Smart Digital Futures 2025

AMSTA | HCIS | IDT | InMed | SEEL |

Conference Programme

25-27 June 2025
Solin, Croatia

Contents

Chairs Welcome

Welcome to the Smart Digital Futures 2025 (SDF-25) multi-theme conference held at the Hotel President in Solin, Croatia, during 25-27 June 2025.

SDF-25 is an amalgamation of six KES conferences: Agent and Multi-Agent Systems - Technology and Applications (KES-AMSTA-25), Intelligent Decision Technologies (KES-IDT-25), Human Centred Intelligent Systems (KES-HCIS-25), Innovation in Medicine and Healthcare (KES-InMed-25), Smart Education and e-Learning (KES-SEEL-25) and Smart Transportation Systems (KES-STS-25). Although the conferences share a common forum, each one has its own Chair and International Programme Committee.

SDF-25 was intended to be, as far as possible, a conference with physical attendance of delegates. However, to allow for those unable to travel to the conference location, provision was made for an element of virtual attendance. In either case delegates could submit a paper and present it to conference delegates.

The best papers submitted to the conference were presented and published in several volumes of proceedings in the Smart Innovation Systems and Technology series by Springer-Verlag.

Smart Digital Futures was organised as part of the KES International conference portfolio. For over a decade the mission of KES International has been to provide a professional community, networking and publication opportunities for all those who work in knowledge-intensive subjects. At KES we are passionate about the dissemination, transfer, sharing and brokerage of knowledge. The KES community consists of several thousand experts, scientists, academics, engineers, students and practitioners who participate in KES activities. KES runs conferences in different countries of the world on leading edge topics including Intelligent Systems, Sustainability in Energy and Buildings, Innovation, Knowledge Transfer and Enterprise, and Digital Media. KES provides routes to publication, such as journals, book series, and online publications, both through its own media and in conjunction with major publishers. KES also provides knowledge transfer services and consultancy.

The aim of Smart Digital Futures was to bring together researchers working at the leading edge of developments in smart systems and intelligent technology theory and applications. This programme contains 127 papers, each selected after full peer review by members of the International Programme Committees of the conferences.

We thank the keynote speakers for providing informative accounts of the latest research in their areas:-

- Prof. Anna Esposito, University of Campania "Luigi Vanvitelli", Italy; title of talk: 'An overview on mood/emotion research: the effects of gender and age of stimuli';
- Dr. Eng. Mihaela Luca, Institute of Computer Science, Romanian Academy, Romania; title of talk: 'From Deep Learning to Vision Transformers - a big step further';

and

- Prof. Gloria Phillips-Wren, Loyola University Maryland, USA; title of talk: 'The Impact of Generative AI on Decision Making and Analytics'.

We thank the General Chairs and Programme Chairs of the SDF-25 conferences for their hard work and dedication. We appreciate the efforts of those organising and chairing special sessions, members of the International Programme Committees and reviewers and we thank them. We are grateful to authors for the papers they have contributed to the conference, and to delegates for their attendance and we give them our thanks.
Finally, we thank the KES International administration team for their efforts.
We hope you find the conference useful and informative, we wish you all well, and we look forward to seeing you at another of our events in the future.

R.J. Howlett and L.C. Jain
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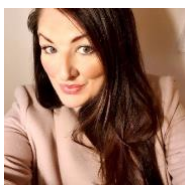
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Keynote Talks

Prof. Anna Esposito
University of Campania "Luigi Vanvitelli", Italy

An overview on mood/emotion research: the effects of gender and age of stimuli

Abstract: In this talk I will present the current research performed at the Behaving Cognitive Systems (BeCogSys) laboratory at University of Campania "Luigi Vanvitelli" on human's ability to decode emotional expressions and negative mood. Implications for their automatic detection and effects of gender and age of stimuli will be discussed.

Biography: Anna Esposito received her "Laurea" Degree summa cum laude from Salerno University with a thesis on Neural Networks (Complex System, 6(6), 507-517, 1992). She received the PhD degree in Applied Mathematics and Computer Science from Naples University "Federico II", with a PhD thesis developed at MIT, RLE Lab (Boston, USA) on mathematical models of speech production (Phonetica, 59(4), 197-231, 2002).
Anna has been postdoc at the International Institute for Advanced Scientific Studies, and Assistant Professor at Dept of Physics, Salerno University, where she has taught courses on Laboratory of Cybernetics, Neural Networks, and Speech Processing (1996-2000). From Nov 2000 to Nov 2002, she had a research professor position at Wright State University, Dept. of Computer Science and Engineering, OH, USA. Anna has been Associate professor (from 2003 to 2019) and currently is full professor in Cybernetics, Artificial Intelligence and Multimodal Communication at Università della Campania "Luigi Vanvitelli", Department of Psychology, where she teaches course on Fundamentals of AI and Neural Networks, Cognitive and Algorithmic Issues of Multimodal Communication, Cognitive Economy and Decision Making. She is the head of the Behaving Cognitive Systems laboratory (BeCogSys, https://www.psicologia.unicampania.it/home-becogsy), the president of the Italian Society on Neural Networks (SIREN) https://www.siren-neural-net.it/, and the Chair of the IAPR Conferences & Meetings Committee, https://iapr.org/committees/conferences-and-meetings-committee.
During the last five years the lab participated/is participating to the H2020 projects: a) Empathic, www.empathic-project.eu/ and b) Menhir, menhir-project.eu/ , the Italian projects: c) SIROBOTICS, https://www.grifomultimedia.it/en/portfolio_page/si-robotics-social-robotics-for-active-and-healthy-ageing/, d) ANDROIDS, https://www.psicologia.unicampania.it/android-project, and SALICE: Socially-Aware Learning through Interactions in Crowded Environments, and the Erasmus project G-Guidance: https://g-guidance.eu/language/en/. Anna is member of the European

Science Foundations (ESF) and the EU networks Cognition. She authored 300+ peer reviewed publications and edited/co-edited 32+ international books.

Dr. Eng. Mihaela Luca
Institute of Computer Science, Romanian Academy, Romania

From Deep Learning to Vision Transformers - a big step further

Abstract: The transition from deep learning (DL) to Vision Transformers (ViTs) represents a significant leap and an important challenge in automatic image interpretation and analysis. This shift from traditional Deep Learning, starting with the CNN-based approaches which dominated medical image analysis due to their strong ability to capture spatial hierarchies in images, were used in disease detection (e.g., pneumonia detection in X-rays), tumor segmentation (e.g., brain tumors in MRI scans), histopathology image classification, organ segmentation in CT scans, polyps in colonoscopy, etc. As limitations, CNNs struggle with long-range dependencies in images, they rely heavily on local features and may require extensive data augmentation and their performance is sensitive to variations in imaging conditions. In the emergence of Vision Transformers (ViTs), a significant role played the Self-Attention Mechanism. Unlike CNNs, ViTs process images as a sequence of patch embeddings and use self-attention to capture both local and global dependencies. The move from deep learning (CNNs) to ViTs represents a paradigm shift in medical image processing, offering new creative capabilities while posing new challenges in interpretability, error analysis, and trustworthiness—which are critical for clinical adoption.

Biography: Mihaela Luca (formerly Costin), https://orcid.org/0000-0001-8924-3161, is a scientific researcher in the Computer Science Institute, Romanian Academy, Iași branch. She obtained her PhD in 2005 with a thesis on the development of decision systems. As an Associate Professor, she taught disciplines in the area of Artificial Intelligence (Image Processing, Artificial Intelligence, Mechatronics and Expert Systems) to the students of the Computer Science Faculty of Alexandru Ioan Cuza University and from the Faculty of Automatic Control and Computer Engineering of Gheorghe Asachi Technical University of Iași, Romania. In 2023, she received the Excellence award of the Romanian Academy (ex-aequo) for her most recent accomplishments. Her research has focused mostly on two-dimensional signal processing, assessing images of interest in materials physics (nanostructures), medicine (scintigraphy, hematology, video colonoscopy and noninvasive cancer diagnosis using microwaves), employing artificial intelligence, neural networks, deep learning, fuzzy logic, and/or uncertainty reasoning. With over a hundred scientific papers and chapters in the last two decades, co-authoring three books and co-editing more volumes, she has been working in the frame of several

scientific projects, either as coordinator for the Computer Science Institute in an excellence research national program for noninvasive breast cancer detection, or as a partner in an IAEA European Project using scintigraphy for cancer detection. She is a member in the editorial board of some international journals, reviewer for more interdisciplinary publications, and the scientific secretary of the Romanian Committee of History and Philosophy of Science and Techniques of the Romanian Academy, Iasi Branch, serving as the editorial secretary of Noesis Journal, belonging to the Romanian Academy, too. Her hobbies are oil painting and psychology.

Prof. Gloria Phillips-Wren
Loyola University Maryland, USA

The Impact of Generative AI on Decision Making and Analytics

Abstract: Generative AI (genAI) has burst upon the workplace over the past few years impacting how work is accomplished and by whom. In particular, the type of genAI called Large Language Models (LLMs) have demonstrated the facility to provide analysis of data and what appears to be reasonable answers to questions posed and answered in natural language. The jury is still out on what tasks and whose jobs may be subsumed by genAI and LLMs. For example, in the area of decision making and analytics, creativity is often cited as a necessary part of analysis as the decision maker develops approaches to solve a decision problem. However, can genAI actually be creative when we know that it is a statistical parrot? In addition, should we trust analysis that we did not develop ourselves with human intelligence? In this discussion, we look at current research in genAI for decision making and go to the professional community for insight on how LLMs are being using to change analytics workflows. We conclude by suggesting future research questions related to decision making using this emerging technology.
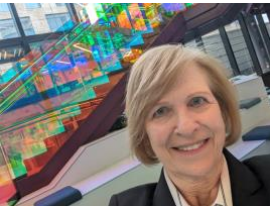
Biography: Gloria Phillips-Wren is a Professor in the Department of Information Systems, Law and Operations Management at Loyola University Maryland. She is a founder and co-editor-in-chief of Intelligent Decision Technologies (IDT) and Associate Editor of the Journal of Decision Systems (JDS). Dr. Phillips-Wren is a past-chair and Board Member of the Special Interest Group on Decision Support and Analytics (SIGDSA) under the Association of Information Systems (AIS), Secretary of IFIP WG8.3 Decision Support (DS), and leader of a focus group for KES in intelligent decision technologies. Her research interests and publications are in decision making and support, analytics, generative AI, healthcare IT, and strategic uses of technologies such as genAI. Her work appears in Omega, Journal of Network and Computer Applications, Decision Support Systems, IDT, JDS, Journal of Organizational Computing and Electronic Commerce, Expert Systems with Applications, Big Data, IT & People, among others. She has also published 13 books (including co-edited), along with numerous book chapters and conference proceedings.

Schedule – Wednesday 25 June

	Plenary Room	Room 2	Room 3	Room 4
	Opening Ceremony Prof Robert J Howlett & Prof Lakhmi Jain 9:00 - 9:15			
	Keynote Speaker 1 Dr. Eng. Mihaela Luca From Deep learning to vision transformers - a big step further 9:15 - 10:15			
	Networking Break 10:15-10:45			

	Plenary Room	Room 2	Room 3	Room 4
Session Details	AMSTA-01 Multi-Agent and Transportation Systems Prof. Roman Sperka and Prof. Mario Kusek	INMED-01 Deep Learning in Medical Imaging and Multimodal Biomedical Data (1) Ivan Macia Oliver	HCIS-01 Human-Centered Security in Resource-Constrained Computing: Bridging IoT Security, Human Trust, and Emerging Technologies Abdellah Chehri, Gwanggil Jeon, Benoit Debaque	IDT-01 General Track Prof. Ireneusz Czarnowski
BST Time	10:45-12:45	10:45-12:45	10:45-12:45	10:45-12:45
	Lunch Break 12:45-13:45			
	Keynote Speaker 2 Prof Anna Esposito An overview of mood/emotion research: the effects of gender and age stimuli 13:45 - 14:45			
	Networking Break 14:45-15:15			

	Plenary Room	Room 2	Room 3	Room 4
Session Details	AMSTA-02 Business Economics and Agent-based Modeling Prof. Setsuya Kurahashi and Prof. Takao Terano	INMED-02 Deep Learning in Medical Imaging and Multimodal Biomedical Data (2) Yen-Wei Chen	HCIS-02 Discovering Knowledge from Raw Mobility Data Yoshimasa Masuda, Mihaela Luca, Vlad Craciun, Alfred Zimmermann	STS-01 Emerging mobility solutions Kun Gao
BST Time	15:15 - 17:15	15:15 - 17:15	15:15 - 17:15	15:15 - 17:15

Schedule – Thursday 26 June

	Plenary Room	Room 2	Room 3	Room 4
	Networking Break 10:00 - 10:30			
Session Details	AMSTA-03 Business Economics, Agent-based Modeling and Process Mining Prof. Hiroshi Takahashi and Prof. Takao Terano	INMED-03 Smart Techniques and Healthcare (1) Smaranda Belciug	IDT-02 Large-Scale Systems for Intelligent Decision Making and Knowledge Engineering Sergey V. Zykov	STS-02 Traffic Planning and Control for Intelligent Mobility (online) Ruo Jia
BST Time	10:30-12:30	10:30-12:30	10:30-12:30	10:30-12:30
	Lunch Break 12:30 -13:30			
	Keynote Speaker 3 Prof. Gloria Phillips-Wren The impact of generative AI on decision making and analytics 13:30 - 14:30			

	Plenary Room	Room 2	Room 3	Room 4
	Networking Break 14:30 - 15:00			
Session Details	AMSTA-04 Education in 21st Century: Artificial Intelligence and future developments Prof. Manuel Mazzara and Dr. Andrei Scutelnicu	INMED-04 Smart Techniques and Healthcare (2) Smaranda Belciug	SEEL - 01 General Track 1 Dr. Peter Ilic	STS-04 Green Transportation Infrastructure and Energy-Efficient Operations Jiahui Liu
BST Time	15:00 - 17:00	15:00 - 17:00	15:00 - 17:00	15:00 - 17:00

Schedule – Friday 27 June

	Plenary Room	**Room 2**	**Room 3**	**Room 4**
	Morning Networking 09:30 - 10:00			
Session Details	AMSTA-05 Education in 21st Century: Artificial Intelligence and future developments II Prof. Manuel Mazzara and Dr. Andrei Scutelnicu	INMED-05 Advanced ICT for Medicine and Healthcare Jingbing Li		STS-03 Integrated Mobility Solutions and Public Transit Innovation (online) Hongyi Lin
BST Time	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00
	Lunch Break 12:00-13:00			

	Plenary Room	Room 2	Room 3	Room 4
Session Details	AMSTA-06 Intelligent Agents in health, wellness, sustainability and human Prof. Rosario Baltazar Flores and Prof. Arnulfo Alanis Garza	INMED-06 Digital Medicine and Healthcare Technology Mihaela Luca	IDT-03 Decision Making Theory for Economics & Advances in Machine Learning Applications and Systems Tokoa Ohya & Hadi Saleh	SEEL - 02 General Track 2 Dr. Peter Ilic
BST Time	13:00-15:00	13:00-15:00	13:00-15:00	13:00-15:00
	Networking Break 15:00 - 15:30			
	Closing Ceremony 15:30 - 15:45			

AMSTA Paper Presentations

AMSTA-01: Wednesday 25th June 2025
Time: 10:45-12:45
Plenary Room

AMSTA-01: Multi-Agent and Transportation Systems
Chairs: Prof. Roman Sperka and Prof. Mario Kusek

Paper No	Paper Title / Authors
4	Privacy-Preserving Trust and Reputation Management with GNNs and DOL3 in Multi-Agent Systems Hariprasauth Ramamoorthy, Rajkumar Vaidyanthan and Suresh Sundaram
37	Forgetting in Agent Belief Bases with Probabilistic Constraints Patrick Doherty and Andrzej Szałas
20	Motivation for the Implementation of Cybersecurity Measures in Small and Medium-Sized Enterprises in Southwest-Germany Ralf Haerting, Joerg Bueechl, Marlene Geist, Julia Himmelmann, Ramona Knobel and Pia Winter
23	Empowering Adversarial Video Games with Teamwork Barbara Dunin-Kęplicz and Rafał Tyl
25	An Improved Adaptive Genetic Algorithm for the loop machine layout problem with shortcuts Mohammed Wajdi Ouertani, Asma Amdouni and Ghaith Manita
19	Optimizing Peer-to-Peer Ride-Sharing with Multi-Agent Systems for Sustainable Mobility Negin Alisoltani, Younes Delhoum, Mostafa Ameli and Mahdi Zargayouna

* Online session

AMSTA-02: Wednesday 25th June 2025
Time: 15:15 - 17:15
Plenary Room

AMSTA-02: Business Economics and Agent-based Modeling
Chairs: Prof. Setsuya Kurahashi and Prof. Takao Terano

Paper No	Paper Title / Authors
35	Building Personas and LLM Assessment Indicators: For Frailty Prevention Akiyo Higuchi, Eiji Murakami and Hiroshi Takahashi
11	A Framework for Sustainable Energy Utilization: Integrating Household Fuel Cells, the J-Credit Scheme, and Community-Based Collaboration Sejun Woo, Eiji Murakami and Hiroshi Takahashi
36	Quantitative Persona Generation through Large Language Model and Hierarchical Classification for Simulation Results Takamasa Kikuchi and Hiroshi Takahashi
17	Improving LPG Supply Network Recovery through Data-Driven BCP: Quantitative Evaluation of Regional Characteristics in the Philippines Marina Yagi, Eiji Murakami and Hiroshi Takahashi
10	Evaluation Methods for Disaster Response Training Based on Course Questionnaire Analysis Gengaku Mashiro, Junga Kariya, Ichimura Kenichi, Sayaka Maeda and Kazuhiko Tsuda
24	Server Management and Monitoring System Florin Iftene, Liviu-Andrei Scutelnicu and Andrei-Felix Similachi

* Online session

AMSTA-03: Thursday 26th June 2025
Time: 10:30-12:30
Plenary Room

AMSTA-03: Business Economics, Agent-based Modeling and Process Mining
Chairs: Prof. Hiroshi Takahashi and Prof. Takao Terano

Paper No	Paper Title / Authors
9	Structural Analysis of digital divide and innovation diffusion in Older Adult Market Naoyuki Inoue, Yasunobu Kino and Setsuya Kurahashi
12	A Case Study of the HAC-SECI model Applied to Programming Beginners Chikako Morimoto
1	an Generative AI Facilitate Consensus Building? ; Reactions to LLM involvement in the decision-making process of complex issues and a proposed method for evaluating these reactions Hiroyasu Seita and Setsuya Kurahashi
22	A Multi-Agent-based infrastructure for coupling physical and digital robotic environments Nesrine Hafiene, Fabien Badeig and Flavien Balbo
38	Integration of Process Mining and Large Language Models – Literature review Michal Halaška, Roman Šperka, Radim Dolák and Tomáš Barčák

AMSTA-04: Thursday 26th June 2025
Time: 15:00 - 17:00
Plenary Room

AMSTA-04: Education in 21st Century: Artificial Intelligence and future developments I

Chairs: Prof. Manuel Mazzara and Dr. Andrei Scutelnicu

Paper No	Paper Title / Authors
33	It is hard to be human: Intuition and Creativity at the time of Artificial Intelligence Manuel Mazzara, Angelo Messina and Mirko Farina
5	Constructive Alignment and Learning Outcomes in Educational Recommender Systems: A Systematic Review Nursultan Askarbekuly and Ivan Luković
6	Artificial intelligence for enhancing the quality of higher education in both online or offline: A systematic Literature Review. Muwaffaq Imam
29	An Overview of Multilayer Network Architectures in Software Engineering Arina Zavelevich and Firas Jolha
28	Ahadith AI: Applying Generative AI and Semantic Search to Enhance Hadith search Retrieval and listings Muwaffaq Imam and Nursultan Askarbekuly
3	Innopolis University's response to the COVID-19 pandemic Rabab Marouf, Iouri Kotorov, Yuliya Krasylnykova and Manuel Mazzara
34	Software Metrics Selection: Exploring Sequential Forward Selection and REINFORCE Ahmadsho Akdodshoev, Jaffar Totanji, Murhaf Alawir and Zamira Kholmatova
15	Project-based learning in cross-functional teams of undergraduate and graduate students Iskander Bariev and Zamira Kholmatova

* Online session

AMSTA-05: Friday 27th June 2025
Time: 10:00-12:00
Plenary Room

AMSTA-05: Education in 21st Century: Artificial Intelligence and future developments II
Chairs: Prof. Manuel Mazzara and Dr. Andrei Scutelnicu

Paper No	Paper Title / Authors
8	Shifting the Focus: Teaching Critical Thinking in an AI-Powered World - Course ''Introduction to Optimization" as a Platform for Critical Thinking Mohammad Reza Bahrami, Elbek Amirkhanov, Farima Behboodi and Samae Pourrafie
7	Reframing the Narrative: AI as an Ally in Education, Not Just a Challenge Mohammad Reza Bahrami, Farima Behboodi and Samae Pourrafie
27	Leveraging AI for e-Learning Platforms Alexandr Parahonco, Mircea Petic and Liviu-Andrei Scutelnicu
13	Leveraging Generative AI Platforms for Collaborative Development and Knowledge Management: A Case Study on ChatGPT and GitHub Copilot Liviu-Andrei Scutelnicu
16	Integrating chatGPT into XP practices: a challenge for students of agile development Andrea Largura and Paolo Ciancarini
21	Software engineering metrics selection using equilibrium optimizer and differential evolution Marina Kotelevskaya, Daniel David, Nikita Yaneev and Zamira Kholmatova
30	Cognitive Complexity Metrics in the SDLC phases Navruza Tulkunova and Firas Jolha

* Online session

AMSTA-06: Friday 27th June 2025
Time: 13:00-15:00
Plenary Room

AMSTA-06: Intelligent Agents in health, wellness, sustainability and human development environments
Chairs: Prof. Rosario Baltazar Flores and Prof. Arnulfo Alanis Garza

Paper No	Paper Title / Authors
40	Analysis of Disability in Mexico: Data from the 2020 INEGI Population and Housing Census Isai Garcia, Bogart Yail Marquez, Arnulfo Alanis and Jose Sergio Magdaleno-Palencia
14	Fitness Trackers in Healthcare: A Hidden Risk or Underestimated Ally? Christopher Reichstein and David Rösch
26	Detection of Coral Bleaching in Akumal Bay Using an Adjusted Stress Heat Index and Satellite Images Ana Laura Santos Chin, Maria del Rosario Baltazar Flores and Anabel Pineda Briseño
39	Interactive system for children with ASD including emotion analysis Luis Arturo Hernández-Martínez, Arnulfo Alanis, Rosario Baltazar and Daniel Velazquez

* Online session

HCIS Paper Presentations

HCIS-01: Thursday 26th June 2025
Time: 10:45-12:45
Room 3

HCIS-01: Human-Centered Security in Resource-Constrained Computing: Bridging IoT Security, Human Trust, and Emerging Technologies
Chairs: Abdellah Chehri, Gwanggil Jeon, Benoit Debaque

Paper No	Paper Title / Authors
1	Enhancing Public Safety in Transportation through the Monitoring of EV Charging Infrastructures Abdellah Chehri
6	Solar Panel Fault Detection Using Deep Learning and CNN-Based Image Classification Younes Ledmaoui, Hasna Chaibi, Abdellah Chehri, Mohamed El
7	Recommender Systems Development: A Comprehensive Overview of Architecture, DSLs, and Tools Adnane Souha, Lamya Benaddi, Charaf Ouaddi, Abdeslam Jakimi, Abdellah Chehri and Rachid Saadane
32	Resilient and Secure P2P Exchange Protocol for Public Transportation Management Software Components Leveraging Web API Local Indexed Database and Deep Learning Ali Darbali, Smail Tigani, Hasna Chaibi, Rachid Saadane, Abdelah Chehri, Abdeslam Jakimi and Khalid Minaoui
3	Development and Validation of an Experimental Protocol for Facial Emotion Recognition Abdalla El Soudany, Mattia Veronese and Andrea Loreggia
30	Raw Mobility Data-Based Trajectory Annotation: The State of the Art Jalel Akaichi, Sihem Nasr Khouaja and Radhia Toujani
33	Exploring the Role of Surveillance Cameras in Enhancing Perceived Neighborhood Safety: Insights from Rabat, Morocco Mohammed Anouar Ainouz, Badre Eddine Chegri and Abderrahmane El Mettiti
5	Labeling of Data Protection Properties in Business Process Models Melanie Windrich, Andreas Speck, Paul Hilge and Nils Gruschka

* Online session

HCIS-02: Thursday 26th June 2025
Time: 15:15 - 17:15
Room 3

HCIS-02: Discovering Knowledge from Raw Mobility Data
Chairs: Yoshimasa Masuda, Mihaela Luca, Vlad Craciun, Alfred Zimmermann

Paper No	Paper Title / Authors
11	Hybrid Model Incorporating Fuzzy SVM and GAN for Multi-Class Sentiment Analysis on Social Media Toujani Radhia, Alqarni Ali and Akaichi Jalel
31	Vision of Applying AIDAF for SAP Business AI Program in Manufacturing Industry Yoshimasa Masuda, Joseph Taylor, Rashmi Jain, Seiko Shirasaka, Alfred Zimmermann and Tetsuya Toma
4	Large Language Models for Automated Data Access Policy Creation in Data Spaces Ryan Ford, Rita Beigaite and Arash Hajikhani
15	DBI-Assisted Behaviour Classification of Malicious Binary Applications Vlad Constantin Craciun, Adrian Valentin Panaintescu and Mihai Leonte
8	Digital and Green Transformation in Japan's Automobile Industry and Changes of Structure, Conduct and Performance Wei-Chuan Chen and Yoshimasa Masuda

IDT Paper Presentations

IDT-01: Wednesday 25th June 2025
Time: 10:45-12:45
Room 4

IDT-01: General Track
Chair: Prof. Ireneusz Czarnowski

Paper No	Paper Title / Authors
1	Select Starting Points and Vote Kenichi Yoshida
7	On Approximations of Arbitrary Relations by Partial Orders. Some Experimental Results Ryszard Janicki and Tianyi Liu
18	Integrating Neighborhoods and Latent Factors for Personalized Recommendation Systems Le Nguyen Hoai Nam
10	Skeleton-based Human Action Recognition for Automated Movement Examination Abdul Moeed Siddiqui, Sayda Elmi and Morris Bell
11	Precedence crossover for loop machine layout problem with shortcuts Asma Amdouni and Ghaith Manita
19	Precedence crossover for loop machine layout problem with shortcuts Maria Ecaterina Olariu, Diana Vuza and Adrian Iftene

IDT-02: Thursday 26th June 2025
Time: 10:30-12:30
Room 3

IDT-02: Large-Scale Systems for Intelligent Decision Making and Knowledge Engineering
Chairs: Sergey V. Zykov

Paper No	Paper Title / Authors
12	An LLM-Based Approach for Creating Multi-Agent Systems Lyudmila Rezunik, Mikhail Prozorskiy and Dmitry Alexandrov
24	Implementation Agile-methodology for lifecycle management in IT projects: Multi-Case Studies Georgii Simakin and Sergey Zykov
2	On the Issue of Creating Dynamic Search Services for Highload Systems Dmitry Alexandrov, Anton Kalinin, Alexey Danilov and Ludmila Rezunik
20	Approaches for Enhancing Software Development Effort Estimation: Project-Effort-Industry Le Thi Kim Nhung Ho, Radek Silhavy and Petr Silhavy
4	Designing RenewablesBridge: A Conceptual Framework for a Smart Digital Platform that Advances Solar PV Development for African Small and Medium Renewable Energy Stakeholders Harold Anuta Oghenetejiri and Chiara Bordin
23	Modern trends of lifecycle optimization in software development Georgii Simakin and Sergey Zykov

* Online session

IDT-03: Friday 27th June 2025
Time: 13:00-15:00
Room 3

IDT-03: Decision Making Theory for Economics & Advances in Machine Learning Applications and Systems
Chairs: Tokoa Ohya & Hadi Saleh

Paper No	Paper Title / Authors
5	Calculations by Several Methods for MDAHP Including Hierarchical Alternatives. Takao Ohya
6	Unsupervised Machine Learning for Predicting Marine Ecological Quality based on Microbiome Data Houria Braikia, Sana Ben Hamida and Marta Rukoz
14	Towards a framework for assessment of Learning outcomes Ghada Ben Khalifa, Lilia Cheniti Belcadhi and Alicia García-Holgado
15	Survey of vector database management systems from recommendation systems perspective Andrey Parinov, Daniil Zhdankin, Hadi Saleh and Ludmila Aleksandrova
17	A study on evaluation models for information systems on web platforms incorporating UX Shunei Norikumo

* Online session

InMed Paper Presentations

INMED-01: Wednesday 25th June 2025
Time: 10:45 - 12:45
Room 2

INMED-01: Deep Learning in Medical Imaging and Multimodal Biomedical Data (1)
Chair: Ivan Macia Oliver (VICOMTECH, Spain)

Paper No	Paper Title / Authors
29	Clinical Feature-Guided Representation Learning on Whole Slide Images for Hepatocellular Carcinoma Recurrence Prediction Xianru Zhang, Fang Wang, Yinhao Li, Lanfen Lin, Hongjie Hu, Rui Xu and Yen-Wei Chen
28	A Teacher-student Learning Approach Using Gene and CT Images for Recurrence Prediction of Non-small Cell Lung Cancer Yang Ai, Jing Liu, Yinhao Li, Rui Xu, Lanfen Lin and Yen-Wei Chen
22	L-CNN: A Convolutional Neural Network for Leukemia predictions Marco Aruta, Aniello Murano, Giuseppe Murano and Lorenzo Tecchia
8	Rethinking Reproductive Healthcare with AI: Balancing Opportunities and Risks with Human-Centric AI Recommenders for Responsible Innovations (HiCARE) Gayane Sedrakyan, Gayane Arustamyan, Simone Borsci, Valeria Resendez Gomez and Caroline Figueroa

INMED-02: Wednesday 25th June 2025
Time: 15:15 - 17:15
Room 2

INMED-02: *Deep Learning in Medical Imaging and Multimodal Biomedical Data (2)*
Chair: Yen-Wei Chen (Ritsumeikan University, Japan)

Paper No	Paper Title / Authors
30	Comparison of deep learning architectures for generalizable lung nodule segmentation Martin Cartajena, Aritz Aranguren, Javier Bóbeda, Larraitz Garcia, Iñigo Lecumberri, Eunate Arana, Jon Eneko Idoyaga, Maria Jesus Ledesma, Benito Farinas, Francois Cousin, Benoit Ernst, Julien Guiot, Ivan Macia and Karen López-Linares
32	Transfer Learning for Breast Cancer Molecular Subtype Classification Using Transcriptomic Data Aurora Sucre, Xabier Calle, Andrea Donadio, Borja Calvo and Alba Garin-Muga
7	Enhancing Large Language Model Efficiency with MCE (Main Content Extractor): Token Optimization and Streamlined Content Integration Hamza Salem and Manuel Mazzara
25	Enhancing k-means longitudinal clustering with an LSTM-based autoencoder for high-dimensional and high-variable data Patrizia Ribino, Maria Mannone, Claudia Di Napoli, Giovanni Paragliola, Davide Chicco and Francesca Gasparini

INMED-03: Thursday 26th June 2025
Time: 10:30-12:30
Room 2

INMED-03: Smart Techniques and Healthcare (1)
Chair: Smaranda Belciug (University of Craiova, Romania)

Paper No	Paper Title / Authors
2	Special Forces Optimization algorithm for ICU asthma patient management Smaranda Belciug and Tiberiu Mihai
4	An approach for Robust and Explainable Lung Disease detection and localization Marcello Di Giammarco, Giovanni Ciaramella, Antonella Santone, Mario Cesarelli, Fabio Martinelli and Francesco Mercaldo
6	Biofeedback Method for Promoting Understanding of Communicative Competence in Children with Autism Spectrum Disorder Vania Manaweel, Margarita Stankova and Polina Mihova
12	Awareness, Knowledge and Attitudes towards Telemedicine of Students in Nursing and Healthcare. A Study Using the AKAS Questionnaire. Polina Mihova, Margarita Stankova and Ivan Ivanov

* Online session

INMED-04: Thursday 26th June 2025
Time: 15:00 - 17:00
Room 2

INMED-04: *Smart Techniques and Healthcare (2)*
Chair: Smaranda Belciug (University of Craiova, Romania)

Paper No	Paper Title / Authors
13	Exploring the possibility to predict Epileptic Seizures through Explainable Machine Learning Paul Tavolato, Hubert Schölnast, Antonella Santone, Mario Cesarelli, Fabio Martinelli, Francesco Mercaldo and Oliver Eigner
24	Possible Epileptic Seizure detection by means of Long short-term memory networks Paul Tavolato, Hubert Scholnast, Oliver Eigner, Antonella Santone, Mario Cesarelli, Fabio Martinelli and Francesco Mercaldo
26	Explainable Automated Eye Disease Detection using Convolutional Neural Networks Lucia Lombardi, Antonella Santone, Mario Cesarelli and Francesco Mercaldo
33	The Use of Medical Simulation to Assess the Impact of a Decision Support System in the Operating Room on Stress in Anesthesia Emergency Management Philipp Dussmann, Rebecca Wiczorek, Lina Mülder, Maximilian Pfefferer, Johannes Laferton and Florian Rückert
34	Optimized Machine Learning Model for Carotid Atherosclerosis Classification on Doppler Ultrasound Features Fitri Aprilianty, Masakazu Takahashi, Sadahiro Hirokazu and Ayumi Omuro
27	Optimizing Water Quality: A Machine Learning Approach for Safe Drinking and Efficient Irrigation Abram C. Dorado, Kristine Jewel B. Malimban, Eleazar Jaren S. Sancio, Joana S. Tria, Ma Sheila A. Magboo and Vincent Peter C. Magboo

* Online session

INMED-05: Friday 27th June 2025
Time: 10:00-12:00
Room 2

INMED-05: Advanced ICT for Medicine and Healthcare
Chair: Jingbing Li (Hainan University, China)

Paper No	Paper Title / Authors
18	Robust Zero-Watermarking Algorithm for Medical Images Based on Wide ResNet-DCT Chuanduo Yang, Jingbing Li, Jing Liu, Yen-Wei Chen, Xinxin Sun and Uzair Aslam Bhatti
19	Robust zero-watermarking algorithm for medical images based on RegNet-DCT Xiaona Yang, Jingbing Li, Jing Liu, Yen-Wei Chen and Uzair Aslam Bhatti
20	A Robust FDCT-ResNet101 based Watermarking Algorithm for Medical Images Shaoxuan Zhang, Jingbing Li, Jing Liu and Yen-Wei Chen
16	A Degree Interaction Domain Adaptation Model for EEG-based Major Depressive Disorder Detection Hui Wang, Yen-Wei Chen, Ju Liu, Haoyang Lei, Yinhao Li, Jiaqing Liu and Qiang Wu
21	Automatic sleep risk prediction system Based on Multimodal Feature Fusion of Tongue Images Bowen Yang, Aohan Li, Abdul Haleem MOHIB, Xu Qiao
35	Liver-VLM: A Vision-Language Model for Focal Liver Lesion Classification Jian Song, Yuchang Hu, Hui Wang and Yen-Wei Chen
23	A Highly Interpretable Two-Stage Deep Learning Method for RUS-CHN Bone Age Assessment Yu Zhao, Wei Chen, Zhe Li, Rui Gao, Xu Qiao and Yen-Wei Chen
15	IHC Pathological Image Generation Based on Multi-Path Reversible Feature Transformation and Multi-Scale HE Staining Transfer Yi Chen, Yizhou Chen, Huiyan Jiang, Xianhua Han and Yen-Wei Chen

* Online session

INMED-06: Friday 27th June 2025
Time: 13:00-15:00
Room 2

INMED-06: *Digital Medicine and Healthcare Technology*
Chair: Mihaela Luca (Institute of Computer Science, Romanian Academy, Romania)

Paper No	Paper Title / Authors
1	Development of a Mobile Application for Disordered Polish Speech Recording Michał Babiński, Anna Bączyk, Jędrzej Wesołowski and Tomasz Piernicki
3	Long COVID and Parkinson's Disease: a telecommunication-based brain-network comparison Maria Mannone, Patrizia Ribino, Norbert Marwan and Peppino Fazio
9	Applying an Architectural Approach to EDMS Implementation in a Medical Company: A Sustainable View Pavel Malyzhenkov, Aleksandra Chelysheva, Maurizio Masi
11	Digital Weight Management Interventions: a review of commercial solutions and a survey analysis of user needs Suncica Hadzidedic, Jingyun Wang, Victor Adeyemo, George Sanders and Grant Westermann

SEEL Paper Presentations

SEEL-01: Thursday 26th June 2025
Time: 15:00 - 17:00
Room 3

SEEL-01: General Track 1
Chair: Peter Ilic

Paper No	Paper Title / Authors
1	Grading the Future: A Comparative Analysis of Large Language Models and Human Instructors in Evaluating First-Year Computer Science Research Proposals Georgy Gelvanovsky
2	Making Learning Count: The Effects of Computer-Assisted Instruction on Early Math and Literacy Haya Shamir, Erik Yoder, David Pocklington, Alexander Houchins and Mikayla Tom
3	Closing Learning Gaps Early: How Technology Drives Long-Term Literacy Success Across Demographics Haya Shamir, Erik Yoder, Mikayla Tom, David Pocklington and Alexander Houchins
4	The design of a recommendation system for generating content. Context of the sources. Part I Alexandr Parahonco and Liudmila Parahonco
7	The Impact of the Blended Learning Approach on Student Learning Outcomes in Higher Education Fathi Aidarus, Tineke Fitch, Petronella Beukman and Alan Weber
8	Inventory for Assessing Higher Education Students' Perceptions of Socio-Affective Empathy in Virtual Learning Environments Magalí Teresinha Longhi, Rafael Leonardo Vivian, Leticia Sophia Rocha Machado and Patricia Alejandra Behar
11	Stakeholder Engagement in Ethical and Human-Centered XR: A Framework for Inclusive and Participatory Learning Environments Ekaterina Prasolova-Forland, Jose Fernando Garcia Estrada, Kseniia Makhortova, Stig Martin Tobiassen, Leif Martin Hokstad, Hariett Bartlett, Maëlle Quevillard, Panagiotis Kavouras and Michael Barngrover

Paper No	Paper Title / Authors
6	Sentiment Analysis in Forums of a Learning Platform: A Comparative Study Between BERTimbau Base and BERTimbau Large Models Regarding Affective Mood States Andrio Pinto, Magalí Longhi, Patricia Behar and Jacqueline Akazaki

STS Paper Presentations

STS-01: Wednesday 25th June 2025
Time: 15:15 - 17:15
Room 4

STS-01: Emerging mobility solutions (on-site, to facilitate participation online link provided as well)
Chair: Kun Gao

Paper No	Paper Title / Authors
4	Methodology for Detecting Feature Availability Focusing on Sensor Degradation Nadra Tabassam, Thomas Schumacher, Martin Fränzle and David Inkermann
13	Shared Micro-Mobility and Public Transit Integration: An Empirical Analysis Hao Li, Louis Inkumsa and Ruo Jia
26	Modeling Results of Trajectory Planning in an Intersection Crossing Scenario with a Connected Autonomous Electric Bus and Multiple Human-Driven Vehicles Radu-Emil Precup, Claudia-Adina Bojan-Dragos, Kun Gao and Shaohua Cui
9	Transforming Future Mobility: Innovations in Technology for Smart, Sustainable, Efficient Transportation – Insights from KEYSTONE Project Preetha Ramiah, Alexeis Garcia Perez, Zoe Petrakou and Giulia Renzi
14	Evaluating the Attractiveness of On-Demand Bus Services in Suburban Areas: A Survey from Gothenburg Natalie Smilevska, Vera Wallin, Hao Li and Ruo Jia

STS-02: Thursday 26th June 2025
Time: 10:30-12:30
Room 4

STS-02: *Traffic Planning and Control for Intelligent Mobility (online)*
Chair: Ruo Jia

Paper No	Paper Title / Authors
2	A Short-Term Traffic State Prediction Method Integrating Fuzzy C-Means Clustering and Deep Learning Yan Liu, Mingjie Zhang, Guozhu Cheng and Wei Bai
5	Intelligent Traffic Signal Control via Multimodal Data Fusion and Deep Reinforcement Learning Cheng Gao, Liang Wang and Zhe Zhang
6	Signal-free Intersection Coordination for Connected and Automated Vehicles: A Review Chenyang Lu, Yuxuan Wang, Can Wang, Zihao Han, Shijie Cong and Kai Wang
11	Traffic congestion identification method based on improved EfficientNetB0 model Yan Liu, Shuying Li, Guozhu Cheng, Mingjie Zhang and Wei Bai
1	Framework of Driving Scenario Library Generation for Complex Road Conditions Jiahui Liu, Tianle Wu, Shengze Miao and Kunjun Wang
29	Forecasting ISP for rail transit drivers based on heart rate variability with wearable devices Haiyue Liu, Yue Zhou, Chuanyun Fu and Chaozhe Jiang

* Online session

STS-03: Friday 27th June 2025
Time: 10:00-12:00
Room 4

STS-03: *Integrated Mobility Solutions and Public Transit Innovation (online)*
Chair: Hongyi Lin

Paper No	Paper Title / Authors
3	A Multi-Modal Route Planning and Travel Points Calculation Method Based on the Context of Mobility Yiliu He, Di Huang, Zhiyuan Liu and Ronghui Liu
7	Optimal Layout of Modular Bus Lines in Urban Arterial Corridor Peng Zhang, Yuting Ji, Yuan Cong, Jinhua Ji and Yiming Bie
8	Detecting UAV Conflicts Based on YOLOv5 and Monocular Ranging Approach under Snow Scenario Chuanyun Fu, Yicai Zhang, Hao Zhou, Yue Zhou, Yi You and Lin Wei
10	Advancements and Current Trends in Collaborative Perception for Autonomous Driving Zheng Qian, Yixuan Shi, Xingwei Yuan, Hongyi Lin and Liang Wang
25	Traffic Conflicts-Based Crash Risk Assessment at Tunnels Using Extreme Value Theory Approach Chuanyun Fu, Hang Yan, Zhaoyou Lu, Jiaming Liu, Huahua Liu, and Wei Bai
24	Typhoon Scenario-Based Roadside Equipment Maintenance Personnel Scheduling System Using Neural Network Assistance Zi'An Zhong

* Online session

STS-04: Thursday 26th June 2025
Time: 15:00 - 17:00
Room 4

STS-04: Green Transportation Infrastructure and Energy-Efficient Operations (online)
Chair: Jiahui Liu

Paper No	Paper Title / Authors
12	LightGBM-Based Model for Estimating Transient Energy Consumption of Highway Battery Electric Vehicles Weiwei Qi and Yue Li
20	From End-of-Life to Energy Storage: Assessing the Echelon Utilization Potential for Retired Electric Bus Batteries Wenzhu Xu, Sheng Jin, Shaohua Cui and Chengcheng Yang
19	Development and Future Prospects of the Near-Zero Carbon Manufacturing Park for Highway Engineering Ke Xin Qiu, Xin Gu and Zhao Ming Wang
28	Optimization of Dynamic Time-Window Overtaking Frequency Function for Autonomous Vehicle State Assessment Mengyuan Huang, Shiwu Li, Hongtao Li and Kai Zhang
21	Drivers of Corporate Pollution Control Investment: The Moderating Role of CEO Capital Characteristics and Institutional Environment Ying Yin
22	Multi-Component Coordinated Operation and Scheduling Optimization for Smart Charging Stations Zhao Shen, Qianqian Wang, Wenchao Lu and Weilun Peng

* Online session

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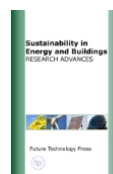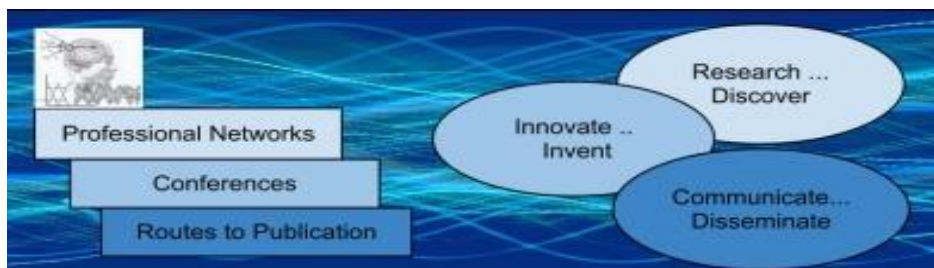
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It is essential for research groups to communicate the outcomes of their research to those that can make use of them. But academics do not want to run their own conferences. KES has specialist knowledge of how to run a conference to disseminate research results. Or a research project workshop can be run alongside a conference to increase dissemination to an even wider audience.

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KES works in partnership with the Institute of Knowledge Transfer (IKT), the sole accredited body dedicated to supporting and promoting the *knowledge professional*: those individuals involved in innovation, enterprise, and the transfer, sharing and exchange of knowledge. The IKT accredits the quality of innovation and knowledge transfer processes, practices activities, and training providers, and the professional status of its members.

ABOUT KES

Formed in 2001, KES is an independent worldwide association involving about 5000 professionals, engineers, academics, students and managers, operated on a not-for-profit basis, from a base in the UK. A number of universities around the world contribute to its organisation, operation and academic activities. KES International Operations Ltd is a company limited by guarantee that services the KES International organization.

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