MDAI 2026
modeling decisions

The 23rd International Conference on Modeling Decisions for Artificial Intelligence

Vic, Catalonia, Spain
September 7-9, 2026

The conference will take place here:

Paraninf de la UVic-UCC
Casa Convalescència
Carrer del Dr. Junyent, 1, 08500 Vic

Monday, September 7th

09:00-10:00 Registration and reception
10:00-10:30 Opening ceremony, Room: Paranimf
10:30-11:30 Plenary talk. Chair: Vicenç Torra, Room: Paranimf
Title: From Pareto to Semantics: Reframing Multi-objective Genetic Programming through Behavioural Search Spaces
Speaker: *Dr. Edgar Galván, Department of Computer Science, Maynooth University, Ireland*

11:30-12:00 Coffee
12:00-13:00 Session 1A: Privacy and security. Chair: Hiroaki Kikuchi, Room: Paranimf
Detecting LLM Hallucinations via Anomaly Detection on Latent Representations
Dario Malchiodi, Luca Dal Mas, Marco Frasca, Massimo W. Rivolta, Ivan Mazzon
Modeling Decisions in Blockchain Analytics: A Leakage-Aware Evaluation of Tree-Based vs. Sequential Models
Michał Bartnicki, Jarosław A. Chudziak
Memory poisoning and secure multi-agent systems
Vicenç Torra, Maria Bras-Amorós

12:00-13:00 Session 1B: Classification. Chair: Shivani Singh, Room: Sala Gòtica
Online Additive Hyperplanes: Conflict-Driven Constructive Classification
Jerzy Krawczuk
PersiSTabNet: Persistence Statistics Tabular Network for Point Cloud Classification
Inés Castilla Rieso, Samuel Peltier, Philippe Carré
PU classification under Non-SCAR:clustering-assisted logistic model with oversampling enhancement
Konrad Furmańczyk, Kacper Paczutkowski

13:00 -14:30 Lunch at Nou Pamplona Restaurant

14:30-15:30 Session 2A: Aggregation functions and games. Chair: José Carlos R. Alcantud, Room: Paranimf

Learning Interpretable Graded Logic Aggregators via Adaptive Anchor Composition
Haishi Bai, Jianwu Wang
Möbius Fields and Covering Measures on Sampling Spaces for Non-additive Set Functions
Ryoji Fukuda, Yoshiaki Okazaki, Aoi Honda
Measures and games, Shapley values, and explainability
Vicenç Torra

14:30-15:30 Session 2B: Data science I. Chair: Jordi Casas, Room: Sala Gòtica

Dual-Calibrated Venn Predictors for Detecting Localized Bias
Niclas Ståhl, Tuwe Löfström, Alberto García-Galindo, Ulf Johansson
Extending Goal-Oriented Specification for Reinforcement Learning to High Dimensions
Bjarne Grotelüschen, Simon Schwan, Sabine Glesner
Graphical Predictive Model of Multimorbidity in Allergic Diseases
Konrad Furmańczyk, Wojciech Niemiro, Marta Zalewska

15:30-16:00 Coffee

16:00-17:00 Session 3A: Reasoning and neuro-symbolic approaches. Chair: Beatriz Lopez, Room: Paranimf

Building 3D Objects from Partial Views using Voxels and Depth Uncertainty (VuQ3D)
Marti Ejarque, Zoe Falomir
Physics-Informed Neural Networks for Parameter Recovery in the Repressilator Oscillatory Model
Bernat Casajuana, Roger Casals-Franch, Adrián López García de Lomana, Pere Martí-Puig, Jordi Villà-Freixa
Recovering Hidden Votes via Constraint-Satisfied Monte Carlo: A Maximum-Entropy Framework for Aggregation Rule Fairness
Ruoyu Sun, Haiwenxiu Xu, Pinyuan Huang

16:00-16:40 Session 3B: Data science II. Chair: Yuuchi Kanzawa, Room: Sala Gòtica

Robust Bayes Acts under Prior Perturbations: Contamination, Stability, and Selection Paths
Christoph Jansen, Georg Schollmeyer
Exploiting Low-Rank Structure in SCADA Data for Wind Turbine Condition Monitoring
Pere Marti-Puig

18:00- 19:30 City tour
19:30 19:30 Welcome dinner at Pockets Restaurant

Tuesday, September 8th

09:30-10:30 Plenary talk. Chair: Vicenç Torra, Room: Paranimf

Title: Beyond the Black Box: Hallucinations and Privacy in LLM
Speaker: *Dr. Sonakshi Garg, South Asian University, Delhi, India*

10:30-11:30 Session 4A: Decision making. Chair: Aoi Honda, Room: Paranimf

Weighted Reduction of m×n Fuzzy Contingency Tables into 2×2 Form with Numerical Experiments
Hiroaki Uesu, Kimiaki Shinkai, Norihiro Someyama, Shuya Kanagawa
Two f-Divergence Entropy Families in Quantum Information: Structure and Coarse-Graining
Mateu Sbert, Jordi Poch, Miquel Feixas, Shuning Chen
Improving the Usefulness of Group Interval Priority Weights under Individual Pairwise Comparison Matrices
Masahiro Inuiguchi, Ryusei Fukuoka

10:30-11:30 Session 4B: Data science. Chair: Niclas Ståhl, Room: Sala Gòtica

A recommender system to find the best class balancing technique for your tabular dataset in binary classification problems
Jordi Pascual-Fontanilles, Said Trujillo de León, Aida Valls
Strategic Efficiency: Hierarchical Reinforcement Learning for Green AI in Real-Time Strategy Game Testbed
Luis Esteve-Elfau, David Pérez, Albert Giménez, Almir Cáceres, Jordi Casas-Roma
Break the glass in OBDA
Divya Baura, Diego Calvanese

11:30-12:00 Coffee

12:00-13:00 Session 5A: Fuzzy integrals. Chair: Yasuo Narukawa, Room: Paranimf

Multi-Sugeno-inspired aggregation functions
José Carlos R. Alcantud
A Riesz type theorem for the Sugeno integral on a locally compact space
Jun Kawabe
Uniform Structure and Group Properties of the Sugeno-Type Function Space L1(Su)
Aoi Honda, Ryoji Fukuda, Yoshiaki Okazaki

12:00-13:00 Session 5B: Data science. Chair: Núria Agell, Room: Sala Gòtica

Feature selection for uplift modeling under a budget constraint assumption
Katarzyna Mamla, Krzysztof Rudaś
Pairwise Interaction Measures for Diversity and Effective Sample Size
Mateu Sbert, Víctor Elvira, Jordi Poch, Shuning Chen
Position-Sensitive Page-Event Representation for Clickstream Purchase Prediction
Arda Ata Turkoglu, Halil İbrahim Simsek, Onur Cilgin, Aysegul Tepe, Mehmet S. Aktas

13:00 -15:30 Lunch at Nou Pamplona Restaurant

15:30-16:30 Session 6A: Evolutionary algorithms / Data science. Chair: Yasuo Narukawa, Room: Paranimf

Structural Compression of Ensemble Models via Evolutionary Algorithms
Davide Guidoboni, Marco Perrotta, Guido Sciavicco
A Study of Evaluation Functions for Efficient Nonogram Optimization in Evolutionary Computation
Yukiko Orito, Aya Nomura, Yasuo Narukawa
Text Re-identification Evaluation with Retrieval-Augmented Generation
Benet Manzanares-Salor, David Sánchez

15:30-16:30 Session 6B: Data science. Chair: Masahiro Inuiguchi, Room: Sala Gòtica

Reviewer Profile Modeling through Ratings and Textual Feedback Integration
Saba Torabi, Jennifer Nguyen, Jordi Nin, Núria Agell
A Comprehensive Analysis of Cooperative Multi-Agent Reinforcement Learning
Mariona Pla-Antigas, Jordi Casas-Roma
Classification Models Based on CPL Criterion Functions Applied to Clinical Kidney Data
Tomasz Łukaszuk, Malgorzata Debowska, Magdalena Jankowska, Leon Bobrowski

16:30-17:00 Coffee

17:00-17:40 Session 7A: Trustworthy AI. Chair: Guillermo Navarro-Arribas, Room: Paranimf

Fair2Zero: Fairness-Aware Aggregation in Federated Learning
Vladimiro González-Zelaya, Julián Salas, Devki Nandan Jha
A multi-objective optimization framework for trustworthy machine learning
E. Boaz Adikaibe, Alexander I. Dessanti, J. Jake Nichol, Mark A. Smith, Michael C. Darling

17:00-17:40 Session 7B: Data science. Chair: Benet Manzanares-Salor, Room: Sala Gòtica

Cross-Domain Single Lesion Localization in Medical Images via Deep Reinforcement Learning
Martina Carretta-Brugueras, Jorge Bernal, Jordi Casas-Roma
Data-Driven Modelling of Incomplete Polymer Characterization Data: Prediction and Interpretability
Shivani Singh, Juan Carlos Nieves, Vicenç Torra

20:30 Gala Dinner at Sala Modernista del Casino

Wednesday, September 9th

09:30-10:30 Plenary talk. Chair: Vicenç Torra, Room: Paranimf

Title: Some privacy aspects on Bitcoin

Speaker: *Prof. Guillermo Navarro-Arribas, Universitat Autònoma de Barcelona, Catalonia.*

10:30-11:30 Session 8A: Data privacy. Chair: Sonakshi Garg, Room: Paranimf

Bistochastically private release of longitudinal data
Nicolas Ruiz
On privacy metrics for multi-hop payments in the Lightning Network
Guillermo Navarro-Arribas, Kanishkar Kannan
Direct Information Gain Estimation for Decision Tree Learning under Local Differential Privacy
Hiroaki Kikuchi

10:30-11:30 Session 8A: Data science. Chair: Sarga Gupta, Room: Sala Gòtica

Distributive Effects of AI Support: A Framework for Analyzing Performance Shifts within Groups
Andrea Campagner, Chiara Natali, Caterina Fregosi, Federico Cabitza
Lehmer K-means and q-Boltzmann factor K-means Clustering
Yuuchi KANZAWA
Understanding specific cows' behavior through cows' activity
Valentin Guien, Violaine Antoine, Luis E C Rocha, Romain Lardy, Isabelle Veissier

11:30-12:00 Coffee

12:00-13:00 Session 9A: Privacy and machine unlearning. Chair: Dario Malchiodi, Room: Paranimf

Privacy-aware federated aggregation
Sargam Gupta, Vicenç Torra
UnReL: Efficient Exact LLM Unlearning via Targeted Relearning
Tamim Al Mahmud, David Sánchez, Josep Domingo-Ferrer

12:00-13:00 Session 9B: Trustworthy AI. Chair: Julian Salas, Room: Sala Gòtica

Plausibility through Coherence: Evaluating Counterfactual Explanations in SHAP-Space
Ulf Johansson, Aicha Maalej
Paralinguistics interpretability through Shapley Values in Emotion Recognition
Guilherme Dean Pelegrina, Ajinkya Kulkarni, Miguel Couceiro
Beyond Keywords: Automated Prerequisite Extraction and Evaluation with MAPLE
Ana Jesus, Ana Moura Santos, Cláudia Antunes

13:00 -13:15 Closing ceremony

13:00 -15:30 Lunch at Nou Pamplona Restaurant

Plenary talks

Title: From Pareto to Semantics: Reframing Multi-objective Genetic Programming through Behavioural Search Spaces
Speaker: *Dr. Edgar Galván, Department of Computer Science, Maynooth University, Ireland*

Abstract
Multi-objective Genetic Programming has traditionally been driven by Pareto-based optimisation, where candidate solutions are evaluated and compared through a set of predefined objective functions. This framework has been highly successful and remains central to evolutionary multi-objective optimisation. However, it also places the emphasis primarily on objective values, while the underlying behaviour of programs, what they actually do, often plays a secondary role. In this keynote, I revisit the role of semantics in Multi-objective Genetic Programming and argue for a shift in perspective: from optimisation in objective space to search and reasoning in behavioural space. Semantics, defined as the input–output behaviour of programs, provides a richer and more structured view of solutions that complements and, in some cases, transcends traditional objective-based representations. I will reflect on a line of research that has explored how semantic information can be integrated into multi-objective evolutionary search, including semantic distance measures, behavioural diversity mechanisms, and semantic-aware variation operators. Rather than treating semantics as an auxiliary tool for improving performance, these approaches suggest that semantics can play a central role in shaping search dynamics, diversity preservation, and the structure of the evolving Pareto front. A key message of the talk is that incorporating semantics into multi-objective Genetic Programming changes not only the performance of algorithms, but also how we understand trade-offs, diversity, and convergence in evolutionary systems. It enables a reinterpretation of the Pareto front as a set of behavioural alternatives rather than purely objective compromises. I will conclude by discussing broader implications for evolutionary computation, including how behavioural representations can help bridge optimisation, program synthesis, and interpretable machine learning, and why semantics may serve as a unifying concept for the next generation of genetic programming systems.

Title: Beyond the Black Box: Hallucinations and Privacy in LLM

Speaker: *Dr. Sonakshi Garg, South Asian University, Delhi, India*

Abstract: Large Language Models (LLMs) are driving the next wave of AI adoption, transforming how individuals and enterprises automate complex tasks, augment decision-making, and build intelligent applications. Despite their remarkable capabilities, LLMs remain fundamentally opaque systems whose probabilistic nature raises critical challenges in reliability, interpretability, privacy, and security. Hallucinated outputs, inconsistent reasoning, data leakage, prompt injection, and the risk of exposing sensitive information continue to hinder their deployment in high-stakes domains. This talk explores the underlying causes of these challenges, with a particular focus on hallucination and privacy in LLMs. It further examines emerging research directions and practical mitigation techniques that enhance the trustworthiness, robustness, and privacy of LLM-based systems, providing insights into the development of reliable and responsible generative AI applications.