ASPAI MALLORCA • 2026

AiMH Mallorca 2026

8th International Conference on Advances in Signal Processing and Artificial Intelligence (ASPAI' 2026)

2nd International Conference on AI in Medicine and Healthcare (AiMH' 2026)

Conference Programme

24-26 June 2026

Palma de Mallorca (Balearic Islands), Spain

Organized by:

IFSA

Message from Chairman

Dear Colleagues, Distinguished Guests, and Participants,

On behalf of the Organizing Committee, it is my great pleasure to welcome you to the conference umbrella combining the *8th International Conference on Advances in Signal Processing and Artificial Intelligence (ASPAI' 2026)* and the *2nd International Conference on AI in Medicine and Healthcare (AiMH' 2026)*, taking place on 24–26 June 2026 in Palma de Mallorca, Balearic Islands, Spain. These two events bring together researchers, engineers, medical specialists, data scientists, industry experts, and young investigators working at the rapidly developing intersection of signal processing, AI, intelligent systems, biomedical technologies, and healthcare applications. Today, AI is no longer only a theoretical or computational discipline; it is becoming an essential tool for solving practical scientific, industrial, and social challenges. At the same time, signal processing continues to provide the methodological foundation for extracting reliable information from complex data, images, sensors, biological signals, and real-world systems.

The programme reflects this broad and dynamic landscape. The conference includes keynote presentation by internationally recognized experts, a special session devoted to *Artificial Intelligence in Nursing Care*, and regular sessions covering AI in medical imaging and clinical support, biomedical signal processing, computer vision, artificial neural networks, intelligent system architectures, applied artificial intelligence, and expert systems.

Contributions presented here address both fundamental methods and real-world applications: from predictive analytics, clinical decision support, medical diagnostics, sensor-based monitoring, and healthcare data analysis to computer vision, intelligent control, deep learning architectures, expert systems, and trustworthy AI. Such diversity creates an excellent environment for scientific discussion and for building collaborations between academia, healthcare, engineering, and industry.

I wish all participants a productive, inspiring, and enjoyable conference in Palma de Mallorca. May ASPAI' 2026 and AiMH' 2026 become a fruitful platform for new knowledge, new partnerships, and new advances in signal processing, artificial intelligence, and AI-driven healthcare.

Prof., Dr. Sergey Y. Yurish
ASPAI & AiMH' 2026 Chairman

Conference Venue

The Conference Umbrella will take place on 24-26 June 2026 in Melia Pama Marina hotel, Palma de Mallorca (Balearic Islands), Spain, Conference Room *Melia 10*. Address: Av. de Gabriel Roca, 29, 07014 Palma, Illes Balears, Spain.

Insurance and Liability

The conference organizers accept no liability for any loss, damage, injury, illness, accident, delay, theft, or other incident affecting participants, accompanying persons, or their property in connection with attendance at the conference or related activities. Participants are solely responsible for arranging adequate personal, medical, travel, accident, liability, and property insurance as necessary. Attendance at the conference is at the participant's own risk.

Registration

The Registration Desk is open in the event Melia Palma Marina Hotel:

- Tuesday, 23 June, 20:00-21:30, in the Welcome Cocktail area in *Marina Hall.*
- Wednesday, 24 June, 9:45-18:00, in front of the Conference Room *Melia 10*
- Thursday, 25 June, 9:45-18:00, in front of the Conference Room *Melia 10*
- Friday, 26 June, from 9:45-12:00, in front of the Conference Room *Melia 10*

Language

The official language of the Conference is English. There will be no simultaneous interpretation.

Conference Identification Tag

The Organizing Committee request that you wear your identification tag (badge) at all times during the conference. Your conference identification tag will serve as your admission to all conference paper presentation sessions and social events.

Coffee/Tea Refreshment

Coffee/tea will be served in foyer near the Conference Room *Malia 10* at the times indicated in the programme.

Dress Code

The event dress code is smart casual for all conference sessions and social programme.

Welcome Cocktail

23 June 2026, Tuesday (20:00-21:30), The Welcome Cocktail (Cheese & Wine) will take place in the Melia Palma Marina Hotel, *Marina Hall*. Do not miss this opportunity to say the first "hello" to attendees and committee members !

Gala Dinner

25 June 2026, Thursday (20:00-23:00). The Gala Dinner will take place in the Melia Palma Marina Hotel, Conference room *Melia 12.*

Farewell Cocktail

26 May 2026, Friday (13:30-14:30). The Farewell Cocktail (mini buffet) will take place in the event hotel, in front of the conference room *Melia 10.* It will be combined with the Poster Session and followed by the Closing Session. Do not miss it to know about the post-conference publications and the next conference's venue !

Post-Conference Publications

Selected and extended papers from the conference will be published in one of the indexed journals:

- *Sensors & Transducers* journal (ISSN: 2306-8515, e-ISSN 1726-5479), Special issue on '*Ai and its Applications*' by IFSA Publishing;
- *Integrated Computer-Aided Engineering* (ISSN: 1069-2509, e-ISSN: 1875-8835) by IOS Press;
- *International Journal of Neural Systems* (ISSN: 0129-0657, e-ISSN: 1793-6462) by World Scientific.

Authors will be also invited to extend their papers or/and articles into the book chapters for the '*Advances in Signal Processing*' Vol. 4, '*Advances in Artificial Intelligence',* Vol. 3 or '*Advances in Intelligent Systems'*, Vol. 4 Book Series. These open access books will be published at the end of 2026 by IFSA Publishing, S.L. (Barcelona, Spain).

Best Papers Awards

In this year, two IFSA Best Paper Awards (Trophy, Certificate and free registration for the next conference edition for both: presenter and accompanying person) will be given to the authors of ASPAI' 2026 and AiMH' 2026 conferences at the Gala Dinner.

Organizing Committee

Chairman:
Prof., Dr. Sergey Y. Yurish *(IFSA, Spain)*

Advisory Chairman:
Prof., Dr. Adeli Hojjat *(The Ohio State University, USA)*

Steering Committee:
Dr. Mobyen Uddin Ahmed *(Mälardalen University, Sweden)*
Dr. Sergey Grosman *(Siemens PPAL, Germany)*
Prof. Sandeep Singh Sengar *(Cardiff Metropolitan University, UK)*

Conference and Publication Manager:
Mrs. Tetyana Zakharchenko *(IFSA Publishing, S.L., Spain)*

Organizing Committee:
Mr. Javier Cañete
(Universitat Politecnica de Catalynya (UPC), Barcelona, Spain)
Mr. Oleksiy Yurish
(FSA Publishing, S.L., Spain)

Conferences' web sites:

https://www.aspai-conference.com
https://www.aimh-conference.com

Local Time

CEST — Central European Summer Time, UTC/GMT +2 hour

Keynote Speakers

Prof. Dr. Karin Wolf-Ostermann
University of Bremen, Department 11,
Human and Health Sciences,
Bremen, Germany

Artificial Intelligence in Nursing Care: Opportunities, Challenges, and Future Directions

Abstract: Artificial Intelligence (AI) is becoming a transformative force in nursing care, offering new ways to improve patient safety, enhance care quality, and reduce nurses' workload. This presentation reviews current advances, challenges, and future directions for AI integration in nursing practice. Based on a bibliometric analysis of 490 nursing-related AI studies published between 1995 and 2025, the field is maturing, shifting from exploratory technological assessments toward practical, evidence-based implementation strategies, with the United States leading in publication output and international collaboration. Key applications include AI-supported fall prevention systems such as SAVE & SAFE, which combines sensor-based monitoring, automated fall detection, and coordinated care models in acute geriatric settings, helping reduce patient risk and nursing workload. Longitudinal field studies using privacy-preserving depth sensors in nursing homes also demonstrate the feasibility of AI-driven activity recognition, including mobility tracking and fall risk prediction, based on over 58,000 hours of unobtrusive data. However, barriers remain, including poor data quality, limited digital infrastructure, insufficient nurse involvement in design, and ethical concerns about transparency and privacy. The AINCRA tool offers a structured framework to support sustainable, equitable, and person-centered AI implementation.

Short Biography: Prof., Dr. Karin Wolf-Ostermann is Professor of Health Care Research at the University of Bremen and Head of the Health Care Research Department at the Institute for Public Health and Nursing Research (IPP). Her academic background is in statistics and theoretical medicine, and she received her doctoral degree in applied statistics from TU Dortmund. Her research focuses on health services and nursing research, evidence-based nursing, quality of care, care for people with dementia, digitalisation and artificial intelligence in nursing care, as well as quantitative and mixed-methods research. Before joining the University of Bremen in 2014, she was Professor of Social and Nursing Research at Alice Salomon University of Applied Sciences in Berlin.

Prof., Dr. Trupti Joshi
Marshall University,
Department of Biomedical Sciences,
Huntington, USA

Empowering Multiomics and Single Cell Based Predictive Analytics for Biomedical Applications with G2PDeep

Abstract: Accurate phenotype prediction from high-dimensional omics data remains a major challenge in computational biology, especially with cellular heterogeneity and demographic variability. Bulk multiomics data, including gene expression, microRNA (miRNA) expression, protein expression, DNA methylation, single nucleotide polymorphisms (SNPs), copy number variations (CNVs), as well as single-cell and spatial transcriptomics, are routinely generated for humans and other organisms across diverse research questions. This data growth creates an increasing need for predictive analytics in clinical and translational applications. We developed G2PDeep, a web-based deep-learning platform for phenotype prediction and marker discovery from multi-omics data. The server enables researchers to create deep-learning models through an interactive interface and train them using automated hyperparameter tuning on HPC resources. Users can visualize phenotype and marker prediction results and perform Gene Set Enrichment Analysis for significant markers, providing insights into molecular mechanisms underlying complex diseases. G2PDeep is publicly available at https://g2pdeep.org/. Our IRnet method for immunotherapy response prediction in cancer patients is available at https://irnet.missouri.edu

Short Biography: Dr. Trupti Joshi is the Senior Associate Dean for Informatics and Population Analytics and Professor in the Department of Biomedical Sciences at Joan C Edwards School of Medicine at Marshall University. She holds an Adjunct faculty appointment in the Department of Electrical Engineering and Computer Science (EECS) at University of Missouri-Columbia. She is the Principal Investigator of the WV-INBRE (NIGMS / NIH Award P20GM103434) and has previously served as Director of Translation Bioinformatics and core faculty with Department of Plant Sciences and Technology (DPST) and MU Data Science and Informatics Institute (MUIDSI), at University of Missouri-Columbia (UM). She is a renowned expert in the translational bioinformatics field with over 25+ years of experience and leads The Translational Bioinformatics and AI Innovations Lab (TBAiL). She has published more than 175 scientific papers and has developed several multiomics data integration frameworks, computational methods and AI based solutions for clinical and translational research.

Prof., Dr. Noria Foukia
University of Applied Sciences and Arts of Western Switzerland, Geneva, Switzerland

When Does a Kalman Filter Beat an LSTM ?

Abstract: Faced with the challenges posed by the energy transition, the decentralisation of generation and the growing integration of renewable energy, the energy sector is undergoing a profound transformation. Energy systems must now become more flexible, intelligent and resilient. Concepts such as microgrids, prosumers and local energy exchanges are emerging as innovative solutions, promoting energy self-sufficiency and more efficient resource management. Our work analyses and implements various methods for processing energy data in order to improve the forecasting and optimisation of energy flows. A comparative analysis allows us to identify the most relevant methods based on use cases and system constraints. Short-term energy load forecasting underpins P2P trading decisions in smart microgrids. Whilst the literature favours LSTM-based architectures, their advantage over conventional estimators is rarely quantified using real-world data. Our main conclusion runs counter to intuition: a well-tuned Kalman filter outperforms all LSTM variants by a factor of 4 on the Frobenius norm. We characterise the conditions under which this applies and show that, when LSTM is justified, Kalman pre-processing constitutes a cost-free improvement.

Short Biography: Noria Foukia is currently an Associate Professor at the University of Aplied Sciences and Arts of Western Switzerland. She holds a Ph.D. in Computer System Security from the University of Geneva, Switzerland, and completed a postdoctoral fellowship at the Information Sciences Institute (ISI), University of Southern California (USC), Los Angeles, USA. Her academic background also includes advanced degrees in Computer Science, Applied Mathematics, and Pure Mathematics from leading French universities: Lyon I-Claude Bernard and Ecole Normale Supérieure de Lyon (France). Her research focuses on cryptography, network security, and cybersecurity including machine learning-based predictive systems. She has extensive experience in intrusion detection and response systems, as well as trust, reputation, and privacy management in collaborative and distributed environments. Her work has been applied to a wide range of domains, including e-commerce, Grid computing, ad hoc network and wireless sensor networks. More recently, her work has expanded to AI-driven cybersecurity, privacy-preserving machine learning, federated learning, explainable artificial intelligence (XAI), intelligent transportation systems, and secure data-sharing platforms.

ASPAI' & AiMH' 2026 Programme at Glance

Time/Date (CEST)	24.06.2026 Wednesday	25.06.2026 Thursday	26.06.2026 Friday
	Conference Room Melia 10		
8:45-9:00	Registration	Registration	Registration
9:00-9:15	* Opening Session Prof., Dr. Sergey Y. Yurish, IFSA, Spain	* Daily announcements	* Daily announcements
9:15-10:00	**Keynote Speaker I** Prof., Dr. Karin Wolf-Ostermann, University of Bremen, Germany	**Keynote Speaker II** Prof., Dr. Trupti Joshi, Marshall University, USA	**Keynote Speaker III** Prof., Dr. Noria Foukia University of Applied Sciences and Arts of Western Switzerland
10:00-10:30	*Coffee Break*	*Coffee Break*	*Coffee Break*
10:30-12:30	**Special Session:** Artificial Intelligence in Nursing Care	**Regular Session:** Signal Processing & Computer Vision	**Virtual Session in Zoom** Signal Processing & AI Applications
12:30-13:30	*Lunch on your own*	*Lunch on your own*	*Poster Session*
13:30-14:30	**Regular Session:** AI in Medical Imaging & Clinical Support	**Regular Session:** Artificial Neural Networks & Intelligent System Architectures	Farewell Cocktail & * Closing Session
14:30-15:30			
15:30-16:00	*Coffee Break*	*Coffee Break*	-
16:00-18:00	**Regular Session**: AI in Medical Diagnostic & Biomedical Signal Processing	**Regular Session:** Applied Artificial Intelligence & Expert Systems	
18:00-20:00	-	-	-
20:00-23:00	-	*Gala Dinner*	-

* The must attend sessions. The time in the table and in the technical programme below is the local time in Mallorca - CEST.

Technical Conference Programme

Day 1
24 June 2026, Wednesday

Special Session:
Artificial Intelligence in Nursing Care

Chairman: Prof., Dr. Karin Wolf-Ostermann,
University of Bremen, Germany

1. **Bibliographic Analysis of Nursing Research Related to Artificial Intelligence in Nursing Care**
   Şengül Akdeniz and Karin Wolf-Ostermann
   (Turkey, Germany)

2. **SAVE & SAFE: An AI-Supported Assistive System for Fall Prevention and Nursing Workload Reduction in Acute Geriatric Care**
   Emily Mena
   (Germany)

3. **AI-driven Services for Care Facilities: Results from a Longitudinal Field Study**
   Rinu Elizabeth Paul, Karin Wolf-Ostermann and Tanja Schultz
   (Germany)

4. **Trust by Design: Building Reliable Clinical AI to Advance Quality in Patient-Centered Care**
   Maria Reyna-Cruz, Christoph Lauter, Martine Ceberio, Jesus Lopez and Cecilia Marquez-Barraza
   (USA, Mexico)

5. **AI-Concordant Care: A Novel Approach Toward Precision Depression Treatment**
   Qing Zeng-Treitler
   (USA)

Regular Session:
AI in Medical Imaging and Clinical Support

Chairman: Prof., Dr. Tanja Schultz
University of Bremen, Germany

1. **Classification of Capillaroscopic Changes in Systemic Sclerosis Using Vision Transformers: Model Refinement, Explainability and Fairness Analysis**
   Delia Haag, Lea Bogensperger, Sonia Difrancesco, Carina Mihai and Michael Krauthammer
   (Switzerland)

2. **Stereo-Vision Localization of Millimeter-Scale Capsule Targets in a Clinically Inspired Maze: A Repeatability Study**
   Ines Frajtag, Lukas Masjosthusmann, Sarthak Misra and Filip Šuligoj
   (Croatia, The Netherlands)

3. **A Pilot Study on Facial Landmark Detection on CT and MR Head Projections for Initial Multimodal Registration**
   Filip Šuligoj, Marko Švaco, Bojan Šekoranja and Bojan Jerbić
   (Croatia)

4. **Hierarchical Contrastive Alignment with a Triplet–Focal Objective for Cervical Cytology Classification**
   Bekhzod Olimov and Sung Wook Ahn
   (South Korea)

5. **Transformer-based Classification of Raman Spectra for Cancer Detection**
   Daniela Jastová, Jakub Tomeš, Matyáš Garnol and Jan Mareš
   (Czech Republic)

Regular Session:
AI in Medical Diagnostic and Biomedical Signal Processing

Chairman: Prof., Dr. Trupti Joshi
Marshall University, USA

1. **Criteria for Integerization to Improve Matroid Computational Complexity**
   David Ash
   (USA)

2. **Interpretable AI Framework for Raman Spectroscopy Based Diagnostics**
   Jakub Tomeš, Daniela Janstová, Matyáš Garnol and Jan Mareš
   (Czech Republic)

3. **AI-Based Bacterial Detection Using Multiple Biosensing Technologies Under Data Scarcity**
   Felipe Yamada, António Cardoso, Flávia Barbosa and Luis Guimarães
   (Portugal)

4. **Generating a New Objective Index (SURG-STRI) to Evaluate the Surgical Stress from ECG Sensor Data**
   (pre-recorded video presentation)
   Daniel Caballero, Manuel J. Pérez-Salazar, Juan A. Sánchez-Margallo and Francisco M. Sánchez-Margallo
   (Spain)

5. **Formal Paraconsistent Operators for Acoustic Feature Selection in Voice-Based Parkinson's Detection**
   Mayara Eid Orlandini and Rodrigo Capobianco Guido
   (Brazil)

Day 2

25 June 2026, Thursday

Regular Session:
Signal Processing & Computer Vision

Chairman: Prof., Dr. Noria Foukia
University of Applied Sciences and Arts of Western Switzerland, Geneva, Switzerland

1. **Best Practices for Implementing Real-Time Computer Vision Systems**
   Hannes Fassold
   (Austria)

2. **Effect of Surface Curvature on CT-to-RGB-D Point Cloud Registration Using Super4PCS and ICP Variants**
   Roč Stilinović
   (Croatia)

3. **Sensitivity Optimization of 4th-Order Bandpass Filter in CBQ Structure**
   Leonard Mikša, Nino Stojković, Zoran Šverko and Sanja Grbac Babić
   (Croatia)

4. **Multi-Head Gated Recurrent Units for Automotive Sound Source Localization and Detection: A Systematic Analysis of Hybrid Feature Fusion and Temporal Dynamics**
   Andre Guntoro
   (Germany)

5. **CT Surface Reconstruction Accuracy Under Varying HU Thresholds**
   Jurica Cvetic
   (Croatia)

Regular Session:
Artificial Neural Networks
& Intelligent System Architectures

Chairman: Prof., Dr. Nino Stojković
University of Rijeka, Croatia

1. **Graph Convolutional Networks in Recognition of Persuasive Faces in Online Media**
   Kristína Machová, Marián Mach and Peter Demeter
   (Slovakia)

2. **A New Multimodal Co-simulation Platform, Based on a Fleet of Small Autonomous Vehicles in a Containerized ROS2 Environment**
   Moïse Djoko-Kouam and Alain-Jérôme Fougères
   (France)

3. **A Maritime Traffic Monitoring and Security Detection Integrating Deep Learning, Uncertainty Quantification, and Complex Networks**
   Julius Venskus, Robertas Jurkus, Povilas Treigys, Lukas Janusauskas and Jurgita Markeviciute
   (Lithuania)

4. **Secure Model Context Protocol Architecture for Deep Data Loops** (pre-recorded video presentation)
   Jérémie Farret and Alexandre Ramtoula
   (Canada)

5. **Applications of Pseudo-Expert System to Lightweight Synthetic Rigid Foam as Load-Bearing Components Under Monolotical and Cyclic Loads**
   (pre-recorded video presentation)
   Rafaat Hussein
   (USA)

Regular Session:
Applied Artificial Intelligence & Expert Systems

Prof., Dr. Kristína Machová
Technical University of Košice, Slovakia

1. **Fuzzy-Neural Control of Industrial Robots for Deburring Tasks**
   Luc Baron
   (Canada)

2. **High precision, Efficient Deep Learning Approaches for Embedded Fruit Quality Classification**
   Mohamed Amine Bouallegui, Imen Saidi, Amine Abadi and David Fofi
   (Tunisia, France)

3. **"CAPF: A Clinical Agent Permission Framework for HIPAA-Aligned Least-Privilege Authorization in Multi-Agent Healthcare AI Systems** (pre-recorded video presentation)
   Rajat Khanna and Jatin Nandal
   (USA)

4. **Applied Pseudo-Expert System Approach to Load Bearing Performance of Mass Timber Panels Including Non-Rigid Bonding, Ply Angle, and New Applied App**
   (pre-recorded video presentation)
   Rafaat Hussein
   (USA)

5. **Applications of Pseudo-Expert System to Ligning-Based Laminates as Load-Bearing Components**
   (pre-recorded video presentation)
   Rafaat Hussein
   (USA)

Day 3

26 June 2026, Friday

Virtual Session in Zoom:
Signal Processing & AI Applications

Prof., Dr. Sergey Y. Yurish
IFSA, Barcelona, Spain

1. **Local Binary Pattern based Self Tuning Spectral Clustering for Images**
   Shadi Abdullah Alamoudi, Nesrine Amor, Hong Wei, Shadan Khattak, Xia Hong and Manal Khalaf Almutairi
   (Saudi Arabia, Czech Republic, UK)

2. **Classification of Targets from Multi-View Side-Scan Sonar Imagery**
   Oleksandr Katrusha, Dmytro Prylipko and Kostiantyn Yefremov
   (Ukraine, Germany)

3. **Diagnostic Performance of an AI System for Mammography Risk Assessment: Low-Prevalence Retrospective Study**
   Daniel Kvak, Karolína Kvaková and Marek Biroš
   (Czech Republic)

4. **Dependence on Fragile AI Systems: Rethinking the Collingridge Dilemma in Clinical AI**
   Anne Gerdes
   (Denmark)

5. **Policy-Focused Evaluation of Individualized Vasopressor Effects with Robustness to Irrelevant Covariates in MIMIC-III ICU Data**
   Ahmad Saeed Khan, Erik Schaffernicht and Johannes Andreas Stork
   (Sweden, Germany)

6. **The Ethical Implications of Artificial Intelligence in Orthopedic Surgery: A Systematic Review**
   Tobi Kamoru, Rebecca Alemu, Nuhame Mulugeta, Muna Jalani, John Cyrus and Lauren A. Barber (USA)

Poster Session

1. **Rapid Adaptation of UXO Classification Using Meta-Learning from Limited Side Scan Sonar Data**
   Franziska Auer, Ashik Shaji and Tobias Meisen
   (Germany)

2. **Neural Compression of Medical History Data: A Strategy to Reduce Big Data Burden in Emergency Medicine**
   Rodrigo Flores-Soto, Julien Lévesque, Christian Vincelette, Michael Chassé and Alexis Cournoyer
   (Canada)

3. **Identifying Firearm Exposure from Clinical Notes**
   Natalie Cartwright, Fran M. Biel, Megan Hoopes, Ali Al Bataineh, Pedro Rivera, Kerry Bet, Alan Cook, Kerime Toksu and Nicole Cook
   (USA)

4. **A Machine Learning Approach to Identify Nutrition-related Diseases Based on Fingernail Structure**
   Jan-Torsten Milde
   (Germany)

5. **Evaluating Artificial Intelligence in Generating Biochemistry Knowledge Assessments for Medical Education**
   Andrej Veljkovic, Aleksandar Mitic, Ognjen Radovic, Monika Simjanoska Misheva and Stevo Lukic
   (Serbia, North Macedonia)

Sponsored by: