

2025 International Conference on Machine Learning and Applications (ICMLA 2025)

**Boca Raton, Florida, USA
3-5 December 2025**

Pages 1–747

IEEE Catalog Number: CFP25592-POD
ISBN: 979-8-3315-5981-6



Copyright © 2025, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP25592-POD
ISBN (Print-On-Demand):	979-8-3315-5981-6
ISBN (Online):	979-8-3315-5980-9
ISSN:	1946-0740

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
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

TABLE OF CONTENTS

Deep Learning for Unrelated-Machines Scheduling: Handling Variable Dimensions	1
<i>Diego Hitzges, Guillaume Sagnol</i>	
Meta-TTT: A Meta-learning Minimax Framework For Test-Time Training	9
<i>Chen Tao, Li Shen, Soumik Mondal</i>	
Fault Robustness and Lightweight Error Correction for Low-Precision Posit Neural Networks in Safety-Critical Systems	17
<i>Suleiman Junaidu Sadiq, Martin Mariusz Lester</i>	
Learning Robust Simplex Sparse Representation Using Alternating Linearized Minimization Method	25
<i>Zhennan Shi, Qiushi Wei</i>	
Progressive Searching for Retrieval in RAG	33
<i>Taehee Jeong, Xingzhe Zhao, Peizu Li, Markus Valvur, Weihua Zhao</i>	
Information-Geometric Barycenters for Bayesian Federated Learning	39
<i>Nour Jamoussi, Giuseppe Serra, Photios A. Stavrou, Marios Kountouris</i>	
Multi-Agent Behavior Cloning for Modeling Realistic Adversaries in Air Combat Simulations	47
<i>Andreas Strand, Karsten Brathen, Martin Asprusten, Patrick Gorton</i>	
Out-of-the-Box Uncertainty: Reducing Confident Errors with Dirichlet Classifiers	55
<i>Courtney Franzen, Farhad Pourkamali-Anaraki</i>	
QMIX-Based Multi-Agent Reinforcement Learning for Coordinated Tourist Recommendation with Crowd Management	61
<i>Kuiche Sop Brinda Leaticia, Yuyan Luo, Kombou Victor, Anto Leoba Jonathan</i>	
PEPS: Quantum-Inspired Reinforcement Learning for Coherent Reasoning Traces in LLMs	67
<i>Venkat Margapuri, Garik Kazanjian, Naren Kosaraju</i>	
Enhancing Heavy Rain Nowcasting with Multimodal Data: Integrating Radar and Satellite Observations	75
<i>Rama Kassoumeh, David Rügamer, Henning Oppel</i>	
Leveraging Anatomical Guidance: A Novel Attention Mechanism for Pedestrian Detection	83
<i>Hongbo Pang, Changcheng Huang</i>	
CAMP-HiVe: Cyclic Pair Merging based Efficient DNN Pruning with Hessian-Vector Approximation for Resource-Constrained Systems	91
<i>Mohammad Helal Uddin, Sai Krishna Ghanta, Liam Seymour, Sabur Baidya</i>	
Scientific Crosstalk: Analyzing Sentiment-Topic Alignment in Personal and Scientific Discourse	99
<i>Praveshika Bhandari, Connor Z. Young, Jan P. Springer, Aryabrata Basu</i>	
Attention-Based Offline Reinforcement Learning and Clustering for Interpretable Sepsis Treatment	107
<i>Punit Kumar, Vaibhav Saran, Divyesh Patel, Nitin Kulkarni, Alina Vereshchaka</i>	
Object Identification Under Known Dynamics: A PIRNN Approach for UAV Classification	115
<i>Nyi Nyi Aung, Neil Muralles, Adrian Stein</i>	

Feature Orthogonalization via Contrastive Upper-bound Separation for Domain Generalization	123
<i>Noaman Mehmood, Kenneth Barner</i>	
VaCDA: Variational Contrastive Alignment-based Scalable Human Activity Recognition	130
<i>Soham Khisa, Avijoy Chakma</i>	
State of Health estimation of Li-ion cells via internal degradation modes identification and physics-informed machine learning	138
<i>Quentin Bigouraux, Vincent Heiries, Saifeddine Aloui, Antoine Laurin, Marion Chandesris</i>	
Optical Character Recognition for Pre-Digital Historical Documents using Large Language Models	144
<i>Chreston Miller, Bipasha Banerjee</i>	
Automated Feature Engineering for Contextual Bandits via AATention Transfer Learning	152
<i>Ethan Pedersen, Jacob W. Crandall</i>	
Mental Multi-class Classification on Social Media: Benchmarking Transformer Architectures against LSTM Models	160
<i>Khalid Hasan, Jamil Saquer, Yifan Zhang</i>	
MIGRANT-DE: Scalable Differential Evolution for Large-Scale Machine-Learning Optimization	168
<i>Priyanka Haresh Bhatia</i>	
BEACON: Behavioral Malware Classification with Large Language Model Embeddings and Deep Learning	176
<i>Wadduwage Shanika Perera, Haodi Jiang</i>	
A Feature-based Linguistic and Statistical Framework for AI-Generated Text Detection	184
<i>Vaishnavi Sen, Rashida Hasan</i>	
Accurate Polyp Sizing via Attention-Guided Parallel CNN-ViT Depth and Learned Scale	192
<i>Alimire Nabijiang, Feng Liu, Jiao Feng, QiLei Chen, Yu Cao, BenYuan Liu</i>	
Edu-EmotionNet: Cross-Modality Attention Alignment with Temporal Feedback Loops	200
<i>S M Rafiuddin</i>	
Data-augmentation Technique Using Helpful AI-generated Images for Training	206
<i>Daichi Murata, Tatsumi Uezato, Yusuke Matsuda, Keisuke Inata, Satoshi Kujiraoka, Morio Matsumoto</i>	
SkewFuse: Unsupervised Confidence-Guided Rank Fusion for Multi-View Image Retrieval	212
<i>Enis Teper, Mustafa Keskin, Emre Rençberoğlu, Yusuf Hüseyin Şahin</i>	
A Generative Adversarial based Approach for Continual Federated Learning with Non-IID Data	218
<i>Akshat Sharma, JingTao Yao</i>	
Decoding Social Media Sentiment Before Events Occur Through Sentence-Level Embeddings and Graph Learning	224
<i>Jovan Andjelkovic, Shelly Gupta, Abdulrahman Alharbi, Zoran Obradovic</i>	
Sparse RNNs in Reinforcement Learning Applications	230
<i>Quincy Hershey, Randy Paffenroth</i>	
Troll Detection in Reddit Using Combined Machine Learning classifiers, Deep Learning, and Human-in-the-Loop Analysis	238
<i>Rafeef Baamer, Mihai Boicu</i>	

SAM2LoRA: Composite Loss-Guided, Parameter-Efficient Finetuning of SAM2 for Retinal Fundus Segmentation	246
<i>Sayan Mandal, Divyadarshini Karthikeyan, Manas Paldhe</i>	
Heterogeneous Time Series Anomaly Detection in Cyber-Physical Systems with VAEM-LSTMs	253
<i>Lekha Patel, Shamina Hossain-McKenzie</i>	
Sliced-Wasserstein Distance-based Data Selection	261
<i>Julien Pallage, Antoine Lesage-Landry</i>	
Enhancing 3D Semi-Supervised Teeth Segmentation with Voxel Entropy-Guided Self-Learning	269
<i>Elbadry Elbadry, Mahmoud Gamal, Marwa Baraka, Marwan Torki</i>	
Diffusion Policies with Offline and Inverse Reinforcement Learning for Promoting Physical Activity in Older Adults Using Wearable Sensors	275
<i>Chang Liu, Ladda Thiamwong, Yanjie Fu, Rui Xie</i>	
Enhancing Authorship Attribution with Synthetic Paintings	283
<i>Clarissa Loures, Caio Hosken, Luan Oliveira, Gianluca Zuin, Adriano Veloso</i>	
NORA: A Nephrology-Oriented Representation Learning Approach Towards Chronic Kidney Disease Classification	289
<i>Mohammad Abdul Hafeez Khan, Twisha Bhattacharyya, Omar Khan, Noorah Khan</i>	
<i>Alina Aziz Fatima Khan, Mohammed Qutub Khan, Sujoy Ghosh Hajra</i>	
Topology of Out-of-Distribution Examples in Deep Neural Networks	296
<i>Esha Datta, Johanna Hennig, Eva Domschot, Connor Mattes, Michael R. Smith</i>	
A Multi-Stage Machine Learning Pipeline for Automated Bowel Preparation Scale Assessment in Colonoscopy Videos	302
<i>Yiqin He, Qilei Chen, Ke Wan, Alimire Nabijiang, Yu Cao, Benyuan Liu</i>	
Reconstruction-Free Classification for Lensless Imaging Systems	310
<i>Pramil Paudel, Fengjun Li</i>	
Label-Efficient Human Activity Recognition from Wearables via Self-Supervised Representation Learning	316
<i>Taoran Sheng, Manfred Huber</i>	
Localized LoRA: A Structured Low-Rank Approximation for Efficient Fine-Tuning	324
<i>Babak Barazandeh, Subhabrata Majumdar, Om Rajyaguru, George Michailidis</i>	
Uncertainty-Guided Learning for Semantic Segmentation in CT using Noisy Pseudo Labels	330
<i>Austin Yunker, Peter Kenesei, Hemant Sharma, Jun-Sang Park, Antonino Miceli, Rajkumar Kettimuthu</i>	
Rig-Aware 3D Reconstruction of Vehicle Undercarriages using Gaussian Splatting	338
<i>Nitin Kulkarni, Akhil Devarashetti, Charlie Cluss, Livio Forte, Dan Buckmaster, Philip Schneider</i>	
<i>Chunming Qiao, Alina Vereshchaka</i>	
Privacy-Preserving Model Compression: Adaptive Pruning for Federated Split Learning of LLMs	346
<i>Dinesh Chowdary Attota, Dr. Linh Le, Ying Xie</i>	
Learning a Single Compact Soft Tree with Iterative Updates of Sample Weights	354
<i>Atsuya Saiga, Akihiro Inokuchi</i>	

Evaluating the Impact of Compression Techniques on the Robustness of CNNs under Natural Corruptions	362
<i>Itallo Patrick Castro Alves Da Silva, Emanuel Adler Medeiros Pereira, Erick de Andrade Barboza Baldoino Fonseca Dos Santos Neto, Márcio de Medeiros Ribeiro</i>	
GUI-Based Deep Learning System for Real-Time Early Dental Caries Classification and Detection via OCT Images	368
<i>Carlos Diaz, Hassan S. Salehi</i>	
Reinforcement Learning and 3D Chirogram Representation for Blind Source Separation	376
<i>Bingcheng Li</i>	
SR4-Fit: An Interpretable and Informative Classification Algorithm Applied to Prediction of U.S. House of Representatives Elections	382
<i>Shyam Sundar Murali Krishnan, Dean Frederick Hougen</i>	
Adaptive von Mises–Fisher Likelihood Loss for Supervised Deep Time Series Hashing	390
<i>Juan Manuel Perez, Kevin Garcia, Brooklyn Berry, Dongjin Song, Yifeng Gao</i>	
Clustering and Explainable AI for Supporting Energy Contracting in the Brazilian Free Energy Market	396
<i>Sérgio B. Júnior, Gabriel S. Matz, Marcos B. S. Paula, Ewerton Guarnier, Donato S. Filho, Raquel L. Melo Lucas B. Picarelli, Victor C. V. Rosa, Zhao Liang, Renato Tinós</i>	
Highly Imbalanced Regression with Tabular Data in SEP and Other Applications	404
<i>Josias K. Moukpe, Philip K. Chan, Ming Zhang</i>	
A Transformer-Based Cross-Platform Analysis of Public Discourse on the 15-Minute City Paradigm	410
<i>Gaurab Chhetri, Darrell Anderson, Boniphace Kutela, Subasish Das</i>	
Survival Analysis for Employee Retention Prediction in Retail and Trade Sector Organizations	416
<i>Ariel Gonzalez Batista, Xingquan Zhu</i>	
Attr-RAG: Attribution-Guided Retrieval-Augmented Generation for Scientific Experiment Design	424
<i>Fazle Rahat, M Shifat Hossain, Arvind Ramanathan, Sumit Jha, Hao Zheng, Rickard Ewetz</i>	
Solving Math Word Problems Using Estimation Verification and Equation Generation	432
<i>Mitchell Piehl, Dillon Wilson, Ananya Kalita, Jugal Kalita</i>	
Unsupervised Feature Extraction using Convolutional Autoencoder for Credit Card Fraud Detection	440
<i>Zahra Salekshahrezaee, Mary Anne Walauskis, Taghi M. Khoshgoftaar</i>	
MADE-PI: Framework for Effective Anomaly Detection in Federated Learning Applications	446
<i>Raman Zatsarenko, Sergei Chuprov, Dmitrii Korobeinikov, Leon Reznik, Adrian Peña</i>	
AI-Driven Test Generation from Natural Language: A Gamified Framework for Automated UI Testing	452
<i>Maroun Ayli, Youssef Bakouny, Nader Jalloul, Hani Seifeddine, Rima Kilany</i>	
Street2Air: A Framework for Synthesizing Aerial Vehicle Views from Ground Images	460
<i>Md Rubel Ahmed, Fazle Rahat, M Shifat Hossain, Sumit Kumar Jha, Rickard Ewetz</i>	
SLA-MORL: SLA-Aware Multi-Objective Reinforcement Learning for HPC Resource Optimization	468
<i>Seraj Al Mahmud Mostafa, Aravind Mohan, Jianwu Wang</i>	
Fusing Camera and Electromyography Data for Enhanced Range of Motion Assessment	476
<i>Xuke Yan, Bo Liu, Jinzhao He, Guangzhi Qu</i>	

Return-to-Work Classification of Occupational Injury Claims via Rank-Ordering	484
<i>Gonzalo A. Vivian, Chelsea M. Zuvieta, Taghi M. Khoshgoftaar</i>	
Supervised Contrastive Disentanglement for Classification	492
<i>Joshua Luo, Luke Zhong, Feiyang Cai, Long Cheng</i>	
Predicting Wildfire Spread with Attention U-Net: A Multi-Feature Geospatial Deep Learning Approach	500
<i>Khalil I. Almakrami, Rose Atuah, Michael P. McGuire</i>	
From Answer to Origin: Page Number Grounding in Document-Level Question Answering	508
<i>Zarin T. Shejuti, Debzani Deb, Emily R. Dunkel</i>	
BoP-X: A New XAI Approach to Explain Reinforcement Learning for Autonomous Driving	515
<i>Gulsum Alicioglu, Bo Sun</i>	
Medical Imaging with Deep Learning: A Comparison of CNN and Transformer Models	523
<i>Kehan Gao, Sarah Tasneem, Taghi M. Khoshgoftaar</i>	
Trust-Aware Human-AI Teaming Framework for Fake News Detection Using LLMs	531
<i>Abdul Muntakim, Sai Sanjay Potluri, Md Abdullah Al Hafiz Khan, Yong Pei</i>	
Drug Repurposing Using Deep Embedded Clustering and Graph Neural Networks	539
<i>Luke Delzer, Robert Kroleski, Ali K. AlShami, Jugal Kalita</i>	
Adaptive Quantile Guidance in Diffusion Models: Multi-Dataset Learning for Pandemic Time Series	547
<i>Jane Odum, John Mller</i>	
EDLAD: Ensemble Deep Learning for Alzheimer’s Disease Detection using Brain EEG Signals	555
<i>An T.T. Phan, Xingquan Zhu</i>	
Applying Machine Learning to Classify Automobile Repossession Success	563
<i>Preston Billion-Polak, Andy Sinclair, Taghi Khoshgoftaar</i>	
Labeling an Arabic Sockpuppet Dataset Using a Human-in-the-Loop Approach – Short Paper	569
<i>Rafeef Baamer, Ahmed S. Alghamdi, Mihai Boicu</i>	
Dynamic Time Warping-Based Evidential Clustering of Time Series with c-Medoids	575
<i>Eya Laffet, Ahmed Samet, Mohamed Anis Bach Tobji, Baptiste Lafabregue</i> <i>François de Bertrand de Beuvron</i>	
Code Generation with Small Language Models: A Codeforces-Based Study	582
<i>Débora Souza, Rohit Gheyi, Lucas Albuquerque, Gustavo Soares, Márcio Ribeiro</i>	
Generalizing Distributions of Learned Error and Bias using Empirical Analysis	588
<i>Zackary Hoyt, Dean Frederick Hougen, Bryan Lavender, Zachary Kastl, Levi Golston, Sean Nguyen</i> <i>Joseph Karch</i>	
Federated Boolean Matrix Factorization Using Integer Programming	595
<i>Duy Nhat Phan, Quynh Anh Nguyen, Thuy Ngoc Nguyen</i>	
Improving Internet Traffic Matrix Prediction via Time Series Clustering	601
<i>Martha Cash, Alexander Wyglinski</i>	
Spectral and Spatial Graph Learning for Multispectral Solar Image Compression	607
<i>Prasiddha Siwakoti, Atefeh Khoshkhahtinat, Piyush M. Mehta, Barbara J. Thompson, Michael S. F. Kirk</i> <i>Daniel Da Silva</i>	

MARVEL: Multi-modal Analysis and Reasoning for Violence Explanation with Large Language Models	615
<i>Kushal Badal, Subhram Dasgupta, Md Tasnim Alam, Xiaohong Yuan, Kaushik Roy</i>	
Efficient Visual Cyberbullying Detection via Knowledge Distillation from EfficientNet to Lightweight CNNs	623
<i>Pal Dave, Subhram Dasgupta, Kushal Badal, Xiaohong Yuan, Kaushik Roy</i>	
RespFormer: A Motion-Guided Temporal-Frequency Multimodal Fusion Transformer for Contactless Respiratory Monitoring	631
<i>Shadman Sakib, Gaurav Shinde, Snehalraj Chugh, Mohammad Saeid Anwar, Nirmalya Roy</i>	
Comparative Analysis of Defense Approaches against Adversarial Attacks on Remote Sensing Applications	639
<i>Sanjaykrishnan Ravikumar, Ravi Kumar Rogannagari, Md Jahirul Islam, Kazi Aminul Islam</i>	
A Semi-Automated Pipeline for Generating and Annotating Colorectal Polyp Data for Semantic Segmentation Tasks	647
<i>André Castro, Alexandre Naves, Lucas Neves, João Pedro Fernandes, Rian Santos, Caio Oliveira Ricardo Franco</i>	
Mamba World Model for RL: Enhancing Long-term Memory in Model-based Reinforcement Learning	655
<i>Mingcong Cao, Yucheng Huang, Suat Gumussoy, Umit Y. Ogras</i>	
Single-Step Reconstruction-Free Anomaly Detection and Segmentation via Diffusion Models	663
<i>Mehrdad Moradi, Marco Grasso, Bianca Maria Colosimo, Kamran Paynabar</i>	
Adaptive Kernel Selection: Performance Pattern Analysis Across Network Depth Hierarchies and Dataset Complexities	671
<i>Areen Patil, Rehaan Kadhar</i>	
DeepTime: Meta-Learning Temporal Dynamics for Salesforce Opportunity Forecasting	677
<i>Sharan Sukesh</i>	
Active Authentication via Korean Keystrokes Under Varying LLM Assistance and Cognitive Contexts	682
<i>Dong Hyun Roh, Rajesh Kumar</i>	
TTQA-RS- A break-down prompting approach for Multi-hop Table-Text Question Answering with Reasoning and Summarization	690
<i>Jayetri Bardhan, Bushi Xiao, Daisy Zhe Wang</i>	
Feature Selection via Class-wise Mean Deviation	698
<i>Abu Fuad Ahmad, Jiefei Liu, Qixu Gong, Satyajayant Misra, Jayashree Harikumar</i>	
Multitask Contrastive Learning using Task-Wise Training and Partitioned Embedding Space	704
<i>M Shifat Hossain, Sumit Kumar Jha, Hao Zheng, Rickard Ewetz</i>	
Semantic Segmentation of Kale Plant Images Using Deep Learning for Phenotypic Feature Analysis	712
<i>Halima Audu, Varun Kumar Reddy Dodda, Ruth Agada, Jie Yan, Anne Osano, George Ude, Supriyo Ray</i>	
Lacium Flower: Learning Phonological Representations for Literacy Tasks in Low-Resource Scenarios for Brazilian Portuguese	720
<i>Geraldo Gomes Da Cruz Júnior, Robson Do Nascimento Fidalgo</i>	

Gradient-based Model Shortcut Detection for Time Series Classification	726
<i>Salomon Ibarra, Frida Cantu, Kaixiong Zhou, Li Zhang</i>	
A Multilingual Evaluation of Large Language Models for Generating Phonological Exercises via Linguistic Heuristic Guidance	732
<i>Geraldo Gomes Da Cruz Júnior, Robson Do Nascimento Fidalgo</i>	
A Multi-Feature Fusion Approach to Learner Engagement Detection	738
<i>Eman Almotairi, Danda B. Rawat</i>	
Can a Machine Learning Model Consistently Learn Profitable Trading Strategies in the Forex Market?	742
<i>Ethan Pedersen, Jacob W. Crandall</i>	
Localized Uncertainty Quantification in Random Forests via Proximities	748
<i>Jake S. Rhodes, Scott D. Brown, J. Riley Wilkinson</i>	
Explainable Gait Abnormality Detection Using Dual-Dataset CNN-LSTM Models	754
<i>Parth Agarwal, Sangaa Chatterjee, Md Faisal Kabir, Suman Saha</i>	
Hierarchical Scoring for Machine Learning Classifier Error Impact Evaluation	760
<i>Erin Lanus, Daniel Wolodkin, Laura J. Freeman</i>	
Spatiotemporal Wildfire Prediction and Reinforcement Learning for Helitack Suppression	766
<i>Shaurya Mathur, Shreyas Bellary Manjunath, Nitin Kulkarni, Alina Vereshchaka</i>	
A Novel Framework for Vehicle Detection and Dynamic Light Control via YOLOv8n on Edge-Deployed IMX500	772
<i>Shreshth Mishra, Daniel Cionca, Raunak Pradhan</i>	
Point-RTD: Replaced Token Denoising for Pretraining Transformer Models on Point Clouds	778
<i>Gunner Stone, Youngsook Choi, Alireza Tavakkoli, Ankita Shukla</i>	
NeuCODEX: Edge-Cloud Co-Inference with Spike-Driven Compression and Dynamic Early-Exit	784
<i>Maruf Hassan, Steven Davy, Muhammad Zawish, Owais Bin Zuber, Nouman Ashraf</i>	
An Empirical Study on the Application of TDA to Deep Neural Networks	790
<i>Tyler Trogden, Dan Ventura</i>	
Post-training Quantization without BN Statistics: A Data Free Approach	796
<i>Akash Chavan, Sumit Kumar Jha, Sunny Raj</i>	
Guided and Unguided Conditional Diffusion Mechanisms for Structured and Semantically-Aware 3D Point Cloud Generation	802
<i>Gunner Stone, Sushmita Sarker, Alireza Tavakkoli</i>	
Diabetic Retinopathy Lesion Segmentation through Attention Mechanisms	808
<i>Aruna Jithesh, Chinmayi Karumuri, Venkata Kiran Reddy Kotha, Meghana Doddapuneni, Taehee Jeong</i>	
EdgeProfiler: A Fast Profiling Framework for Lightweight LLMs on Edge Using Analytical Model	814
<i>Alyssa Pinnock, Shakya Jayakody, Kawsher A Roxy, Md Rubel Ahmed</i>	
Hybrid Deep Learning Models for the Prediction of Some Experimental Quantities of Molecules	820
<i>P. Djagba, V. Rakotonarivo, A. Zeleke</i>	
An Autoencoder-based Feature Selection with Optimized Reconstruction Loss and Feature Scoring	826
<i>Monitha Davuluri, Manish Vikrama, Rashida Hasan</i>	

Neural Oceans: Physics-Informed Deep Learning for Underwater Marine Debris Forecasting	832
<i>Abdullah Tariq Choudhry, Vivek K. Pallipuram</i>	
Physics-Informed Neural Networks for Soil Moisture Modeling and Landslide Assessment	838
<i>Shelly Gupta, Jovan Andjelkovic, Abhudaya Shrivastava, Atsuhiko Muto, Zoran Obradovic</i>	
Towards Reliable Reasoning in Vision-Language Models	842
<i>Chinh Hoang, Youssef Nassef, Mohammad Rashedul Hasan</i>	
Toward Unified Moderation of Cyberbullying Across Social Media and Video Games	848
<i>David Cong, Keyan Guo, Hongxin Hu</i>	
ShelfRectNet: Single View Shelf Image Rectification with Homography Estimation	853
<i>Onur Berk Tore, Ibrahim Samil Yalciner, Server Calap</i>	
LVADNet3D: A Deep Autoencoder for Reconstructing 3D Intraventricular Flow from Sparse Hemodynamic Data	857
<i>Mohammad Abdul Hafeez Khan, Marcello Mattei Di Eugenio, Benjamin Diaz, Ruth E. White, Siddhartha Bhattacharyya, Venkat Keshav Chivukula</i>	
LIGHT-HIDS: A Lightweight and Effective Machine Learning-Based Framework for Robust Host Intrusion Detection	863
<i>Onat Gungor, Ishaan Kale, Jiasheng Zhou, Tajana Rosing</i>	
AQUA-LLM: Evaluating Accuracy, Quantization, and Adversarial Robustness Trade-offs in LLMs for Cybersecurity Question Answering	869
<i>Onat Gungor, Roshan Sood, Harold Wang, Tajana Rosing</i>	
Oracle-Guided Soft Shielding for Safe Move Prediction in Chess	875
<i>Prajit T Rajendran, Fabio Arnez, Huascar Espinoza, Agnes Delaborde, Chokri Mraidha</i>	
Label-Guided Imputation via Forest-Based Proximities for Improved Time Series Classification	881
<i>Jake S. Rhodes, Adam G. Rustad, Sofia Pelagalli Maia, Evan Thacker, Hyunmi Choi, Jose Gutierrez, Tatjana Rundek, Ben Shaw</i>	
Integrating Prior Observations for Incremental 3D Scene Graph Prediction	887
<i>Marian Renz, Felix Igelbrink, Martin Atzmueller</i>	
Robot Learning Framework using Behavioral Cloning and Gaussian Mixture Model (BC-GMM) for Sorting Tasks	893
<i>Hambal Tella, Prajyot Patil, Maria Kyrarini</i>	
A Reward-Driven Controller for Text Generation with Black-Box Language Models	899
<i>Robert Morain, Dan Ventura</i>	
Difficulty-Driven Fine Training for WisdomNet	905
<i>Ayomide Afolabi, Ramazan Ayyun, Truong X. Tran</i>	
Reducing Exposure Bias in Deep Learning Models for GPU Temperature Prediction in Data Centers	911
<i>Mark Fullton, Xiaojun Ruan, Xunfei Jiang, Mahdi Ebrahimi</i>	
Bounomodes: the grazing ox algorithm for exploration of clustered anomalies	917
<i>Samuel Matloob, Ayan Dutta, O. Patrick Kreidl, Swapnoneel Roy, Ladislau Bölöni</i>	

Kolmogorov-Arnold Networks in Low-Data Regimes: A Comparative Study with Multilayer Perceptrons	923
<i>Farhad Pourkamali-Anaraki</i>	
LUMIN: Language-based Understanding and Multimodal Interface for NASA PDS	929
<i>Joshua Lockart, Venkata Shaurya Mantrala, Vaibhav Reddy Dandala, Sokhna Amar, Emily Dunkel Sambit Bhattacharya</i>	
MOTIF: Modular Thinking via Reinforcement Fine-tuning in LLMs	936
<i>Purbesh Mitra, Sennur Ulukus</i>	
Perception-based multiplicative noise removal with Diffusion models	942
<i>An Vuong, Thinh Nguyen</i>	
Unitary Vision: Deep Learning with Information Decorrelation for Signal Reconstruction	948
<i>Steven Tate, Randy Paffenroth</i>	
Energy Efficiency for Automobile A/C Systems Using Machine Learning Algorithms	954
<i>Neha Ananthavaram, Taehyung Wang</i>	
Applying LLMs to the Classification of Cybersecurity Incident Tickets in a Few-Shot Scenario	960
<i>Sebastião Alves de Jesus Filho, Alvaro Santana Santos, Rafael Dias Araújo, Rodrigo Sanches Miani</i>	
Memory-Augmented Log Analysis with Phi-4-mini: Enhancing Threat Detection in Structured Security Logs	966
<i>Anbi Guo, Mahfuza Farooque</i>	
Information Theoretic Threshold Tuning in Parallel Stochastic Quantizer Architectures *	972
<i>Hassan Tavakoli, Thinh Nguyen, Bella Bose</i>	
Axes-Oblique Partitioning for Local Model Networks with RFIR Models	978
<i>Christopher Illg, Oliver Nelles</i>	
Adaptive Contrastive Learning for Understanding Procedural Activities	984
<i>Chenxi Guo, Andreas Hubert, Konrad Doll</i>	
Deep Learning for Third Molar Segmentation: An Empirical Analysis on Dental Radiographs	990
<i>Munim Ahmed, M. M. Mahbubul Syeed, Jahid Hasan Rony, Razib Hayat Khan, Mohammad Faisal Uddin Safiqul Islam, Mohammad Khursheed Alam</i>	
Influence of Stratified Variable Encoding on Quality of Mortality Prediction in Systolic Heart Failure	996
<i>Bhumi Patel, Lemba Priscille Ngana, Atefehsadat Haghighathoseini, Janusz Wojtusiak</i>	
Explainable Artificial Intelligence in Robotics: A Review of Applications and Methods	1000
<i>Gulsum Alicioglu, Bo Sun</i>	
From Uncertainty to Clarity: Projecting Points onto Classification Boundaries Using Distance Metrics	1006
<i>Michael R. Smith, Eva Domschot</i>	
Bilevel-Optimized Clustered and Distributed Federated Learning Secured by Blockchain for Building Energy Forecasting	1010
<i>Ai Kagawa, Judy Min, Nancy Min</i>	
Leveraging Diffusion-Based Augmentation for Robust Semantic Segmentation	1016
<i>Muhammad Momin Salman, Christoph Gerhardt, Wolfgang Broll</i>	

A New Federated Learning Approach for Imbalanced Medical Image Datasets	1022
<i>Aniruddha Tiwari, Zhen Ni, Xiangnan Zhong, Ahmed Imteaj</i>	
Efficient Edge Inference via Entropy and Magnitude-Aware Feature Map Pruning in Partitioned CNNs	1028
<i>Eiraj Saqib, Oscar Artur Bernd Berg, Isaac Sánchez Leal, Irida Shallari, Silvia Krug, Axel Jantsch</i> <i>Mattias O’Nils</i>	
Enhancing Multi-Agent Collaboration with Attention-Based Actor-Critic Policies	1034
<i>Hugo Garrido-Lestache Belinchon, Jeremy Kedziora</i>	
Strategy Masking: A Method for Guardrails in Value-based Reinforcement Learning Agents	1040
<i>Jonathan Keane, Sam Keyser, Jeremy Kedziora</i>	
Offline Reinforcement Learning Benchmark for Variable Speed Limit Control with Real-World Dataset	1046
<i>Yuhang Zhang, Zhiyao Zhang, Marcos Quinones-Grueiro, William Barbour, Gautam Biswas, Daniel Work</i>	
Learning from Incomplete Logs: Dual-Task Failure Prediction for Natural Gas Compressor Units	1052
<i>Pegah Mavaie, Ravigopal Vennelakanti</i>	
Detecting Sliver DNS Command and Control (C2) Beaconing Using LSTM Neural Networks	1058
<i>Robert D Ward, Xinyuan Wang</i>	
Event Detection in Dark Web and Surface Web Forums using Machine Learning	1064
<i>Rodrigo Bernabé Silveira, Rodrigo Sanches Miani, Paulo Henrique Ribeiro Gabriel</i>	
Toward Data-Driven Surrogates of the Solar Wind with Spherical Fourier Neural Operator	1070
<i>Reza Mansouri, Dustin J. Kempton, Pete Riley, Rafal A. Angryk</i>	
Iterative Tensorization of Physics-Informed Neural Networks	1076
<i>Carter Capetz, Ryan Solgi, William Sheppard</i>	
Detecting Patient and Healthy People’s Personalized Breathing Patterns with Few-Shot Learning	1080
<i>Manas V. Shetty, John Springer, Sudip Vhaduri, Zachary Hass, Jessica Huber, Brad H. Rosen</i> <i>Jennifer A. Coddington</i>	
A Data-Driven Approach for Sleep Stage Detection Using Machine Learning and Feature Selection Algorithms	1086
<i>Md Nahid Hasan, Md Sultan Mahmud, Clifford Jones, Saroj Baral, Khem Poudel</i>	
A Self-Supervised Auxiliary Learning Approach for Effective Depression Screening	1092
<i>Kevin Hickey, Ricardo Flores, Avantika Shrestha, Elke Rundensteiner</i>	
Optimizing Equitable Access to Opportunities within Salesforce Networks using Reinforcement Learning-Driven Graph Augmentation	1098
<i>Sharan Sukesh</i>	
Multiclass Hate Speech Detection: Evaluating 303 Model Configurations Across Traditional Machine Learning, Deep Learning, and Transformer Approaches	1104
<i>Mahmoud Abusaqer, Khalid Hasan, Jamil Saquer</i>	
Structural Damage Detection Using AI Super Resolution and Vision Language Model	1110
<i>Catherine Hoier, Khandaker Mamun Ahmed</i>	
Jailbreaking Large Language Models: Safety Alignment, Response Quality, Computational Cost	1116
<i>Jonas Rosengren, Joel Brynielsson, Fredrik Johansson, Patrik Jonell</i>	

Analyzing Code Injection Attacks on LLM-based Multi-Agent Systems in Software Development	1124
<i>Brian Bowers, Smita Khapre, Jugal Kalita</i>	
Spontaneous organization of diverse human color representations: from trichromacy to dichromacy in neural networks trained with retina-like inputs	1130
<i>Asaki Kataoka, Nipun Ravindu Wickramanayaka, Yu Togashi, Masafumi Oizumi</i>	
Design and Validation of a YOLOv8 Synthetic Data Generation Pipeline for Surface Defect Detection in Manufacturing	1136
<i>Armin Moghadam, Sahib Bhatia, Fatemeh Davoudi Kakhki, Hiroyuki Ichikawa</i>	
An Explainable Dynamic Few-Shot Learning Framework for GERD and Polyp Detection in Endoscopic Imaging	1144
<i>Md. Hasan Imam Bijoy, Dewan Aminul Islam, Susmoy Biswas, Mohammad Shamsul Arefin Md Zahid Hasan, Mohammad Shorif Uddin</i>	
Rep Smarter, Not Harder: AI Hypertrophy Coaching with Wearable Sensors and Edge Neural Networks	1152
<i>Grant King, Musa Azeem, Savannah Noblitt, Ramtin Zand, Homayoun Valafar</i>	
Beyond a Single Perspective: Neural Fusion of Lévy-Generated Super-Resolution Images for Robust Face Recognition	1160
<i>Marcelo dos Santos, João C. Neves, David Menotti</i>	
LoRaDoctor: LLM-Driven Diagnosis and Adaptive Policy Optimization for Reducing Packet Error Rate in LoRaWAN Networks	1168
<i>Dongyi Ma, Aitian Ma, Sirui Luo, Martin de Jode, Andrew Hudson-Smith, Mo Sha</i>	
Adversarially-Refined VQ-GAN with Dense Motion Tokenization for Spatio-Temporal Heatmaps	1176
<i>Gabriel Maldonado, Narges Rashvand, Armin Danesh Pazho, Ghazal Alinezhad Noghre, Vinit Katariya Hamed Tabkhi</i>	
CLIPS: Continual Learning Infrastructure for Plastics Sorting	1184
<i>Shivm Mehta, Vaishali Maheshkar, Charuvahan Adhivarahan, Karthik Dantu</i>	
Improving Long-Term HDD RUL Prediction Using a Novel Feature Engineering Approach	1192
<i>Francisco Lucas F. Pereira, Victor A. E. Farias, Felipe T. Brito, João Paulo P. Gomes, Javam C. Machado</i>	
Anti-Submarine Warfare Planning Using Public Belief States and Self-Play	1198
<i>Christoffer Limér, Joel Brynielsson, Mika Cohen, Felix Rydell</i>	
Iterative Denoising Autoencoders with Adaptive Iterations Trained Using Sum Iteration Losses	1206
<i>Shiquan He, Randy Paffenroth</i>	
Causal Time Series Modeling of Supraglacial Lake Evolution in Greenland under Distribution Shift	1213
<i>Emam Hossain, Muhammad Hasan Ferdous, Devon Dunmire, Aneesh Subramanian, Md Osman Gani</i>	
Causal Autoencoder-like Generation of Feedback Fuzzy Cognitive Maps with an LLM Agent	1221
<i>Akash Kumar Panda, Olaoluwa Adigun, Bart Kosko</i>	
Improving Geolocalization with Social Media Captions: A Retrieval-Based Approach	1229
<i>Anton Ljungar, Sofia Reineck, Edward Tjornhammar, Sebastian Oberg</i>	
Semi-Dense Feature Matching via Mamba-Based Knowledge Distillation	1236
<i>José Medina, Helena Sokk, Amnir Hadachi</i>	

QSeg: Quantum - Classical Segmentation Model for Breast Cancer Images	1242
<i>Nadine Matondo-Mvula, Khaled Elleithy</i>	
Adversarial-Resilient RF Fingerprinting: A CNN-GAN Framework for Rogue Transmitter Detection	1248
<i>Raju Dhakal, Prashant Shekhar, Laxima Niure Kandel</i>	
iDiffODE: Learning Continuous-Time Latent Dynamics for Generative Spatiotemporal Modeling	1254
<i>Sai Deepthi Yeddula, Abhijeet Bhattacharya, Chen Jiang</i>	
Learning from Execution Graphs: A Graph Neural Network Approach to Malware Detection	1260
<i>Hossein Shokouhinejad, Mackenzie Chase, Roozbeh Razavi-Far</i>	
HierTTF: Hierarchical Two-Stage Time-to-Failure Prediction for Datacenter SSDs Using Telemetry	1266
<i>Geunrok Oh, Sohyun Han, Kijong You, Jongsung Na, Kyungsik Song, Sejeong Jang, Yuqi Zhang</i>	
<i>Haonan Luo</i>	
AI-Driven Prediction of Material Deformation: Stress-Strain Curves Faster Than Crystal Plasticity	
Finite Element Simulation	1272
<i>Sayak Chakrabarty, Shahriyar Keshavarz, Yuwei Mao, Andrew Reid, Alok Choudhary, Ankit Agrawal</i>	
Automated Clinical Coding with Multiclass ICD Prediction	1276
<i>Supriya Khadka, Xiaorui Jiang, Vasile Palade</i>	
Real-Time Remaining Useful Life Prediction with LSTM Priority Resampling	1282
<i>Tori Wright, Bulent Soykan, Sean Mondesire</i>	
Monte Carlo-Type Neural Operator for One-Dimensional Differential Equations	1288
<i>Salah Eddine Choutri, Prajwal Chauhan, Othmane Mazhar, Saif Eddin Jabari</i>	
Genotype-to-Phenotype Associations in Yeast with Frequented Region Variants and Deep Learning	1294
<i>Tejaswi Vemuri, Trung Dinh, Zonglin Yang, Thiruvarangan Ramaraj, Joann Mudge, Brendan Mumey</i>	
<i>Indika Kahanda</i>	
YOLO-Based Object Detection for Automated Identification of IVC Filters in Abdominal CT Imaging	1299
<i>Mykle Buhrow, Ian Nie, Naeem Seliya, Joseph Wildenberg, Rahul Gomes</i>	
Ensembles of Statistically Independent Models: A Method for Semi-Supervised Domain Adaptation	1305
<i>Nicholas Josselyn, Walter Gerych, Biao Yin, Ziming Zhang, Elke Rundensteiner</i>	
Multimodal Foundation Models for Zero-Shot Water Stress Forecasting in Precision Agriculture	1311
<i>Seyed Hamidreza Nabaei, Zeyang Zheng, Dong Chen, Arsalan Heydarian</i>	
Prompt Learner for Industrial Anomaly Detection: Towards Generalizable Multimodal Defect	1319
<i>Yen-Han Chiang, Pablo Mollá, Yi-Lun Pan, Yi-Ju Tseng, Vincent S. Tseng</i>	
A Multimodal Machine Learning Approach for Solar Flare Prediction Using Polarity Inversion Lines	
Data with Low-Rank Fusion	1327
<i>Ziba Khani, Reza Mansouri, Rafal A. Angryk, Berkay Aydin</i>	
Background-Aware Instance Segmentation for Early Detection of E. coli and Salmonella in	
Time-Stamped Microscopy Images	1335
<i>Bibek Koirala, Anas M. Alsobeh, Namariq Dhahir, Amer AbuGhazaleh</i>	
JaiLIP: Jailbreaking Vision-Language Models via Loss Guided Image Perturbation	1343
<i>Md Jueal Mia, M. Hadi Amini</i>	

Privacy-Preserving Multimodal Stress Detection from Wearables with Attention Fusion and Federated Learning	1350
<i>Mohd Farhan Israk Soumik, Hussein Zangoti, Ebrahim Maghsoudlou, Awal Ahmed Fime, Ahmed Imteaj Abdur R. Shahid</i>	
Pi-talk: Edge-Only, Adapter-Tuned Multimodal Small Language Model for Safe, Real-Time In-Vehicle Dialogue	1357
<i>Alex Pissinou Makki, Vahid Tarokh, Louis Lago Enamorado, Carlos Carroz, Miguel Garcia, Niki Pissinou</i>	
Morphology-Inspired Optimization with Deep Learning for Sedimentary Particle Segmentation in Petrographic Microscope Images	1365
<i>Tahmid Anjum Bin Haroon, Md Golam Kibria, Md Belayat Hossain</i>	
SecureFixAgent: A Hybrid LLM Agent for Automated Python Static Vulnerability Repair	1371
<i>Jugal Gajjar, Kamalasankari Subramaniakuppusamy, Relsy Puthal, Kaustik Ranaware</i>	
LLMZ+: Contextual Prompt Whitelist Principles for Agentic LLMs	1377
<i>Tom Pawelek, Raj Patel, Charlotte Crowell, Noorbakhsh Amiri Golilarz, Sudip Mittal, Shahram Rahimi Andy Perkins</i>	
Detection of LLM Hallucinations Using Late Internal Representations	1384
<i>Sakhawat Hossan, Jing Deng</i>	
Breaking and Securing Vision-Language Models: An Adversarial Robustness Study	1392
<i>Md Zarif Hossain, Abdur R. Shahid, Ahmed Imteaj</i>	
Improving Robustness of Large Language Models Used in Healthcare Through Prompt Engineering	1398
<i>Jonathan O'Berry, Indika Kahanda, Upulee Kanewala</i>	
Jailbreaking Large Vision Language Models in Intelligent Transportation Systems	1404
<i>Badhan Chandra Das, Md Tasnim Jawad, Md Jueal Mia, M. Hadi Amini, Yanzhao Wu</i>	
Retrieval-Augmented Multi-Agent System for Rapid Statement of Work Generation	1411
<i>Amulya Suravarjula, Rashi Chandrashekhar Agrawal, Sakshi Jayesh Patel, Rahul Gupta</i>	
Black drama: between hate speech and algorithmic racism	1419
<i>Cássia C. S. Rosa, Renato Porfirio Ishii, Fábio Henrique Viduani Martinez</i>	
MCP-AI: Protocol-Driven Intelligence Framework for Autonomous Reasoning in Healthcare	1427
<i>Zag ElSayed, Craig Erickson, Ernest Pedapati</i>	
Reducing Domain Gap with Diffusion-Based Domain Adaptation for Cell Counting	1433
<i>Mohammad Dehghanmanshadi, Wallapak Tavanapong</i>	
Tabular Data with Class Imbalance: Predicting Electric Vehicle Crash Severity with Pretrained Transformers (TabPFN) and Mamba-Based Models	1441
<i>Shriyank Somvanshi, Pavan Hebli, Gaurab Chhetri, Subasish Das</i>	
LLMs as Agentic Cooperative Players in Multiplayer UNO	1447
<i>Yago Romano Martinez, Jesse Roberts</i>	
BRAINS: A Retrieval-Augmented System for Alzheimer's Detection and Monitoring	1454
<i>Rajan Das Gupta, Md Kishor Morol, Nafiz Fahad, Md Tanzib Hosain, Sumaya Binte Zilani Choya Md Jakir Hossen</i>	

Generation of Programmatic Rules for Document Forgery Detection Using Large Language Models	1460
<i>Valentin Schmidberger, Manuel Eberhardinger, Setareh Maghsudi, Johannes Maucher</i>	
LLM Chatbot for Autonomous User Support in High-Performance Computing (HPC)	1468
<i>Rajesh Pasupuleti, Ravi Vadapalli, Christopher Mader, Subhan Shakoor</i>	
NLD-LLM: A systematic framework for evaluating small language transformer models on natural language description	1475
<i>Hamed Jelodar, Mohammad Meymani, Parisa Hamed, Tochukwu Emmanuel Nwankwo, Samita Bai Roozbeh Razavi-Far, Ali A. Ghorbani</i>	
Language Models as Decision Support Systems for Directional Network Maneuvering	1482
<i>Carlos Flores-Molina, Alex Bordetsky, Marko Orescanin</i>	