

ICONIP 2025

APNNS
Asia Pacific Neural Network Society



32nd International Conference on Neural Information Processing
35th Annual Meeting of Japanese Neural Network Society

November 20-24, 2025

Okinawa Institute of Science and Technology (OIST), Japan

Keynote Speakers

Asako Kanezaki, Institute of Science Tokyo

Yew Soon Ong, Nanyang Technological University

Jun Tani, Okinawa Institute of Science and Technology



<https://iconip2025.apnns.org>



Welcome to ICONIP 2025 Okinawa!

It is our great pleasure to hold [ICONIP 2025](#), the joint meeting of the 32nd International Conference on Neural Information Processing of [the Asia Pacific Neural Network Society \(APNNS\)](#) and the 35th Annual Meeting of [the Japanese Neural Network Society \(JNNS\)](#), at [Okinawa Institute of Science and Technology \(OIST\)](#).

Since the last pandemic, ICONIP has been held in online or hybrid format, but this year, the main conference is held in a fully in-person format. We believe unexpected encounters and spontaneous discussions are the most exciting and important aspects of conferences, and we hope ICONIP will provide ample opportunities.

There are a few more novelties at ICONIP 2025. We made the three days of main conference single-track, so that the community can gain common understanding from well selected talks. To complement this, we allocated extended time for poster sessions for interactive exchanges of knowledge and ideas.

Also new is the introduction of OpenReview platform for paper submission and reviewing, which enables best matching of papers to reviewers' expertise. This year's ICONIP received 1,092 submissions and 426 papers were accepted, resulting in the acceptance rate of 39%. We hope that all authors benefitted from quality reviews and appreciate all the hard works by the reviewers and program committee members.

Despite the inflation these days, we strived to keep the registration fees as low as possible, especially for student members. We thank Okinawa Prefecture for generous financial support and OIST for providing the superb conference facility.

We hope all the participants enjoy encounters and discussions in and outside the sessions and also enjoy the distinct nature and culture of Okinawa, a historic center of exchanges across Asia-Pacific countries.

Kenji Doya and Maryam Doborjeh, ICONIP 2025 General Chairs

Kevin Wong, APNNS President

Shin Ishii, JNNS President

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ICONIP 2025 Organizers

Honorary Chairs

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Siddhartha Bhattacharyya, VSB Technical University of Ostrava, Czech Republic

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Asia Pacific Neural Network Society (APNNS)



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Okinawa Institute of Science and Technology (OIST)

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About ICONIP 2025

Welcome to ICONIP 2025, the joint meeting of the 32nd International Conference on Neural Information Processing of the Asia Pacific Neural Network Society (APNNS) and the 35th Annual Meeting of the Japanese Neural Network Society (JNNS), held at Okinawa Institute of Science and Technology (OIST), Japan, November 20 – 25, 2025.

The mission of APNNS and JNNS is to promote active interactions among researchers, scientists, and industry professionals who are working in neural networks and related fields in the Asia-Pacific region and in Japan. ICONIP aims to provide a leading international forum for researchers, scientists, and industry professionals who are working in neuroscience, neural networks, deep learning, and related fields to share their new ideas, progress, and achievements.

ICONIP 2025 received 1092 papers for peer review. Of these, 197 papers were accepted for publication in Lecture Notes in Computer Science (LNCS), representing an acceptance rate of 18.04% and reflecting the increasingly high quality of research in neural networks and related areas. From the remaining 895 papers, 229 papers (25.59%) were accepted for publication in Communications in Computer and Information Science (CCIS) series volumes.

The conference focuses on three main areas, i.e., "Theory and Algorithms," "Computational Neurosciences," and "Applications and Frontiers". All the submissions were rigorously reviewed by the conference Program Committee (PC). The single-blind review process ensured that every paper was reviewed by multiple experts, with each submission receiving approximately 2.67 reviews on average.

We would like to take this opportunity to thank all the authors for submitting their papers to our conference, and our great appreciation goes to the PC members and the reviewers who devoted their time and effort to our rigorous peer-review process; their insightful reviews and timely feedback ensured the high quality of the papers accepted for publication. We hope you enjoy the research program at the conference.

Tadahiro Taniguchi and Andrew Chi Sing Leung, Program Chairs

Tadashi Kozuno, Associate Program Chair

Tatsuya Daikoku, Special Session Chair

Masakazu Taira, Tutorial and Workshop Chair

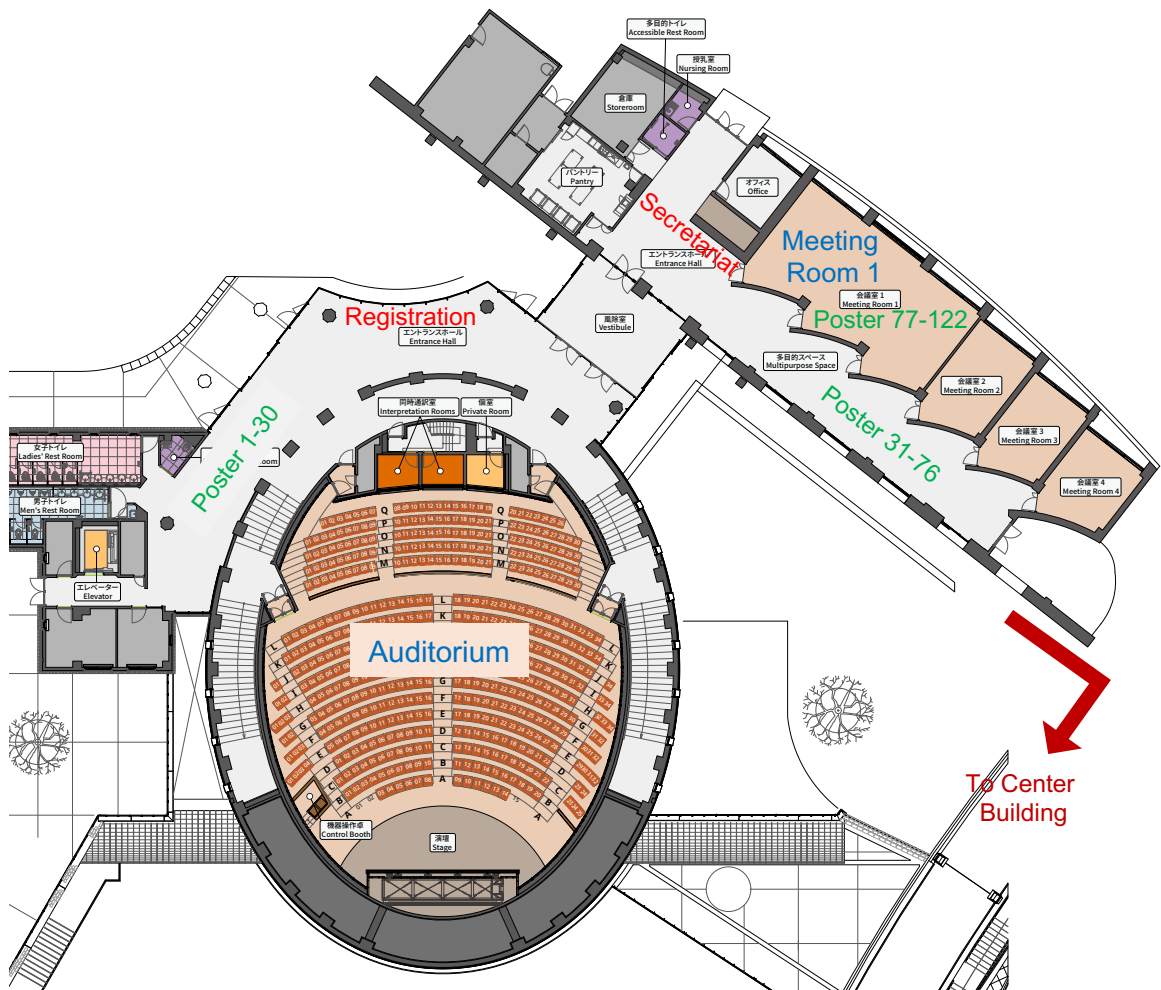
Junichiro Yoshimoto and Mufti Mahmud, Publication Chairs

Maryam Dobarjeh and Kenji Doya, General Chairs

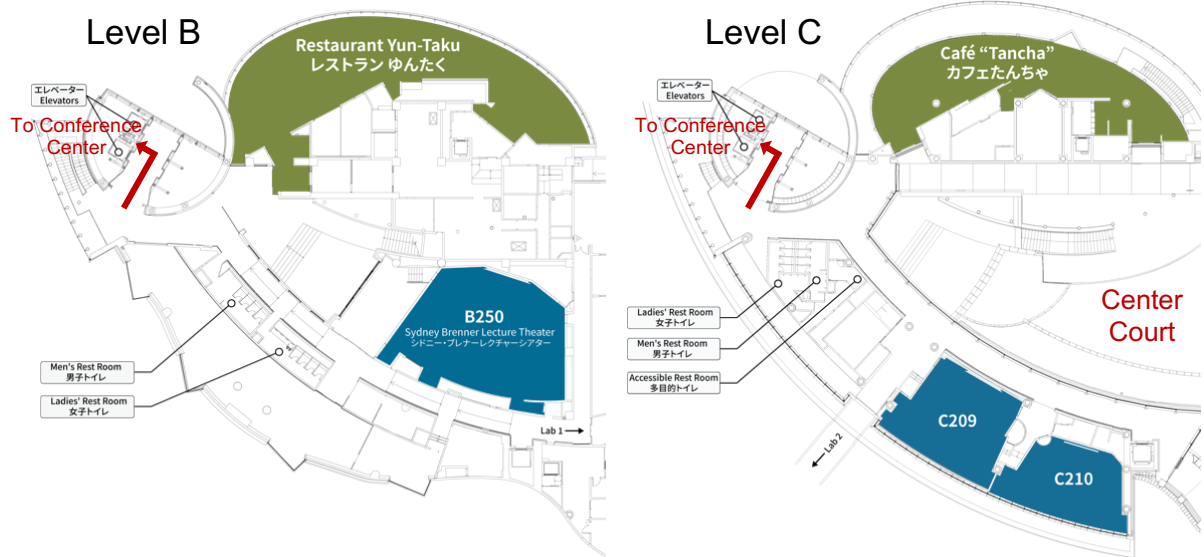
ICONIP 2025 Schedule											
Day	Auditorium	Meeting Room 1	B250	C209	C210	Auditorium	Sun 23 Nov	Sat 22 Nov	Fri 21 Nov	Thu 20 Nov	Day
Room	493	130	144	60	60	493	Auditorium	Auditorium	Auditorium	Meeting Room 1	Room
capacity											capacity
9:00	Registration (Foyer)							Keynote Lecture 2 Yew Soon Ong	Keynote Lecture 1 Jun Tani		9:00
9:20							Break	Break	Break		9:20
9:40											9:40
10:00	Tutorial 1 Mathematical Theories of Deep Foundation Models	Tutorial 4 Improved Explainability with Spiking Neural Networks for Spatiotemporal Brain Data Modelling	Tutorial 2 The Free-Energy Principle for AI Researchers and Neuroscientists	Tutorial 3 AI for Human Neuroscience Research: Generative AI Modeling and Large-Scale Analysis	Tutorial 5 A Methodology for Designing Brain-Like AI Software	Oral Session 1 Student Best Paper Award Session	Oral Session 3	Oral Session 5	Oral Session 1 Student Best Paper Award Session		10:00
10:20							Break	Break	Break		10:20
10:40											10:40
11:00											10:40
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14:20											14:00
14:40	Opening										14:20
15:00							Flash Talks 1	Flash Talks 2	Flash Talks 3		14:40
15:20	Special Session 5 Computer Vision and Language Understanding	Special Session 7 Imitation Learning and Latent Models Applicable to Real-World Robotics	Special Session 4 Toward Safe Brain-Inspired AI	Special Session 8 Deep Learning Applications for Smart Agriculture		Poster Session 1 (Foyer and Meeting Room 1)	Poster Session 2 (Foyer and Meeting Room 1)	Poster Session 3 (Foyer and Meeting Room 1)			15:00
15:40											15:20
16:00											15:40
16:20											16:00
16:40											16:20
17:00											16:40
17:20											17:00
17:40	Reception (Foyer)										17:20
18:00							Special Session 2 Generative AI and Deep Learning for Advancing Affective Human-Robot Interaction	Special Session 1 Sustainable Smart Villages – Harnessing Edge AI and TinyML for Low-Resource Communities	Special Session 3 Reliable, Robust and Secure Machine Learning Algorithms		17:40
18:20											18:00
18:40											18:20
19:00											18:40
19:20											19:00
19:40											19:20
20:00											19:40
20:20											20:00
20:40											20:20

Venue Map

Conference Center



Center Building



Guide for Participants

Registration

Thu. Nov. 20: 9:00-17:00
 Fri. Nov. 21: 8:00-19:00
 Sat.-Sun. Nov. 22-23: 8:30-19:00
 Mon. Nov. 24: 8:30-15:00

Reception

Thu. Nov. 20: 17:20-18:20, Auditorium Foyer
 Open to all conference participants

Banquet

Sat. Nov. 22: 19:00-21:00, Center Building Level C, Center Court
 Pre-registration required

WiFi Connection

Please use eduroam or OIST-Public

Web page for further information:

<https://iconip2025.apnns.org/for-participants/>

Shuttle Bus Schedule

Please check the web for the bus routes

<https://iconip2025.apnns.org/plan-your-visit/transportation/>

Shuttle Bus Time Table		Hotel Departure			OIST Departure				
Hotels		11/20	11/21	11/22 - 24	11/20	11/21	11/22	11/23	11/24
A) South		(Please come to the entrance 5 minutes before departure)							
Renaissance Okinawa Resort		8:45	7:45	8:05	17 : 25 18 : 55	19 : 20 19 : 50	19 : 00 19 : 30 21 : 25	19 : 00 19 : 30	16 : 25
The Moon Beach Museum Resort		9:00	8:00	8:15					
Hotel Monterey Okinawa Spa & Resort		9:05	8:05	8:20					
Kafuu Resort Fuchaku CONDO-HOTEL		9:10	8:10	8:25					
Sheraton Okinawa Sunmarina Resort		9:15	8:15	8:30					
OIST		9:25	8:25	8:40					
B) Rizzan									
Rizzan Sea-Park Hotel Tancha-Bay		9:00	8:00	8:15	17 : 30 18 : 00 19 : 00	19 : 25 19 : 50 20 : 15	19 : 05 19 : 30 21 : 55	19 : 05 19 : 35 20 : 05	16 : 30 16 : 55 17 : 20
OIST		9:10	8:10	8:25					
Rizzan Sea-Park Hotel Tancha-Bay		9:35	8:35	8:40					
OIST		9:45	8:45	8:50					
C) North									
ANA InterContinental Manza Beach Resort		8:55	7:55	8:10	17 : 20 18 : 50	19 : 20 19 : 50	19 : 00 19 : 30 21 : 50	19 : 00 19 : 30	16:20
Manza Beach Mae local bus stop		9:00	8:00	8:15					
OIST Seaside House		9:20	8:20	8:35					
OIST		9:25	8:25	8:40					
D) Hyatt									
Hyatt Regency Seragaki Island Okinawa		9:10	8:10	8:25	17 : 20 18 : 50	19 : 15 19 : 45	18 : 55 21 : 20	18 : 55 19 : 25	16:20
OIST		9:30	8:30	8:45					

Program

Day 1: Thursday November 20th

Tutorial 1: Mathematical Theories of Deep Foundation Models

10:00-12:00 at Auditorium

[Taiji Suzuki](#) (The University of Tokyo)

This lecture explains the mathematical theory for understanding the learning capabilities of deep foundation models. While the development of the deep foundation models is driven by the scaling law, a theoretical understanding of the learning principles behind the scaling law is increasingly important.

Generalization is essential for biological intelligence, as organisms must adapt to changing environments and select appropriate actions. To achieve superior generalization, it is necessary to acquire compressed representations that avoid rote memorization, making representation learning and feature learning fundamental. It has been theoretically shown that deep learning naturally achieves feature learning through its deep structure, thereby gaining various advantages in generalization. This is particularly crucial for diffusion models and Transformers.

However, due to the non-convexity of the loss function, it is not obvious whether appropriate features can be acquired by stochastic gradient descent. This lecture will also cover the theoretical guarantees for this process. Furthermore, feature learning is significant not only during pre-training but also during test-time inference. This will be demonstrated concisely using in-context learning as an example. Additionally, as a theory of test-time inference, the principles by which chain-of-thought and reinforcement learning improve learning efficiency will be introduced.

More detail is available at

<https://url.au.m.mimecastprotect.com/s/tB9tCGv0oyCA4jR5qSKfMsBa1AI?domain=ibis.t.u-tokyo.ac.jp>

Tutorial 2: The Free-energy Principle for AI Researchers and Neuroscientists

10:00-13:00 at B250

[Takuya Isomura](#) (RIKEN Center for Brain Science)

The free-energy principle is a brain theory that has received considerable attention in the fields of neuroscience, artificial intelligence, and robotics. This tutorial introduces the foundations of the free-energy principle and demonstrates its empirical applications to account for various brain functions in terms of variational Bayesian inference. Specifically, its application in motor control and planning is referred to as active inference and is considered a new, biologically grounded control theory. Mathematically, the dynamics of neural activity and synaptic plasticity that minimise an energy function can be cast as performing Bayesian inference that minimises variational free energy. This equivalence licenses the adoption of the free-energy principle as a unified characterisation of artificial and biological neural networks. The virtue of this perspective is that it enables the formal association of neural network

properties with prior and posterior beliefs that characterise inference and learning. This tutorial will introduce the fundamental mathematics of the free-energy principle, explore its real-world applications—including its use in brain data analysis—and include a hands-on session using simple simulation codes implemented in a Jupyter Notebook. Link to python codes:

<https://github.com/takuyaisomura/reverse-engineering-py>

Tutorial 3: AI for Human Neuroscience Research: Generative AI Modeling and Large-Scale Analysis

10:00-13:00 at C209

3-1: Population Analysis of Large-Scale Human MRI Datasets

[Saori Tanaka](#) (ATR, NAIST)

3-2: Human Brain Dynamics Study via Multi-modal Integration and Machine Learning

[Okito Yamashita](#) (ATR, RIKEN API)

3-3: Modeling Human Brain Activity with Generative AI

[Yu Takagi](#) (Nagoya Institute of Technology)

The abstracts and contents of the tutorial are available at the following link.

<https://url.au.m.mimecastprotect.com/s/rkyvCv1rKiAxpORhQfZsQAMG?domain=xsaori.github.io>

Tutorial 4: Improved Explainability with Spiking Neural Networks for Spatiotemporal Brain Data Modelling: Hands-on NeuCube-based-SNN Tutorial

10:00-13:00 at Meeting Room 1

Maryam Doborjeh, Nikola Kasabov (Auckland University of Technology)

This tutorial introduces participants to the principles and applications of Spiking Neural Networks (SNNs) for modelling complex, dynamic brain data. It begins with an overview of biologically inspired SNN models, their learning algorithms—including STDP and supervised methods—and their suitability for temporal brain data. A comparative look at key platforms and techniques for SNN-based modelling will be presented, highlighting opportunities and challenges in working with large, noisy, and spatiotemporal neural signals like EEG and fMRI. The second part of the tutorial will provide a practical demonstration of NeuCube, a software environment developed specifically for modelling spatiotemporal brain data using SNNs. We will walk through how to encode EEG and fMRI data into spike trains, train SNNs using biologically plausible learning mechanisms, and run classification or prediction models on conditions such as tinnitus, stroke, and dementia. Participants will observe how NeuCube supports data visualization, network construction, and dynamic analysis, enabling researchers, students, and professionals to model and explore brain activity in a biologically meaningful way. As interest grows in brain-inspired AI and interpretable neural modelling, SNNs offer a powerful approach to capture the dynamic and sparse nature of brain signals. This tutorial addresses the gap between

SNN theory and practical application, helping the community bridge neuroscience, data science, and AI through spatiotemporal modelling of brain data.

Tutorial 5: A Methodology for Designing Brain-Like AI Software

10:00-13:00 at C210

Yoshimasa Tawatsuji, Hiroshi Yamakawa, Yudai Suzuki (The University of Tokyo / Whole Brain Architecture Initiative)

This tutorial presents a structured methodology for designing and evaluating brain-inspired AI systems using the Brain Reference Architecture (BRA). Participants will learn to construct Brain Information Flow (BIF) diagrams, Hypothetical Component Diagrams (HCDs), and Function Realization Graphs (FRGs). Through hands-on review exercises, they will evaluate BRA datasets based on anatomical plausibility and computational coherence. The session also introduces probabilistic generative modeling for capturing functional properties in brain-morphic architectures.

More detail is available at <https://wba-initiative.org/26684/>

Opening

14:40-15:00 at Auditorium

Special Session 5: Computer Vision and Language Understanding: Transformers in Image Analysis and Text Understanding in Medicine

15:00-17:00 at Auditorium

Organizers: Olaide Nathaniel Oyelade, Absalom El Shamir Ezugwu, Hui Wang

PS1-1 Efficient Transformer-Based SAR Ship Detection with Hybrid Cross-Fusion Modules

Xinchi Zhao

https://doi.org/10.1007/978-981-95-4445-5_1

PS1-2 EnsembleRegNet: A Multi-ROIs Ensemble Network for Classification of Parkinson's Disease Using MRI Data

Akanksha Upadhyay and Bharti Rana

https://doi.org/10.007/978-981-95-4445-5_2

PS1-3 BMS3: Bayesian Modeling Based SwinUNet Segmentation on Self-distillation Architecture

Jiecheng Liao, Ruijie Hu, Junhao Lu, Weifeng Su, Shi He, Yixuan Ji, and Liangfu Chen

https://doi.org/10.1007/978-981-95-4445-5_3

PS1-4 SAPAG: Self-attention Parts Guidance with Latent Diffusion Models for Anomaly Detection in Microscopy Images

Kazuki Shimizu and Yukako Tohsato
https://doi.org/10.1007/978-981-95-4445-5_4

PS1-5 X-GAN: A Generative AI-Powered Unsupervised Model for Main Vessel Segmentation of Glaucoma Screening

Cheng Huang, Weizheng Xie, Tsengdar Lee, Karanjit Kooner, Jui-Kai Wang, Ning Zhang, and Jia Zhang
https://doi.org/10.1007/978-981-95-4445-5_5

PS1-6 GUIDE: Generative Understanding Injection for Dense Estimation via Enhanced Shape Coherence

Shengye Yang, Jie Liu, and Qingyang Zhang
https://doi.org/10.1007/978-981-95-4445-5_6

Special Session 7: Imitation Learning and Latent Models Applicable to Real-World Robotics

15:00-17:00 at Meeting Room1

Organizer: Shin Ishii

PS2-1 Parameter-Space Policy Composition for Sim-to-Real Transfer in Quadruped Locomotion Control

Yuta Goto, Satoshi Yamamori, Satoshi Yagi, and Jun Morimoto
https://doi.org/10.1007/978-981-95-4445-5_25

PS2-2 Audio-Guided Dynamic Modality Fusion with Stereo-Aware Attention for Audio-Visual Navigation

Jia Li, Yinfeng Yu, Liejun Wang, Fuchun Sun, and Wendong Zheng
https://doi.org/10.1007/978-981-95-4445-5_24

PS2-3 Sim-to-Real Reinforcement Learning for Hybrid Robotic System: Platform Design and Enhanced Hindsight Experience Replay

Zhenyao Bi, Ping Zhong, and Bolei Chen
https://doi.org/10.1007/978-981-95-4445-5_23

PS2-4 Human-in-the-Loop Generative Policy Learning from Demonstrations and Preferences

Eiji Uchibe
https://doi.org/10.1007/978-981-95-4445-5_22

Special Session 4: Toward Safe Brain-Inspired AI

15:00-16:00 at B250

Organizers: Hiroshi Yamakawa, Akira Taniguchi, Takeshi Nakashima

PS3-1 Interpretable Anomaly Detection in a Hippocampal Formation-Inspired Spatial Cognition Model

Takeshi Nakashima, Akira Taniguchi, Tadahiro Taniguchi, and Hiroshi Yamakawa
https://doi.org/10.1007/978-981-95-4384-7_35

PS3-2 Alignment with Psychological Concept Network

Hiro Taiyo Hamada and Yuto Harada
https://doi.org/10.1007/978-981-95-4384-7_36

PS3-3 Decentralized Belief Propagation in LLM Agents: A Brain-Inspired Approach to AI Safety Analysis

Yusuke Hayashi
https://doi.org/10.1007/978-981-95-4384-7_37

Special Session 8: Deep Learning Applications for Smart Agriculture

15:00-16:20 at C209

Organizers: Mian M. Awais, El-Sayed M. El-Alfy, Derong Liu, Jian Wang

PS4-1 Learnable Bilateral Downsampling and Triple-Augmented Feature Fusion in YOLOv8 for Small Object Detection of UAV Aerial Images

Ruojun Guo, Yan Gui, Jianming Zhang, and Fengling Li
https://doi.org/10.1007/978-981-95-4445-5_27

PS4-2 Addressing Capture Bias in Tomato Disease Classification with Deep Transfer Learning

Muhammad Toseef, Malik Jahan Khan, Saifur Rahaman, Atta Ullah, Olutomilayo Olayemi Petinrin, Xiangtao Li, and Ka-Chun Wong
https://doi.org/10.1007/978-981-95-4445-5_32

PS4-3 NDRL: Cotton Irrigation and Nitrogen Application with Nested Dual-Agent Reinforcement Learning

Ruifeng Xu and Liang He
https://doi.org/10.1007/978-981-95-4445-5_29

PS4-4 LAF-YOLO: A Lightweight Architecture with Haar Wavelet Feature Learning for In-field Crop Disease Detection

Hongli Yuan, Ying Shi, Xi Guan, Jin Zheng, Yeye Wei, and Rui Mao
https://doi.org/10.1007/978-981-95-4445-5_30

Reception

17:20-18:20 at Foyer

Day 2: Friday November 21st

Keynote Lecture 1

9:00-10:00 at Auditorium

Development of Higher Cognitive Mechanisms Through Iterative Sensorimotor Interactions With the World: Insights From Neurorobotics

Jun Tani

Professor, Cognitive Neurorobotics Unit

Okinawa Institute of Science and Technology

Chair: Kenji Doya

Abstract: This talk presents two recent neurorobotics studies that extend the active inference framework. The first study [1] explores how out-of-distribution generalization (ODG) can emerge during the learning of goal-directed object manipulation tasks. Robotic experiments demonstrated that a form of ODG can be achieved through the emergence of content-agnostic information processing at the executive control level during learning. The second study [2] builds on this by investigating how compositionality in action and language can be acquired through sparse interactive learning. Results showed that generalization of compositional structures improves when a wider variety of compositional elements are included in training examples. Finally, I will discuss how these findings provide insights into potential neural mechanisms underlying higher-order or meta-level cognition, as revealed through emergent phenomena in neurorobotics experiments.

[1] Queißer, J. F., Jung, M., Matsumoto, T., & Tani, J. "Emergence of Content-Agnostic Information Processing by a Robot Using Active Inference, Visual Attention, Working Memory, and Planning." *Neural Computation.*, 2021

[2] Vijayaraghavan, P., Queißer, J. F., Verduzco-Flores, S., & Tani, J. "Development of compositionality through interactive learning of language and action of robots." *Science Robotics*, 10, eadp0751., 2025

Oral Session 1 (Best Student Paper Candidates)

10:20-12:00 at Auditorium

Chair: Tingwen Huang

O1-1 Item Popularity Attention for Mitigating Popularity Bias in Sequential Recommendation

Zhewei Ding, Runxiong Liu, Mingwei Lin, Shenbao Yu, and Jiayin Lin

https://doi.org/10.1007/978-981-95-4367-0_18

O1-2 MVGT: A Multi-view Graph Transformer Based on Spatial Relations for EEG Emotion Recognition

Yan-Jie Cui, Xiao-Hong Liu, Jing Liang, and Ya-Min Fu

https://doi.org/10.1007/978-981-95-4378-6_1

O1-3 Diverse Neural Sequences in QIF Networks: An Analytically Tractable Framework for Synfire Chains and Hippocampal Replay

Genki Shimizu and Taro Toyoizumi

https://doi.org/10.1007/978-981-95-4378-6_29

O1-4 Block-Structured Bayesian Source Estimation Model for Magnetoencephalography Signals

Kai Miyazaki, Okito Yamashita, and Yoichi Miyawaki

https://doi.org/10.1007/978-981-95-4378-6_32

O1-5 Multi-granularity Complex Question Answering Over Temporal Knowledge Graphs

Jiahui Yang, Yifu Gao, Linbo Qiao, Ruchen Yi, and Lang Yuan

https://doi.org/10.1007/978-981-95-4367-0_26

Oral Session 2 (Best Paper Candidates)

13:00-15:00 at Auditorium

Chair: Yutaka Sakai

O2-1 SDSP: Scalable and Diverse Synthetic Pairwise Text Generation from Web Corpus Using Large Language Model

Xiaoxu Wu, Xi Li, Wentao Wu, Aleksei Timofeev, Yinfei Yang, Meng Cao, Ping Huang, Si Li, and Jiulong Shan

https://doi.org/10.1007/978-981-95-4367-0_1

O2-2 Revisiting 16-Bit Neural Network Training: A Practical Approach for Resource-Limited Learning

Juyoung Yun, Sol Choi, Francois Rameau, Byungkon Kang, and Zhoulai Fu

https://doi.org/10.1007/978-981-95-4367-0_19

O2-3 Smart Video Capsule Endoscopy: Raw Image-Based Localization for Enhanced GI Tract Investigation

Oliver Bause, Julia Werner, Paul Palomero Bernardo, and Oliver Bringmann

https://doi.org/10.1007/978-981-95-4378-6_3

O2-4 DFIR-Metric: A Benchmark Dataset for Evaluating Large Language Models in Digital Forensics and Incident Response

Bilel Cherif, Tamas Bisztray, Richard A. Dubniczky, Aesha Aldahmani, Saeed Alshehhi, and Norbert Tihanyi
https://doi.org/10.1007/978-981-95-4367-0_2

O2-5 EEG-Based Phase-Amplitude Coupling in Computational Modeling During Audiovisual Bistable Perception
Sahar Zakeri and Osamu Araki
https://doi.org/10.1007/978-981-95-4378-6_33

O2-6 Reward-Independent Messaging for Decentralized Multi-agent Reinforcement Learning
Naoto Yoshida and Tadahiro Taniguchi
https://doi.org/10.1007/978-981-95-4367-0_25

Flash Talks 1

15:00-15:20 at Auditorium

Chair: Junichiro Yoshimoto

S1-1 Breaking the Heterophily Mixing Barrier in Graph Learning: A Mixed-Curvature Product Manifold Approach
Lizhi Liu
https://doi.org/10.1007/978-981-95-4367-0_28

S1-2 Asymptotic Accuracy Analysis of Fast Simulation-Calibration Model Bridge
Keisuke Yamazaki
https://doi.org/10.1007/978-981-95-4367-0_29

S1-3 3SDeblur: Three-Stage Image Defocus Deblurring Guided by Residual Prior
Yihang Chen, Zhan Li, Boyang Yao, Xiaohan Li, Wenzhuo Wang, and Qingliang Chen
https://doi.org/10.1007/978-981-95-4378-6_6

S1-4 STOTFormer: A Transformer-Based Model for Vertical Offset Estimation in Underground Power Optical Cables
Wanchang Jiang and Chunzhen Li
https://doi.org/10.1007/978-981-95-4381-6_18

S1-5 Frequency Specific Effects of Oscillatory Inputs on Timing and Chaotic Time-Series Learning in Spiking Reservoir Computing
Jihoon Park, Yuji Kawai, and Minoru Asada
https://doi.org/10.1007/978-981-95-4378-6_36

S1-6 Advancing Complex-Valued Neural Networks with Product Units for MRI Reconstruction

Ziyuan Li, Uwe Jaekel, and Babette Dellen

https://doi.org/10.1007/978-981-95-4378-6_38

S1-7 PDS-YOLO: An Improved Insulator Defect Detection Model Based on YOLOv8

Jing Li and Haonan Sun

https://doi.org/10.1007/978-981-95-4378-6_9

S1-8 Multi-scale Scanning Network for Machine Anomalous Sound Detection

Yucong Zhang, Juan Liu, and Ming Li

https://doi.org/10.1007/978-981-95-4381-6_21

S1-9 Turbo-TTS: Enhancing Diffusion Model TTS with an Improved ODE Solver

Xulong Zhang, Jiashu Wang, Xiaoyang Qu, Hui Tian, and Jianzong Wang

https://doi.org/10.1007/978-981-95-4367-0_7

S1-10 Novel Neuron-Stability Weighted Dynamic Evolving Spiking Neural Network (NSW-DeSNN) for Classification of fMRI Data

Maryam Doborjeh, Zohreh Doborjeh, and Nikola Kasabov

https://doi.org/10.1007/978-981-95-4378-6_42

Poster Session 1

15:20-17:20 at Foyer and Meeting Room 1

P1-1 MSER-Whisper: Mongolian Speech Emotion Recognition Based on the Whisper

Ren Qing-Dao-Er-Ji, Qian Bo, Shuai Yuan, Yatu Ji, and Nier Wu

https://doi.org/10.1007/978-981-95-4088-4_1

P1-2 LNAHGN: LLM-Guided Neighbor Aggregation for Heterogeneous Graph Neural Network

Chenhao Zhang, Fengge Wu, and Hang Gao

https://doi.org/10.1007/978-981-95-4088-4_2

P1-3 Implicit Hate Speech Detection via Soft Prompt-Tuning

Han Wang, Yi Zhu, Yun Li, Chaowei Zhang, Yunhao Yuan, and Jipeng Qiang

https://doi.org/10.1007/978-981-95-4088-4_3

P1-4 Synergistic-RAG: A Framework for Reliable LLM Generation via Hybrid Retrieval and Semantic Refinement

Xueying Liu, Jing Yun, Bo Li, Yuying Zhang, and Xiaoguo Shi

https://doi.org/10.1007/978-981-95-4088-4_4

P1-5 Towards Urban Semantic Cognition: Investigating the Capability of LLMs in Understanding Urban Areas

Mingzhe Liu, Zihang Xu, Kangting Xu, Tongyu Zhu, and Leilei Sun

https://doi.org/10.1007/978-981-95-4367-0_3

P1-6 ReLOpt: A Retriever-Augmented Framework for Optimizing Code with Long-Range Dependencies

Lei Qiu, Fang Lyu, Ming Zhong, Lulin Wang, and Xiaobing Feng

https://doi.org/10.1007/978-981-95-4367-0_4

P1-7 Hierarchical Emotion Transformer for Multimodal Joint Emotion Category and Intensity Recognition

Tian-Fang Ma, Wei-Bang Jiang, Wei-Long Zheng, and Bao-Liang Lu

https://doi.org/10.1007/978-981-95-4367-0_5

P1-8 CoFi-VisRAG: Coarse-to-Fine Visual Retrieval-Augmented Generation for Multimodal Documents

Chunming Liu, Yanping Zhang, Zibo Yi, Minghao Hu, Tongtong Duan, Sijia Wang, Guotong Geng, Wei Luo, and Zhunchen Luo

https://doi.org/10.1007/978-981-95-4088-4_5

P1-9 ACRNet: A Knowledge-Enhanced Neural Framework for High-Precision Audio Reconstruction from Basilar-Membrane Motion

He Xu and Wei Zhang

https://doi.org/10.1007/978-981-95-4088-4_6

P1-10 CSEQL-Llama: A Text-to-CSEQL Framework Based on Multi-agent Collaborative Data Synthesis and Parameter-Efficient Fine-Tuning

Ye Li, Jinfeng Peng, Lirong Yang, Yuwei Li, Fan Shi, Pengfei Xue, and Chengxi Xu

https://doi.org/10.1007/978-981-95-4088-4_7

P1-11 Mitigate Hallucinations in LLM's Understanding of Dynamic Graph: An In-Depth Evaluation and Enhancement

Yuou Chen, Ruixing Zhang, Yunqi Liu, Tongyu Zhu, Mingzhe Liu, and Weifeng Lv

https://doi.org/10.1007/978-981-95-4088-4_8

P1-12 DMBL: Dual-Stage Multimodal Balanced Learning for Multimodal Sentiment Analysis

YiYang Tang, Qian Chen, NanJie Zheng, and Ning Luo

https://doi.org/10.1007/978-981-95-4367-0_6

P1-13 Entropy-Aware Fusion Speculative Decoding for Reliable and Efficient Domain Text Generation

Qing Xiao, Zheng Chen, Chenlin Wang, and Yun Bian

https://doi.org/10.1007/978-981-95-4088-4_9

P1-14 QR-MSRF: Query Rewriting with Multi-stage Retrieval Feedback in Retrieval-Augmentation Generation

Guangdong Zhang, Chuantao Li, Zhigang Zhao, Jintao Li, Yan Liu, Yuxin Wang, and Chuanxiang Li

https://doi.org/10.1007/978-981-95-4088-4_10

P1-15 Large Language Model-Driven Multi-agent Collaborative Framework for Chinese Grammatical Error Correction

Xiaoqiang Wang, Chengrui Qi, and Nier Wu

https://doi.org/10.1007/978-981-95-4088-4_11

P1-16 Turbo-TTS: Enhancing Diffusion Model TTS with an Improved ODE Solver

Xulong Zhang, Jiashu Wang, Xiaoyang Qu, Hui Tian, and Jianzong Wang

https://doi.org/10.1007/978-981-95-4367-0_7

P1-17 AoPSFT: Subplan-Aware Fine-Tuning for Interpretable Multi-turn Reasoning Agents

Xufeng Zhou, Jiakai Geng, Chiyu Cai, Linjing Li, and Daniel Dajun Zeng

https://doi.org/10.1007/978-981-95-4088-4_12

P1-18 MSISA: A Modality-Specific Interaction Network with Semantic Alignment for Multimodal Sentiment Analysis

Yuanyi Zhao and Mingze Zhang

https://doi.org/10.1007/978-981-95-4088-4_13

P1-19 Exemplar-Guided Planning: Enhanced LLM Agent for KGQA

Jingao Xu, Shuoyoucheng Ma, Xin Song, Rong Jiang, Hongkui Tu, and Bin Zhou

https://doi.org/10.1007/978-981-95-4088-4_14

P1-20 DHI: Leveraging Diverse Hallucination Induction for Enhanced Contrastive Factuality Control in Large Language Models

Jiani Guo, Xiangke Zeng, Jie Wu, and Zuchao Li

https://doi.org/10.1007/978-981-95-4088-4_15

P1-21 Entity Similarity RAG: Enhancing LLM Answers with Precise Knowledge Graph Retrieval

Zhengan Wang, Bo Peng, Hanzhe Tu, and Xu Li
https://doi.org/10.1007/978-981-95-4088-4_16

P1-22 Embedding-Based Sparse Retrieval in E-Commerce Search
Lei Wang, Jiyuan He, Sheng Xu, Yunchuan Lin, Yuxin Cheng, Wei Yin, Di Wang,
and Tao Feng
https://doi.org/10.1007/978-981-95-4367-0_27

P1-23 Time Cost for Cluster Consensus of Multi-agent Systems with Switching
Control
Jiaqi Chang, Haifeng Dai, and Guanghui Wen
https://doi.org/10.1007/978-981-95-4091-4_21

P1-24 HSE-GFN: Multimodal Knowledge Graph Entity Alignment via Hierarchical
Structure Encoding and Gated Fusion
Fuwen Tang, Yanhui Zhu, Zhixuan Zhang, Fangteng Man, Xujian Ying, Hao Chen,
and Zhipeng Gan
https://doi.org/10.1007/978-981-95-4091-4_22

P1-25 Breaking the Heterophily Mixing Barrier in Graph Learning: A Mixed-
Curvature Product Manifold Approach
Lizhi Liu
https://doi.org/10.1007/978-981-95-4367-0_28

P1-26 Efficient Inter-Task Attention for Multitask Transformer Models
Christian Bohn, Thomas Kurbiel, Klaus Friedrichs, Hasan Tercan, and Tobias
Meisen
https://doi.org/10.1007/978-981-95-4091-4_23

P1-27 Asymptotic Accuracy Analysis of Fast Simulation-Calibration Model Bridge
Keisuke Yamazaki
https://doi.org/10.1007/978-981-95-4367-0_29

P1-28 Deep Graph Knowledge Tracing with Multi-head Self-attention and Forgetting
Mechanism
Qiancheng Liu and Luqiang Xu
https://doi.org/10.1007/978-981-95-4091-4_24

P1-29 Successive Mouse Movement: Dual-Phase Adaptation with Pre-balancing and
Test-Time Learning
Jingyi Feng, Yong Luo, Anke Tang, and Xuxu Liu
https://doi.org/10.1007/978-981-95-4367-0_30

P1-30 SEDEG: Sequential Enhancement of Decoder and Encoder's Generality for Class Incremental Learning with Small Memory

Shaoling Pu, Hongyang Chen, Lingyu Zheng, and Zhongwu Sun

https://doi.org/10.1007/978-981-95-4091-4_25

P1-31 Variance-Aware Scaling Loss for Enhanced Differentiable Architecture Search

Boyu Wang and Yong Zhong

https://doi.org/10.1007/978-981-95-4091-4_26

P1-32 Making Robust Generalizers Less Rigid with Loss Concentration

Matthew J. Holland and Toma Hamada

https://doi.org/10.1007/978-981-95-4091-4_27

P1-33 DG-IVF: A Dual-Gated IMU-Vision Fusion Method for Efficient HAR

Timin Li, Dongmei Li, Yuepeng Chen, Yihe Wang, Xuefeng Feng, Ye Ma, Dongwei Liu, Ji Wu, and Chenyi Guo

https://doi.org/10.1007/978-981-95-4091-4_28

P1-34 Multi-head Low-Rank Adaptation for Parameter-Efficient Fine-Tuning

Xuan Deng, Juan Xu, and PiJi Li

https://doi.org/10.1007/978-981-95-4091-4_29

P1-35 Context-Aware Policy-Guided Gradient Search for Offline Model-Based Optimization

Mingcheng Chen, Haoran Zhao, Weinan Zhang, and Yong Yu

https://doi.org/10.1007/978-981-95-4091-4_30

P1-36 HarmonyTrain: A Hybrid Parallel Training Method for Deep Learning Models in Dual-Heterogeneous Environments

Jintao Li, Chuantao Li, Chunxiao Wang, Zhigang Zhao, Guangdong Zhang, Zhiwei Zhou, Yuxin Wang, Yan Xu, Fulai Liu, and Anbang Li

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P1-37 Mitigating Oversmoothing in GNNs Across Diverse Graph Domains

Monika Varshney and Tanima Dutta

https://doi.org/10.1007/978-981-95-4091-4_32

P1-38 AstroSpectra-MNIST: An Astronomical Spectral Dataset for Benchmarking Machine Learning Algorithms

Qiankun Wu, Yungao Shi, Ke Wang, and Ping Guo

https://doi.org/10.1007/978-981-95-4091-4_33

P1-39 Frequency Spatial Hybrid Joint Source-Channel Coding with Channel Adaptive Attention Mechanism

Enze Cui, Shengjie Zhao, and Weichao Chen

https://doi.org/10.1007/978-981-95-4091-4_34

P1-40 Cross-Entropy Loss of Approximated Deep Neural Networks

Jiří Šíma and Petra Vidnerová

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P1-41 Distorted Distributional Policy Evaluation for Offline Reinforcement Learning

Ryo Iwaki and Takayuki Osogami

https://doi.org/10.1007/978-981-95-4091-4_35

P1-42 Modularity Regularized Locality Preserving Projection

Ibuki Masuda, Yasunori Futamura, Jianbo Lin, Anh Khoa Augustin Lu, Ryo Tamura, Tsuyoshi Miyazaki, and Tetsuya Sakurai

https://doi.org/10.1007/978-981-95-4091-4_36

P1-43 TULiP: Test-Time Uncertainty Estimation via Linearization and Weight Perturbation

Yuhui Zhang, Dongshen Wu, Yuichiro Wada, and Takafumi Kanamori

https://doi.org/10.1007/978-981-95-4367-0_32

P1-44 MCL-UC: Meta-Learning for Uncertainty-Aware Calibration in Complementary Label Learning

Chenhao Ye

https://doi.org/10.1007/978-981-95-4091-4_37

P1-45 Analysis of Majority Binary Neural Networks Based on Simple Feature Quantities

Ryota Toyama and Toshimichi Saito

https://doi.org/10.1007/978-981-95-4091-4_38

P1-46 Nonnegative Matrix Factorization for Joint Clustering and Topic Modeling with Minority Topics

Seyedeh Fatemeh Ebrahimi and Jaakko Peltonen

https://doi.org/10.1007/978-981-95-4367-0_33

P1-47 A Novel Plug-and-Play Method for LiDAR and 4D Radar Fusion

Pengfei Qi, Jinlai Zhang, Yan Su, Xiang Zou, Yi Huang, Yonggang Tong, Kaiming Wang, Qiqi Li, and Lin Hu

https://doi.org/10.1007/978-981-95-4097-6_1

P1-48 PointSC: A Novel Simplicial Complex-Based Neural Network for Point Cloud Classification

Xuran Yao, Zheng Yao, Xianwei Zheng, and Xutao Li

https://doi.org/10.1007/978-981-95-4378-6_5

P1-49 3SDeblur: Three-Stage Image Defocus Deblurring Guided by Residual Prior

Yihang Chen, Zhan Li, Boyang Yao, Xiaohan Li, Wenzhuo Wang, and Qingliang Chen

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P1-50 GaussianFocus: Constrained Attention Focus for 3D Gaussian Splatting

Zexu Huang, Min Xu, and Stuart Perry

https://doi.org/10.1007/978-981-95-4097-6_2

P1-51 DDRASR: Double Dimension Retractable Attention Super-Resolution

Haoyu Tian, Jiangbo Xu, Gaolin Yang, and Zijian Xue

https://doi.org/10.1007/978-981-95-4097-6_3

P1-52 DTMPose: Depth Transform-Enhanced Mamba Pose Estimation Framework for Efficient 2D Keypoint Detection

Guanting Dong and Kei Kawamura

https://doi.org/10.1007/978-981-95-4097-6_4

P1-53 GGMNet: Gradient Imagery-Guided Multi-scale Feature Fusion for Remote Sensing Change Detection

Eksan Payzullam, Baokun Su, Guoxia Wang, Changle Yin, and Gang Shi

https://doi.org/10.1007/978-981-95-4097-6_5

P1-54 DPFDD-DETR: Directional Prior Guided Frequency Decomposition with Axial-Spatial Context Alignment

Chao Zhang, Wenhong Wu, Hengmao Niu, Bao Shi, and Nier Wu

https://doi.org/10.1007/978-981-95-4378-6_7

P1-55 DedustNet: A Large-Scale Benchmark and Baseline for Sand Dust Video Enhancement

Linghui Ma, Gang Zhou, Mengzhen Xue, Gulisidan Abulizi, Li Zhang, and Zhenhong Jia

https://doi.org/10.1007/978-981-95-4378-6_8

P1-56 Automated Knot Detection and Pairing for Wood Analysis in the Timber Industry

Guohao Lin, Shidong Pan, Rasul Khanbayov, Changxi Yang, Ani Khaloian-Sarnaghi, and Andriy Kovryga

https://doi.org/10.1007/978-981-95-4097-6_6

P1-57 Enhancing Hyperspectral Remote Salient Object Detection via Spectral Recalibration, Multi-scale Decoding, and Global Context Modeling

Pengxuan Liu, Wuzhen Shi, and Yang Wen

https://doi.org/10.1007/978-981-95-4097-6_7

P1-58 FSMHNet: A Frequency-Aware and Stroke-Enhanced Multiscale Hash Network for Oracle Image Retrieval

Yanni Zuo, Zhongyuan Yang, Yongge Liu, and Kurban Ubul

https://doi.org/10.1007/978-981-95-4097-6_8

P1-59 PDS-YOLO: An Improved Insulator Defect Detection Model Based on YOLOv8

Jing Li and Haonan Sun

https://doi.org/10.1007/978-981-95-4378-6_9

P1-60 RealCraft: Attention Control as A Tool for Zero-Shot Consistent Video Editing

Shutong Jin, Ruiyu Wang, and Florian T. Pokorny

https://doi.org/10.1007/978-981-95-4378-6_10

P1-61 MSVDNet: A Multi-scale Video Desnowing Network for Real World

Mengzhen Xue, Gang Zhou, Linghui Ma, Li Zhang, Yanyun Zhou, and Zhenhong Jia

https://doi.org/10.1007/978-981-95-4097-6_9

P1-62 MAPT: Memory-Augmented Prompt Tuning at Test-Time for CLIP

Jiaming Yi, Ruirui Pan, Jishen Yang, and Xiulong Yang

https://doi.org/10.1007/978-981-95-4097-6_10

P1-63 WT-RT-DETR: A Wavelet Detector for Real-Time Wood Defect Detection

Yuefeng Zhao, Junjie Wang, Jinwei Zhang, Qifei Wang, Xianqi Meng, Guicong Zhang, Yuxin Song, and Nannan Hu

https://doi.org/10.1007/978-981-95-4097-6_11

P1-64 Efficient Medical Image Segmentation with Rectified Flow-Based Diffusion Transformer

Shunichi Kato, Masaki Nishimura, Takaya Ueda, Yu Song, and Ikuko Nishikawa

https://doi.org/10.1007/978-981-95-4100-3_1

P1-65 CMFDNet: Cross-Mamba and Feature Discovery Network for Polyp Segmentation

Feng Jiang, Zongfei Zhang, and Xin Xu

https://doi.org/10.1007/978-981-95-4100-3_2

P1-66 SFINE: Structural-Functional Individual Brain Network Modeling Integrating Group-Level Characteristics

Zixin Huang, Chunzhi Zhao, Tülay Adalı, Gengqian Wei, Vince D. Calhoun, and Shile Qi

https://doi.org/10.1007/978-981-95-4378-6_35

P1-67 Frequency Specific Effects of Oscillatory Inputs on Timing and Chaotic Time-Series Learning in Spiking Reservoir Computing

Jihoon Park, Yuji Kawai, and Minoru Asada

https://doi.org/10.1007/978-981-95-4378-6_36

P1-68 A Unified Framework for Fine-Grained Brain Network Representation Learning

Xin Liu and Zuping Zhang

https://doi.org/10.1007/978-981-95-4100-3_3

P1-69 HMB-MCI: Multimodel Detector of Mild Cognitive Impairment Through Spontaneous Language Analysis

Zihui Deng, Boyuan Li, Wei Liu, and Baha Ihnaini

https://doi.org/10.1007/978-981-95-4378-6_37

P1-70 Advancing Complex-Valued Neural Networks with Product Units for MRI Reconstruction

Ziyuan Li, Uwe Jaekel, and Babette Dellen

https://doi.org/10.1007/978-981-95-4378-6_38

P1-71 Can Diffusion Models Bridge the Domain Gap in Cardiac MR Imaging?

Xin Ci Wong, Duygu Sarikaya, Kieran Zucker, Marc De Kamps, and Nishant Ravikumar

https://doi.org/10.1007/978-981-95-4100-3_4

P1-72 Evaluating On-Off Motor Intermittency During Virtual Stick Balancing Using Bayesian Data Assimilation

Haruki Shimokado, Akihiro Nakamura, Yasuyuki Suzuki, and Taishin Nomura

https://doi.org/10.1007/978-981-95-4378-6_39

P1-73 Multi-modal Segmentation via Medical Image-Text Fusion with Hierarchical Cross-Attention

Xuezheng Sun, Tao Wan, Jiankun Xu, and Zengchang Qin

https://doi.org/10.1007/978-981-95-4100-3_5

P1-74 GSoP-LENet: A Global Second-Order Pooling Guided Multi-dimensional Interaction Network for Energy-Efficient EEG Motor Imagery Decoding

Ruidong Ma, Xianghong Lin, Yaxi Lv, Lining Yan, and Chengyang Xie

https://doi.org/10.1007/978-981-95-4100-3_6

P1-75 Neural-CAT-SNN: Spike-Driven Neural Decoder with Multi-scale Temporal Dynamic and Reparameterized Linear Attention

Yuqi Yang, Tengjun Liu, Haiyan Zhang, Nenggan Zheng, and Shaomin Zhang

https://doi.org/10.1007/978-981-95-4100-3_7

P1-76 CAS-IQA: Teaching Vision-Language Models for Synthetic Angiography Quality Assessment

Bo Wang, De-Xing Huang, Xiao-Hu Zhou, Mei-Jiang Gui, Nu-Fang Xiao, Jian-Long Hao, Ming-Yuan Liu, and Zeng-Guang Hou

https://doi.org/10.1007/978-981-95-4378-6_40

P1-77 Implicit Neural Representations for Brain Image Registration Between Human and Marmoset

Keisuke Fujimoto, Shin Ishii, Rui Gong, Ken Nakae, Noritaka Ichinohe, and Henrik Skibbe

https://doi.org/10.1007/978-981-95-4378-6_41

P1-78 Novel Neuron-Stability Weighted Dynamic Evolving Spiking Neural Network (NSW-DeSNN) for Classification of fMRI Data

Maryam Doborjeh, Zohreh Doborjeh, and Nikola Kasabov

https://doi.org/10.1007/978-981-95-4378-6_42

P1-79 Isnooping: An Enhanced Traffic-Based Multidimensional Privacy Snooping Attack

Haodong Yue, Haozhen Zhang, Xi Xiao, Le Yu, Guangwu Hu, Qingsong Zou, Qing Li, and Hao Li

https://doi.org/10.1007/978-981-95-4100-3_26

P1-80 MPFT: Multi-perspective Frequency Learning for Non-Stationary Time Series Forecasting

Jinglin Li, Tao Xie, Kun Li, Weiwei Ye, and Ning Gui

https://doi.org/10.1007/978-981-95-4381-6_17

P1-81 AMFNVD: Addressing Two Kinds of Discrepancy Problems for Fake News Detection on Short Video Platforms

Cheng, Zhang, Yang, and Liu

https://doi.org/10.1007/978-981-95-4100-3_27

P1-82 MARAGAN-IDS: a Bidirectional Residual GAN for Imbalanced Intrusion Detection

Yifan Liu, Jinduo Gao, Wenlei Chai, Yi Liu, and Fan Feng

https://doi.org/10.1007/978-981-95-4100-3_28

P1-83 Audio Replay Spoof Attack Detection by Joint F-Ratio Adaptive Filter Bank of Silent Segment and Attention-Enhanced ResNeXt-50 Network

Jianpeng Cheng, Junliu Zhong, Jiaxin Mai, and Sai Zhao

https://doi.org/10.1007/978-981-95-4100-3_29

P1-84 FLARE-SSM: Deep State Space Models with Influence-Balanced Loss for 72-Hour Solar Flare Prediction

Yusuke Takagi, Shunya Nagashima, and Komei Sugiura

https://doi.org/10.1007/978-981-95-4100-3_30

P1-85 STOTFormer: A Transformer-Based Model for Vertical Offset Estimation in Underground Power Optical Cables

Wanchang Jiang and Chunzhen Li

https://doi.org/10.1007/978-981-95-4381-6_18

P1-86 Greedy Batch Mode Query: An Active Learning Framework to Optimize Air Quality Monitoring Station Placement

Meng Xu, Weijian Hu, Ke Han, and Wen Ji

https://doi.org/10.1007/978-981-95-4381-6_19

P1-87 Threshold-Bound Fuzzy Cognitive Maps for Spatial-Temporal Traffic Forecasting

Jiacheng Tang, Meng Liu, Mengyao Zhao, and Xinjie Zhao

https://doi.org/10.1007/978-981-95-4100-3_31

P1-88 Practical and General Backdoor Attacks Against Personalized Federated Learning

Yuxin Xuan, Xiaojun Chen, Zhendong Zhao, Ye Dong, Xin Zhao, and Bisheng Tang

https://doi.org/10.1007/978-981-95-4100-3_32

P1-89 Minimum Pooling Ensemble of Reconstructive Reservoir Computing for Enhancing Anomaly Detection Performance

Junya Kato, Ryo Natsuaki, and Akira Hirose

https://doi.org/10.1007/978-981-95-4100-3_33

P1-90 SlotITD: Insider Threat Detection Method Using Slot-Based Heterogeneous Graph Neural Network

Chen Zhang, Yinhao Qi, Yan Zhu, Bo Jiang, Zhigang Lu, and Tao Guo

https://doi.org/10.1007/978-981-95-4100-3_34

P1-91 SA-HPAFNet: A Structure-Aware Hierarchical Patch Attention Framework for Multivariate Time Series Forecasting with Multi-scale Dependency Learning

Anyi Zhang and Peng Xu

https://doi.org/10.1007/978-981-95-4100-3_35

P1-92 Harnessing Quantum Finance and Sentiment for Multi-agent-Driven Financial Prediction

Su Liu, Yueling Chen, Yuehan Chen, and Raymond S. T. Lee

https://doi.org/10.1007/978-981-95-4109-6_1

P1-93 Tell Fake from Real: Temporal Forgery Localization with Fake-Real Guided Cross-Modal-Reconstruction

Xu Yang, Yanhui Zhou, Yaowen Xu, Zhaofan Zou, Chenyang Ge, and Zhixiang He

https://doi.org/10.1007/978-981-95-4381-6_20

P1-94 Multi-scale Scanning Network for Machine Anomalous Sound Detection

Yucong Zhang, Juan Liu, and Ming Li

https://doi.org/10.1007/978-981-95-4381-6_21

P1-95 Fact-Augmented Reasoning Model for Fake News Detection

Liang Xiao, Chongyang Shi, Shufeng Hao, and Zeyu Wei

https://doi.org/10.1007/978-981-95-4109-6_2

P1-96 Inductive Link Prediction in Heterogeneous Information Networks via Adversarial Distillation

Rui Mi, Ruohan Yang, and Huan Wang

https://doi.org/10.1007/978-981-95-4109-6_3

P1-97 Interpretable Smart Contract Vulnerability Detection with Graph Information Bottleneck

Zhanji Xu and Junliang Du

https://doi.org/10.1007/978-981-95-4381-6_22

P1-98 FECCD: Frequency Enhanced Channel Correlations Discovery for Multivariate Time Series Forecasting

Guanyao Du, Yize Wu, Jing Zhao, Wei Wan, and Chun Long

https://doi.org/10.1007/978-981-95-4109-6_4

P1-99 PGSTalker: Real-Time Audio-Driven Talking Head Generation via 3D Gaussian Splatting with Pixel-Aware Density Control

Tianheng Zhu, Yinfeng Yu, Liejun Wang, Fuchun Sun, and Wendong Zheng

https://doi.org/10.1007/978-981-95-4384-7_9

P1-100 DRF: LLM-AGENT Dynamic Reputation Filtering Framework

Yuwei Lou, Hao Hu, Shaocong Ma, Zongfei Zhang, Liang Wang, Jidong Ge, and Xianping Tao

https://doi.org/10.1007/978-981-95-4384-7_10

P1-101 Acting Technique: Factors that Influence the Effectiveness of Role-Playing Model

Baohua Zhang, Yongyi Huang, WenYao Cui, and Huaping Zhang

https://doi.org/10.1007/978-981-95-4384-7_12

P1-102 ProKG-Dial: A Progressive LLM-Driven Approach to Building Knowledge-Intensive Multi-turn Dialogue Datasets with Domain Knowledge Graphs

Yuanyuan Liang, Xiaoman Wang, Tingyu Xie, and Lei Pan

https://doi.org/10.1007/978-981-95-4384-7_13

P1-103 Acquisition of Product Purchasing Behavior by Robots Based on Problem Decomposition and Parallel Reinforcement Learning

Masaya Nishimura and Satoru Morita

https://doi.org/10.1007/978-981-95-4384-7_14

P1-104 AeerBERT: Recognizing Atypical Emotions in Bullet Comment

Bei Xu and Yue Wang

https://doi.org/10.1007/978-981-95-4384-7_15

P1-105 KeyKnowledgeRAG (K2RAG): An Enhanced RAG Method for Improved LLM Question-Answering Capabilities

Hruday Markondapatnaikuni, Basem Suleiman, Shijing Chen, and Abdelkarim Erradi

https://doi.org/10.1007/978-981-95-4384-7_16

P1-106 Focusing on Abnormal: Visual Contrastive Classification and Semantic Enhancement for Medical Report Generation

Haoquan Chen, Mingtao Pei, and Zhengang Nie

https://doi.org/10.1007/978-981-95-4100-3_10

P1-107 TS3DCNN: A Fine-Grained Classification Network for Fetal Heart Rate Abnormality Detection

Zheng You, An Zeng, Rongyue Zhang, and Dan Pan

https://doi.org/10.1007/978-981-95-4445-5_7

P1-108 SPPBench: A Comprehensive Sports Psychology Performance Benchmark for LLMs

Xiangyu Guo and Yunzhi Xu

https://doi.org/10.1007/978-981-95-4445-5_8

P1-109 Graph-Based Uncertainty Modeling and Multimodal Fusion for Salient Object Detection

Yuqi Xiong, Wuzhen Shi, Yang Wen, and Ruhan Liu

https://doi.org/10.1007/978-981-95-4445-5_9

P1-110 MetaCRN: Language-Augmented Multimodal Metaphor Detection Using Cross-Modal Dynamic Replacement

Hao Meng, Qimeng Yang, Jingwen Ma, and Qixing Wei

https://doi.org/10.1007/978-981-95-4445-5_11

P1-111 RoSPER-Net: Robust Medical Image Segmentation with Spatial Prompting and Cross-Scale Edge Refinement

Yongquan Xue, Zhaoru Guo, Chong Peng, Chunlei Xu, Yongming Li, and Panpan Zheng

https://doi.org/10.1007/978-981-95-4445-5_12

P1-112 Open-Vocabulary Object Detection Based on Novel-Class Aware Enhancement and Classification Optimization

Shuhao Liu and Zhi Zhang

https://doi.org/10.1007/978-981-95-4445-5_13

P1-113 Self-layer-wise Distillation for Light-Weighted Transformer Models in Speech Emotion Recognition

Divya Lakshmi Yalavarthi, Ahmad Bdeir, Niels Landwehr, and Ronald Böck

https://doi.org/10.1007/978-981-95-4445-5_14

P1-114 ALV-Net: Adaptive Language and Visual Feature Fusion for Radiology Report Generation

Longyang Guo, Pengyao Xu, and Ruixia Liu

https://doi.org/10.1007/978-981-95-4445-5_15

P1-115 Empowering Healthcare Time-Series Reasoning by Reinforcement Learning-Enhanced Large Language Models

Jun Liu and Yang Gu

https://doi.org/10.1007/978-981-95-4445-5_16

P1-116 Hierarchical and Multi-scale Attention Network for Retinal Artery/Vein Segmentation and Diameter Estimation

Jian Meng, Zhenchao Cui, and Jing Qi

https://doi.org/10.1007/978-981-95-4445-5_17

P1-117 SMANet: Saliency-Guided Multi-task Attention Network for Diabetic Retinopathy Grading

Zhuoqun Xia, Yufang Shen, Jingjing Tan, Jiahui Xu, and Wenjing Li

https://doi.org/10.1007/978-981-95-4445-5_18

P1-118 FaRMamba: Frequency-Based Learning and Reconstruction Aided Mamba for Medical Segmentation

Ze Rong, Ziyue Zhao, Zhaoxin Wang, and Lei Ma

https://doi.org/10.1007/978-981-95-4445-5_19

P1-119 BEM-DBNet: Bi-Weighted Multi-Level Feature Enhancement for Text Detection

Tianyang Li, Nuan Wen, and Yayuan Hu

https://doi.org/10.1007/978-981-95-4445-5_20

P1-120 EIFNet: Leveraging Event-Image Fusion for Robust Semantic Segmentation

Zhijiang Li, Haoran He, and Guoshun Nan

https://doi.org/10.1007/978-981-95-4445-5_21

~~P1-121—Lightweight Dual-Branch Segmentation Model for Colorectal Pathology Images Based on Deep Learning~~

~~Aojia Han, Qitong Wan, Liheng Dong, Xuan Wang, and Yuelei Xu~~

~~https://doi.org/10.1007/978-981-95-4445-5_22 (Retracted)~~

P1-122 Balti-Tamko: A Spoken Words Dataset Development for Automatic Recognition of the Endangered Balti Language

Muhammad Sharif, Bin Liu, Sardar Shan Ali Naqvi, Zeeshan Abbas, and Liu Cheng-Lin
https://doi.org/10.1007/978-981-95-4445-5_10

Special Session 2: Generative AI and Deep Learning for Advancing Affective Human-Robot Interaction

17:20-18:40 at Auditorium

Organizers: El-Sayed M. El-Alfy, Zeng-Guang Hou, Sadam Al-Azani, Amir Hussain, Hussain Bin Samma, Shadi Abudalfa

MS1-1 Parameter-Efficient Fine-Tuning Based on Decomposed Convolutional Kernel in Mixture-of-Experts Architecture

Hewei Yu and Jinwei Yu

https://doi.org/10.1007/978-981-95-4384-7_6

MS1-2 Enhancing Multimodal Emotion Recognition via Multi-feature Encoding and Attention-Based Fusion

Xu Lin, Ke Wang, Hui Kang, and Xinying Wang

https://doi.org/10.1007/978-981-95-4384-7_11

MS1-3 Style-Aware Music-to-Dance Generation via Multi-Stage Unit Decomposition and Recombination

Yufei Gao, Qian Wu, Keren He, and Jinjia Zhou

https://doi.org/10.1007/978-981-95-4384-7_7

MS1-4 GRAIL: Guided Retrieval via Layer-Wise Discrepancy from Extrapolated Final Distributions

Kexin Liu, Hongkuan Zhang, Zhaoyang Liu, and Shuwang Zhou

https://doi.org/10.1007/978-981-95-4384-7_8

Day 3: Saturday November 22nd

Keynote Lecture 2

9:00-10:00 at Auditorium

Closing the Gap: From Digital AI to Physically Grounded intelligence

Yew Soon Ong

President's Chair Professor of Computer Science College of Computing and Data Science, Nanyang Technological University, Singapore

Chief Artificial Intelligence Scientist The Agency for Science Technology and Research (A*STAR), Singapore

Chair: Kevin Wong

Abstract: This talk explores the evolution of AI from purely digital, data-driven abstraction toward physically grounded intelligence aligned with the laws of nature. It traces the progression from predictive modeling, to precision optimization, and ultimately to generative modeling that reshapes solution spaces in science and engineering. Advances in physics informed neural networks, guided diffusion models, and prompt evolution illustrate how AI can not only simulate and predict, but also plan and create within real world physical constraints. By following nature's evolutionary principles and multifactorial mechanisms, AI systems are shown to bridge digital representation with physical reality. The talk envisions a future where AI serves as a coexplorer in discovery, fusing data, theory, and imagination to reveal latent structures, accelerate innovation, and deliver potential breakthroughs in science and engineering.

Oral Session 3

10:20-12:00 at Auditorium

Chair: Maryam Doborjeh

O3-1 Emergence of Fixational and Saccadic Movements in a Multi-level Recurrent Attention Model for Vision

Pengcheng Pan, Shogo Yonekura, and Yasuo Kuniyoshi

https://doi.org/10.1007/978-981-95-4378-6_21

O3-2 Comparison-Based Beam Search for Constructive NCO Approaches

Xinwei Chen, Huiyuan Tian, Li Zhang, Runhe Huang, and Shijian Li

https://doi.org/10.1007/978-981-95-4367-0_21

O3-3 Optimization Design of Adaptive Loss Function Using Evolutionary Neural Networks

Xiang Meng, Zhaoyang Hai, Xiabi Liu, and Yan Pei

https://doi.org/10.1007/978-981-95-4367-0_22

O3-4 Collaborative Perceiver: Elevating Vision-Based 3D Object Detection via Local Density-Aware Dense Spatial Occupancy

Jicheng Yuan, Manh Nguyen-Duc, Qian Liu, Manfred Hauswirth, and Danh Le-Phuoc

https://doi.org/10.1007/978-981-95-4378-6_4

Oral Session 4

13:00-14:40 at Auditorium

Chair: Reza Enayatollahi

O4-1 Fine and Dynamic Functional Modules of Local Field Potentials in the Lateral Prefrontal Cortex of Monkeys

Kotaro Hironaka, Kazuhiro Sakamoto, Norihiko Kawaguchi, Hajime Mushiake, and Kazushi Ikeda

https://doi.org/10.1007/978-981-95-4378-6_22

O4-2 Prompting Large Language Models for fMRI-Based Brain Semantic Decoding

Anna Sato and Ichiro Kobayashi

https://doi.org/10.1007/978-981-95-4378-6_27

O4-3 A Predictive Map Model of Place Cells Learned from Grid Cell Activity in Continuous Spatial Environments

Yusuke Kuniyoshi and Tadashi Yamazaki

https://doi.org/10.1007/978-981-95-4378-6_28

O4-4 Biophysical Simulation of the Effects of Transcranial Magnetic Stimulation (TMS) on a Cortical Column

Masaharu Yonezawa, Kaaya Akira, and Tadashi Yamazaki

https://doi.org/10.1007/978-981-95-4378-6_30

O4-5 Multi-session Meditative EEG Classification with Noise-Robust Self-supervision

Zuxin Song, Fei Cheng, Mingyu Gou, Tianzhen Chen, Bao-Liang Lu, Jiang Du, and Wei-Long Zheng

https://doi.org/10.1007/978-981-95-4378-6_31

Flash Talks 2

14:40-15:00 at Auditorium

Chair: Tatsusya Daikoku

S2-1 RepDynaMixer: Dynamic Kernel Fusion and Reparameterization for Lightweight Image Super-Resolution

Wenwu Jiang and Zili Zhang

https://doi.org/10.1007/978-981-95-4378-6_12

S2-2 Beyond Detection: A Checksum-Based Dual Verification Mechanism for Host LLM Watermarking

Xiaofan Deng, Junfeng Zhu, Kexin Yu, and Yongtao Yu

https://doi.org/10.1007/978-981-95-4381-6_24

S2-3 Scene Text Reconstructor: A Contextual-Aware Masking Framework for Pre-training Text Detectors

Yaohou Fan, Tomo Miyazaki, Zhengmi Tang, Juan Wang, Yongsong Huang, and Shinichiro Omachi

https://doi.org/10.1007/978-981-95-4378-6_13

S2-4 MEDNet: Multi-level Expert Disentangled Network For EEG Classification

Bingxu Hou, Yinchun Liu, Mingxuan Cui, and Gongsheng Yuan

https://doi.org/10.1007/978-981-95-4381-6_3

S2-5 Optimizing and Benchmarking a Multi-task Transformer Model for Netlist Generation of Electrical Passive Components

Richard Thomas Blakey and Abdulrahman Altahhan

https://doi.org/10.1007/978-981-95-4367-0_37

S2-6 Comparative Analysis of Fusion Network Models for Colorectal Polyp Segmentation on Heterogeneous Datasets

Daniela-Maria Cristea, Vladimir Sinițin, and Laszlo-Barna Iantovics

https://doi.org/10.1007/978-981-95-4381-6_4

S2-7 SERI: Stagnation-Based Extinction and Re-initialization Operator for Enhanced Evolutionary Optimization

Quratulain Quraishi, Mian Muhammad Awais, and El-Sayed M. El-Alfy

https://doi.org/10.1007/978-981-95-4367-0_39

S2-8 Meta-Adaptive Hilbert Framework for Continual Cross-Subject Neural Decoding in BCIs

Deepak Mewada, Shamin Aggarwal, Monalisa Sharma, and Debasis Samanta

https://doi.org/10.1007/978-981-95-4378-6_44

Poster Session 2

15:00-17:00 at Foyer and Meeting Room 1

P2-1 Neural Synchronization and Analysis-Grounded Computational Model for Fine-Grained Sentiment Understanding

Yue Yin, Bin Chen, Sijia Li, Zilong Yin, Chenyu Zhou, and Haoyu Wang

https://doi.org/10.1007/978-981-95-4367-0_8

P2-2 Latent Diffusion Models for Text-to-Audio Generation with Limited Training Data

Haiyan Jin, Jiahong Zhu, Tianlong Yang, Hongwei Zuo, and Wei Wang

https://doi.org/10.1007/978-981-95-4088-4_17

P2-3 Factored Internal Verification Enhances Large Language Model Factuality

Ren Zhuang, Ben Wang, Shuifa Sun, and Ke Lu

https://doi.org/10.1007/978-981-95-4088-4_18

P2-4 Causal What-Ifs: Rethinking Counterfactuals with LLM Agents

Yash Narendra and Niladri Chatterjee

https://doi.org/10.1007/978-981-95-4367-0_13

P2-5 Exploring Data Augmentation for Keyword-Based Document Classification Using Large Language Models

Yu Onodera and Hiroyuki Shinnou

https://doi.org/10.1007/978-981-95-4088-4_19

P2-6 LLMs-Empowered Retrieval on Text-Attributed Graphs

Yifei Huang, Mingzhe Liu, Leilei Sun, Tongyu Zhu, and Weifeng Lv

https://doi.org/10.1007/978-981-95-4088-4_20

P2-7 TSA-Net: Tri-Affine Attention-Based Spanning Attention Network for Named Entity Recognition

Xiaoqin Zhang, Tian Shi, Yanjun Lu, Xingpeng Wu, and Xianglong Liu

https://doi.org/10.1007/978-981-95-4088-4_21

P2-8 Traffic Pretext Tasks for Trajectory Prediction with Large Language Models

Shengyi Li, Xuanpeng Li, Qifan Xue, and Feng Yang

https://doi.org/10.1007/978-981-95-4088-4_22

P2-9 Exchange of Perspective Prompting Enhances Reasoning in Large Language Models

Lin Sun and Can Zhang

https://doi.org/10.1007/978-981-95-4088-4_23

P2-10 Evaluating LLMs on Pure Graph Structures: Benchmarks with Multiscale Graph Tasks and Structure-Based Prompt Improvements

Mingzhe Liu, Jiarui Liu, Tongyu Zhu, and Leilei Sun

https://doi.org/10.1007/978-981-95-4088-4_24

P2-11 LEARN: A Story-Driven Layout-to-Image Generation Framework for STEM Instruction

Maoquan Zhang, Bisser Raytchev, and Xiujuan Sun

https://doi.org/10.1007/978-981-95-4367-0_9

P2-12 Deep Semantics for Structured Data: Hybrid LLM-Based Models for Temporal Forecasting

Ankit Manna, Sadhana Tiwari, Himanshi Singh, and Sonali Agarwal

https://doi.org/10.1007/978-981-95-4088-4_25

P2-13 Enhancing Edge Microservice Deployment Efficiency with an LLM-Empowered Multi-agent Framework

Shendong Gao, Zhixuan Wang, Yuqi Zhao, and Zengyang Li

https://doi.org/10.1007/978-981-95-4088-4_26

P2-14 A Time-Frequency Feature Fusion Approach to Silent Speech Signal Recognition

Haoran Wang, Yangjie Luo, Zihua Chen, Lihua Zhang, and Xiaoyang Kang

https://doi.org/10.1007/978-981-95-4367-0_10

P2-15 Multimodal LLM Guidance for Aligning Text-to-Image Generation

Melike Nur Yegin and Mehmet Fatih Amasyali

https://doi.org/10.1007/978-981-95-4088-4_27

P2-16 Creative Synthesis of Indoor Scene with Large Language Model

Haolun Lan, Yao Cheng, Yizhe Gu, Chenkang He, Xuan Cheng, and Juncong Lin

https://doi.org/10.1007/978-981-95-4088-4_28

P2-17 AutoFSM: A Multi-agent Framework for FSM Code Generation with IR and SystemC-Based Testing

Qiuming Luo, Yanming Lei, Kunzhong Wu, Yixuan Cao, and Chengjian Liu

https://doi.org/10.1007/978-981-95-4088-4_29

P2-18 React-Driven Skill Decision to Design Zero-Shot Prompt

Mengye Lan and Yan Yang

https://doi.org/10.1007/978-981-95-4088-4_30

P2-19 CAF-I: A Collaborative Multi-agent Framework for Enhanced Irony Detection with Large Language Models

Ziqi Liu, Ziyang Zhou, Mingxuan Hu, Yangbin Chen, and Zhijie Xu

https://doi.org/10.1007/978-981-95-4367-0_11

P2-20 TTRCD: Task-Specific Token-Level Representations and Cross-Utterance Dependencies for Conversational Aspect-Based Sentiment Quadruple Analysis

Yufei Ding, Senyu Hou, and Fang Fang

https://doi.org/10.1007/978-981-95-4088-4_31

P2-21 Shadows in the Attention: Contextual Perturbation and Representation Drift in the Dynamics of Hallucination in LLMs

Zeyu Wei, Shuo Wang, Xiaohui Rong, Xuemin Liu, and He Li

https://doi.org/10.1007/978-981-95-4088-4_32

P2-22 Topic-Driven Data Augmentation for Hierarchical Text Classification

Zhiwen Hu, Fumiyo Fukumoto, Bin Hu, Yoshimi Suzuki, and Dongjin Yu

https://doi.org/10.1007/978-981-95-4088-4_33

P2-23 Psychology-Driven Enhancement of Humour Translation

Yuchen Su, Yonghua Zhu, Yang Chen, Diana Benavides-Prado, and Michael Witbrock

https://doi.org/10.1007/978-981-95-4088-4_34

P2-24 M2RAG: A Multi-agent and Multimodal Fusion Framework for Retrieval-Augmented Document QA

Tongtong Duan, Minghao Hu, Liang Xue, Chunming Liu, Guotong Geng, Wei Luo, and Zhunchen Luo

https://doi.org/10.1007/978-981-95-4088-4_35

P2-25 Hint of Pseudo Code (HoPC): Zero-Shot Step by Step Pseudo Code Reasoning Prompting

Iok Tong Lei, Ziyu Zhu, Han Yu, Yige Yao, and Zhidong Deng

https://doi.org/10.1007/978-981-95-4088-4_36

P2-26 Cross-Class Zero-Shot Audio Classification via Generative Learning on Reconstructed Auditory Description

Meng Tang, Xinzhou Xu, Zheng Gu, and Zixing Zhang

https://doi.org/10.1007/978-981-95-4088-4_37

P2-27 Task-Driven Fine-Grained Authorization via Explainable LLM Reasoning

Min Li, Guanghan Xi, Neng Gao, and Lidong Zhai

https://doi.org/10.1007/978-981-95-4088-4_38

P2-28 MAFPO: A Multi-Agent Framework for Prompt Optimization in Complex Question Answering

Shuo Wang, Zeyu Wei, Guangjun Shi, Xiaohui Rong, and Jianjun Yu
https://doi.org/10.1007/978-981-95-4091-4_1

P2-29 Topology-Guided Graph Transformer for Recommender Systems
Lizhi Liu
https://doi.org/10.1007/978-981-95-4091-4_39

P2-30 Dual-Space Structure Preservation with Non-Homogeneous Fusion for Incomplete Multi-view Multi-label Classification
Zhixian Jiang, Yishan Jiang, Chaoran Li, Jiayan Li, and Xiaohuan Lu
https://doi.org/10.1007/978-981-95-4091-4_40

P2-31 FlashMLA-ETAP: Efficient Transpose Attention Pipeline for Accelerating MLA Inference on NVIDIA H20 GPUs
Pengcui Dege, Qiuming Luo, Rui Mao, and Chang Kong
https://doi.org/10.1007/978-981-95-4094-5_1

P2-32 Purification Enhancement Network for Fine-Grained Few-Shot Class Incremental Learning
Hongyu Nie, Zicheng Pan, and Yongsheng Gao
https://doi.org/10.1007/978-981-95-4094-5_2

P2-33 Accelerated Shapley Based Pruning with Data Synthesis and Channel Dependency Grouping
Zexu Huang and Yihao Chen
https://doi.org/10.1007/978-981-95-4367-0_34

P2-34 Policy Constraint by Only Support Constraint for Offline Reinforcement Learning
Yunkai Gao, Jiaming Guo, Fan Wu, Siming Lan, and Rui Zhang
https://doi.org/10.1007/978-981-95-4094-5_3

P2-35 GeomKD: A Geometric Framework for Knowledge Distillation
Haoran Zhang, Saiyu Hu, Bohan Ma, Boao Gong, Zhiyong Tao, and Shi Wang
https://doi.org/10.1007/978-981-95-4094-5_4

P2-36 An Asymptotic Equation Linking WAIC and WBIC in Singular Models
Naoki Hayashi, Takuro Kutsuna, and Sawa Takamuku
https://doi.org/10.1007/978-981-95-4367-0_35

P2-37 Contextually-Enriched KGC: A Novel Framework for Relational Semantics Enhancement

Fang Lu and Yuguo Pan

https://doi.org/10.1007/978-981-95-4094-5_5

P2-38 Inter-Core Resource-Aware Deep Reinforcement Learning RMSCA Algorithm in SDM-EONs

Jing Jiang, Yushu Su, Jingchi Cheng, and Tao Shang

https://doi.org/10.1007/978-981-95-4094-5_6

P2-39 BOAT: Binary Optimizer with Adaptive Thresholds

Shan Gu, Guoyin Zhang, Chengwei Jia, and Yanxia Wu

https://doi.org/10.1007/978-981-95-4094-5_7

P2-40 Uncertainty-Aware Policy Search via Free Energy Optimization

Tikara Hosino

https://doi.org/10.1007/978-981-95-4094-5_8

P2-41 Learning Top-k Classification with Label Ranking

Zui Chen, Kai Wang, Chen Yang, Bin Cao, and Jing Fan

https://doi.org/10.1007/978-981-95-4094-5_9

P2-42 Distributed Generalized Nash Equilibrium Learning for Online Multi-cluster Games with Bandit Feedback

Bingqian Liu and Guanghui Wen

https://doi.org/10.1007/978-981-95-4367-0_36

P2-43 JAG-R: Online Geometric Recentering for Noise-Robust XOR Classification in Complex-Valued Neural Networks

Jamie Keegan-Treloar, Alex Newcombe, and Greg Falzon

https://doi.org/10.1007/978-981-95-4094-5_10

P2-44 Scalable and Universal Reservoir Computing with 2D Active Photonic Cavities

Shiki Endo, Wataru Sugahara, and Shigeru Nakagawa

https://doi.org/10.1007/978-981-95-4094-5_11

P2-45 Optimizing and Benchmarking a Multi-task Transformer Model for Netlist Generation of Electrical Passive Components

Richard Thomas Blakey and Abdulrahman Altahhan

https://doi.org/10.1007/978-981-95-4367-0_37

P2-46 Realistic Benchmarks for Fair Stream Learning

Kathrin Lammers, Valerie Vaquet, Jonas Vaquet, and Barbara Hammer

https://doi.org/10.1007/978-981-95-4094-5_12

P2-47 Fast and Accurate Visuomotor Imitation Learning via 2D Consistency Flow Matching Policy

Shuai Tian, Haoran Li, and Dongbin Zhao

https://doi.org/10.1007/978-981-95-4094-5_13

P2-48 Reward Calibration for Continual Reinforcement Learning from Human Feedback

Jiaqi Lang, Jiahao Zhao, Linjing Li, and Daniel Dajun Zeng

https://doi.org/10.1007/978-981-95-4094-5_14

P2-49 Breaking the Bottleneck of BPTT: Joint Local Backpropagation for Deep SNNs

Jing Wang, Maozhen Han, Lang Xue, Ying Liu, and Hong Qu

https://doi.org/10.1007/978-981-95-4094-5_15

P2-50 Knee Trajectory Prediction via Decoupling and Conditional Diffusion

Jiatong Cui, Chen Wang, Renjie Ma, Rui Zou, Ziyun Ge, Guangyu Liang, Yatang Wang, and Zeng-Guang Hou

https://doi.org/10.1007/978-981-95-4445-5_26

P2-51 Personalization of Human Activity Recognition with Cross-Conditioned Diffusion Models

Tatsuhito Hasegawa and Shunsuke Sakai

https://doi.org/10.1007/978-981-95-4094-5_16

P2-52 Context-Driven Knowledge Graph Completion with Semantic-Aware Relational Message Passing

Siyuan Li, Ruitong Liu, Te Sun, Yan Wen, Ruihao Zhou, Jingyi Kang, and Yunjia Wu

https://doi.org/10.1007/978-981-95-4367-0_38

P2-53 Cross-Subject Attentive Multimodal Modeling for Social Interaction Understanding

Le Tian, Bo Sun, Jun He, and Yinghui Zhang

https://doi.org/10.1007/978-981-95-4094-5_17

P2-54 Selective Fine-Tuning for Deep Transfer Learning

Nosseiba Ben Salem, Younès Bennani, and Thomas Papastergiou

https://doi.org/10.1007/978-981-95-4094-5_18

P2-55 A Distributionally Robust Framework for Nuisance in Causal Effect Estimation

Akira Tanimoto

https://doi.org/10.1007/978-981-95-4094-5_19

P2-56 SERI: Stagnation-Based Extinction and Re-initialization Operator for Enhanced Evolutionary Optimization

Quratulain Quraishi, Mian Muhammad Awais, and El-Sayed M. El-Alfy

https://doi.org/10.1007/978-981-95-4367-0_39

P2-57 Enhancing 4D Consistency for Mamba-Based Light Field Spatial Super-Resolution

Yu Wang, Ruixuan Cong, Zexin Sun, Da Yang, Zhenglong Cui, Siyang Li, Shuai Wang, and Hao Sheng

https://doi.org/10.1007/978-981-95-4097-6_12

P2-58 Leveraging Spatiotemporal Semantic Features for Skeleton-Based Action Recognition

Hailun Xia, Naichuan Zheng, and Yuqi Yang

https://doi.org/10.1007/978-981-95-4097-6_13

P2-59 Augmentation of LiDAR Scenes with Adverse Weather Conditions Using Latent Diffusion Models

Andrea Matteazzi, Michael Arnold, and Dietmar Tutsch

https://doi.org/10.1007/978-981-95-4097-6_14

P2-60 EAY-Net: Edge-Aware Y-Network for Color Guided Depth Map Super-Resolution

Yuan Shi, Jiamian Bian, Xiaoyu Jin, Qingmin Liao, and Wenming Yang

https://doi.org/10.1007/978-981-95-4378-6_11

P2-61 DLRF-Net: A Decomposition-Driven Network for Low-Rank Infrared and Visible Image Fusion

Wei Gao, Youning Wei, Yu Zhang, Peng Yang, Wei Mao, and Yi Shi

https://doi.org/10.1007/978-981-95-4097-6_15

P2-62 Teacher-Student Consistent Distillation for Source-Free Domain Adaptation Object Detection

Yangfan Wang, Hongyang Yu, and Xiyang Li

https://doi.org/10.1007/978-981-95-4097-6_16

P2-63 Optimized Dynamic Snake Convolution Module for Accurate Crack Segmentation

Dianwen Li, Jianming Zhang, Gan Cheng, Fangli Duan, and Yan Gui

https://doi.org/10.1007/978-981-95-4097-6_17

P2-64 RepDynaMixer: Dynamic Kernel Fusion and Reparameterization for Lightweight Image Super-Resolution

Wenwu Jiang and Zili Zhang

https://doi.org/10.1007/978-981-95-4378-6_12

P2-65 Scene Text Reconstructor: A Contextual-Aware Masking Framework for Pre-training Text Detectors

Yaohou Fan, Tomo Miyazaki, Zhengmi Tang, Juan Wang, Yongsong Huang, and Shinichiro Omachi

https://doi.org/10.1007/978-981-95-4378-6_13

P2-66 LABA-CycleGAN: LAB-Enhanced CycleGAN with Spatial-Channel Attentive for Underwater Image Enhancement

Yongxing Hong, Haisen Li, Jing Wang, and Zhanfei Peng

https://doi.org/10.1007/978-981-95-4097-6_18

P2-67 A Category-Guided Keypoint Detection Framework for Industrial Binary Images

Tianqi Ni, Yueche Chen, Xubin Wen, and Siyu Xia

https://doi.org/10.1007/978-981-95-4097-6_19

P2-68 Event-Driven Surveillance Video Moment Retrieval with Foreground Enhancement

Shuyi He, Qingchao Kong, Wenji Mao, and Shaoqiang Tang

https://doi.org/10.1007/978-981-95-4378-6_14

P2-69 Global Joint Local with Multi-directional Weighted Sparse Model for Infrared Small Target Detection

Junying Li, Xiaorong Hou, and Yajian Zeng

https://doi.org/10.1007/978-981-95-4097-6_20

P2-70 Hermite Curves and Multi-kernel Fusion for Large-Angle Curved and Rotated Text Spotting

Jiawhen Chen, Bo Wu, Tianyue Chen, and Chunhua Deng

https://doi.org/10.1007/978-981-95-4097-6_21

P2-71 Enhancing Interpretability for Fine-Grained Vessel Recognition

Wolodymyr Krywonos and Angelo Cangelosi

https://doi.org/10.1007/978-981-95-4097-6_22

P2-72 STM-SalNet: A Biologically-Inspired Spatial-Temporal Memory Network for Video Saliency Prediction

Jikai Xu, Dandan Zhu, Kaiwei Zhang, and Xiongkuo Min

https://doi.org/10.1007/978-981-95-4097-6_23

P2-73 Pose-Guided Cross-Modal Knowledge Distillation for Visible-Infrared Person Re-identification

Sheng Zhang, TongJiaHao Teng, and XiaoWei Zhang

https://doi.org/10.1007/978-981-95-4097-6_24

P2-74 FEFusion: A Frequency-Domain Enhancement Method for Rainy Infrared and Visible Image Fusion

Jianlou Lou, Xinyu Sheng, and Jianxun Lou

https://doi.org/10.1007/978-981-95-4097-6_25

P2-75 VSLCG-U: A UNet-Based Model with Mamba Gated Connections for Dinosaur Footprint Segmentation

Yinghao Cai, Shaoning Zeng, and Jianhang Zhou

https://doi.org/10.1007/978-981-95-4378-6_15

P2-76 CQM: Algorithm for Video Moment Localization and Highlight Segment Detection Based on Conditional Query

Yude Wang, Xinyu Wang, Fei Song, Chuanxin Liu, and Zongqiang Liu

https://doi.org/10.1007/978-981-95-4097-6_26

P2-77 Towards Feature Enhanced Small Object Recognition in X-ray Safety Inspection

Jie Yang, Ho Yin Kan, and Erli Lyu

https://doi.org/10.1007/978-981-95-4378-6_16

P2-78 Machine Learning Methods for Computing Brain State Sleep Trajectories and Insomnia Detection

Xiaojing Ren, Irena Koprinska, Stephen McCloskey, and Bryn Jeffries

https://doi.org/10.1007/978-981-95-4100-3_8

P2-79 From Neurons to Computation: Biological Reservoir Computing for Pattern Recognition

Ludovico Iannello, Luca Ciampi, Gabriele Lagani, Fabrizio Tonelli, Eleonora Crocco, Lucio Maria Calcagnile, Angelo Di Garbo, Federico Cremisi, and Giuseppe Amato

https://doi.org/10.1007/978-981-95-4100-3_9

P2-80 Heterogeneous Dual Teacher-Student Mutual Learning with Shape Awareness for Semi-Supervised Medical Image Segmentation

Juntao Chen, Haoran Zhou, and Guangyao Li

https://doi.org/10.1007/978-981-95-4378-6_43

P2-81 An Adaptive Soft-Selection Stacking-Based Model for Chronic Disease Prediction

Chao Lin, Zongwen Fan, and Jin Gou

https://doi.org/10.1007/978-981-95-4100-3_11

P2-82 CURVETE: Curriculum Learning and Progressive Self-supervised Training for Medical Image Classification

Asmaa Abbas, Mohamed Medhat Gaber, and Mohammed M. Abdelsamea

https://doi.org/10.1007/978-981-95-4381-6_7

P2-83 iPac: Incorporating Intra-image Patch Context Into Graph Neural Networks for Medical Image Classification

Usama Zidan, Mohammed Medhat Gaber, and Mohammed M. Abdelsamea

https://doi.org/10.1007/978-981-95-4100-3_12

P2-84 FPG2DNet: A Deep Learning Framework for Molecular Property Prediction via Multi-type Feature Fusion

Xuecheng Wang, Lijuan Peng, Huan Liu, Yingkun Ren, Hongcheng Zhou, and Zongjun Ren

https://doi.org/10.1007/978-981-95-4381-6_1

P2-85 A Spatio-Temporal Feature Classification Method for fNIRS Signals Based on a Hybrid CNN-Transformer Architecture

Li-Dan Kuang, Yi-Xiao Wang, and Junwu Xie

https://doi.org/10.1007/978-981-95-4381-6_2

P2-86 MEDNet: Multi-level Expert Disentangled Network For EEG Classification

Bingxu Hou, Yinchun Liu, Mingxuan Cui, and Gongsheng Yuan

https://doi.org/10.1007/978-981-95-4381-6_3

P2-87 Multiscale Recursive Graph Transformer for Retinal Vessel Segmentation

Syed Javed, Erik Meijering, Arcot Sowmya, and Imran Razzak

https://doi.org/10.1007/978-981-95-4100-3_13

P2-88 Estimating Cortical Hierarchy in the Human Cerebral Cortex Using Deep Graph Matching Consensus

Yudai Suzuki, So Kariyama, Yuta Ashihara, and Hiroshi Yamakawa

https://doi.org/10.1007/978-981-95-4100-3_14

P2-89 Comparative Analysis of Fusion Network Models for Colorectal Polyp Segmentation on Heterogeneous Datasets

Daniela-Maria Cristea, Vladimir Sinițin, and Laszlo-Barna Iantovics

https://doi.org/10.1007/978-981-95-4381-6_4

P2-90 Excitatory-Inhibitory Dynamics in Adaptive Decision-Making

Veronica Chelu and Doina Precup

https://doi.org/10.1007/978-981-95-4381-6_5

P2-91 A Cortical Microcircuit Model in Layer 2/3 for Reproducing Orientation Selectivity in the Primary Visual Cortex (V1)

Yuki Nagai and Nobuhiko Wagatsuma

https://doi.org/10.1007/978-981-95-4100-3_15

P2-92 Interpretable Modeling of Multi-scale Temporal Patterns in Depressive Speech

Zhihao Wang, Wenju Yang, Peng Cao, Fei Wang, and Osmar R. Zaiane

https://doi.org/10.1007/978-981-95-4381-6_6

P2-93 The Effect of Introducing Randomness into Connectome-Based Reservoir Weights when Solving Neuroscience Tasks

Makoto Fukushima

https://doi.org/10.1007/978-981-95-4100-3_16

P2-94 Meta-Adaptive Hilbert Framework for Continual Cross-Subject Neural Decoding in BCIs

Deepak Mewada, Shamin Aggarwal, Monalisa Sharma, and Debasis Samanta

https://doi.org/10.1007/978-981-95-4378-6_44

P2-95 TDAdv: Improving Transferability of Unrestricted Adversarial Examples with Text-Guided Diffusion

Shijie Zhao, Siyu Hu, Zhenyu Liang, Siqi Huang, and Anjie Peng

https://doi.org/10.1007/978-981-95-4109-6_5

P2-96 Robust Training to Secure Automated AI Accelerator Generation Against Malicious Platforms

Chao Guo and Youhua Shi

https://doi.org/10.1007/978-981-95-4109-6_6

P2-97 Light Feature Analysis for Data Poisoning Detection

Achraf Kerzazi, Sujeevan Aseervatham, Younès Bennani, and Mounia Kharbouche-Harrari

https://doi.org/10.1007/978-981-95-4109-6_7

P2-98 STIN: Spatio-Temporal Inference Network Enhanced by Social Attributes for Next Location Prediction

Yongyi Huang, Weikang Liu, and Huaping Zhang

https://doi.org/10.1007/978-981-95-4109-6_8

P2-99 SMF-Net: Spatiotemporal Motion Former Network for Ship Flooding Time Prediction

Yang Dongmei, Li Ze, Chen Kanjun, and Lai Churong

https://doi.org/10.1007/978-981-95-4109-6_9

P2-100 Real-Time Diagnosis of UAV Configuration Parameters Based on Fuzz Testing

Yifei Yan, Xiao Yu, Yuexuan Ma, Xiaoyu Li, Yuanzhang Li, and Yu-an Tan

https://doi.org/10.1007/978-981-95-4109-6_10

P2-101 L3-POI: Integrating Popularity, Periodicity, and Short-Term Interests

Zhuojun Jiang, Xu Zhang, Bada Xin, Rong Yang, Jiang Guo, Zhao Li, and Qingyun Liu

https://doi.org/10.1007/978-981-95-4109-6_11

P2-102 Operator-Based Implied Volatility Smoothing: An Approach to Improve GNO Efficiency Using Bivariate Cubic B-Splines

Xuan Ye, Claire Liu, and Junbin Gao

https://doi.org/10.1007/978-981-95-4109-6_12

P2-103 A Seasonal-Trend Dynamic Interactive Integration Network for Traffic Forecasting

Jianuo Ji, Hongbin Dong, and Xiaoping Zhang

https://doi.org/10.1007/978-981-95-4381-6_23

P2-104 DRAMoE: Boosting Adversarial Robustness with Adversarial Training and Adaptive Mixture of Experts

Yu Fu, Hengzhi Xie, Ming Yang, and Denghui Zhang

https://doi.org/10.1007/978-981-95-4109-6_13

P2-105 Beyond Detection: A Checksum-Based Dual Verification Mechanism for Host LLM Watermarking

Xiaofan Deng, Junfeng Zhu, Kexin Yu, and Yongtao Yu

https://doi.org/10.1007/978-981-95-4381-6_24

P2-106 LightGuard: Adaptive TEE-GPU Sync for Real-Time Training Integrity
Chengkai Chen, Zhicheng Xu, Chenyang Mo, Zhe Liu, and Hongbing Cheng
https://doi.org/10.1007/978-981-95-4381-6_25

P2-107 Open-World Anomaly Segmentation via Visual-Language Alignment
Jia-Xi Li, Ji Zhang, Yu-Xing Liu, Xin-Xin Wen, Hui-Min Yang, Xu-Chuan Zhou, and
Jing-Zhong Xiao
https://doi.org/10.1007/978-981-95-4109-6_14

P2-108 SmoothStormFCA: Convolutional Smoothing Adversarial Camouflage with
Complex Weather Robustness
Siqi Huang, Haoqi Gao, Shijie Zhao, Anjie Peng, Hui Zeng, and Xing Yang
https://doi.org/10.1007/978-981-95-4109-6_15

P2-109 MHPA: Multi-channel Hybrid Perturbation Adversarial Embedding via Fixed
Neural Network Steganography
Jibin Zheng, Li Ma, Fen Liu, Wenyin Yang, Yongqiang Li, and Zhengbin Liu
https://doi.org/10.1007/978-981-95-4109-6_16

P2-110 Gated Fusion Enhanced Multi-scale Hierarchical Graph Convolutional
Network for Stock Movement Prediction
Xiaosha Xue, Peibo Duan, Zhipeng Liu, Qi Chu, Changsheng Zhang, and Bin Zhang
https://doi.org/10.1007/978-981-95-4381-6_26

P2-111 Teacher Encoder-Student Decoder Denoising Guided Segmentation Network
for Anomaly Detection
Shixuan Song, Hao Chen, Shu Hu, Xin Wang, Jinrong Hu, and Xi Wu
https://doi.org/10.1007/978-981-95-4109-6_17

P2-112 Boosting Video Deepfake Detection via Quality-Aware and Multi-scale
Audio-Visual Alignment
Jingfei Chen, Xun Che, Qianmu Li, and Qian Zhao
https://doi.org/10.1007/978-981-95-4109-6_18

P2-113 Towards Transparent Industrial Fault Diagnosis via Logic-Aware Neural Rule
Learning
Xueting Jiang, Xincheng He, Haoran Liu, Shuo Guan, Jiayu Xue, Bowen Shen, and
Yuanguang Wang
https://doi.org/10.1007/978-981-95-4109-6_19

P2-114 HeteroWaveVD: A Heterogeneous Wavelet-Enhanced Source Code Vulnerability Detection Framework

Zhen Li, Yuhan Li, Liangze Yin, and Ji Wang

https://doi.org/10.1007/978-981-95-4109-6_20

P2-115 RL-Based Explainable Factor Generation for Market Risk Analysis

Shuxiao Chen, Ruyao Xu, Chenyu Wang, Mingjun Ma, and Zhongchen Miao

https://doi.org/10.1007/978-981-95-4381-6_27

P2-116 StreamGuard: A Streaming-Based Defense Against Jailbreaking Attacks in Large Language Models

Laizhen Li, Xitong Gao, Xuan Wang, Juanjuan Zhao, and Kejiang Ye

https://doi.org/10.1007/978-981-95-4109-6_21

P2-117 STTS-EAD: Improving Spatio-Temporal Learning Based Time Series Prediction via Embedded Anomaly Detection

Yuanyuan Liang, Tianhao Zhang, Xiaoman Wang, Lei Pan, and Tingyu Xie

https://doi.org/10.1007/978-981-95-4445-5_31

P2-118 FrustumFusionNets: A 3D Object Detection Network Based on Tractor Road Scene

Lili Yang, Mengshuai Chang, Xiao Guo, Yiwen Mei, and Caicong Wu

https://doi.org/10.1007/978-981-95-4445-5_33

P2-119 Evaluate LLMs on Code Review Understanding: A Multi-step Reasoning Benchmark

Xue Wei and Junchang Xin

https://doi.org/10.1007/978-981-95-4445-5_34

P2-120 Autonomous Framework Reforming Agricultural Irrigation Decisions with a Large Language Model

Shihong Li, Lin Li, and Yun Li

https://doi.org/10.1007/978-981-95-4445-5_28

Special Session 1: Sustainable Smart Village – Harnessing Edge AI and TinyML for Low-Resource Communities

17:00-18:40 at Auditorium

Organizers: Absalom El-Shamir Ezugwu, Diego Oliva, Seyed Jalaaladdin Mousavirad, Mario A. Navarro

MS2-1 Gating-TinyLLaVA: A Compact Multimodal Model with Dual Visual Encoders

Xuanang Zhang, Yuezhong Wu, Lingjiao Chen, and Xi Chen

https://doi.org/10.1007/978-981-95-4384-7_12-1

MS2-2 A Voice-Based Gender and Age Recognition System on Devices with Low Computational Resources

Haoxuan Li and Yonghui Rao

https://doi.org/10.1007/978-981-95-4384-7_2

MS2-3 Sparse Spectral Transformer: Dynamic Frequency-Aware Attention for Scalable Multimodal Fusion

Ruoyao Cai

https://doi.org/10.1007/978-981-95-4384-7_3

MS2-4 LERIS: An Energy-Efficient and Resource-Optimized Inference System for CNNs and MLPs in Edge AI Applications

Phuc Van Le, Thanh-Dat Van Nguyen, Tran Ngoc Thinh, Huynh Phuc Nghi, and Long Tan Le

https://doi.org/10.1007/978-981-95-4384-7_5

MS2-5 Design of Collective Housing Based on Airflow and Geometric Forms

Satoru Morita

https://doi.org/10.1007/978-981-95-4384-7_4

Banquet

19:00-21:00 at Center Court

Day 4: Sunday November 23rd

Keynote Lecture 3

9:00-10:00 at Auditorium

Machine Learning for Robots: From Perception to Action

Asako Kanezaki

Associate Professor, Institute of Science Tokyo

Chair: Tadahiro Taniguchi

Abstract: To build a robotic system that operates in real-world environments, it is necessary to recognize the environment and acquire policies that determine optimal actions based on the recognition results. In this talk, I will introduce the recent work of our laboratory in areas such as 3D object recognition, robot manipulation, multi-agent cooperative behavior learning, and research in the field of Embodied AI.

Oral Session 5

10:20-12:00 at Auditorium

Chair: Monowar Bhuyan

O5-1 CLIP-Guided Adversarial Example Detection via Latent Mutual Information

Jun Ma, PengJu Wang, and Jing Liu

https://doi.org/10.1007/978-981-95-4367-0_17

O5-2 Orthogonal Frequency-Spatial Gradient Fusion Attack for Boosting Adversarial Transferability

Qingpei Zhao, Zhenyu Liang, Siqi Huang, Shijie Zhao, Anjie Peng, and Hui Zeng

https://doi.org/10.1007/978-981-95-4367-0_20

O5-3 Mind Map-guided Meta-prompting for ADHD Intervention with Large Language Models

Yingqi Wang, Xuguang Qiu, Kehui Song, Rize Jin, and Hongbo Zhao

https://doi.org/10.1007/978-981-95-4378-6_23

O5-4 Enhancing Prompting with Deep Understanding and Extended Reasoning for Solving Mathematical Problems

Zhiwei Yang, Rongxin Huo, Jiahua Yang, Longtao Wang, and Yuxuan Zhou

https://doi.org/10.1007/978-981-95-4367-0_23

O5-5 PFMF-Net: Progressive Feedback Network with Multi-feature for Image Tampering Localization

Shihao Lu, De Li, Xun Jin, and Xian Yang

https://doi.org/10.1007/978-981-95-4378-6_2

Oral Session 6

13:00-14:40 at Auditorium

Chair; Ken Nakae

O6-1 Superpixel-Enhanced Quaternion Feature Fusion and Contextualization Graph Contrastive Learning for Cervical Cancer Diagnosis

Jiajun Ma, Guoheng Huang, Xiaochen Yuan, Xuhang Chen, Jiawang Chen, Lianglun Cheng, Chi-Man Pun, Guo Zhong, and Qingjian Ye

https://doi.org/10.1007/978-981-95-4378-6_24

O6-2 Quantifying Motor Adaptation: A Hybrid AI Approach for Interpreting Short-Term Gait Variability

Basma Jalloul, Bassem Bouaziz, Walid Mahdi, Achraf Ammar, and Wolfgang Schöllhorn

https://doi.org/10.1007/978-981-95-4378-6_25

O6-3 Multi-view Cancer Subtype Identification Based on a Dual-Channel Encoder and Cauchy-Schwarz Divergence

Yong Zhang, Kun Liu, Jiongcheng Zhu, and Wenzhe Liu

https://doi.org/10.1007/978-981-95-4378-6_26

O6-4 A Hybrid Sampling Algorithm Based on Generative Adversarial Networks and Reinforcement Learning for Medical Insurance Fraud Detection

Yaping Zhao, Longfeng Wang, Gustave Florentin Nkoulou Mvondo, and Xing Yang

https://doi.org/10.1007/978-981-95-4367-0_24

O6-5 ISSD-NET: Intra-student Self-distillation with Adaptive q-vMF Loss for Enhanced Semi-supervised Medical Segmentation

Haowen Li, Guoheng Huang, Xiaochen Yuan, Yan Li, Chi-Man Pun, Baiying Lei, and Zhixin Huang

https://doi.org/10.1007/978-981-95-4378-6_34

Flash Talks 3

14:40-15:00 at Auditorium

Chair: Tatsuya Daikoku

S3-1 Attention-Guided Multi-view Feature Fusion for Proxy Traffic Classification

Xu Tang, Jun Tao, and Yuantu Luo

https://doi.org/10.1007/978-981-95-4381-6_29

S3-2 GMamba: EEG Representation Learning from Spatiotemporal Perspectives via Graph Mamba

Weiwei Feng, Nanqing Xu, Kaiyuan Zheng, Changtao Miao, Tengfei Liu, and
Weiqiang Wang
https://doi.org/10.1007/978-981-95-4381-6_8

S3-3 Reconstructing Chest CT from Orthogonal Biplanar X-rays via Feature
Enhancement Blocks and Perceptual Consistency Loss
Tao Tang, Wenjie Cai, Bin Yang, Jun Huang, Ying Zhou, Zhiqin Liu, Qingfeng
Wang, and Guangwei Li
https://doi.org/10.1007/978-981-95-4381-6_10

S3-4 VISE: Velocity-Guided Interpolant Diffusion for Efficient Speech Enhancement
Gang Yang, Yangjie Wei, Ben Niu, Yuqiao Wang, and Shengling Yu
https://doi.org/10.1007/978-981-95-4367-0_15

~~S3-5 Active Defense Against Deepfakes: An Integrated Framework of Adversarial
Data Embedding and Blockchain Authentication
Yuli Wang, Yiyang Liang, Bin Ma, Pei Zhang, and Jinwei Wang
https://doi.org/10.1007/978-981-95-4381-6_32 (Retracted)~~

S3-6 BrainGACCL: Brain Graph Adaptive Co-contrastive Learning with Universum
Samples for fMRI-Based Brain Disease Detection
Yaru Li, Guangyu Wang, Xiaochuan Wang, Junze Wang, Xiaoming Xi, Shuai Zhang,
Limei Zhang, Lishan Qiao, and Mingxia Liu
https://doi.org/10.1007/978-981-95-4381-6_15

S3-7 HEMQ: Towards More Accurate Post-training Mixed-Precision Quantization of
Neural Networks
Yong Yuan, Hang Shi, and Yuan Gao
https://doi.org/10.1007/978-981-95-4367-0_43

S3-8 Building Reasonable Inference for Vision-Language Models in Blind Image
Quality Assessment
Yuan Li, Zitang Sun, Yen-ju Chen, and Shin'ya Nishida
https://doi.org/10.1007/978-981-95-4378-6_20

S3-9 Binning Encoder-Based Grouped Aggregation for Network Traffic Anomaly
Detection
Lingyao Lu, Tongya Zheng, Haoye Wang, Zunlei Feng, and Mingli Song
https://doi.org/10.1007/978-981-95-4381-6_33

Poster Session 3

15:00-17:00 at Foyer and Meeting Room 1

P3-1 Automated Book Drawing for Audiobook Production: A Benchmark and Comparative Study from Heuristics to LLMs

Zheng Chen and Kefan Chen

https://doi.org/10.1007/978-981-95-4367-0_12

P3-2 DGFN: Brain-Inspired Distributed Fusion for Robust Multimodal Sentiment Analysis

Ningping Li, Ruibao Zhang, Xiangyu Zhou, Weichen Dai, Ji Qi, and Yi Zhou

https://doi.org/10.1007/978-981-95-4091-4_2

P3-3 Recognizing Nested Entities from Flat Supervision: A New NER Subtask, Feasibility and Challenges

Yiyang Liu, Ming Jin, and Enwei Zhu

https://doi.org/10.1007/978-981-95-4091-4_3

P3-4 INSIGHT-RAG: Internal State Signals-Heightened Trustworthy Retrieval-Augmented Generation

Yunyang Chen, Bruce Gu, Youyang Qu, Yan Chen, Lei Cui, and Longxiang Gao

https://doi.org/10.1007/978-981-95-4091-4_4

P3-5 AUV: Efficient KV Cache Eviction for LLMs via Attention Score Aggregation and Usage Count

Quanli Li, Qinglin Wang, Hongyang Hu, Xiaoyan Luo, and Jie Liu

https://doi.org/10.1007/978-981-95-4091-4_5

P3-6 MKDF: Knowledge Distillation Based Lightweight Multimodal Framework for Emotion Recognition

Yiwen Wang, Yujian Sun, Bingtian Qiao, Cheng Wang, Zeyu Li, and Shanliang Yang

https://doi.org/10.1007/978-981-95-4091-4_6

P3-7 DAD-PDD: Dual-Aspect Discrepancies-Based Pre-Training Data Detection for LLMs

Xin Fan, Fan Mo, Miyamoto Ryoto, Eint Sandi Aung, Chongxian Chen, Tsuneo Matsumoto, Fuyuko Kido, and Hayato Yamana

https://doi.org/10.1007/978-981-95-4091-4_7

P3-8 Unsupervised Text Style Transfer via LLMs and Mask-Filling with Multi-way Interactions

Lei Pan, Yuanyuan Liang, Hongshen Xu, Da Ma, Su Zhu, and Shuai Fan

https://doi.org/10.1007/978-981-95-4367-0_14

P3-9 DVISI: Dual-View Intent-Slot Interaction for Profile-Based Intent Detection and Slot Filling

Xiaoqin Zhang, Xingpeng Wu, Yanjun Lu, Xianglong Liu, Tian Shi, Shuhan Nie, and Xin Yang

https://doi.org/10.1007/978-981-95-4091-4_8

P3-10 PeterAI: An AI Multi-agent Framework for Personalized Investment Consultancy

Alefe Vitor A. Gadioli, Pedro Azevedo, Anselmo Frizera-Neto, Alberto F. De Souza, Thiago Oliveira-Santos, and Claudine Badue

https://doi.org/10.1007/978-981-95-4091-4_9

P3-11 Multimodal Aspect-Based Sentiment Analysis via Aspect-Guided Pseudo-text Generation

Zhenhowe Liu, Feng Yu, Ru Xie, and Dequan Zheng

https://doi.org/10.1007/978-981-95-4091-4_10

P3-12 VISE: Velocity-Guided Interpolant Diffusion for Efficient Speech Enhancement

Gang Yang, Yangjie Wei, Ben Niu, Yuqiao Wang, and Shengling Yu

https://doi.org/10.1007/978-981-95-4367-0_15

P3-13 Towards Sentic-Aware Multimodal Models for Cyberbullying Detection in Thai Memes

Nattawat Weradechtaweewon, Mongkol Boondamnoen, and Kitsuchart Pasupa

https://doi.org/10.1007/978-981-95-4367-0_16

P3-14 Towards Comprehensive Argumentation Via Guiding Questions in a Multi-Agent System

Sikun Yang, Xian Zhou, and Zhunchen Luo

https://doi.org/10.1007/978-981-95-4091-4_11

P3-15 DSVF-KD: Knowledge Distillation Framework with Dual-Stage Visual Filtering for Robust Multimodal Sentiment Analysis

Xiaoya Cui, Tao Wan, and Zengchang Qin

https://doi.org/10.1007/978-981-95-4091-4_12

P3-16 HGAERE: A Hypergraph Attention-Based Pipeline Model for Joint Entity-Relation Extraction

Changjian Li and Aiping Li

https://doi.org/10.1007/978-981-95-4091-4_13

- P3-17 Logical Data Augmentation for Debiased Zero-Shot Stance Detection
Yinghan Cheng, Shufeng Hao, and Chongyang Shi
https://doi.org/10.1007/978-981-95-4091-4_14
- P3-18 MPCR-SQL: Enhancing SQL Generation by Multi-path SQL Generation and Collective SQL Refinement
Min Hou, Yiming Huang, and Shaopeng Wang
https://doi.org/10.1007/978-981-95-4091-4_15
- P3-19 Counterspeech for Mitigating the Influence of Media Bias: Comparing Human and LLM-Generated Responses
Luyang Lin, Zijin Feng, Lingzhi Wang, and Kam-Fai Wong
https://doi.org/10.1007/978-981-95-4091-4_16
- P3-20 FinLBench: A Benchmark for Evaluating Large Language Models on Long-Text Financial Documents
Sihan Hu, Dingfu Yu, Yuhao Zhang, Zhongliang Yang, Linna Zhou, Xinguang Jiang, Yu Li, Binjie Fei, and Jiaqi Liu
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- P3-23 Controllable Font Style for Visual Text Generation Using Reference Images
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https://doi.org/10.1007/978-981-95-4094-5_21

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Tianshu Zhao, Yanran Guan, and Zinovi Rabinovich

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P3-28 FedAST: Semi-supervised Federated Learning via Adaptively Switched Training

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Ji Feng, Qingjun Zhang, and Fapeng Cai

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Yifei Zhang, Erhao Li, Sibin Wang, Yuxi Zhu, and Jiajia Li

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P3-46 Minimal Invariant Subspaces in Bias Formation

Md. Nur Amin and Alexander Jesser

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Shinnosuke Hirano, Yuiga Wada, Tsumugi Iida, and Komei Sugiura

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Yuanhao Yang, Jinlai Zhang, Yan Su, Ong Zhi Chao, Du Xu, Lairong Yin, and Lin Hu

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P3-50 Parallel Attention-Based Asymmetric Feature Decomposition and Recovery for Domain Generalization Person Re-identification

Hangyuan Yang, Yongfei Zhang, Siyu Chen, Shan Yang, Yanglin Pu, and Yongjun Wang

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Wei Gao, Youning Wei, Yu Zhang, Peng Yang, Wei Mao, and Yi Shi

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Hailong Zhang, Yinfeng Yu, Liejun Wang, Fuchun Sun, and Wendong Zheng

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Yuhan Duan, Lu Che, Xin Cheng, Zhiqiang Zhang, and Wenxin Yu

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Wei Lv, Wenxuan Jin, and Wenyuan Ying

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Yuan Li, Zitang Sun, Yen-ju Chen, and Shin'ya Nishida
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P3-68 IR-MHAtt: A Lightweight Skin Lesion Classification Network with Improved Inverted Residual and Self-attention Mechanism

Yang Lian, Ruizhi Han, Xiaofang Zhong, and Yuehui Chen

https://doi.org/10.1007/978-981-95-4381-6_9

P3-69 Reconstructing Chest CT from Orthogonal Biplanar X-rays via Feature Enhancement Blocks and Perceptual Consistency Loss

Tao Tang, Wenjie Cai, Bin Yang, Jun Huang, Ying Zhou, Zhiqin Liu, Qingfeng Wang, and Guangwei Li

https://doi.org/10.1007/978-981-95-4381-6_10

P3-70 A GFlowNet-Based World Model for Structural Protein-Protein Interaction Prediction on DB5

Olaide Nathaniel Oyelade and Hui Wang

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Hiroshi Yokoyama and Keiichi Kitajo

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P3-72 Unified Multi-modal Aggregated-Masked Diffusion Network for MRI Synthesis with Modality Missing

Ming Guo, Feng Chen, and Chongjun Wang

https://doi.org/10.1007/978-981-95-4381-6_12

P3-73 Biologically Informed EEG Simulation for Neurological Disorder Pattern Injection and Dataset Generation

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P3-74 Evaluating Transfer Learning and Multiple Instance Learning for Domain-Specific Endoscopic Video Classification

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https://doi.org/10.1007/978-981-95-4100-3_21

P3-75 E2D2R-Net: Echo-Enhanced Dual-Dilated Residual Attention Network for Precise Breast Ultrasound Segmentation

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P3-76 Symmetry Interactive Transformer with CNN Framework for Diagnosis of Alzheimer's Disease Using Structural MRI

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Tianyang Dong, Jiahao Bao, Wuchuan Liu, and Wenyuan Ying

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Xinxiang Liu, Jingming Li, Hu Yu, Zhiwei Song, and Xiaojuan Guo

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Yaru Li, Guangyu Wang, Xiaochuan Wang, Junze Wang, Xiaoming Xi, Shuai Zhang, Limei Zhang, Lishan Qiao, and Mingxia Liu

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P3-81 GraIS: Graph-Based Interpretable Network for Sepsis Mortality Prediction Using Multi-modal Electronic Health Records

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Yifei Yue, Zhuonan Liang, Dongnan Liu, and Weidong Cai

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Jing-Yao Huang, Feng-Feng Wei, Tai-You Chen, and Wei-Neng Chen

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- P3-84 Robust Multivariate Time Series Forecasting with Deep Reconstruction
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- P3-86 Attention-Guided Multi-view Feature Fusion for Proxy Traffic Classification
Xu Tang, Jun Tao, and Yuantu Luo
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- P3-87 Overlapping Reconstruction Based on Biased Attention for Consecutive Sequence Imputation
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- P3-89 Neural Network Approach for Robust Estimation of Position of a Target Based on TOA and AOA Signals
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- P3-91 Mesoscopic Community-Based Sparse Portfolio for Index Tracking
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- P3-92 GMFVAD: Using Grained Multi-modal Feature to Improve Video Anomaly Detection
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- P3-93 FOCAL-UAT: Flexible One-Class Acoustic Representation Learning for Underwater Acoustic Target Recognition

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P3-95 Predictive Modeling of Cyclone Impact for Disaster Managers Using Machine Learning

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P3-96 IA-LDiffProtect: Improving Imperceptibility of Adversarial Examples Using Latent Diffusion Models for Facial Privacy Protection

Yanlei Wei, Xiaolin Zhang, Yongping Wang, Jingyu Wang, Zhiqiang Zhao, Baiqi Xiao, and Zheyi Jia
https://doi.org/10.1007/978-981-95-4109-6_32

P3-97 Real-Time Anomaly Detection and Completion in Data Streams Based on RRCF and RTHaLRTC Tensor Completion

Tong Liang, Hao Jia, Binghua Li, Ziqing Chang, Chao Li, Jiahe Guo, Kai Zhang, Jordi Solé-Casals, Yasuhiro Kushihiashi, Ryutaro Himeno, and Zhe Sun
https://doi.org/10.1007/978-981-95-4381-6_31

~~P3-98 Active Defense Against Deepfakes: An Integrated Framework of Adversarial Data Embedding and Blockchain Authentication~~

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P3-99 Semantic Consistency Guided Backdoor Trigger Inversion and InitDistillNet for Backdoor Detection

Shuofan Hu, Zhiqiu Huang, Yaoshen Yu, Hongjing Guo, and Guohua Shen
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P3-100 CRL-TIKG: Causal Reinforcement Learning-Based Threat Intelligence Knowledge Graph Reasoning

Haibin Pan, Longyu Sun, Pengdeng Li, and Yuan Liu
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P3-101 Detection of Cyber Attack in Water Distribution System Based on Adaptive Interactive Aggregation Convolution and RSLSTM

Zhuoqun Xia, Chenang Li, Jingjing Tan, and Han Qiu
https://doi.org/10.1007/978-981-95-4109-6_35

P3-102 A PDQN-Based Routing Algorithm for Joint Load and Risk Balancing in Power Communication Network

Wanchang Jiang, Bing Hu, and Danni Liu
https://doi.org/10.1007/978-981-95-4109-6_36

P3-103 Conv-Like ScaleFusion Transformer: A Multi-scale Representation Learning Framework for Variable-Length Long Time Series

Kai Zhang, Siming Sun, Zhengyu Fan, Qinmin Yang, and Xuejun Jiang
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P3-104 MMDQN: A Multimodal Deep Reinforcement Learning Approach for Load-Balanced Routing in LEO Satellite Networks

Qinghe Cai, Chuxiong Sun, Shuaijun Liu, and Lixiang Liu
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P3-105 Binning Encoder-Based Grouped Aggregation for Network Traffic Anomaly Detection

Lingyao Lu, Tongya Zheng, Haoye Wang, Zunlei Feng, and Mingli Song
https://doi.org/10.1007/978-981-95-4381-6_33

P3-106 FLAGUS: Feedback-Driven Learning with GAN-Augmented Data for Enhanced Anomaly Detection via Uncertainty Sampling

Sidahmed Benabderrahmane and Talal Rawhan
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P3-107 Multi-information Fusion Unsupervised Feature Selection

Pu Zhou, Hao Wang, Chi-Sing Leung, and Yuxin He
https://doi.org/10.1007/978-981-95-4384-7_20

P3-108 DTSAT-DRQN: A Novel DRQN-Enhanced Chaos Communication Strategy with Dual-TCN

Siyu Hu, Wang Yu, Jiqiang Liu, Xiaoqiang Zhu, Zhenyan Ji, Chenyang Wang, and Xiangyi Chen
https://doi.org/10.1007/978-981-95-4384-7_21

P3-109 Transformer-Based Dynamic Gated Trajectory Privacy-Preserving Generative Adversarial Model

Yangdingkang Huang, Zhiguang Chu, Tian Sang, Yang Gao, and Xing Zhang
https://doi.org/10.1007/978-981-95-4384-7_22

P3-110 Performance Evaluation of Validity Indices on Evolutionary K-Means Clustering

Abiodun M. Ikotun, Faustin Habyarimana, and Absalom E. Ezugwu

https://doi.org/10.1007/978-981-95-4384-7_23

P3-111 AEIN: Attention-Enhanced Iterative Join Graph Neural Networks

Jixin Zhang and Y. Lai

https://doi.org/10.1007/978-981-95-4384-7_24

P3-112 TFTN: A Time-Frequency Integrated Transformer Network with Multi-scale Feature Extraction for Time Series Classification

Lin Huang, Jinghua Yan, Wei Zhang, and Yuchao Lu

https://doi.org/10.1007/978-981-95-4384-7_25

P3-113 Multi-scale Dynamic Preservation Mapping: A Time Series Data Augmentation Approach

Yuchao Lu, Jinghua Yan, Wei Zhang, and Lin Huang

https://doi.org/10.1007/978-981-95-4384-7_26

P3-114 Domain Generalization with CLIP-Based Multi-modal Calibration Distillation
Zhiyu Wen, Pei Zhang, Ming Zhang, Xiaohong Huang, Dandan Li, Kun Xie, and Yan Ma

https://doi.org/10.1007/978-981-95-4384-7_27

P3-115 The Dual-Branch Cross-Alignment Design for Action Transfer Based on Feature Distribution Patterns

Chaoqun Jin, Qiao Qi, and Jianjun Li

https://doi.org/10.1007/978-981-95-4384-7_28

P3-116 Unsupervised Semantic Mask-Guided Image Animation with Fused Cross-Attention

Jixiang Zhu and Jianjun Li

https://doi.org/10.1007/978-981-95-4384-7_29

P3-117 Gradient-Guided Motion Transfer with Motion Optimization

Qingwei Wang, Tingting Xiao, and Jianjun Li

https://doi.org/10.1007/978-981-95-4384-7_30

P3-118 Mask-Guided Multi-scale Edge-Enhanced Segment Anything Model for Ancient Mural Damage Detection

Keming Zhou, Ying Yu, and Jialv Hu

https://doi.org/10.1007/978-981-95-4384-7_31

P3-119 Coarse-and-Learn: Efficient Online Node Labeling

Subhanu Halder, Manoj Kumar, Yifan Sun, and Sandeep Kumar

https://doi.org/10.1007/978-981-95-4384-7_32

P3-120 A Hybrid CNN-BiLSTM Approach for PPG-Based Stress Monitoring from Wrist Worn Wearables

Md Santo Ali, Mohammad Abdul Motin, El-Sayed M. El-Alfy, and Mufti Mahmud

https://doi.org/10.1007/978-981-95-4384-7_33

P3-121 A Defense Method Based on Natural Scene Statistics and Autoencoders to Enhance the Robustness of Darknet Traffic Classifiers

Yan Tang, Ziqiang Ma, Hailong Teng, and Tianyu Yang

https://doi.org/10.1007/978-981-95-4384-7_34

Special Session 3: Reliable, Robust and Secure Machine Learning Algorithms

17:00-18:20 at Auditorium

Organizers: Monowar Bhuyan, Xuan-Son Vu, Harry Nguyen

MS3-1 Ada-TransGNN: An Air Quality Prediction Model Based On Adaptive Graph Convolutional Networks

Dan Wang, Feng Jiang, and Zhanquan Wang

https://doi.org/10.1007/978-981-95-4384-7_17

MS3-2 Fitness-Driven Evolutionary Federated Learning: Adaptive Client Selection and Dynamic Population for Communication Efficiency

Yichun Yu, Yuqing Lan, Xiaoyi Yang, Zhihuan Xing, Han Zheng, and Dan Yu

https://doi.org/10.1007/978-981-95-4384-7_18

MS3-3 Matrix Completion with Fuzzy Sampling for Network Traffic Measurement

Yifei Zhang, Nina Shu, Chunsheng Liu, Chunlai Ma, Chao Chang, and Tao Wu

https://doi.org/10.1007/978-981-95-4384-7_19

MS3-4 Performance Evaluation of Validity Indices on Evolutionary K-Means Clustering

Abiodun M. Ikotun, Faustin Habyarimana, and Absalom E. Ezugwu

https://doi.org/10.1007/978-981-95-4384-7_23

Day 5: Monday November 24th

Workshop 1: The 18th International Workshop on Artificial Intelligence and Cybersecurity (AICS 2025)

9:00-16:00 at C210

Organizers: Tao Ban, Bin Dong, Ryo Karakida

Web site: <https://aics.csmining.org>

Keynote Talks:

The Path to Defence: A Roadmap to Characterising DataPoisoning Attacks on Victim Models

Paul Pang (Federation University, Australia)

Safeguarding AI: Protecting Data, Models, and Systems in the Era of Intelligent Computing

Hayato Yamana (Waseda University, Japan)

WS1-1 Dual Prototype Attentive Graph Network for Cross-Market Recommendation

Li Fan, Menglin Kong, Yang Xiang, Chong Zhang, and Chengtao Ji

https://doi.org/10.1007/978-981-95-4445-5_35

WS1-2 Defending Against Jailbreak Through Early Exit Generation of Large Language Models

Chongwen Zhao, Zhihao Dou, and Kaizhu Huang

https://doi.org/10.1007/978-981-95-4445-5_36

WS1-3 Entropy-Guided Distillation for Medical Image Segmentation Under Missing Modalities

Jinming Zhang, Yuyao Yan, Xi Yang, and Kaizhu Huang

https://doi.org/10.1007/978-981-95-4445-5_37

WS1-4 Stock Price Prediction with Attention-Based Framework by Integrating LLM-Generated Features

Yining Sun, Penglei Gao, Yuyao Yan, and Xi Yang

https://doi.org/10.1007/978-981-95-4445-5_38

Workshop 2: Quantifying and simulating multi-neuromodulatory dynamics in the biological brain: Experimental advances, data-centric practices, and computational models

9:00-16:00 at Meeting Room 1

Organizers: Jie Mei, Srikanth Ramaswamy

Neuromodulatory processes in the brain have been viewed as homogeneous and spatially unified, with early evidence linking neuromodulators such as dopamine, acetylcholine, serotonin and noradrenaline with broad and basic brain functions. Nevertheless, with advances in experimental neuroscience tools, researchers have

identified projection-specific functions of neuromodulators, as well as intricate interconnections across neuromodulatory systems. For example, depending on brain region and contextual information, a pair of neuromodulators such as dopamine and serotonin can exhibit opposing, convergent, or modulatory interactions.

These new findings challenge the conventional view of neuromodulatory systems, necessitating an updated, integrative perspective on their computational roles and learning mechanisms. The proposed workshop will highlight recent experimental discoveries in multi-neuromodulatory interactions, alongside modeling efforts that attempt to capture their complexity. These discussions will be followed by how open science practices – such as data sharing and standardization of simulation tools – can foster a synergy between experimental and computational research.

Workshop 4: The Third International Whole Brain Architecture Workshop

9:00-12:00 at Auditorium

Organizers: Yoshimasa Tawatsuji, Hiroshi Yamakawa

Web site: <https://wba-initiative.org/en/25942/>

The International Whole Brain Architecture Workshop (WBA-WS) brings together researchers from neuroscience, AI, cognitive science, and engineering to advance the integration of brain-inspired knowledge into AI systems. Central to the workshop is the Brain Reference Architecture (BRA), a structured, high-level representation of functional brain organization designed to support interpretable, biologically grounded AI. BRA emphasizes the mapping between neural structures and cognitive functions in a modular, reusable format, making it accessible even to non-specialists. BRA data and associated papers are authored and published through the Brain Reference Architecture Editing System (BRAES), which ensures interoperability and scalability. The workshop features three presentation types: (1) BRA Data Presentations, (2) Work-in-Progress BRA Data, and (3) General Presentations on supporting knowledge or BRA dissemination. Accepted BRA data will be archived and made citable via BRAES. We invite submissions of BRA data, papers, and related contributions to foster a shared platform for cross-disciplinary collaboration and innovation in brain-inspired AI.

Workshop 5: Frontiers and Hardware Applications of Neural Network Models

9:00-12:00 at B250

Organizers: Yuichi Katori, Hideaki Yamamoto, Ayumi Hirano-Iwata

Web site: <https://www.mnbc.riec.tohoku.ac.jp/eng/iconip2025/>

Neural networks have revolutionized various fields, including artificial intelligence, computational neuroscience, and hardware-based computing. This workshop aims to explore cutting-edge developments in neural network models, their biological foundations, and their implementation in hardware. The workshop will bring together experts from diverse disciplines to discuss advancements in neural dynamics,

reservoir computing, robotics, and hardware-based implementations of neural computations.

Workshop 6: Ultra-Brain Neuromorphic by Material-Device-System Co-Research

9:00-12:00 at C209

Organizer: Mutsumi Kimura

Web site: <https://sites.google.com/view/ultra-neuro>

It is extremely important to consider the close correlation between material, device, circuit, and systems at each level in analog-type neuromorphic systems, like living brains, comparing conventional digital-type computers. Many researchers continue to aim not only to imitate brains but also to realize beyond-the-brain) neuromorphic system with ultra-compact and low energy. By promoting research aware through the co-research, utilizing advantages of superior materials and manufacturing technologies, and wiping out the disadvantages of integration, systems, and applications, we dream of success of a final great turnaround in the electronics industry. Interesting invited talks on material intelligence, outstanding memdevices and synaptic devices, exotic materials and devices, and slow electronics, which are promising for dramatic breakthrough of neuromorphic systems, will be presented. Some referrals have come from organizations that strongly promote this theme. This workshop welcomes regular submissions.

*Cutting-edge research of material, device, circuit, and system for neuromorphic and vice-versa

*Co-research of them for neuromorphic and vice-versa

*Requests from the research of material, device, circuit, and system to neuromorphic and vice-versa

Workshop 3: Accelerating Large-Scale Computational Neuroscience Using Transformers and Large Language Models (LLMs)

13:00-16:00 at B250

Organizer: Riichiro Hira

Under the AMED Brain/Minds 2.0 domain 4 project, our research aims to transform computational neuroscience through four key objectives. First, we seek to develop a standard platform for analyzing large-scale brain measurement and simulation data. While a fully detailed digital brain capturing every molecular to behavioral nuance is theoretically possible, the enormous number of undetermined parameters makes it impractical. Instead, we propose building a functional digital brain model using Transformer architectures applied to both experimental and simulation datasets, linking molecular, cellular, circuit, and behavioral scales. Second, we aim to unravel the inner workings of large language models (LLMs) and multimodal models (LMMs). Although these Transformers excel in next-word prediction and implicitly generate linguistic structures, how high-level representations emerge remains unclear. We plan to create innovative, large-scale analytical methods that extend beyond current

techniques like attention flow analysis. Third, we will apply these Transformer-based techniques to neural data to optimize models for predicting brain activity, capturing the essential dynamics and spatiotemporal interactions of neural populations, and refining our digital brain model. Lastly, we intend to develop a specialized LLM to automate script generation and evaluation, streamlining complex simulations and data analysis. Join us as we bridge advanced computational methods with neuroscience, paving the way for a new era in data-driven brain research!

Website: <https://cath.sakura.ne.jp/ICONIP2025/index.html>

Workshop 7: International Workshop on Deep learning for Multi-modal Data

13:00-16:00 at C209

Organizers: Nistor Grozavu, Nicoleta Rogovschi, Guénaél Cabanes, Parisa Rastin

Website: <https://deepmodai.sciencesconf.org>

Multimodal data is everywhere, yet making sense of its complexity requires advancing deep learning far beyond traditional paradigms. This workshop brings together academic researchers and industry professionals to address core challenges in this field. We focus on deep learning techniques, particularly unsupervised, self-supervised and weakly supervised approaches, that learn transferable latent representations across modalities, moving beyond unimodal and static paradigms. Key topics include multi-view architectures, cross-modal alignment, attention mechanisms for modality fusion, diversity-aware ensemble learning, and explainable collaborative frameworks. Emphasis lies on adaptability to dynamic, incomplete, or context-dependent data structures, as well as scalable deployment. We encourage contributions on critical real-world applications such as health monitoring, autonomous systems, and environmental modeling. Featuring technical presentations, panel discussions and collaborative sessions, the workshop highlights theoretical advances and practical solutions. It fosters interdisciplinary dialogue on emerging challenges: computational efficiency, missing modality, evaluation standards and ethical considerations, charting future directions for deep multimodal learning.

Open Forum: Society of Humans and AI Agents

公開フォーラム：人とAIの織りなす社会

13:00-16:00 at Auditorium (Open to public, in Japanese with English captions)

Speakers: Yutaro Yamada (Sakana AI)

Mizuki Oka (Chiba Tech, Artificial Life Institute)

Panelists: Hiroaki Hamada (ARAYA)

Yusuke Hayashi (AI Alignment Network)

Tadahiro Taniguchi (Kyoto University)

Coordinators: Kenji Doya (OIST)

Hiroshi Yamakawa (University of Tokyo, AI Alignment Network)

ICONIP 2025

APNNS Asia Pacific Neural Network Society



ICONIP2025 公開フォーラム

人と AI の織りなす社会

2025 年 11 月 24 日（月、祝）13-16 時

沖縄科学技術大学院大学講堂

Web サイト : <https://iconip2025.apnns.org/forum>

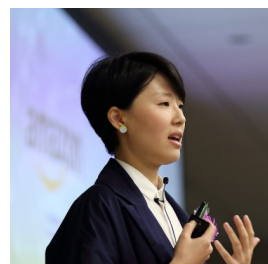
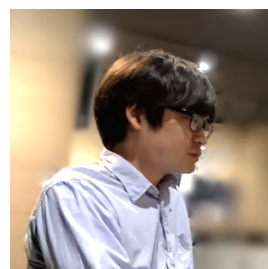
開催趣旨

今日 AI は誰もがいつのまにか使っている技術となり、私たちの日々の生活からビジネス、教育、政治、文化芸術、最先端の科学技術まで、AI 抜きには語れない時代が来ています。このたび世界各国の AI 研究者を集めた国際会議 ICONIP2025 が沖縄科学技術大学院大学 (OIST) で開催される機会に、研究者と市民、学生のみなさんとが一緒になり、これから AI はどう進化するのか、私たちは AI とどう関わっていけばよいのか、AI による危険や弊害をどう予測し抑えることができるのか、学び合い話し合う公開フォーラムを開催します。

AI 研究開発の先端を走る研究者を講師、パネリストとして招き、それぞれから見える AI の新たな地平を語ってもらい、参加者の皆さんと一緒に質疑応答を行います。発表は日本語で、スクリーンには AI 翻訳の英語字幕を表示する予定です。

プログラム :

- 13:00 開会あいさつ : 銅谷賢治 (OIST)
- 13:10 講演 1 : ここまできた科学者 AI :
山田祐太郎 (Sakana AI)
- 13:40 講演 2 : 人と AI の共生する社会とは :
岡瑞起 (千葉工業大学、Artificial Life Institute)
- 14:10 休憩
- 14:30 パネル討論 1 : 科学する AI と人間社会
コーディネーター : 銅谷賢治 (OIST)
山田祐太郎 (Sakana AI)
濱田太陽 (ARAYA)
林祐輔 (AI Alignment Network)
- 15:10 パネル討論 2 : 人と AI の望ましい関係とは
コーディネーター : 山川宏 (東京大学、AI Alignment Network)
岡瑞起 (千葉工業大学、Artificial Life Institute)
谷口忠大 (京都大学)
- 15:50 閉会のことば : 谷口忠大 (京都大学)
- 16:00 終了



参加登録 : 現地/オンラインの参加は無料です。

上記 QR コードの Web サイトより事前登録をお願いします。

問合せ先 : iconip2025@apnns.org

ICONIP 2026

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W: deakin.au/ICONIP26



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