshop on Signal Processing for Autonomous Systems (SPAS)

W04 Signal Processing and Machine Learning to Foster Accessibility in Cultural Environments

Organizers: **Dimitrios Kosmopoulos** *(University of Patras, Greece)*
Iason Oikonomidis *(ICS FORTH, Greece)*
Anastasios Roussos *(ICS FORTH, Greece)*
Antonis Argyros *(ICS FORTH, Greece & University of Crete, Greece)*

Monday June 5 (AM-only); Lectures: Delphi; Posters: WP-A

8:30 – 9:45 Welcome & Opening Keynotes

(Chairs: **Anastasios Roussos** & **Iason Oikonomidis**)

8:30 Welcoming & Opening Remarks

8:45 Invited Talk: Vassilis Katsouros *(ILSP / Athena RC)*
Enhancing Accessibility to Tangible and Intangible Cultural Heritage Content

9:15 Invited Talk: Thomas Hanke *(Universität Hamburg)*
Sign Language Technologies and Accessibility

9:45 – 10:00 Spotlight Paper Presentations (3-min)

(Chairs: **Anastasios Roussos** & **Iason Oikonomidis**)

9:45
Improving Few-Shot Performance of DST Model through Multitask to Better Serve Language-Impaired People
Mingyang Sun, QiXiang Gao, Yutao Mou, Guanting Dong, Ruifang Liu, Wenbin Guo

9:48
A Lightweight Dynamic Filter for Keyword Spotting
Donghyeon Kim, Kyungdeuk Ko, Jeong-gi Kwak, David K Han, Hanseok Ko

9:51
Investigating Pooling Strategies and Loss Functions for Weakly-supervised Text-to-Audio Grounding via Contrastive Learning
Xuenan Xu, Mengyue Wu, Kai Yu

9:54
Assisted Labeling Visualizer (ALVI): A Semi-Automatic Labeling System For Time-Series Data
Lee B Hinkle, Tristan Pedro, Tyler Lynn, Gentry M Atkinson, Vangelis Metsis

9:57
Procrustes-DTW: Dynamic Time Warping Variant for the Recognition of Sign Language Utterances
Nikolaos Arvanitis, Evangelos Sartinas, Dimitrios Kosmopoulos

10:00 – 10:20 **Coffee-Break**

10:20 – 11:00 **Poster Session** **(Poster Area WP-A)**

11:00 – 12:00 **Closing Keynotes**

(Chairs: **Dimitrios Kosmopoulos** & **Iason Oikonomidis**)

11:00 **Invited Talk: Sotirios Chatzis** *(Cyprus University of Technology)*

Promoting Sustainable Development Goals via Deep Learning for Signal Processing and Understanding

11:30 **Invited Talk: Evanthia Papadopoulou**

(Archeological Museum of Thessaloniki)

Sensitive Museums: Engaging Deaf Audiences with the SignGuide Application

Monday June 5 (10:20 – 11:00 AM); Poster Area: WP-A

Chairs: **Anastasios Roussos & Iason Oikonomidis**

WP-A-1

7041 (W04.01): Improving Few-Shot Performance of DST Model through Multitask to Better Serve Language-Impaired People

Mingyang Sun *(Beijing University of Posts and Telecommunications);* ***QiXiang Gao*** *(Beijing University of Posts and Telecommunications);* ***Yutao Mou*** *(Beijing University of Posts and Telecommunications);* ***Guanting Dong*** *(Beijing University of Posts and Telecommunications);* ***Ruifang Liu*** *(Beijing University of Posts and Telecommunications);* ***Wenbin Guo*** *(Beijing University of Posts and Telecommunications)*

WP-A-3

7089 (W04.02): A Lightweight Dynamic Filter for Keyword Spotting

Donghyeon Kim *(Korea University);* ***Kyungdeuk Ko*** *(Korea University);* ***Jeong-gi Kwak*** *(Korea University);* ***David K Han*** *(Drexel University);* ***Hanseok Ko*** *(Korea University)*

WP-A-5

7090 (W04.03): Investigating Pooling Strategies and Loss Functions for Weakly-supervised Text-to-Audio Grounding via Contrastive Learning

Xuenan Xu *(Shanghai Jiao Tong University);* ***Mengyue Wu*** *(Shanghai Jiao Tong University);* ***Kai Yu*** *(Shanghai Jiao Tong University)*

WP-A-8

7133 (W04.04): Assisted Labeling Visualizer (ALVI): A Semi-Automatic Labeling System For Time-Series Data

Lee B Hinkle *(Texas State University);* ***Tristan Pedro*** *(Texas State University);* ***Tyler Lynn*** *(Texas State University);* ***Gentry M Atkinson*** *(Texas State University);* ***Vangelis Metsis*** *(Texas State University)*

WP-A-11

7136 (W04.05): Procrustes-DTW: Dynamic Time Warping Variant for the Recognition of Sign Language Utterances

Nikolaos Arvanitis *(University of Patras);* ***Evangelos Sartinas*** *(University of Patras);* ***Dimitrios Kosmopoulos*** *(University of Patras)*

W05 HMM-QoE 2023: Humans, Machines and Multimedia - Quality of Experience and Beyond

Organizers: **Maria Martini** *(Kingston University London, UK)*
Laura Toni *(University College London, UK)*
Ali C. Begen *(Özyeğin University, Turkey)*

Monday June 5 (AM-only); Lectures: Jupiter Ballroom

8:30 – 9:20 Opening & Keynote (Chair: **Maria Martini**)

8:30 Welcome & Opening: Maria Martini

8:35 Keynote: Ivan Bajić *(Simon Fraser University)*
Visual Coding for Humans and Machines

9:20 – 10:00 Oral Paper Presentations (I) (Chair: **Angelo Collucia**)

9:20
6968 (W05.01): LCCM-VC: Learned Conditional Coding Modes for Video Compression
Hadi Hadizadeh *(Simon Fraser University);* ***Ivan Bajic*** *(Simon Fraser University)*

9:40
7181 (W05.05): Predicting CNN Learning Accuracy Using Chaos Measurement
Rémi Piau *(INRIA);* ***Thomas Maugey*** *(INRIA);* ***Aline Roumy*** *(INRIA)*

10:00 – 10:20 Coffee-Break

10:20 – 11:20 Oral Paper Presentations (II) (Chair: **Laura Toni**)

10:20
7105 (W05.02): A Study on the Impact of Virtual Reality on User Attention
Sara Baldoni *(University of Padova);* ***Mahmoud Z. A. Wahba*** *(University of Padova);* ***Marco Carli*** *(Università degli Studi Roma Tre);* ***Federica Battisti*** *(University of Padova)*

10:40
7119 (W05.03): Quality-of-Things Based Machine Learning for the MIoT Applications
Shaymaa Al-Juboori *(University of Plymouth);* ***AH Alnuaimi*** *(University of Plymouth);* ***Amulya Karaadi*** *(University of Plymouth);* ***Is-Haka Mkwawa*** *(University of Plymouth);* ***Jianwu Zhang*** *(Hangzhou Dianzi University);* ***Lingfen Sun*** *(University of Plymouth)*

11:00
7179 (W05.04): A Clustered Federated Learning Approach for Estimating the Quality of Experience of Web Users
Simone Porcu *(University of Cagliari);* ***Alessandro Floris*** *(University of Cagliari);* ***Luigi Atzori*** *(University of Cagliari)*

11:20 – 12:00 **Invited Talks** (Chair: **Maria Martini**)

11:20 **Kristian Fischer** *(Friedrich-Alexander-Universität Erlangen-Nürnberg)*

Image and Video Coding for Machines

11:40 **Patrick Le Callet** *(Ecole polytechnique de l'université de Nantes)*

Opportunity in Difficulty: Post Pandemic Practices for QoE Testing

W06 OISAC: Opportunistic Integrated Sensing and Communication (ISAC) of Weather

Organizers: **Hagit Messer** *(Tel Aviv University, Israel)*
Jonatan Ostrometzky *(Tel Aviv University, Israel)*

Monday June 5 (AM-only); Lectures: Athena; Posters: WP-B

8:30 – 10:00 Keynotes

(Chair: **Jonatan Ostrometzky**)

8:30 Opening Remarks: Jonatan Ostrometzky

8:40 Keynote #1: Hagit Messer *(Tel Aviv University)*
Review of Opportunistic Integrated Weather Sensing and Communication by CMLs

9:10 Keynote #2: Filippo Giannetti *(University of Pisa)*
Hands-On Opportunistic Rainfall Estimation from Satellite Signals: Implementation, Performance and Lessons Learnt

9:35 Keynote #3: François Mercier *(Co-founder & CSO of HD-Rain)*
Opportunistic Rain Measurements from TV-sat: An Operational Business Application

10:00 – 10:30 Coffee-Break

10:30 – 10:50 Spotlight Paper Presentations (2-min)

(Chair: **Hagit Messer**)

10:30

Opportunistic Rainfall Sensing: State of the Art and Perspectives in Italy
Filippo Giannetti, Vincenzo Lottici, Fabiola Sapienza, Federico Porcù, Giacomo Roversi, Pier Paolo Alberoni, Elia Covi, Roberto Nebuloni, Greta Cazzaniga, Carlo De Michele, Cristina Deidda, Matteo Colli, Sara Zani, Christian Gianoglio, Daniele D. Caviglia, Elisa Adirosi

10:32

Opportunistic Rainfall Measurements from Dual Channel Ku-band Receiver
Francois Mercier, Laurent Barthès, Cecile Mallet

10:34

Rain Estimation over a Region Using CycleGan
Sergey Timinsky, Hai Habi, Jonatan Ostrometzky

10:36

Expert Flagging of Commercial Microwave Link Signal Anomalies: Effect on Rainfall Estimation and Ambiguity of Flagging

Julius Polz, Luca Glawion, Maximilian Graf, Nico Blettner, Elzbieta Lasota, Lennart Schmidt, Harald Kunstmann, Christian Chwala

10:38

Potential and Limitations of Filling Gaps in Commercial Microwave Link Data Stemming from Complete Loss of Signal During Heavy Rainfall

Maximilian Graf, Nico Blettner, Julius Polz, Christian Chwala

10:40

A Cramer-Rao Based Study of 2-D Fields Retrieval by Measurements from a Random Sensor Network

Shay Sagiv, Hagit Messer

10:42

Empiric Bayesian Inversion of Evaporation Ducts from Synthetic Phased-Array Data

Ted Rogers, Peter Gerstoft

10:44

Performance of a Low-Cost Dual-Frequency GNSS Receiver for Near Real-Time Water Vapor Estimation

Christina Oikonomou, Ion-Anastasios Karolos, Stylianos Bitharis, Christos Pikridas, Haris Haralambous

10:46

Improved Calibration Method for CML Humidity Retrievals over Complex Terrain

Yoav Rubin, Pinhas Alpert

10:48

Improved Water Vapor Density Estimation with Commercial Microwave Links Attenuation and Temperature

Itay Bragin, Yoav Rubin, Pinhas Alpert, Jonatan Ostrometzky

10:50 – 12:30 Poster Session (Poster Area WP-B)

Monday June 5 (10:50 AM – 12:30 PM); Poster Area: WP-B

Chair: Hagit Messer

WP-B-1

6974 (W06.05): Opportunistic Rainfall Sensing: State of the Art and Perspectives in Italy

Filippo Giannetti *(University of Pisa);* ***Vincenzo Lottici*** *(University of Pisa);* ***Fabiola Sapienza*** *(University of Pisa);* ***Federico Porcù*** *(University of Bologna);* ***Giacomo Roversi*** *(University of Bologna);* ***Pier Paolo Alberoni*** *(Arpae Emilia Romagna);* ***Elia Covi*** *(Arpae Emilia Romagna);* ***Roberto Nebuloni*** *(CNR);* ***Greta Cazzaniga*** *(Politecnico di Milano);* ***Carlo De Michele*** *(Politecnico di Milano);* ***Cristina Deidda*** *(Politecnico di Milano);* ***Matteo Colli*** *(Artys, Darts Engineering srl);* ***Sara Zani*** *(Artys, Darts Engineering srl);* ***Christian Gianoglio*** *(University of Genoa);* ***Daniele D. Caviglia*** *(University of Genova);* ***Elisa Adirosi*** *(CNR)*

WP-B-2

6985 (W06.07): Opportunistic Rainfall Measurements from Dual Channel Ku-band Receiver

Francois Mercier *(HD Rain);* ***Laurent Barthès*** *(LATMOS/UVSQ);* ***Cecile Mallet*** *(LATMOS/UVSQ)*

WP-B-3

6763 (W06.01): Rain Estimation over a Region Using CycleGan

Sergey Timinsky *(Tel Aviv University);* ***Hai Habi*** *(Tel Aviv University);* ***Jonatan Ostrometzky*** *(Tel Aviv University)*

WP-B-5

6997 (W06.08): Expert Flagging of Commercial Microwave Link Signal Anomalies: Effect on Rainfall Estimation and Ambiguity of Flagging

Julius Polz *(Karlsruhe Intitute of Technology);* ***Luca Glawion*** *(Karlsruhe Intitute of Technology);* ***Maximilian Graf*** *(University of Augsburg);* ***Nico Blettner*** *(University of Augsburg);* ***Elzbieta Lasota*** *(Karlsruhe Intitute of Technology);* ***Lennart Schmidt*** *(Helmholtz Centre for Environmental Research GmbH - UFZ);* ***Harald Kunstmann*** *(University of Augsburg);* ***Christian Chwala*** *(Karlsruhe Intitute of Technology)*

WP-B-6

7002 (W06.09): Potential and Limitations of Filling Gaps in Commercial Microwave Link Data Stemming from Complete Loss of Signal During Heavy Rainfall

Maximilian Graf *(University of Augsburg);* ***Nico Blettner*** *(University of Augsburg);* ***Julius Polz*** *(Karlsruhe Intitute of Technology);* ***Christian Chwala*** *(Karlsruhe Intitute of Technology)*

WP-B-7

6951 (W06.03): A Cramer-Rao Based Study of 2-D Fields Retrieval by Measurements from a Random Sensor Network

Shay Sagiv *(Tel Aviv University);* ***Hagit Messer*** *(Tel Aviv University)*

WP-B-8

7074 (W06.10): Empiric Bayesian Inversion of Evaporation Ducts from Synthetic Phased-Array Data

Ted Rogers *(Scripps Institution of Oceanography);* ***Peter Gerstoft*** *(University of California, San Diego)*

WP-B-9

6955 (W06.04): Performance of a Low-Cost Dual-Frequency GNSS Receiver for Near Real-Time Water Vapor Estimation

Christina Oikonomou *(Cloudwater Ltd);* ***Ion-Anastasios Karolos*** *(Cloudwater Ltd);* ***Stylianos Bitharis*** *(Cloudwater Ltd);* ***Christos Pikridas*** *(Cloudwater Ltd); Haris Haralambous (Frederick University)*

WP-B-11

6940 (W06.02): Improved Calibration Method for CML Humidity Retrievals over Complex Terrain

Yoav Rubin *(Tel Aviv University);* ***Pinhas Alpert*** *(Tel Aviv University)*

WP-B-12

6977 (W06.06): Improved Water Vapor Density Estimation with Commercial Microwave Links Attenuation and Temperature

Itay Bragin *(Tel Aviv University);* ***Yoav Rubin*** *(Tel Aviv University);* ***Pinhas Alpert*** *(Tel Aviv University);* ***Jonatan Ostrometzky*** *(Tel Aviv University)*

W07 IWCIM 2023: The Eleventh International Workshop on Computational Intelligence for Multimedia Understanding

Organizers: **Maria Trocan** *(Institut Supérieur d'Électronique de Paris, France)*
Davide Moroni *(National Research Council of Italy, Pisa, Italy)*
Behçet Uğur Töreyin *(Istanbul Technical University, Turkey)*

Monday June 5 (PM-only); Lectures: Delphi; Posters: WP-A

2:00 – 3:15 Oral Session I

(Chair: **Davide Moroni**)

2:00

7191 (W07.18): SieveNet: An Efficient Model Utilizing H.265 Codec Structure for Video Object Detection

Onur Can Koyun *(Istanbul Technical University);* ***Behçet U Töreyin*** *(Istanbul Technical University)*

2:15

7083 (W07.07): Medical Waste Sorting: A Computer Vision Approach for Assisted Primary Sorting

Antonio Bruno *(ISTI CNR);* ***Claudia Caudai*** *(ISTI CNR);* ***Giuseppe R Leone*** *(ISTI CNR);* ***Massimo Martinelli*** *(ISTI CNR);* ***Davide Moroni*** *(ISTI CNR);* ***Francesco Crotti*** *(CISA)*

2:30

7150 (W07.11): Generating Artistic Images via Few-Shot Style Transfer

Itay Buchnik *(Ben-Gurion University);* ***Or Berebi*** *(Ben-Gurion University);* ***Tammy Riklin Raviv*** *(Ben-Gurion University);* ***Nir Shlezinger*** *(Ben-Gurion University)*

2:45

7153 (W07.13): Face-Dubbing++: Lip-Synchronous, Voice Preserving Translation of Videos

Alexander Waibel *(Karlsruhe Institute of Technology);* ***Moritz Behr*** *(Karlsruhe Institute of Technology);* ***Dogucan Yaman*** *(Karlsruhe Institute of Technology);* ***Fevziye Irem Eyiokur Yaman*** *(Karlsruhe Institute of Technology);* ***Tuan-Nam Nguyen*** *(Karlsruhe Institute of Technology);* ***Carlos Mullov*** *(Karlsruhe Institute of Technology);* ***Mehmet Arif Demirtas*** *(Istanbul Technical University);* ***Alperen Kantarcı*** *(Istanbul Technical University);* ***Stefan Constantin*** *(Karlsruhe Institute of Technology);* ***Hazim Kemal Ekenel*** *(Istanbul Technical University)*

3:00

7154 (W07.14): State-of-the-Art in Nudity Classification: A Comparative Analysis

Fatih Cagatay Akyon *(Middle East Technical University);* ***Alptekin Temizel*** *(Middle East Technical University)*

3:15 – 4:15 Poster Session (Area: WP-A) & Coffee-Break (3:30 – 4:00)

4:15 – 5:30 Oral Session II

(Chair: **Behçet Uğur Töreyin**)

4:15

7187 (W07.16): Evaluation of a Marine Mesoscale Events Classifier

Marco Reggiannini *(ISTI CNR);* ***Oscar Papini*** *(ISTI CNR);* ***Gabriele Pieri*** *(ISTI CNR)*

4:30

7135 (W07.09): CryptoSentiment: A Dataset and Baseline for Sentiment-Aware Deep Reinforcement Learning for Financial Trading

Loukia Avramelou *(Aristotle University of Thessaloniki);* ***Paraskevi Nousi*** *(Aristotle University of Thessaloniki);* ***Nikolaos Passalis*** *(Aristotle University of Thessaloniki);* ***Stavros Doropoulos*** *(Datascouting);* ***Anastasios Tefas*** *(Aristotle University of Thessaloniki)*

4:45

7036 (W07.05): Software Module Classification for Commercial Bug Reports

Ceyhun E. Öztürk *(ASELSAN & Bilkent University);* ***Eyüp Halit Yılmaz*** *(ASELSAN & METU);* ***Ömer Köksal*** *(ASELSAN);* ***Aykut Koç*** *(Bilkent University)*

5:00

7037 (W07.06): Role of Audio in Video Summarization

Ibrahim Shoer *(Koç University);* ***Berkay Köprü*** *(Koç University);* ***Engin Erzin*** *(Koç University)*

5:15

6989 (W07.04): SDRV: Real-time On-device Subtitles Detection, Recognition and Voicing

Illya Degtyarenko *(Samsung R&D Institute Ukraine);* ***Nazarii Tkach*** *(Samsung R&D Institute Ukraine);* ***Olga Radyvonenko*** *(Samsung R&D Institute Ukraine);* ***Ivan Deriuga*** *(Samsung R&D Institute Ukraine);* ***Kostiantyn Seliuk*** *(Samsung R&D Institute Ukraine);* ***Oleksandr Ivanov*** *(Samsung R&D Institute Ukraine);* ***Valerii Sielikhov*** *(Samsung R&D Institute Ukraine);* ***Sang Young Lee*** *(Samsung Electronics);* ***Youn-Ho Choi*** *(Samsung Electronics);* ***Cheul-Hee Hahm*** *(Samsung Electronics)*

Monday June 5 (3:15 – 4:15 PM); Poster Area: WP-A

Chair: Maria Trocan

WP-A-1

7160 (W07.15): Scalable Missing Data Imputation with Graph Neural Networks

Guillaume Lachaud *(ISEP);* ***Patricia Conde Cespedes*** *(ISEP);* ***Maria Trocan*** *(ISEP)*

WP-A-3

6839 (W07.03): CluCDD: Contrastive Dialogue Disentanglement via Clustering

Jingsheng Gao *(Shanghai Jiao Tong University);* ***Zeyu Li*** *(Shanghai Jiao Tong University);* ***Suncheng Xiang*** *(Shanghai Jiao Tong University);* ***Ting Liu*** *(Shanghai Jiao Tong University);* ***Yuzhuo Fu*** *(Shanghai Jiao Tong University)*

WP-A-4

7101 (W07.08): Texture Quality Criteria Comparison

Michal Haindl *(UTIA);* ***Nahidbanu Shaikh*** *(Czech Technical University)*

WP-A-6

7147 (W07.10): Modeling Lead-Lag Structure in Facial Expression Synchrony for Social-Psychological Outcome Prediction from Negotiation Interaction

Nobukatsu Hojo *(NTT Corporation);* ***Saki Mizuno*** *(NTT Corporation);* ***Satoshi Kobashikawa*** *(NTT Corporation);* ***Ryo Masumura*** *(NTT Corporation)*

WP-A-7

6830 (W07.01): Supervised Image Segmentation for High Dynamic Range Imaging

Ali Reza Omrani *(ISTI CNR);* ***Davide Moroni*** *(ISTI CNR)*

WP-A-9

7152 (W07.12): Incremental Image Labeling via Iterative Refinement

Fausto Giunchiglia *(University of Trento);* ***Xiaolei Diao*** *(University of Trento);* ***Mayukh Bagchi*** *(University of Trento)*

WP-A-10

7188 (W07.17): Collaborative visual-inertial localization of teams with floorplan extraction

Sándor Gazdag *(SZTAKI);* ***Dániel Pásztornicky*** *(SZTAKI);* ***Zsolt Jankó*** *(SZTAKI);* ***Tamás Szirányi*** *(SZTAKI);* ***András Majdik*** *(SZTAKI)*

WP-A-12

6835 (W07.02): Optimal Order of Hippocampal Place Cell Models Constructed Using Expansions of Zernike Popynomials and Power Series

Sleim Mohamed I. Margham *(Istanbul Technical University);* ***Murat Okatan*** *(Istanbul Technical University)*

W08 EEG Workshop - EEG Signal Processing for the Future: Integrating Insights Across Domains

Organizers: **Maarten De Vos** *(KU Leuven, Belgium)*
Elisabeth Heremans *(KU Leuven, Belgium)*
Nick Seeuws *(KU Leuven, Belgium)*
Huy Phan *(Amazon Alexa, USA)*
Alexandre Gramfort *(Meta Reality Labs)*

Monday June 5 (PM-only); Lectures: Athena Hall

2:00 – 3:40 **Invited Talks**

(Chairs: **Maarten De Vos** & **Huy Phan**)

2:00 **Elisabeth Heremans** *(KU Leuven)* & **Huy Phan** *(Amazon Alexa)*
Automatic Sleep Staging: Recent Development, Challenges and Future Directions

2:25 **Alexandre Gramfort** *(Meta Reality Labs)*
From Self-supervised Learning to Data Augmentation on EEG Signals

2:50 **Catarina da Silva Lourenço** *(University of Twente)*
Deep Learning for Detection of Epileptiform Discharges in Human EEG Recordings

3:15 **Samaneh Nasiri** *(Harvard University)*
Generalizability of Machine Learning Models for Electrophysiology

3:40 – 4:00 **Coffee-Break**

4:00 – 5:45 **Paper Presentations**

(Chairs: **Alexandre Gramfort** & **Nick Seeuws**)

4:00

6844 (W08.01): Decoding Auditory Attention from EEG Data Using Cepstral Analysis

Emina Alickovic *(Eriksholm Research Centre, Oticon A/S, Snekkersten);* ***Carlos Fransico Mendoza*** *(Eriksholm Research Centre);* ***Andrew Segar*** *(Eriksholm Research Centre);* ***Maria Sandsten*** *(Lund University);* ***Martin A Skoglund*** *(Linköping University)*

4:15

6984 (W08.04): Topological Analysis of Low Dimensional Phase Space Trajectories of High Dimensional EEG Signals for Classification of Interictal Epileptiform Discharges

Annika Stiehl *(University of Applied Sciences Ansbach);* ***Martina Flammer*** *(Julius-Maximilians-Universität Würzburg);* ***Fabienne Anselstetter*** *(BESA GmbH); Nicole Ille (BESA GmbH);* ***Harald Bornfleth*** *(BESA GmbH);* ***Stefan Geißelsöder*** *(University of Applied Sciences Ansbach);* ***Christian Uhl*** *(University of Applied Sciences)*

4:30

6995 (W08.05): Enabling Large-Scale Probabilistic Seizure Detection with a Tensor-Network Kalman Filter for LS-SVM

Seline J de Rooij *(Delft University of Technology);* ***Kim Batselier*** *(Delft University of Technology);* ***Borbala Hunyadi*** *(Delft University of Technology)*

4:45

7004 (W08.06): Novel Approach Explains Spatio-Spectral Interactions in Raw Electroencephalogram Deep Learning Classifiers

Charles A Ellis *(TReNDS);* ***Abhinav Sattiraju*** *(TReNDS);* ***Robyn Miller*** *(TReNDS);* ***Vince Calhoun*** *(TReNDS)*

5:00

7006 (W08.07): Hypercomplex Multimodal Emotion Recognition from EEG and Peripheral Physiological Signals

Eleonora Lopez *(Sapienza University of Rome);* ***Eleonora Chiarantano*** *(Sapienza University of Rome);* ***Eleonora Grassucci*** *(Sapienza University of Rome);* ***Danilo Comminiello*** *(Sapienza University of Rome)*

5:15

6907 (W08.02): EEG Source Estimation Using Deep Prior without a Subject's Individual Lead Field

Naoki Hojo *(Kobe University);* ***Hajime Yano*** *(Kobe University);* ***Ryoichi Takashima*** *(Kobe University);* ***Tetsuya Takiguchi*** *(Kobe University);* ***Seiji Nakagawa*** *(Chiba University)*

5:30

6976 (W08.03): A New Multiway MFDM Based Technique for EEG Source Localisation and Interpretation

Anchal Yadav *(Indian Institute of Technology);* ***Monika Agrawal*** *(Indian Institute of Technology);* ***S D Joshi*** *(Indian Institute of Technology Delhi)*

W09 SDPNGS 2023: Signal and Data Processing for Next Generation Satellites

Organizers: **Miguel Ángel Vázquez** *(Centre Tecnològic de Telecomunicacions de Catalunya, Spain)*
Ana I. Pérez-Neira *(Centre Tecnològic de Telecomunicacions de Catalunya, Spain & Universitat Politècnica de Catalunya, Spain)*

Monday June 5 (PM-only); Lectures: Salon Des Roses B

2:00 – 2:40 Opening & Panel

2:00 **Welcome & Introduction to the Panel:** **Miguel Ángel Vázquez**

2:10 **Panel:** *Data-Enhanced Satellite Communication Systems: The Industry Perspective*

Panelists: **Gabriele Infantolino** *(Telecom. Satellite Payload System Engineer, **OHB**)*
Gabriele Giordana *(Mission Autonomy Engineer, **AIKO**)*
Leticia Alonso *(Ground Segment Telecom Engineer, **GMV** Aerospace and Defense)*

Moderator: **Miguel Ángel Vázquez** *(Senior Researcher, **CTTC**)*

2:40 – 3:30 Paper Presentations (I): "Space Systems" (Chair: **Miguel Ángel Vázquez**)

2:40

6958 (W09.01): Site Diversity Switching Prediction at Q Band Using Deep Learning Techniques in Satellite Communications

Maria Kaselimi *(National Technical University of Athens);* ***Anargyros Roumeliotis*** *(National Technical University of Athens);* ***Apostolos Papafragkakis*** *(National Technical University of Athens);* ***Athanasios Panagopoulos*** *(National Technical University of Athens);* ***Nikolaos Doulamis*** *(National Technical University of Athens)*

2:50

7182 (W09.11): CNN-Based On-Board Interference Detection in Satellite Systems: An Analysis of Dataset Impact on Performance

Saed Daoud *(University of Luxembourg);* ***Geoffrey Eappen*** *(University of Luxembourg);* ***Flor Ortiz*** *(University of Luxembourg);* ***Eva Lagunas*** *(University of Luxembourg);* ***Wallace A. Martins*** *(University of Luxembourg);* ***Symeon Chatzinotas*** *(University of Luxembourg)*

3:00

7185 (W09.12): On Hybrid Free-Space Optic-Radio Systems as Enablers of 6G Services over Non-Terrestrial Networks

Marc Jovan Amay *(Centre Tecnològic de Telecomunicacions de Catalunya);* ***Joan Bas*** *(Centre Tecnològic de Telecomunicacions de Catalunya)*

3:10

7081 (W09.05): Multi-Aperture Ground Receiver to Enhance Adaptive Optics Corrected GEO-Feeder Uplinks

Perrine Lognoné *(ONERA);* ***Jean-Marc Conan*** *(ONERA);* ***Ghaya Rekaya*** *(Télécom Paris);* ***Laurie Paillier*** *(ONERA);* ***Nicolas Védrenne*** *(ONERA)*

3:20

7086 (W09.07): Improved Graph-based User Scheduling for Sum-Rate Maximization in LEO-NTN Systems

Bilal Ahmad *(University of Bologna);* ***Daniel Gaetano Riviello*** *(University of Bologna);* ***Alessandro Guidotti*** *(National Inter-University Consortium for Telecommunications);* ***Alessandro Vanelli-Coralli*** *(University of Bologna)*

3:30 – 4:00 Coffee-Break

4:00 – 5:10 Paper Presentations (II): "NTN Air-Interface" (Chair: **Màrius Caus**)

4:00
6975 (W09.02): NOMA MIMO Downlink in LEO Satellites

Rei Richter *(Bar Ilan University);* ***Itsik Bergel*** *(Bar Ilan University);* ***Yair Noam*** *(Bar Ilan University);* ***Zehavi Ephraim*** *(Bar Ilan University)*

4:10
7062 (W09.03): Cooperative Dual LEO Satellite Transmission in Multi-User OTFS Systems

Marius Caus *(CTTC);* ***Musbah Shaat*** *(CTTC);* ***Ana I. Pérez-Neira*** *(CTTC);* ***Malte Schellmann*** *(Huawei);* ***Hanwen Cao*** *(Huawei)*

4:20
7078 (W09.04): Time Variant Doppler Compensation for TS-UNB

Samhita Roy *(Fraunhofer IIS);* ***Uyen Ly Dang*** *(Fraunhofer IIS);* ***Jakob Kneissl*** *(Fraunhofer IIS);* ***Gerd Killian*** *(Fraunhofer IIS);* ***Raimund Meyer*** *(ComResearch Gmbh);* ***Frank Obernosterer*** *(ComResearch Gmbh)*

4:30
7085 (W09.06): Learning Model-Free Robust Precoding for Cooperative Multibeam Satellite Communications

Steffen Gracla *(Universität Bremen);* ***Alea Schröder*** *(Universität Bremen);* ***Maik Röper*** *(Universität Bremen);* ***Carsten Bockelmann*** *(Universität Bremen);* ***Dirk Wübben*** *(Universität Bremen);* ***Armin Dekorsy*** *(Universität Bremen)*

4:40
7112 (W09.10): On the Complexity of Non-Coherent Acquisition of Chirp Spread Spectrum Signals

Daniel Egea-Roca *(Universitat Autònoma de Barcelona);* ***José A. López-Salcedo*** *(Universitat Autònoma de Barcelona);* ***Gonzalo Seco-Granados*** *(Universitat Autònoma de Barcelona)*

4:50
7110 (W09.09): Frequency Asynchronous NOMA in LEO Satellite Communication Systems

Joohyun Son *(Yonsei University);* ***Jehyun Heo*** *(Yonsei University);* ***Hyunwoo Lee*** *(Yonsei University);* ***Seungwoo Sung*** *(Yonsei University);* ***Minchul Hong*** *(Yonsei University);* ***Hanwoong Kim*** *(Yonsei University);* ***Gayeon Ahn*** *(Yonsei University);* ***Daesik Hong*** *(Yonsei University)*

5:00
7092 (W09.08): Robust Reflective Beamforming for Non-Terrestrial Networks under Thermal Deformations

Damir Rakhimov *(TU Ilmenau);* ***Bile Peng*** *(TU Braunschweig);* ***Eduard A Jorswieck*** *(TU Braunschweig);* ***Martin Haardt*** *(TU Ilmenau)*

5:10 – 5:40 Keynote Closure: **Charilaos Kourogiorgas** *(Technical Director,* ***Atheras Analytics****)*

AI-based Software Tools for Designing and Operating Ka-Band and Q/V-Band Satellite Networks

W18 Workshop on Signal Processing for Autonomous Systems (SPAS)

Organizers: **Shunqiao Sun** *(The University of Alabama, USA)*
Lucio Marcenaro *(University of Genoa, Italy)*
Anthony Vetro *(Mitsubishi Electric Research Laboratories, USA)*

Monday June 5 (PM-only); Lectures: Jupiter Ballroom

2:00 – 2:15 **Opening Remarks:** **Lucio Marcenaro**

2:15 – 3:30 **Invited Talks I: Perception for Autonomous Systems**
(Chair: **Shunqiao Sun**)

2:15 **Prof. João Barros** *(Chief Platform Officer, Nexar Inc. & Prof. Universidade do Porto, Portugal)*
AI Meets the Streets: Building Accurate HD Maps with Crowdsourced Road Images

2:40 **Prof. Siheng Chen** *(Assoc. Prof., Shanghai Jiao Tong University, China & Research Scientist, Shanghai AI Laboratory, China)*
Vehicle-to-Everything-Communication-Aided Perception in Autonomous Driving

3:05 **Dr. Gor Hakobyan** *(Chief Technology Officer, Waveye Inc, Palo Alto, CA, USA)*
Recent Advances in the Automotive Radar Research

3:30 – 3:45 **Coffee-Break**

3:45 – 4:35 **Invited Talks II: Coordination & Interaction for Autonomous Systems**
(Chair: **Shunqiao Sun**)

3:45 **Prof. Bernhard Rinner** *(University of Klagenfurt, Austria)*
How to Act as Team - Multi-Robot Coordination

4:10 **Dr. Avinash Balachandran** *(Director, Human Interactive Driving, Toyota Research Institute (TRI), USA)*
Human Interactive Driving: Amplify People for a Safer, More Enjoyable Driving Experience

4:35 – 5:00 **Lightning Talks**
(Chair: **Lucio Marcenaro**)

4:35 **Prof. Amir Leshem** *(Bar-Ilan University, Israel)*
Group Learning Without Explicit Communication

4:40 **Prof. Markku Juntti** *(University of Oulu, Finland)*
Finnish 6G Flagship Program

4:45 **Prof. Sarah Ostadabbas** *(Northeastern University, USA)*
Synthetic Data to The Rescue: Testing Mobility Performance of Autonomous Vehicles in Extreme Cases with Small/No Data

4:50 **Prof. Raj Thilak Rajan** *(Delft University of Technology, The Netherlands)*
Signal Processing for Autonomous Systems in Inaccessible Environments

4:55 **Dr. Ban-Sok Shin** *(German Aerospace Center, Germany)*
Towards Extraterrestrial Seismic Exploration with an Autonomous Robotic Swarm

5:00 – 5:30 Closing Panel

Panelists:

Prof. João Barros *(Nexar Inc. & Universidade do Porto)*
Prof. Siheng Chen *(Shanghai Jiao Tong University & Shanghai AI Laboratory)*
Dr. Gor Hakobyan *(Waveye Inc, Palo)*
Prof. Bernhard Rinner *(University of Klagenfurt)*
Dr. Avinash Balachandran *(Toyota Research Institute)*

Moderator:

Dr. Anthony Vetro *(President, Chief Executive Officer, Mitsubishi Electric Research Laboratories (MERL), Cambridge, MA, USA)*