

18th International Conference on Agents and Artificial Intelligence (ICAART 2026)

Volume 4

Marbella, Spain
5-7 March 2026

Part 1 of 2

ISBN: 979-8-3313-3343-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2026) by SCITEPRESS – Science and Technology Publications, Lda.
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact SCITEPRESS – Science and Technology Publications, Lda.
at the address below.

SCITEPRESS – Science and Technology Publications, Lda.
Avenida de S. Francisco Xavier, Lote 7 Cv. C,
2900-616 Setúbal, Portugal

Phone: +351 265 520 185
Fax: +351 265520 186

info@scitepress.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENTS

ARTIFICIAL INTELLIGENCE

SHORT PAPERS

ChronoSHAP Framework: Time-Aware SHAP for Time Series with ARIMA-Based Surrogates <i>Yosr Baccari, Nesrine Khabou and Ismael Bouassida Rodriguez</i>	2935
Unveiling Concise Counterfactual Explanations and Feature Relevance in Machine Learning through Decision Trees <i>Jurandir Silva, Eduardo Aguilar and Rogerio Salvini</i>	2941
On the Non-Stationarity of Rewards in MCTS <i>Peter Guba</i>	2949
Data-Driven Decision Support System for Managing Discrepancies in Textile Ordering Operations <i>Miguel Martins, Daniela Quintas, Ivan Gomes, Cláudia Mendes Araújo and Rui Fonseca</i>	2957
Improved Convolutional Neural Network for Imbalanced Multi-Class Mammogram Images Classification Based on BI-RADS <i>Hana Mechria and Lamjed Ben Said</i>	2965
Intelligent Mutation Enhanced PSO for Efficient and Resilient Microservice Scheduling <i>Maroua Douiri, Imen Ben Mansour and Moncef Tagina</i>	2973
Financial Time Series Augmentation Using Transformer Based GAN Architecture <i>Andrzej Podobiński and Jarosław A. Chudziak</i>	2981
AGMO: Attention-Guided Metaheuristic Optimization for High-Dimensional Hyperparameter Tuning in Tiny-MLP Based Intrusion Detection <i>Nasreddine Hamdi, Akram Belazi, Safya Belghith and Héctor Migallón</i>	2989
Filtering Goals of Necessity-Optimal Agents in Qualitative Possibilistic Recognition via Planning <i>Brandon Rozek and Selmer Bringsjord</i>	2997
CAPRE: Counterfactual-Augmented Path-Based Reasoning for Extrapolative Link Prediction on Temporal Knowledge Graphs <i>Dang Huynh, Minh Khau, Thanh Le and Bac Le</i>	3009
Adapter-Based Multi-Document Summarisation: Opinion Summarisation Use Case <i>Kushan Hewapathirana, Nisansa de Silva and C. D. Athuraliya</i>	3018
Not All Countermodels Are Equal <i>Daniel Crowley, Daniel Le Berre and Yakoub Salhi</i>	3028
AMSAS: A BERT-ViT Fusion Framework for Real-Time Multimodal Sentiment Analysis <i>Molka Kharoubi, Ibtissem Khedher and Neila Rjaibi</i>	3036
Source Speech Reconstruction for Many-to-Many and One-to-One Voice Conversion <i>Zbyněk Lička, Anton Firc and Kamil Malinka</i>	3044

RAG-Enhanced Prompt Compression with Need-Oriented Knowledge for Dialog Based Embodied Navigation <i>Hiroaki Shimoma, Sudesna Chakraborty, Takeshi Morita, Aoi Ohta, Masaki Asada, Shusaku Egami, Takanori Ugai and Masahiro Hamasaki</i>	3055
Comparison of Dimensionality Reduction Methods for MCI Classification Using Machine Learning and Static Functional Connectivity Based on Resting-State Functional Magnetic Resonance Imaging <i>Ryosuke Minami, Ryo Hatano and Hiroyuki Nishiyama</i>	3063
Tool-Augmented Disambiguation LLM Agent Utilizing UMLS for Biomedical Entity Linking <i>Luka Blašković, Nikola Tanković and Ivo Ipšić</i>	3071
Benchmarking and Transfer Learning for Hyperparameter Optimization of Graph Neural Networks <i>Marek Dědič and Michal Bělohávek</i>	3079
Evaluating the Sample Efficiency of Solomonoff-Inspired Predictive Models <i>Cleyton Slaviero, Edward Hermann Haeusler and Luiz Carlos Castro Guedes</i>	3087
Modeling Fantasy Premier League Player Performance with a Two-Component Poisson Mixture Transformer <i>Weronika Wiechno, Piotr Duch and Bartosz Bartosik</i>	3093
Empirical Analysis of Adversarial Robustness and Explainability Drift in Cybersecurity Classifiers <i>Mona Rajhans and Vishal Khawarey</i>	3101
Multi-Modal Forecasting: An Advanced Framework for Emerging Technology Prediction in Blockchain Patents <i>Emna Rassâa and Asma Amdouni</i>	3109
Hallucinate or Memorize? The Two Sides of Probabilistic Learning in Large Language Models <i>Junichiro Niimi</i>	3117
Reinforcement Learning for Parameterized Quantum State Preparation: A Comparative Study <i>Gerhard Stenzel, Michael Kölle, Tobias Rohe, Leo Sünkel, Julian Hager and Claudia Linnhoff-Popien</i>	3127
AIgmented HUMANity: A Pragmatic Framework for AI-Guided Human Enhancement <i>Kacper Boś, Nikolas Jerzy Feduniewicz and Anna Bryniarska</i>	3134
Empowering Financial Controlling with Artificial Intelligence: An Empirical Evaluation <i>Korbinian Markl, Michael Diener, Michaela Polz and Felix Rößle</i>	3142
Towards Trustworthy LLM Decision Support through MCDA Integration <i>Andrii Shekhovtsov, Amiria Rafiei Oskoei and Wojciech Sałabun</i>	3150
Sample Complexity of Identifying the Nonredundancy of Nontransitive Games in Dueling Bandits <i>Shang Lu and Shuji Kijima</i>	3158
A-RailYOLOM: Unified Framework for Railway Scenes Understanding <i>Dorsaf Sebai and Manel Zouaoui</i>	3166
Towards AI-Enabled Training Needs Analysis Using Dual AI-Agent Collaboration <i>Nikilkumar Patel, Peter J. Barclay, Janice McMillan and David McGuire</i>	3174
Dynamic K-Prototypes for Mixed Data Stream Clustering <i>Siwar Gorraab, Fahmi Ben Rejab and Kaouther Nouria</i>	3182

Toward Explainable Diagnosis: A Neurosymbolic Approach <i>Ciro Listone, Vadim Malvone and Aniello Murano</i>	3190
A Novel Hybrid Deep Learning Model for Context-Aware Subjectivity Classification of Textual Data <i>Rim Chiha, Radhia Toujani and Hela Ltifi</i>	3198
Detection of Dangerous Driving Event Using Qualitative Spatial Reasoning from the Video <i>Kazuko Takahashi and Yurika Yamaguchi</i>	3205
Optimizing Road Flow with Genetic Algorithms and Deep Learning <i>Alex Lewis, Rina Azoulay and Esther David</i>	3213
Retrieval-Augmented Generation for Alzheimer’s Disease Detection: A Multi-Dataset Validation Study <i>Sabrine Brahmi, Marwa Afnouch, Wided Ben Daoud and Faouzi Zarai</i>	3224
Adaptive Structured Pruning of Convolutional Neural Networks for Time Series Classification <i>Javidan Abdullayev, Maxime Devanne, Cyril Meyer, Ali Ismail-Fawaz, Jonathan Weber and Germain Forestier</i>	3232
A Survey and Case Study on Radar Perception for Object Detection <i>Rajarshi Biswas, Kshitij Kumar, Mohamed Salman and Laura Bies</i>	3244
Domain-Adaptive Named Entity Recognition for Specialized Arabic Texts: Medical, Legal, and Financial Entity Extraction with Minimal Supervision <i>Hassen Mahdhaoui, Abdelkarim Mars, Mazin S. Mohammed, Alaa Abid Muslam Abid Ali, Salah Zrigui and Mounir Zrigui</i>	3252
Explainable Quantum Convolutional Neural Network for Attack Detection in Healthcare IoMT Systems Using SHAP and Grid5000 Computing <i>Marwen Amara, Sami Mnasri, Marwa Amara and Thierry Val</i>	3260
SAC: A Framework for Measuring and Inducing Personality Traits in LLMs with Dynamic Intensity Control <i>Adithya Chittam, Aishna Shrivastava, Sai Tarun Pendela, Jagat Sesh Challa and Dhruv Kumar</i>	3267
Multi-Objective Text Detoxification with Policy Gradient Optimization and Curriculum Learning <i>Amira Dhokar, Olfa Mabrouk and Lobna Hlaoua</i>	3279
Energy-Efficient IoT Routing Procedure Using Reinforcement Learning <i>Awatef BenFradj Guiloufi, Nouha Alyaoui, Nawres Bouabid, Hajer Ben Fradj and Karim Chabir</i>	3287
Belief Revision with Two Kinds of Trust <i>Aaron Hunter and Deanna Lepke</i>	3294
I-SteganoGAN++: Fusion-Encoder and Dual-Attention Decoder for High-Capacity Generative Steganography <i>Mounir Telli, Mohamed Othmani and Hela Ltifi</i>	3302
Detecting New Attacks under Concept Drift in Intrusion Detection Systems Using Autoencoder Networks and Gaussian Mixture Models <i>Lincoln de Queiroz Vieira, Ricardo Choren and Ricardo Sant’ana</i>	3313
RAG-KGRec++: Enhancing the Robustness and Explainability of Knowledge-Graph-Based Recommender Systems through Semantic Traceback Filtering <i>Mohamed Anouer Sdiri, Hamza Gharsellaoui and Sadok Bouamama</i>	3321

A Retrieval-Augmented Generation Approach for Bilingual Radiological Recommendation System <i>Abir Baâzaoui and Lamis Kaddoussi</i>	3329
When Senses Collide: Reasoning with Contradictory Multimodal Inputs <i>Marcus Valtonen Örnå, Katja Szybek, Tobias Widmark and Anastasia Grebenyuk</i>	3337
A Hybrid Ontology Alignment Approach Using Syntactic and Linguistic Similarity with Supervised Machine Learning <i>Faten Abbassi and Yousra Bendaly Hlaoui</i>	3345
Evaluating the Trustworthiness of LEMNA versus LIME and SHAP in Explainable Malware Detection <i>Kefas Rimannuske Galadima, Peter Anthony, Roderik Ploszek, Štefan Balogh, Pavol Zajac and Martin Homola</i>	3353
A Comparative Study of Feature Identification Methods for Sparse Autoencoders in Board Game Representations <i>Jonathan A. Zea, Lorena Isabel Barona and Marco E. Benalcázar</i>	3365
Automatic Query-Intent Annotation: A Log-Free Agentic LLM Framework <i>Zahra Taheri and Ziad Kobti</i>	3372
Optimized Deep Learning Multimodal Medical Images Registration: Validation on MRI/PET <i>Aymen Chaouch, Nada Haj Messaoud, Asma Ben Abdallah and Mohamed Hedi Bedoui</i>	3380
Real-Time Indoor Obstacle-to-Exit Distance Measurement Using a Monocular Camera <i>Adam Pirkhdrie, Hamed Talebi, Azad Shokrollahi, Erdal Akin and Arezoo Sarkheyli-Hägele</i>	3390
Adaptive Penalty-Guided VND with CP-SAT for Curriculum-Based Course Timetabling <i>Tam Minh Nguyen</i>	3398
An Attention-Residual 3D Framework for Robust Hippocampal Segmentation with K-Fold Cross-Validation <i>Nesrine Jazzar, Raghda Jouirou, Basma Mabrouk and Ali Douik</i>	3406
Recent Progress in Compilation-Based Approaches for Multi-Agent Path Finding <i>Pavel Surynek</i>	3414
Fuzzy TransE: A Fuzzy Type Semantic-Based Learning for Translating Embedding Models <i>Italo F. Zoppis, Sahar Shah, Sara L. Manzoni and Davide E. Ciucci</i>	3422
Selecting Network Flow Attributes: A Proposal to Identify Internet Video Streaming Traffic Exploring Fuzzy-Based Classifiers <i>Eduardo M. Monks, Giancarlo Lucca, Gabriel Rosa, Bruno M. P. Moura, Helida Santos, Adenauer C. Yamin and Renata Reiser</i>	3430
DeepXFusion: A Hybrid Representation Learning and Explainability Framework for Trustworthy Machine Learning <i>Wajih Abdallah and Majed Alruwaili</i>	3438
Failing on Bias Mitigation: A Case Study on the Challenges of Fairness in Government Data <i>Hongbo Bo, Jingyu Hu, Debbie Watson and Weiru Liu</i>	3446
Simulation-Based Optimization of Demand Flexibility and Storage Capacity in Distributed Solar Energy Systems <i>Marco A. Hudelist, Claudia Maussner, Erich Teppan and Elena Wiegmann</i>	3454

Time-Aware Auto-SCS: An Enhanced Deep Learning Based Approach for POI Recommendation <i>Chaima Laroussi and Raouia Ayachi</i>	3462
Enhanced Data-Driven Product Development via Gradient Based Optimization and Conformalized Monte Carlo Dropout Uncertainty Estimation <i>Andrea Thomas Nava, Lijo Johny, Fabio Azzalini, Johannes Schneider and Arianna Casanova</i>	3471
An Empirical Study of Architectural Trade-Offs in Vision-Based Traffic Sign Interpretation Systems <i>Su Myat Noe, Ha Thanh Nguyen, May Myo Zin and Ken Satoh</i>	3479
Residual U-Net with Spatial Feature Refinement and Channel Sensitivity Enhancement for Accurate Segmentation of Cochineal Insect Infestation <i>Adel Benali, Rahma Fourati and Imen Jdey</i>	3487
A Novel Depth-First Scheduling for Spatially Dynamic Neural Networks <i>Steven Coleman, Andrea Nardi-Dei, Marc C.W. Geilen, Sander Stuijk and Toon Goedemé</i>	3495
AUDITRON: Secure AI-Orchestrated Auditing with Privilege-Gated Data Actions <i>Raja Hanafi, Amir Smati and Henda ben Ghezela</i>	3502
Cluster Purge Loss: Structuring Transformer Embeddings for Equivalent Mutants Detection <i>Adelaide Danilov, Aria Nourbakhsh and Christoph Schommer</i>	3508
Explaining Mental Health Predictions through Natural Language <i>Dan Dodun-Des-perrieres and Madalina Raschip</i>	3518
Physics-Constrained Machine Learning Framework for Parametric Optimization of Industrial Cooling Systems <i>Md Mohsin Kabir, Shaibal Barua, Mobyen Uddin Ahmed, Behrouz Nourozi, Shahina Begum and Rebei Bel Fdhila</i>	3526
A Trust-Based Model for Document Credibility in Collaborative Annotation Systems <i>Fatiha Naouar and Lobna Hlaoua</i>	3538
Collaborative Spatio-Temporal Graph Reinforcement Learning for Multivariate Drought Forecasting <i>Ahlem Ferchichi, Mejda Chihaoui and Haifa Harrouch</i>	3546
Variable Semantic Representation: A Replication Study and Hyper-Parameter Optimization Using Taguchi Methods <i>Stefan-Octavian Custura, Radu Gaceanu and Andreea Vescan</i>	3554
DL-Based Lesion Segmentation and Novel Biomarkers for Early EDSS Prediction in Multiple Sclerosis <i>Nada Haj Messaoud, Aymen Chaouch, Asma Ben Abdallah and Mohamed Hedi Bedoui</i>	3566
A New Tunisian Arabic Corpus and Benchmark for Automatic Speech Recognition <i>Mohamed Ali Sghaier, Mohamed Lazhar Bellagha and Mounir Zrigui</i>	3575
Comparative Study of Random Forest and XGBoost for Cardiovascular Risk Prediction Using SHAP Interpretability <i>Raghda Jouirou, Nesrine Jazzar and Olfa Boussaid</i>	3586
Learning Proportional Analogies: Lightweight Neural Network vs Large Language Models <i>Stergos Afantenos, Miguel Couceiro, Emiliano Lorini and Van-Duy Ngo</i>	3592

Emerging Patterns and Research Directions on Machine Learning in Software Defect Prediction: A Systematic Literature Review <i>Camelia-Petrina Nadejde</i>	3603
An Agentic Hybrid LLM–RAG Framework for Explainable Clinical Decision Support <i>Mohammed Anas Kapadia, Mohammed Maaz Memon, Pankaj Mishra and Shun Okuhara</i>	3611
A Structural Equation Modeling Analysis of How Responsibility Attribution toward AI Influences Blame in AI-Assisted Medical Decision-Making <i>Keito Miyake and Seiji Yamada</i>	3619
Sample Policy Gradient: A Competitive Policy Optimisation Method for Off-Policy Reinforcement Learning <i>Athanasios Trantas</i>	3627
A Multi-Architecture Evaluation for Meltdown Crisis Detection Based on Behavioral Analysis <i>Marwa Masmoudi, Salma Kammoun Jarraya and Mohamed Hammami</i>	3636
End-to-End Development of a Multimodal Fusion Model for Diabetic Retinopathy and Cardiovascular Risk Prediction <i>Marwa Masmoudi, Salma Kammoun Jarraya and Mohamed Hammami</i>	3648
Automating the NIST Phish Scale with Language Models: A Reduced Metric for Threat Analysis and Red Team Operations <i>Antonio Skorin, Pedro Pinacho-Davidson and Fernando Gutierrez</i>	3660
A Multi-LLM Agent System for Modular Ontology Population: A Case Study on ADHD <i>Ibrahim Traore, Yassine Belmabrouk, Imen Megdiche, Abdel-Rahman H. Tawil, Jérôme Marquet-Doléac and Lotfi Chaari</i>	3668
Improving Scalability of the Multicriteria Vehicle Routing Problem <i>Temirlan Kurbanov and Jiří Vokřínek</i>	3676
Improving Semantic Segmentation Accuracy with Stable Diffusion-Based Augmentation <i>Dániel Mezei and Csanád Sándor</i>	3684
Human-LLM Collaboration for Reliable Prompt Monitoring and Benchmarking of Domain-Specific Language Assistants <i>Daniel Pawlowicz, Mirjam Wittich and Claudia Dukino</i>	3692
A Rank Aggregation-Based Framework for Finding Optimal k-Plexes in Large Graphs <i>Hajer Raddaoui, Haythem Mahfoudh, Mourad Kmimech and Mohamed Othmani</i>	3700
SpiTranNet-LIF: A Spiking Neural Network–Transformer Framework for Efficient Motor Imagery Decoding <i>Maryam Khoshkhooy Titkanlou, Alireza Hashemi and Roman Mouček</i>	3710
Smart Cuckoo Search Algorithm for Community Detection in Social Networks <i>Randa Boukabene, Fatima Benbouzid-Si Tayeb and Narimène Dakiche</i>	3719
Statistical Analysis and Predictive Modelling for Early Detection of Diabetic Retinopathy Using Retinal Image Features <i>Adel Ali Alkhaibari and Ammar Mohammed Ammar</i>	3727
Context-Aware AI-Based Framework for Sports Analytics <i>Konstandinos Aiwanseido, Brahim Daoud and Hamza Ariouich</i>	3736

A Variational Text-to-Motion Model for Emotion-Aware 3D Human Movement <i>Ciprian Paduraru, Monica Girbea and Alin Stefanescu</i>	3744
Prefix-Aware Deep Reinforcement Learning for Resource Allocation in Business Processes <i>Jeroen Middelhuis, Zaharah Bukhsh, Ivo Adan and Remco Dijkman</i>	3752
Near-Lossless Motor Imagery EEG Compression Using Hybrid Discrete Cosine Transform and Convolutional Autoencoder <i>Duc Thien Pham, Josef Kohout, Eyyüb Tayşi and Roman Mouček</i>	3764
CopperNet: Hybrid Deep Learning and LLM-Based Optimization for Copper Refining Processes <i>Gourav Sarkar, Hindesh Akash, Dinesh Kumar Yadav, Rohit Padakanti and Aman De Sarker</i>	3773
Enterprise-Ready Web Automation: A Framework for Democratizing the AI Agent <i>Gaurav Adke and Ameya Divekar</i>	3781
COVID-19 Propagation Model Based on a Network of Cellular Automata <i>Beatriz da Silva Vieira and Luiz Gustavo Almeida Martins</i>	3789
Generative Transformer-Based Cross-Modal EEG-HRV Fusion for MCI Detection <i>Amal Boudaya, Siwar Chaabene, Bassem Bouaziz and Lotfi Chaari</i>	3797
A Hybrid Approach for Opinion Leader Detection Integrating Semantic, Behavioral, and Topological Features in Online Social Networks <i>Amira Foughali, Lobna Hlaoua and Mohamed Nazih Omri</i>	3807
Multi-Expert Topic Modeling for Code-Switched Dialectal Arabic: A Dynamic Routing Approach to Tunisian Social Media Analysis <i>Samia Ben Ismail and Abdelkarim Mars</i>	3815
DEPC:Derivative Based EEG Preprocessing Framework for Epilepsy Monitoring Classification Using Deep Learning Models <i>Ines Bouzouita, Zayneb Brari and Safya Belghith</i>	3823
An Adaptive Differential Evolution with Boundary-Guided Mutation for Multi-Threshold Breast Cancer Image Segmentation <i>Mohamed Slim Kassis, Olfa Fakhfakh and Ghaith Manita</i>	3831
BEFT vs. LoRA: Parameter-Efficient Fine-Tuning for Auto-Optimized Vision Transformers in Image Classification <i>Moez Hamdi, Sonia Bouzidi and Imen Jdey</i>	3839
A Scenario Generation Framework for Targeting Emotional Vulnerabilities in Virtual Reality First Responder Training <i>Jeanne Parisse, Domitile Lourdeaux and Mathieu Chollet</i>	3847
Dynamic Weighted Multimodal Fusion for Explainable Chest X-Ray Segmentation Using Integrated Gradients <i>Ghazala Hcini and Imen Jdey</i>	3855
Ordering Queries in Constrained Partial CP-nets <i>Sultan Ahmed and Malek Mouhoub</i>	3863
Self-Supervised and Contrastive Learning for Audio-Based Traffic Congestion Classification in Smart Cities <i>Mouna Zouari Mehdi, Youssef Salhi, Jihen Frikha Elleuch and Dorra Sellami</i>	3871

Can Generative Adversarial Networks Compete against Diffusion Models at Generating Time Series? 3878
Philipp Engler, Ludger van Elst, Sheraz Ahmed and Andreas Dengel

AUTHOR INDEX