16th International Conference on Agents and Artificial Intelligence (ICAART 2024)

Volume 2

Rome, Italy 24-26 February 2024

Editors:

Ana Paula Rocha Luc Steels Jaap van den Herik

ISBN: 978-1-7138-9748-4

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© (2024) by SCITEPRESS – Science and Technology Publications, Lda. All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

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

INVITED SPEAKERS

KEYNOTE SPEAKERS

Tai-Che Feng and Sheng-De Wang

Mattias Wahde, Minerva Suvanto and Marco L. Della Vedova

Is Artificial Consciousness the Missing Ingredient for Ethical AI? Antonio Chella	5
Understanding and Improving the Next Generation of Conversational Systems: Trends, Challenges and Future <i>Luis Fernando D'Haro Enriquez</i>	7
The Major Challenges for Cyber Security and AI <i>Pavan Duggal</i>	9
ARTIFICIAL INTELLIGENCE	
Full Papers	
Deep Reinforcement Learning and Transfer Learning Methods Used in Autonomous Financial Trading Agents Ciprian Paduraru, Catalina Camelia Patilea and Stefan Iordache	15
Adaptive Action Supervision in Reinforcement Learning from Real-World Multi-Agent Demonstrations Keisuke Fujii, Kazushi Tsutsui, Atom Scott, Hiroshi Nakahara, Naoya Takeishi and Yoshinobu Kawahara	27
Hybrid Quanvolutional Echo State Network for Time Series Prediction Rebh Soltani, Emna Benmohamed and Hela Ltifi	40
VP-DARTS: Validated Pruning Differentiable Architecture Search	47

Lazy Nested Monte Carlo Search for Coalition Structure Generation Milo Roucairol, Jérôme Arjonilla, Abdallah Saffidine and Tristan Cazenave

Identification of Opinion and Ground in Customer Review Using Heterogeneous Datasets Po-Min Chuang, Kiyoaki Shirai and Natthawut Kertkeidkachorn A Challenging Data Set for Evaluating Part-of-Speech Taggers

Dataset Characteristics and Their Impact on Offline Policy Learning of Contextual Multi-Armed Bandits 87 Piotr Januszewski, Dominik Grzegorzek and Paweł Czarnul Improving Parameter Training for VQEs by Sequential Hamiltonian Assembly

Jonas Stein, Navid Roshani, Maximilian Zorn, Philipp Altmann, Michael Kölle and 99 Claudia Linnhoff-Popien

CNNs Sparsification and Expansion for Continual Learning Basile Tousside, Jörg Frochte and Tobias Meisen

58

68

79

Metrics for Popularity Bias in Dynamic Recommender Systems Valentijn Braun, Debarati Bhaumik and Diptish Dey	121
Investigation into the Training Dynamics of Learned Optimizers Jan Sobotka, Petr Šimánek and Daniel Vašata	135
HierNet: Image Recognition with Hierarchical Convolutional Networks Levente Tempfli and Csanád Sándor	147
Garment Returns Prediction for AI-Based Processing and Waste Reduction in E-Commerce Marie Niederlaender, Aena Nuzhat Lodi, Soeren Gry, Rajarshi Biswas and Dirk Werth	156
GNNDLD: Graph Neural Network with Directional Label Distribution Chandramani Chaudhary, Nirmal Kumar Boran, N. Sangeeth and Virendra Singh	165
Exploring Unsupervised Anomaly Detection with Quantum Boltzmann Machines in Fraud Detection Jonas Stein, Daniëlle Schuman, Magdalena Benkard, Thomas Holger, Wanja Sajko, Michael Kölle, Jonas Nüßlein, Leo Sünkel, Olivier Salomon and Claudia Linnhoff-Popien	177
Multi-Granular Evaluation of Diverse Counterfactual Explanations Yining Yuan, Kevin McAreavey, Shujun Li and Weiru Liu	186
Multiple Agents Dispatch via Batch Synchronous Actor Critic in Autonomous Mobility on Demand Systems Jiyao Li and Vicki H. Allan	198
Knowledge Modelling, Strategy Designing, and Agent Engineering for Reconnaissance Blind Chess Robin Stöhr, Shuai Wang and Zhisheng Huang	210
Fingerprint Large Classification Using Sequential Learning on Parallel Environment Nicolás A. Reyes-Reyes, Marcela C. González-Araya and Wladimir E. Soto-Silva	222
DRL4HFC: Deep Reinforcement Learning for Container-Based Scheduling in Hybrid Fog/Cloud System Ameni Kallel, Molka Rekik and Mahdi Khemakhem	231
An Analysis of Knowledge Representation for Anime Recommendation Using Graph Neural Networks Yuki Saito, Shusaku Egami, Yuichi Sei, Yasuyuki Tahara and Akihiko Ohsuga	243
Foundations of Dispatchability for Simple Temporal Networks with Uncertainty Luke Hunsberger and Roberto Posenato	253
Big Data Synthesis and Class Imbalance Rectification for Enhanced Forest Fire Classification Modeling Fatemeh Tavakoli, Kshirasagar Naik, Marzia Zaman, Richard Purcell, Srinivas Sampalli, Abdul Mutakabbir, Chung-Horng Lung and Thambirajah Ravichandran	264
A Hierarchical Anytime k-NN Classifier for Large-Scale High-Speed Data Streams Aarti, Jagat Sesh Challa, Hrishikesh Harsh, Utkarsh D., Mansi Agarwal, Raghav Chaudhary, Navneet Goyal and Poonam Goyal	276
Neural Architecture Search for Bearing Fault Classification Edicson Santiago Bonilla Diaz, Enrique Naredo, Nicolas Francisco Mateo Díaz, Douglas Mota Dias, Maria Alejandra Bonilla Diaz, Susan Harnett and Conor Ryan	288

A Probabilistic Approach for Detecting Real Concept Drift Sirvan Parasteh and Samira Sadaoui	301
Optimization of Fuzzy Rule Induction Based on Decision Tree and Truth Table: A Case Study of Multi-Class Fault Diagnosis Abdelouadoud Kerarmi, Assia Kamal-Idrissi and Amal El Fallah Seghrouchni	312
Towards Efficient Quantum Anomaly Detection: One-Class SVMs Using Variable Subsampling and Randomized Measurements Michael Kölle, Afrae Ahouzi, Pascal Debus, Robert Müller, Daniëlle Schuman and Claudia Linnhoff-Popien	324
On Handling Concept Drift, Calibration and Explainability in Non-Stationary Environments and Resources Limited Contexts <i>Sara Kebir and Karim Tabia</i>	336
Scalable Prediction of Atomic Candidate OWL Class Axioms Using a Vector-Space Dimension Reduced Approach Ali Ballout, Célia da Costa Pereira and Andrea G. B. Tettamanzi	347
Dynamically Choosing the Number of Heads in Multi-Head Attention Fernando Fradique Duarte, Nuno Lau, Artur Pereira and Luís Paulo Reis	358
Embryo Development Stage Onset Detection by Time Lapse Monitoring Based on Deep Learning Wided Souid Miled, Sana Chtourou, Nozha Chakroun and Khadija Kacem Berjeb	368
Diversifying Knowledge Enhancement of Biomedical Language Models Using Adapter Modules and Knowledge Graphs Juraj Vladika, Alexander Fichtl and Florian Matthes	376
An Optimised Ensemble Approach for Multivariate Multi-Step Forecasts Using the Example of Flood Levels Michel Spils and Sven Tomforde	388
Parameter-Free Undersampling for Multi-Label Data Sarbani Palit and Payel Sadhukhan	397
Efficient and Flexible Topic Modeling Using Pretrained Embeddings and Bag of Sentences Johannes Schneider	407
A Survey of Deep Learning: From Activations to Transformers Johannes Schneider and Michalis Vlachos	419
DGDNN: Decoupled Graph Diffusion Neural Network for Stock Movement Prediction Zinuo You, Zijian Shi, Hongbo Bo, John Cartlidge, Li Zhang and Yan Ge	431
Spiral Drawing Test and Explainable Convolutional Neural Networks for Parkinson's Disease Detection Francesco Mercaldo, Luca Brunese, Mario Cesarelli, Fabio Martinelli and Antonella Santone	443
ALISE: An Automated Literature Screening Engine for Research Hendrik Roth and Carsten Lanquillon	453
Predicting Major Donor Prospects Using Machine Learning Greg Lee, Aishwarya Vaishali Sathyamurthi and Mark Hobbs	462

Depth-Enhanced 3D Deep Learning for Strawberry Detection and Widest Region Identification in Polytunnels Gabriel Lins Tenorio, Weria Khaksar and Wouter Caarls	471
Learning Occlusions in Robotic Systems: How to Prevent Robots from Hiding Themselves Jakob Nazarenus, Simon Reichhuber, Manuel Amersdorfer, Lukas Elsner, Reinhard Koch, Sven Tomforde and Hossam Abbas	482
On Learning Bipolar Gradual Argumentation Semantics with Neural Networks Caren Al Anaissy, Sandeep Suntwal, Mihai Surdeanu and Srdjan Vesic	493
A Coachable Parser of Natural Language Advice Christodoulos Ioannou and Loizos Michael	500
Multiple Relations Classification Using Imbalanced Predictions Adaptation Sakher Khalil Alqaaidi, Elika Bozorgi and Krzysztof J. Kochut	511
EAPC: Emotion and Audio Prior Control Framework for the Emotional and Temporal Talking Face Generation <i>Xuan-Nam Cao, Quoc-Huy Trinh, Quoc-Anh Do-Nguyen, Van-Son Ho, Hoai-Thuong Dang and Minh-Triet Tran</i>	520
Machine Learning-Based Optimization of E-Commerce Advertising Campaigns Arti Jha, Pratyut Sharma, Ritik Upmanyu, Yashvardhan Sharma and Kamlesh Tiwari	531
I-AM-Bird: A Deep Learning Approach to Detect Amazonian Bird Species in Residential Environments <i>Lucas Ferro Zampar and Clay Palmeira da Silva</i>	542
Evaluating Data Augmentation Techniques for Coffee Leaf Disease Classification Adrian Gheorghiu, Iulian-Marius Tăiatu, Dumitru-Clementin Cercel, Iuliana Marin and Florin Pop	549
Second-Order Learning with Grounding Alignment: A Multimodal Reasoning Approach to Handle Unlabelled Data Arnab Barua, Mobyen Uddin Ahmed, Shaibal Barua, Shahina Begum and Andrea Giorgi	561
Analysis of the Effectiveness of Large Language Models in Assessing Argumentative Writing and Generating Feedback Daisy Cristine Albuquerque da Silva, Carlos Eduardo de Mello and Ana Cristina Bicharra Garcia	573
LIDL4Oliv: A Lightweight Incremental Deep Learning Model for Classifying Olive Diseases in Images Emna Guermazi, Afef Mdhaffar, Mohamed Jmaiel and Bernd Freisleben	583
Towards the Use of AI-Based Tools for Systematic Literature Review Lotfi Souifi, Nesrine Khabou, Ismael Bouassida Rodriguez and Ahmed Hadj Kacem	595
A Unified Conceptual Framework Integrating UML and RL for Efficient Reconfiguration Design Amen Ben Hadj Ali and Samir Ben Ahmed	604
Hybrid Mechanistic Neural Network Modelling of the Degree of Cure of Polymer Composite Samuel Sells and Jie Zhang	614

Examining Decision-Making in Air Traffic Control: Enhancing Transparency and Decision Support Through Machine Learning, Explanation, and Visualization: A Case Study

Christophe Hurter, Augustin Degas, Arnaud Guibert, Maelan Poyer, Nicolas Durand, Alexandre Veyrie, Ana Ferreira, Nicola Cavagnetto, Stefano Bonelli, Mobyen Uddin Ahmed, Waleed Jmoona, Shaibal Barua, Shahina Begum, Giulia Cartocci, Gianluca Di Flumeri, Gianluca Borghini, Fabio Babiloni and Pietro Aricó

Using Chatbot Technologies to Support Argumentation

Luis Henrique Herbets de Sousa, Guilherme Trajano, Analúcia Schiaffino Morales, Stefan Sarkadi 635 and Alison R. Panisson

Spread and (Mis)use of Evaluative Expressions in Human Written and LLM-Based Generated Text Maurice Langner and Ralf Klabunde 646

AUTHOR INDEX

655