

2024 IEEE International Conference on Agents (ICA 2024)

**Wollongong, Australia
4-6 December 2024**



IEEE Catalog Number: CFP24H09-POD
ISBN: 979-8-3315-3992-4

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
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:	CFP24H09-POD
ISBN (Print-On-Demand):	979-8-3315-3992-4
ISBN (Online):	979-8-3315-3991-7

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

CURRAN ASSOCIATES INC.
proceedings
.com

2024 IEEE International Conference on Agents (ICA) ICA 2024

Table of Contents

Preface	ix
Conference Organization	x
Program Committee	xi

ICA 2024

A BDI Agent-Based Asynchronous Scheduling Framework For Cloud Computing	1
<i>Yikun Yang (University of Wollongong, Australia), Fenghui Ren (University of Wollongong, Australia), Minjie Zhang (University of Wollongong, Australia), Jun Yan (University of Wollongong, Australia), Fei Xie (Wenzhou Business College, China), and Weiwei Gao (Wenzhou Business College, China)</i>	
A Comparison of the Performance of ResNet and DenseNet for Obstacle Avoidance and Path Following on a Mobile Robot Using Embedded GPUs	7
<i>Shengjun Ma (Auckland University of Technology, New Zealand), Pawan Sudhir Karkal (Auckland University of Technology, New Zealand), Jing Ma (Auckland University of Technology, New Zealand), and Fakhrul Alam (Auckland University of Technology, New Zealand)</i>	
A Framework Design of a Personalized Learning Pathway Recommendation	13
<i>Feilai Zhou (Central China Normal University Wuhan, China) and Lei Niu (Central China Normal University Wuhan, China)</i>	
A Modularized Agent-Based Framework for Causal-Based Policy-Making	15
<i>Shuang Chang (Fujitsu Research, Fujitsu Ltd., Japan)</i>	
A Multiple-Nash-SA Mediator for Huge Design Utility Spaces in Automated Negotiations	19
<i>Takayuki Ito (Kyoto University, Japan)</i>	
Achieving Preferable Agreement by Utilizing Offline Negotiation Dialogue on Decision Transformer	25
<i>Yuta Ohno (Chiba University, Japan) and Sachiyo Arai (Chiba University, Japan)</i>	
Action-Integrated QAttn: Introducing Action Values Into Value Decomposition for Effective Cooperation Among Heterogenous Agents	31
<i>Naohiro Takakuwa (Chiba University, Japan) and Sachiyo Arai (Chiba University, Japan)</i>	

An Adaptive BDI Agent-Based System Design for Distributed 3D-Container Loading	33
<i>Yikun Yang (University of Wollongong, Australia), Fenghui Ren (University of Wollongong, Australia), Minjie Zhang (University of Wollongong, Australia), Jun Yan (University of Wollongong, Australia), Shujin Jia (Baosteel Group Corporation, China), and Jing Wen (Baosteel Group Corporation, China)</i>	
An Agent-Based Decentralised Approach to Disturbances in Rail Systems	37
<i>Kevin Malysiak (University of Wollongong, Australia), Fenghui Ren (University of Wollongong, Australia), and Bo Du (Griffith University, Australia)</i>	
Autonomous Driving Agents for Safe Road Junctions Through Deep Reinforcement Learning	39
<i>Jie Yun (University of South Australia, Australia) and Zehong Cao (University of Tasmania, Australia)</i>	
BDI Agents Based Dynamic Resource Allocation in Emergency Scenarios	45
<i>Junhui Shang (University of Wollongong, Australia), Jun Yan (University of Wollongong, Australia), and Fenghui Ren (University of Wollongong, Australia)</i>	
Can Curiosity Enhance the Quality of on-Demand Delivery Services?	50
<i>Riku Yoshioka (Nagoya Institute of Technology, Japan), Koichi Moriyama (Nagoya Institute of Technology, Japan), and Yuko Sakurai (Nagoya Institute of Technology, Japan)</i>	
Causality-Guided Exploration for Multi-Agent Reinforcement Learning	56
<i>Zhonghai Ruan (Sun Yat-sen University, China) and Chao Yu (Sun Yat-sen University, China)</i>	
Density-Based Hysteretic Learning for Fully Decentralised Environments	60
<i>Brighter Agyemang (University of Wollongong), Fenghui Ren (University of Wollongong), and Jun Yan (University of Wollongong)</i>	
Disentangled Task Representation Learning for Offline Meta Reinforcement Learning	64
<i>Shan Cong (Sun Yat-sen University, China; Pengcheng Laboratory, China), Chao Yu (Sun Yat-sen University, China; Pengcheng Laboratory, China), Yaowei Wang (Pengcheng Laboratory, China), Dongmei Jiang (Pengcheng Laboratory, China), and Xiangyuan Lan (Pengcheng Laboratory, China)</i>	
Event Sourcing in Jason: Event-Driven State Reconstruction for BDI Agents	70
<i>Curtis Davies (Carleton University, Canada) and Babak Esfandiari (Carleton University, Canada)</i>	
Event-Triggered Reinforcement Learning to Obtain Stable Train Operation Strategies	76
<i>Hayato Chujo (Chiba University, Japan) and Sachiyo Arai (Chiba University, Japan)</i>	
Exploring Epistemic and Distributional Uncertainties in Algorithmic Trading Agents	82
<i>Justin Loh (Nanyang Technological University, Singapore), Li Rong Wang (Nanyang Technological University, Singapore), Chang Liu (Beijing University of Technology, China), Chanwoo Choi (Won-Kwang University, South Korea), Siyuan Liu (Nanyang Technological University, Singapore), and Xiuyi Fan (Nanyang Technological University, Singapore)</i>	

Fair Influence Maximization in Social Networks: A Group-Fairness-Aware Multi-Objective Grey Wolf Optimizer	88
<i>Ziying Zhao (Auckland University of Technology, New Zealand), Weihua Li (Auckland University of Technology, New Zealand), Jing Ma (Auckland University of Technology, New Zealand), Jianhua Jiang (Jilin University of Finance and Economics Changchun, P. R. China), and Quan Bai (University of Tasmania, Australia)</i>	
Heterogeneity and Isomerism Based Improved Sugarscape Modeling for Real Estate Market Cycles	94
<i>Wei Deng (Southwestern University of Finance, China), Lan Wang (Southwestern University of Finance and Economics, China), Xinyu Meng (Southwestern University of Finance and Economics, China), and Guoyin Wang (Chongqing University of Posts and Telecommunications, China)</i>	
HGAttack: Transferable Heterogeneous Graph Adversarial Attack	100
<i>He Zhao (Nanyang Technological University, Singapore), Zhiwei Zeng (Nanyang Technological University, Singapore), Yongwei Wang (Nanyang Technological University, Singapore), Deheng Ye (Tencent, China), and Chunyan Miao (Nanyang Technological University, Singapore)</i>	
Improving the Execution Time of a Path Negotiation Method Using a Task-Based Utility Function	106
<i>Takahiro Uchiya (Nagoya Institute of Technology, Japan) and Ichi Takumi (Nagoya Institute of Technology, Japan)</i>	
Inverse Bayesian Inference for Player Agents in Computer Daihinmin Game	108
<i>Ayano Ibuka (Ibaraki University, Japan) and Kazuto Sasai (Ibaraki University, Japan)</i>	
KANStock: A KAN-Integrated Reinforcement Learning Approach for Predictive Portfolio Management with Dynamic Risk Control	110
<i>Xiawei Wu (Sun Yat-sen University, China), Chao Yu (Sun Yat-sen University, China), and Weiqi Luo (Sun Yat-sen University, China)</i>	
Large Size Magic Square Generation Using Multi-Stage Evolutionary Strategy	114
<i>Kazuki Takemi (Nagoya Institute of Technology, Japan), Takuto Sakuma (Nagoya Institute of Technology, Japan), and Shohei Kato (Nagoya Institute of Technology, Japan)</i>	
LLM-Based Agent for Recommending Information Related to Web Discussions at Appropriate Timing	120
<i>Takayoshi Sakurai (Nagoya Institute of Technology, Japan), Shun Shiramatsu (Nagoya Institute of Technology, Japan), and Ryosuke Kinoshita (Nagoya Institute of Technology, Japan)</i>	
LLM-Based Automated Facilitator for Building Effective Consensus on Mission and Vision Definition	124
<i>Qilin Liu (Department of Computer Science, Nagoya Institute of Technology, Japan) and Shun Shiramatsu (Department of Computer Science, Nagoya Institute of Technology, Japan)</i>	

Multi-Agent Approach for Dynamic Research Insight Path Generation	128
<i>Jinghong Li (Division of Advanced Science and Technology, Japan Advanced Institute of Science and Technology, Japan), Prarinya Siritanawan (Shinshu University, Japan), Wen Gu (Center for Innovative Distance Education and Research, Japan Advanced Institute of Science and Technology, Japan), and Shinobu Hasegawa (Center for Innovative Distance Education and Research, Japan Advanced Institute of Science and Technology, Japan)</i>	
Multi-Agent-Based Decomposition and Coordination for Solving Non-Convex Constrained Optimization in Cogeneration System with Transmission Loss	130
<i>Dechen Jiang (Xiangtan University, China), Chixin Xiao (Xiangtan University, China), and Maoxin He (Xiangtan University, China)</i>	
RGD: Multi-LLM Based Agent Debugger via Refinement and Generation Guidance	136
<i>Haolin Jin (University of Sydney), Zechao Sun (University of Sydney), and Huaming Chen (University of Sydney)</i>	
Self-Refinement of Reward Function by Utilizing Failure Trajectories	142
<i>Kota Minoshima (Chiba University, Japan) and Sachiyo Arai (Chiba University, Japan)</i>	
Smart Crystal Ball on a Budget: Reinforcement Learning and Prediction for Budget-Friendly Comfort	146
<i>Narjes Nourzad (Department of Electrical and Computer Engineering), Bhaskar Krishnamachari (Department of Electrical and Computer Engineering), and Matthew Kahn (University of Southern California, CA)</i>	
Synaptic Weight Optimization for Oscillatory Neural Networks: A Multi-Agent RL Approach	152
<i>Shuhao Liao (Beihang University, China), Xuehong Liu (Beihang University, China), Wenjun Wu (Beihang University, China), Rongye Shi (Beihang University, China), Junyu Zhang (Beihang University, China), and Haopeng Wang (Beihang University, China)</i>	
The Collaborative Intelligent Mathematics Tutoring Agent Platform	159
<i>Hao Meng (University of Wollongong, Australia), Qian Zhao (Shenyang University of Technology, China), Xiaosong Wang (Shandong Technology and Business University, China), Jun Shen (University of Wollongong, Australia), Yunheng Luo (University of Wollongong, Australia), and Fei Xie (Institute of Micro-nano Structures & Optoelectronics, Wenzhou Business College, China)</i>	
TraderTalk: An LLM Behavioural ABM Applied to Simulating Human Bilateral Trading Interactions	164
<i>Alicia Vidler (UNSW) and Toby Walsh (UNSW)</i>	
User Equipment Privacy and Security Issues in 5G Network	168
<i>Danish Khan (University of Southern Queensland, Australia), Xujuan Zhou (University of Southern Queensland, Australia), Jianming Yong (University of Southern Queensland, Australia), and Xiaohui Tao (University of Southern Queensland, Australia)</i>	
Author Index	175