7th International Conference
on Advances in Signal Processing
and Artificial Intelligence (ASPAI' 2025)

First International Conference
on AI in Medicine and Healthcare
(AiMH' 2025)

Conference Programme

8-10 April 2025
Innsbruck, Austria

Organized by:

Message from Chairman

On behalf of Organizing Committee, I would like to welcome you to the *7th International Conference on Advances in Signal Processing and Artificial Intelligence (ASPAI '2025)* and *1st International Conference on AI in Medicine and Healthcare (AiMH' 2025)*, 8-10 April 2025, Innsbruck, Austria.

This conference umbrella provides a unique platform for presentations, discussions, and information exchange, as well as the latest theoretical and experimental research results in the relevant fields. They bring together researchers, developers, and practitioners from various domains, including international scientists and engineers from universities, research institutes, and companies, to present and discuss the latest achievements in automation, robotics, communications, drones and unmanned systems.

In addition to technical discussions, an important part of these events is the opportunity for participants to meet colleagues and potential partners for joint research projects. This aspect of our IFSA events has always received high marks, and we continue to pay special attention to it. During coffee breaks, welcome cocktail, gala dinner and farewell cocktail, participants will have the chance to make new social connections.

The conferences are organized by the international, non-profit, professional association IFSA serving the industry and the academic community since 1999, in cooperation with the IFSA Group's company - *IFSA Publishing, S.L.* (Spain), *IOS Press* (USA) and *World Scientific* (USA) publishers.

We are confident that your participation in these conferences will bring you both professional satisfaction and inspiration, as well as an enjoyable experience. Welcome to ASPAI' 2025 and AiMH' 2025 !

Prof., Dr. Sergey Y. Yurish
Conference Umbrella Chairman

Conferences Venue

The conference umbrella will take place in the modern 4-star Austria Trend Hotel Congress Innsbruck, conference room Tyrol (II). The hotel is located on the banks of the Inn River, close to the Congress and Exhibition Centre of Innsbruck, and just a few steps away from the historic city centre. The hotel is situated in 5 km from the Airport and 3 km from the Railway Station. Address: Rennweg 12a, 6020 Innsbruck, Austria.

Registration

The Registration Desk is opened in the Austria Trend Hotel Congress Innsbruck in front of the Tyrol (II) conference room:

- Monday, 7 April 2025, from 20:00-21:30
- Tuesday, 8 April 2025, from 8:45-18:00
- Wednesday, 9 April 2025, from 8:45-18:00
- Thursday, 10 April 2025, from 8:45-14:00.

Language

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

Insurance and Liability

The conferences organizers do not accept responsibility for any individual, medical, travel or personal insurance policies as necessary.

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 sessions and social events.

Welcome Cocktail

7 April 2025, Monday (20:00-21:30). The Welcome Cocktail will take place in the Austria Trend Hotel Congress Innsbruck in the lobby near the Tyrol conference rooms. Do not miss this opportunity to say the first "hello" to attendees and committee members. The Registration will be opened at the Welcome Cocktail area.

Coffee/Tea Refreshment

Coffee/tea will be served at the times indicated in the programme in front of the *Tyrol* conference rooms.

Gala Dinner

9 April 2025, Wednesday (19:00-22:00). Tyrolean Evening, Dinner & Show with the Gundolf Family - one of the best traditional shows in Europe including typical Tyrolean Shoe slapping dances and yodeling. Address: Kapuzinergasse 11 Eingang in der, Ing.-Etzel-Straße, 6020 Innsbruck (1 km, 14 min walking distance) from the event hotel. See the location map, programme and menu at the end of this brochure. Please do not forget your ticket and badge !

Local Time

The local time in Austria is: GMT+2

Conferences' web sites:

- ASPAI' 2025: http://www.aspai-conference.com/
- AiMH' 2025: http://www.aimh-conference.com/

Post-Conference Publications

Selected papers presented at the conference can be published in the following journals:

- *Sensors & Transducers* (ISSN 2306-8515, e-ISSN 1726-5479) open access journal, Special Issue on '*Advances in Artificial Intelligence and Signal Processing*', 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 paper or/and articles into the book chapters for the '*Advances in Signal Processing*' Vol. 4/5, '*Advances in Artificial Intelligence',* Vol. 4/5 or '*Advances in Intelligent Systems'* Book Series. These open access books will be published at the end of 2025 by IFSA Publishing, S.L. (Barcelona, Spain).

Organizing Committee

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Keynote Speakers

Prof., Dr. Jingshan Li

Department of Industrial Engineering,
Tsinghua University,
Beijing, China

AI-based Whole-cycle Health Care Management: Problems, Challenges, and Opportunities

Abstract: In current healthcare systems, there are still many limitations in the management of entire medical process cycle, particularly in the coordination and connection of the three stages: pre-hospital screening and prevention, in-hospital diagnosis and treatment, and post-hospital rehabilitation and health management. In this report, we aim to optimize the healthcare delivery process using AI-based algorithms from a whole-cycle perspective. By characterising the process flow and changes in patients status throughout the entire cycle, we consider optimal management of work flow, medical resources, and comprehensive coverage of healthcare delivery from prevention, treatment to rehabilitation, thereby truly enhancing the quality of healthcare services for the entire population across their life cycle.

Short Biography: Dr. Jingshan Li is the Head and Gavriel Salvendy Chair Professor in Department of Industrial Engineering, Tsinghua University, Beijing, China. He received BS, MS, and PhD degrees from Tsinghua University, Chinese Academy of Sciences, and University of Michigan-Ann Arbor, in 1989, 1992 and 2000, respectively. Before joining Tsinghua University in 2021, he was with General Motors R&D Center, University of Kentucky, and University of Wisconsin-Madison. Dr. Li has published 2 textbooks, 7 book volumes, and close to 300 refereed journal articles, book chapters, and conference proceedings. He has been the Department Editor of IISE Transactions and Flexible Service and Manufacturing Journal, the Senior Editor of *IEEE Transactions on Automation Science and Engineering* and *IEEE Robotics and Automation Letter*, Associate Editor of International Journal of Production Research, etc. He was the Editor-in-Chief of *IEEE International Conference on Automation Science and Engineering*, and the Chairs of many flagship conferences. He has been the Chairs of IEEE Technical Committees on Sustainable Production Automation, and Healthcare Management Automation. Dr. Li is an IEEE Fellow, IISE Fellow, and IEEE Distinguished Lecturer in robotics and automation. He received NSF CAREER Award, IEEE Robotics and Automation Early Career Award, and multiple Best Paper Awards from flagship journals and conferences. His primary research interests are in design, analysis, and control of production and healthcare systems.

Prof., Dr. Akbar Naminn

Texas Tech University,
Department of Computer Science.
TX, USA

Reinforcing Cyber-Physical Systems Security to Combat Intelligent Aliens

Abstract: The recent advent of Artificial Intelligent (AI) and in particular machine learning has dramatically changed computer-assisted technologies in many application domains and sectors where automated decision makings are performed in accordance and help of intelligent and systematically trained AI-powered models. It is not a surprise that cyber security hackers also leverage these sophisticated AI-based technologies to craft and launch advanced and evasive cyber attacks that remain undetected and stealth during the course of cyber operations. This talk will provide a comprehensive overview of cyber attacks with special focus on Cyber-Physical Systems (CPS) and Internet-of-Things (IoT). As the major theme of this talk, the AI-powered cyber attacks and their operations will also be explored. The talk will also provide the state-of-the-art of research in adapting AI-based and, in particular, Reinforcement Learning approaches in building automated defense systems to combat evasive cyber attacks.

Short Biography: Dr. Akbar Namin is a full professor in Computer Science at Texas Tech University where he directs the Center for the Science and Engineering of Cyber Security (CSECS). Namin earned his Ph.D. in Computer Science from Western University, Canada, in 2008. Namin's research is in cyber security, machine learning, Reinforcement Learning, Large Language Models (LLM), software engineering, and human AI interactions. Namin has authored over 120 scientific papers and research articles appeared at premier professional venues and journals. Namin has been the guest editors of several scientific journals. He has founded the Advanced Socio-Technical Analytics Research Lab in Computer Science Department with over 10 Ph.D. and 80 Master's students graduated. His research lab conducts multidisciplinary research projects in various areas including human factors in cyber security and humanized AI through Reinforcement Learning. The National Science Foundation (NSF) and The Office of Navy Research (ONR) fund his scholarly work in cyber security research and education. Namin is a Fulbright U.S. scholar visiting the St. Polten University of Applied Sciences, Department of Computer and Security, Austria, in 2025.

Prof., Dr. Pradeep Kundu

Faculty of Engineering Technology,
Dept. Mechanical Engineering,
KU Leuven, Belgium

Signal Processing and AI Augmentation for Robust Condition Monitoring

Abstract: The presentation highlights the critical challenges posed by asset failure and degradation, which can result in unplanned outages, reduced product quality, lower productivity, and increased operational and maintenance costs. To address these > issues, machine learning (ML)-based data-centric models are widely used for health assessment tasks such as anomaly detection, fault diagnostics, and prognostics to predict the remaining useful life of assets. However, the effectiveness of these ML models heavily relies on the quality and sensitivity of health indicators or features, which are derived using signal processing techniques. This talk will focus on two key aspects: first, the development of robust feature extraction methods using novel signal processing techniques for gear condition monitoring and second, evaluating the performance of the extracted features by comparing single-sensor data with multi-sensor fusion data for estimating the remaining useful life of assets using machine learning models.

Short Biography: Pradeep Kundu is currently working as an assistant professor in the Department of Mechanical Engineering at KU Leuven, Belgium. Before joining KU Leuven, he worked as a Post-Doctoral Fellow and Research Associate at the University of Cincinnati, USA, and > the University of Strathclyde, UK, respectively. His research focused on the broad domain of utilizing the potential of digital twins, artificial intelligence, and signal processing techniques to solve asset health management and quality control problems. > His research helps industries in reducing unplanned outages, increase productivity, automate quality control, and reduce operation and maintenance costs. He has published around 50 articles in reputed journals and conferences. He has delivered more than 20 > keynote/invited talks and has been part of more than 10 conference committees. He has received several awards, including runner-up for PHM Europe 2022 Data Challenge, overseas visiting doctoral fellowship from SERB, etc.

Prof., Dr. Surajit Ray

School of Mathematics and Statistics,
University of Glasgow, UK

Bridging Statistical Learning and Deep Learning for Probabilistic Segmentation in Molecular Imaging

Abstract: The integration of artificial intelligence (AI) in medical imaging is transforming cancer treatment, particularly in radiotherapy (RT), where accurate tumour detection and segmentation are essential for effective treatment planning. Functional imaging techniques like Positron Emission Tomography (PET) provide valuable insights, but current AI-driven segmentation methods often struggle with precisely identifying tumour boundaries. This is especially critical for advanced treatment strategies such as intensity-modulated radiation therapy (IMRT) dose painting, which requires highly accurate contouring to ensure optimal radiation delivery. In this talk, I will introduce KsPC-Net, a novel AI-powered approach that combines deep learning with statistical techniques to improve segmentation accuracy in molecular imaging. By integrating a convolutional neural network (CNN) with a probability-based contouring method, KsPC-Net not only enhances tumour boundary detection but also provides confidence estimates for treatment planning. Unlike conventional methods, our approach learns key parameters automatically, reducing the need for manual adjustments and improving consistency. Tested on a leading medical imaging dataset, KsPC-Net outperforms existing techniques, bringing AI-driven segmentation closer to clinical application. This talk will explore how blending deep learning with statistical modeling can lead to more reliable and interpretable AI solutions in healthcare.

Short Biography: Prof. Surajit Ray is a Professor of Statistics at the University of Glasgow. His research focuses on uncertainty quantification of AI algorithms for medical image analysis, as well as the theory and geometry of mixture models and functional data analysis. He is particularly interested in challenges arising from high-dimensional and large-scale data, both in terms of vector dimensions and sample sizes. His methodological expertise includes multivariate mixture models, structural equation modeling, high-dimensional clustering, and functional clustering. He collaborates extensively across disciplines, with key projects in medical image segmentation, immunology, and climate-ecosystem dynamics modeling. Beyond academia, he contributes to advisory boards, including the Newton Gateway to Mathematics, fostering interdisciplinary engagement. His work bridges theoretical advancements with real-world applications, making significant contributions to medical imaging and statistical science.

Dr. Vedran Jurdana

University of Rijeka,
Faculty of Engineering,
Croatia

Rényi Entropy-Based Shrinkage Algorithm for Sparse Time-Frequency Distribution Reconstruction Using Component Alignment Map

Abstract: Time-frequency distributions (TFDs) are powerful tools for analyzing non-stationary signals, addressing the limitations of the conventional Fourier transform. Compressive Sensing (CS) has emerged as an advanced technique in this field, enabling the reconstruction of a signal's time-frequency distribution from a sparse subset of ambiguity function samples. While this CS-based method demonstrates high performance, determining the optimal regularization parameter remains a significant challenge. A recent approach leverages the local Rényi entropy (LRE) to estimate the local number of components in both time and frequency, replacing the conventional regularization parameter. This led to the development of a Rényi-entropy-based shrinkage algorithm, which outperforms traditional algorithms. However, this algorithm's performance is constrained by the limitations of LRE itself. In this talk, I will discuss these challenges and present an improved approach using the component alignment map (CAM). CAM identifies and extracts regions of the TFD with similar components, enabling more accurate estimation of local component counts and simplifying the Rényi-entropy-based algorithm. Experimental results demonstrate the efficacy of this enhancement, offering improved reconstruction performance compared to existing methods. Furthermore, this work opens new research avenues, including the integration of machine learning techniques to further refine this CS-based method.

Short Biography: Dr. Vedran Jurdana is a Postdoctoral Researcher at the Department of Automation and Electronics, Faculty of Engineering, University of Rijeka (Croatia). He has got his Ph.D. in Electrical Engineering from the same institution and has published in esteemed international journals and conferences, primarily in signal processing. He actively contributes to scientific projects, including a Croatian Science Foundation-funded study investigating early behavioral markers of developmental alterations in visuospatial processing and visual-motor integration in preterm infants. He is a Reviewer of several prominent international journals and conferences and has been a Technical Program Committee member for the International Conference on Broadband Communications for Next Generation Networks and Multimedia Applications. He is serving as a Guest editor of a Special Issue in Sensors journal.

ASPAI' 2025 & AiMH' 2025 Programme at Glance

Time/Date (GMT+2)	8.04.2025 Tuesday	9.04.2025 Wednesday	10.04.2025 Thursday
	Conference Room Tyrol II		
8:45-9:00	Registration	Registration	Registration
9:00-9:15	* Opening Session	* Daily announcements	* Daily announcements
9:15-10:00	**Keynote Speaker I** Prof., Dr. Jingshan Li, *Tsinghua University, Beijing, China*	**Keynote Speaker III** Prof., Dr. Akbar Namin, *Texas Tech University, USA*	**Keynote Speaker V** Dr. Vedran Jurdana, *University of Rijeka, Croatia*
10:00-10:30	*Coffee Break*	*Coffee Break*	*Coffee Break*
10:30-12:30	**Regular Session:** *Biomedical Signal Processing*	**Regular Session:** Signal Processing, Computer Vision and Pattern Recognition	**Regular Session:** AI Algorithms, Tools & Applications
12:30-13:30	*Lunch on your own*	*Lunch on your own*	*Lunch on your own*
13:30-14:00	**Keynote Speaker II** Prof., Dr. Pradeep Kundu, *KU Leuven, Belgium*	**Keynote Speaker IV** Prof., Dr. Surajit Ray, *University of Glasgow, UK*	**Virtual Session in Zoom** Signal Processing and AI Applications (Live streams)
14:00-16:00	**Regular Session:** AI in Medical Imaging, Diagnostics, Education and Training	**Regular Session**: AI for Health Informatics, Data Science and Clinical Decision Support	
16:00-16:30	*Coffee Break*	*Coffee Break*	*Poster Session & Farewell Cocktail* * Closing Session (17:45-18:00)
16:30-18:00	**Regular Session:** Machine and Deep Learnings: Theory & Applications	**Special Session:** *From Algorithms to Action: Implementing AI in Daily Nursing Practice*	
18:00-18:30		-	-
18:30-19:00	-	-	-
19:00-22:00	-	*Gala Dinner*	-

* The must attend sessions. The time in the table and in the technical programme below is the local time in Innsbruck is: GMT+2.

Technical Conference Programme

Day 1

8 April 2025, Tuesday

Regular Session:
Biomedical Signal Processing

Chairman: Prof., Dr. Jingshan Li
Tsinghua University, Beijing, China

1. **Removing EOG Artifacts from EEG Recordings Using Deep Learning**
   Christian O' Reilly and Scott Huberty *(USA)*

2. **Examining Physiological Responses to Misophonic Triggers**
   Christian O'Reilly, Xuan Yang, Sewon Oh, Doug Wedell and Svetlana V. Shinkareva *(USA)*

3. **Diagnosing Plant Leaf Disease with THz Sensor and Digital Signal Processing**
   Janez Trontelj, Andrej Švigelj and Janez Trontelj *(Slovenia) ->Video*

4. **Functional Connectivity Analysis Using Adaptive Window Size and Intersection of Confidence Intervals**
   Zoran Sverko, Sasa Vlahinic, Nino Stojkovic and Peter Rogelj *(Croatia)*

5. **Deep Jansen-Rit Parameter Inference for Model-Driven Analysis of Brain Activity**
   Deepa Tilwani and Christian O'Reilly *(USA)*

6. **Applied AI for DLT and CLT with Imperfect Bbonding**
   Rafaat Hussein *(USA)*

Regular Session:
AI in Medical Imaging, Diagnostics, Education and Training

Chairman: Dr. Maria Mannone
ICAR, National Research Council of Italy (CNR), Italy

1. **Prototype Networks for Reliable Classification Decision Based on Gene Expressions for Breast Cancer Detection Integrating Expert Knowledge**
   Thomas Villmann and Marika Kaden *(Germany)*

2. **Assessing Artificial Intelligence and Radiologist Performance in Musculoskeletal Fracture Detection: Multi-Reader, Multi-Case Study**
   Jakub Dandár, Šimon Kličník, Zdeněk Straka and Daniel Kvak *(Slovakia, Czeck Republic)*

3. **BLIP-Eye: Vision-Language Pre-training Classification Model for Eye Diseases Using OCT Scans**
   Khalid Ayed Alharthi, Saja Alshahrani, Rasha Alshahrani, Rahaf Alshahrani and Zhaorui Zhang *(Saudi Arabia, Hong Kong)*

4. **Kidney Tumor Segmentation using Improved U-Net architecture for early diagnosis of Renal Cell Carcinoma**
   Sameena Pathan, Tanweer Ali and Haneena Hyder *(India)*

5. **AI for Education: A Generative AI-Powered Cognitive Tool for Medical Students' Self-Assessment**
   Andrea Pitrone and Intissar Haddiya *(USA, Morocco)*

Regular Session:
Machine and Deep Learnings: Theory & Applications

Chairman: Prof., Dr. Pradeep Kundu
KU Leuven, Belgium

1. **Radioactive Tabular Datasets to Detect Unauthorized Machine Learning**
   Mehdi Ben Ghali, Gouenou Coatrieux and Reda Bellafqira *(France)*

2. **Radial Basis Operator Networks**
   Jason Kurz, Sean Oughton and Shitao Liu *(New Zeeland, USA)*

3. **An Improved Algorithm for Computing Matroids Over Polynomials**
   David Ash *(USA)*

4. **Traffic Predictions Using Graph Neural Networks on Real-time Observations**
   Joachim Hansen, Donglin Liu and Alexandros Sopasakis *(Sweden)*

5. **Machine Learning-Based Sarcopenia Classification Using Multimodal Patient Data**
   Akhila Abdulnazar, Julia Traub, Nicole Feldbacher, Lavra Celcer, Vanessa Stadlbauer and Laurin Herbsthofer *(Austria)*

6. **A Platform for Machine Learning-Enhanced Decision Support in Molecular Tumor Boards**
   Akhila Abdulnazar, Stefanie Stanzer and Laurin Herbsthofer *(Austria)*

7. **Soft Computing for Flood Susceptibility Mapping of Kullu District of India**
   Shweta Vincent, Mahesh Anil Inamdar, Om Prakash Kumar, Rohit Narayan H S, Nakul Rajendra Varma, Kaushik Naidu and Anadya Dang *(India)*

8. **Smart Sensor Selection: A Review on Metaheuristic Algorithms in IoT Platforms**
   Sujith Kumar, Shweta Vincent and Om Prakash Kumar *(India)*

Day 2
9 April 2025, Wednesday

Regular Session:
Signal Processing, Computer Vision and Pattern Recognition

Chairman: Prof., Dr. Akbar Namin
Texas Tech University, USA

1. **Computing the Time-Dependent Krankheit-Operator in Epilepsy from ECoG: a Case Study**
   Maria Mannone, Patrizia Ribino, Aurora Saibene, Peppino Fazio, Sofia Fazio, Francesca Gasparini, Marco Gherardi and Norbert Marwan *(Italy, Germany)*

2. **CFUs detection in Petri Dish images using YOLOv12**
   Victorien Quevit, Jean-Marc Laferté, Jean-Louis Dillenseger, Alain-Jérôme Fougères, Hayet Djelal and Emmanuel Jalenques *(France)*

3. **MineralBLIP: Advancing Mineral Classification with Vision Language Pre-training Model**
   Khalid Alharthi, Ghadi Alkhushail, Sharifah Malhan, Batol Alsalkhadi, Hatun Alqarni, Kholoud Alharthi, Reem Almarhabi, Raghad Alharthi, Muhammad Zaka Emad and Dhafer Abdullah Alshehri *(Saudi Arabia)*

4. **Compact Dual-Band Millimeter Wave Antenna at Ka- and V-Band for Sensing Applications**
   Parveez Shariff B. G., Tanweer Ali, Sameena Pathan and Pallavi R Mane *(India)*

5. **Chart Pattern Recognition Using Convolutional Neural Networks**
   Cándido Caballero-Gil, Jose Antonio Antúnez-Pulido and Javier Giner-Rubio *(Spain)*

5. **The Protocol for Integration of Automated and Dynamic Facial Expression Emotion Recognition with EEG for Emotional Rraits Analysis in Pilot Candidates**
   Slawomir Michalak, Tomasz Łodygowski, Paweł Śniatała, Mikołaj Goralewski, Ewa Kozielewska-Zwierska, Jakub Moskal, Marta Galant-Gołębiewska, Konrad Śniatała and Patryk Zych *(Poland)*

Regular Session:
AI for Health Informatics, Data Science and Clinical Decision Support

Chairman: Prof., Dr. Surajit Ray
University of Glasgow, UK

1. **End-to-end Pseudonymization of German Texts with Deep Learning – An Empirical Comparison of Classical and Modern Approaches**
   Saurav Kumar Saha and Felix Biessmann *(Germany)*

2. **Broken AI. A test bench for a Non-invasive Experiment in Computational Neuropsychiatry Joining Krankheit-Operator and Artificial Intelligence**
   Maria Mannone, Norbert Marwan, Peppino Fazio and Patrizia Ribino *(Germany, Italy)*

3. **Explaining Classifications of Raman Spectral Data Based on Quotient Games**
   Marco Piazza, Mauro Passacantando, Marzia Bedoni and Enza Messina *(Italy)*

4. **Deep Learning Explainability on Non-Hodgkin Lymphoma: Relapse & Treatment**
   Maria Reyna Cruz, Christoph Lauter, Martine Ceberio and Jesus Lopez *(USA)*

5. **Application for Predicting Left Ventricular Diastolic Dysfunction**
   Pakpoom Danjittisiri, Anuchate Pattanateepapon, Chanon Puttanawarut, Teerapat Yingchoncharoen, Porntep Amornritvanich and Ammarin Thakkinstian *(Thailand)*

6. **Predicting Posterior Circulation Stroke Using Deep Learning on CT Brain Non-Contrast**
   Pasit Supholkhan, Panu Looareesuwan, Chanon Puttanawarut, Boonchai Kijsanayotin, Padcha Tunlayadechanont and Ammarin Thakkinstian *(Thailand)*

Special Session:
From Algorithms to Action: Implementing AI in Daily Nursing Practice

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

1. **From Digital Disruption to AI Revolution: The Evolution of Healthcare Transformation**
   Shafaq Khan, Munir Majdalawieh, Dhruvi Kharadi, Taun Verma, Tasnim Farhin and Aditya Kumar *(Canada, UAE)*

2. **Reducing Nurses' Workload with an AI Speech Assistant for Documentation**
   Katja Schwabe, Drin Ferizaj and Susann Neumann *(Germany)*

3. **Preventing Falls with the Help of Data (KIP-SDM)**
   Felix Biessmann *(Germany)*

4. **ProKIP: Rationale and Development of the AI-Nursing-Care-Readiness-Assessment (AINCRA)**
   K. Seibert, D. Domhoff, J. Altona, S. Jäger, F. Bießmann, A. Nowak, R. Gubser, D. Fürstenau, J. Pohle, L. Bergmann, D. Walter, K. Beier, and K. Wolf-Ostermann *(Germany)*

5. **Suicide Prediction Among Older Adults in Sweden Using Survival Analysis and Sequential Machine Learning Models**
   Oliver Karlsson, Wilhelm Von Hacht, Mahmoud Rahat and Magnus Pettersson *(Sweden)*

Day 3

10 April 2025 Thursday

Regular Session:
Applied AI: Algorithms, Tools & Applications

Chairman: Prof., Dr. Cándido Caballero-Gil
University of la Laguna, Tenerife, Spain

1. **Self-Adaptive and Self-Learning Lighting System: Integrating LSTM and RL for Energy Efficiency and Personalized Visual Comfort**
   Patrizia Ribino, Giacomo Potenza, Cristina Baglivo and Marina Bonomolo *(Italy)*

2. **GNSS Non-Line-of-Sight Error Repairing in Challenging Urban Environments with Channel Attention and Inception-based Deep Learning Network**
   Zhiqiang Wang, Ni Zhu and Ruiwen He *(France)*

3. **Comparative Study of Route Algorithms Applied to Drones**
   Jezabel Molina-Gil, Ricardo Aguasca-Colomo and José Gregorio Dorta-Luis *(Spain)*

4. **Combined Feature Selection and Hyperparameter Optimization for Small Datasets**
   Nicki Lena Kämpf *(Germany)*

5. **The Role of Code Readability in Large Language Model Code Summarization**
   Balázs Szalontai, Gergő Szalay, Anna Sike, Tamás Márton, Péter Mátray, Máté Imre Nagy, Balázs Pintér and Tibor Gregorics *(Hungary)*

6. **Neurorehabilitation System Supported by Virtual Reality**
   Slawomir Michalak, Ewa Kozielewska-Zwierska, Aleksander Krawczyński, Katarzyna Sniatala, Szymon Baliński and Pawel Sniatala *(Poland)*

Pre-Recorded Video Presentations

ASPAI' 2025: https://aspai-conference.com/aspai_2025_video_presentations.html
AIMH' 2025: https://aimh-conference.com/aimh_2025_video_presentations.html

1. **Prediction of Total Daily Diaper Changes Based on Infants' Bowel Sounds During the Beginning of Breastfeeding**
   Saya Mukaiyama, Nari Tanabe and Yasunori Oka *(Japan)*

2. **Enhancing Real-Time Decision-Making with Scalable, Safe, and Private LLMOps and Context-Aware RAG Workflows**
   Jérémie Farret, Jerin Jude and Nitish Kumar Pilla *(Canada)*

3. **Characteristics of Dynamic Velocity Response in Hand Movements Using Frequency and Time Modeling Technique**
   Camilo Leonardo Sandoval Rodriguez, Andres Felipe Jimenez Quezada, Nicolas Orejarena Osorio, Diana Maria Reyes Bravo and Omar Lengerke Pérez *(Colombia)*

4. **Graphical User Interface for Volumetric Capnography: Parameter Estimation and Fowler's Method Implementation**
   Camilo Leonardo Sandoval Rodriguez, Nicolas Orejarena Osorio, Andres Felipe Jimenez Quezada and Omar Lengerke Pérez *(Colombia)*

5. **Forecasting Flood in Vietnam Using Deep Learning**
   Nguyen Thu Huong and Nguyen The Long *(Russia)*

6. **Catastrophic Forgetting Mitigation of Melanoma Skin Cancer Detection Using ADANemo**
   Jesse Orlanda, Nandatama Bagus Adisaka, William Suryadharma Pangestu and Hidayaturrahman *(Indonesia)*

7. **Optimizing Medical Information Retrieval: Innovative Methodologies for Enhanced Precision and Efficiency**
   Prachi Patel *(USA)*

8. **KIADEKU: Identification of Wound Types with AI**
   Khalid Majjouti and Bernadette Hosters *(Germany)*

9. **A Reliable and Efficient Detection Pipeline for Rodent Ultrasonic Vocalizations**
   Sabah S. Anis, Devin M. Kellis, Kris F. Kaigler, Marlene A. Wilson and Christian O'Reilly *(USA)*

10. **AI-based Prediction of Localized Muscle Fatigue in Minimally Invasive Gynecological Surgery**
    Daniel Caballero Jorna, Manuel J. Pérez-Salazar, Juan A. Sánchez-Margallo and Francisco M. Sánchez-Margallo *(Spain)*

Virtual Session in Zoom (live streams): *Signal Processing and AI Applications*

Chairman: Prof., Dr. Sergey Y. Yurish
International Frequency Sensors Association (IFSA), Spain

1. **Knowledge Distillation for Efficient Algerian Dialect Processing: Training Compact BERT Models with DziriBERT**
   Amina Laggoun, Chahnez Zakaria and Kamel Smaili *(Algeria, France)*

2. **An Evaluation of General-Purpose Large Language Models for Aspect Summarization**
   Sarah Frank, Andreas Wagner and Christian Guetl *(Austria, Switzerland)*

3. **Enhancing Accuracy in Non-Contact Physiological Monitoring: The Critical Role of Radar and Sensor Signal Alignment**
   Nour Ghadban, Jonathan Cooper and Julien Le Kernec *(UK)*

4. **Towards AI-based Cognitive Training for Adult ADHD Patients**
   Filippo Boschello, Andreas Conca, Ivan Donadello, Giancarlo Giupponi, Sonia Holzer and Floriano Zini *(Italy)*

5. **Detecting and Pre-coding Multiple Tumours in Pathology Reports**
   Tapio Niemi, Gautier Defossez and Jean-Luc Bulliard *(Switzerland)*

6. **Risk Stratification and Early Diagnosis of Heart Failure**
   Borut Flis, Petar Vracar, Matej Piculin, Djordje Jakovljevic, Nenad Filipovic and Zoran Bosnic *(Slovenia, UK, Serbia)*

7. **A Novel Approach to Generating Synthetic Data with WGAN-GP and Mahalanobis Distance Filtering**
   Akshay Sunkara, Rajiv Morthala, Anav Jain and Srinjoy Ghose *(USA)*

8. **Res-Scrum: A Proactive and Resilient Agile Framework for Managing Uncertainty in Software Development**
   Aziz Fellah *(USA)*

Poster Session

10 April 2025 (16:00-17:45)

1. **Monitoring OoD Prediction Error in Semantic Segmentation Networks via Temporal Consistency of Logits**
   Youssef Shoeb, Azarm Nowzad and Hanno Gottschalk *(Germany)*

2. **Millimeter-Wave Beam Prediction with Inverse Beamforming ML Model**
   Smail Mokdadi, Salah Eddine Bouzid and Pascal Chargé *(France)*

3. **Video-Based Analysis for Automated Ptosis Detection**
   Szymon Baliński and Pawel Sniatala *(Poland)*

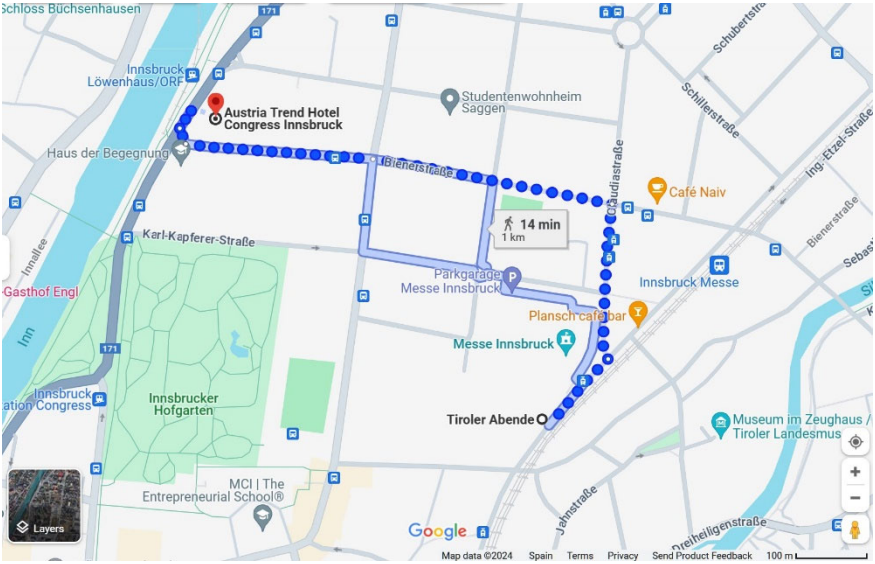
4. **Identification of Musical Instruments in Audios Using Signal Analysis and Artificial Intelligence**
   Alan S. Vazquez-Robledo, Rocio A. Lizarraga-Morales and Misael Lopez-Ramirez *(Mexico)*

5. **Generation of a Rhythm Descriptor in Musical Phrases Using Signal Processing and Artificial Intelligence Techniques**
   Hugo A. Aguilera-Garcia and Rocio A. Lizarraga-Morales *(Mexico)*

6. **Digital Twins: Synthesizing Patient's 3D Anatomical Model from a CT Scan**
   Valentina Paneta, Vasileios Eleftheriadis, George C. Kagadis and Panagiotis Papadimitroulas *(Greece)*

Gala Dinner Location:

From the conference hotel *Austria Trend Hotel Congress Innsbruck,* Rennweg 12a, 6020 Innsbruck, Austria:

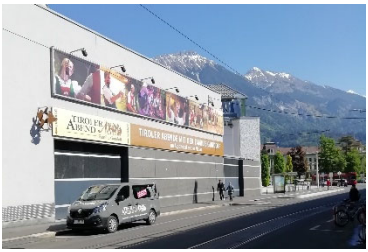


1. Head southwest on Rennweg/B171, 30 m
2. Turn left toward Tschurtschenthalerstraße, 24 m
3. Turn left onto Tschurtschenthalerstraße, 270 m
4. Continue onto Bienerstraße, 350 m
5. Turn right onto Claudiastraße, 220 m
6. Turn right onto Ing.-Etzel-Straße/Viaduktbögen

Destination will be on the right., 130 m

Address: Tiroler Abende, Kapuzinergasse 11 Eingang in der, Ing.-Etzel-Straße, 6020 Innsbruck, Austria

GPS: 47.270788, 11.403726 (47°16'14.8"N, 011°24'13.4"E)



Gala Dinner Menu:

- Pumpkin soup
- Roast pork with potatoes and vegetables
- Apple strudel with whipped cream
- One drink included: 0.5 l beer, 0.25 l wine or 0.25 l soft drink

Programme:

1. Music
2. Schuhplattler (folk dance) – “Reith im Winkel”
3. Yodel-song
4. Tyrolean figure-dance
5. Song on the singing saw
6. Yodel-song
7. Schuhplattler (folk dance) – “Cross Polka”
8. Solo on the country-harp
9. Alphornklänge – alphorn-sounds
10. Solo on special tuned cow-bells
11. Yodel-song
12. Hackbrett (typical Tyrolean string instrument)
13. Wood chopper’s dance

- Intermission

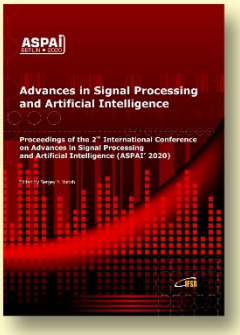
14. Innsbrucker Fanfare
15. Yodel-song
16. Solo on the zither
17. The miller’s dance
18. Raffele (old Tyrolean string instrument)
19. Jealousy dance
20. Hölzernes G’lachter – xylophone
21. Cowbell dance
22. Yodel-song
23. Miner’s dance
24. The march of the mountaineers – “Bozner Bergsteigermarsch”

- Finale

Programme subject to change.

Advances in Signal Processing and Artificial Intelligence

Proceedings of the 2nd ASPAI' 2020 Conference



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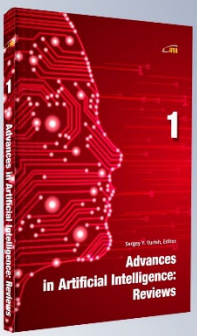
Advances in Artificial Intelligence: Reviews

Sergey Y. Yurish, Editor



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1

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