

Postdoc fellow, Department of Computing Science
Reinforcement Learning and Artificial Intelligence Lab,
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RESEARCH INTERESTS

Reinforcement Learning, Machine Learning, application of machine learning/reinforcement learning to real-world problems such as healthcare, automation, industrial control, etc.

EDUCATION

Postdoc Fellow

RLAI Lab, University of Alberta, Canada

supervisor: Martha White

2022-2024

Ph.D. with the Best Student Honor

Robot Learning Lab, Nara Institute of Science and Technology, Japan

supervisor: Takamitsu Matsubara

2019-2022

Thesis title: Entropy regularization for scalable, safe and robust reinforcement learning

Master of Engineering

Robot Learning Lab, Nara Institute of Science and Technology, Japan

supervisor: Takamitsu Matsubara

2017-2019

Thesis title: RL for Large-scale Process Control: application to vinyl acetate monomer process

Bachelor of Engineering

Tianjin Polytechnic University, China

2013-2017

PUBLICATIONS

Refereed Journal and Conference Articles

(† indicates joint first authors)

- [1] Offline Reinforcement Learning with Tsallis Regularization, *Lingwei Zhu, M. Schlegel, H. Wang, M. White*, *Transaction on Machine Learning Research (TMLR)*, 2024.
- [2] Generalized Munchausen Reinforcement Learning using Tsallis KL Divergence, *Lingwei Zhu, Z. Chen, M. Schlegel, M. White*, *Advances on Neural Information Processing Systems (NeurIPS)*, 2023.
- [3] Cautious Policy Programming: Exploiting KL for Monotonic Policy Improvement in RL, *Lingwei Zhu, T. Matsubara*, *Machine Learning*, 2023.
- [4] Cyclic policy distillation: Sample-efficient sim-to-real reinforcement learning with domain randomization, *Y. Kadokawa, Lingwei Zhu, Y. Tsurumine, T. Matsubara*, *Robotics and Autonomous Systems*, 2023.
- [5] Automated Sleep Staging via Parallel Frequency-Cut Attention, *Z. Chen, Z. Yang, Lingwei Zhu, W. Chen, T. Tamura, N. Ono, MD Altaf-Ul-Amin, S. Kanaya*, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2023.
- [6] Learning vector quantized representation for cancer subtypes identification, *Z. Chen[†], Z. Yang[†], Lingwei Zhu[†], P. Gao, T. Matsubara, S. Kanaya, Md Altaf-Ul-Amin*, *Computer Methods and Programs in Biomedicine*, 2023.
- [7] Alleviating parameter-tuning burden in RL for large-scale process control, *Lingwei Zhu, G. Takami, M. Kawahara, H. Kanokogi, T. Matsubara*, *Computers and Chemical Engineering*, 2022.
- [8] A Two-View EEG Representation for Brain Cognition by Composite Temporal-Spatial Contrastive Learning, *Z. Chen[†], Lingwei Zhu[†], H. Jia, T. Matsubara*, *SIAM International Conference on Data Mining*, 2023.
- [9] Hierarchical Categorical Generative Modeling for Multi-omics Cancer Subtyping, *ZW. Yang[†], Lingwei Zhu[†], C. Li, Z. Chen, N. Ono, M. Altaf-Ul-Amin, S. Kanaya*, *International Conference on Bioinformatics and Biomedicine (BIBM)*, 2022.

- [10] Automated cancer subtyping via vector quantization mutual information maximization, *Z. Chen[†], Lingwei Zhu[†], Z. Yang, T. Matsubara*, European Conference on Machine Learning (ECML), 2022.
- [11] Multi-tier platform for cognizing massive electroencephalogram, *Z. Chen[†], Lingwei Zhu[†], Z. Yang, R. Zhang*, International Joint Conference on Artificial Intelligence (IJCAI), 2022.
- [12] Cancer Subtyping via Embedded Unsupervised Learning on Transcriptomics Data, *Z. Yang, Lingwei Zhu, Z. Chen, M. Huang, N. Ono, MD. Altaf-Ul-Amin, S. Kanaya*, IEEE Engineering in Medicine & Biology Society (EMBC), 2022.
- [13] Adaptive Spike-Like Representation of EEG Signals for Sleep Stages Scoring, *Lingwei Zhu, Z. Yang, K. Odani, G. Shi, Y. Kan, Z. Chen, R. Zhang*, IEEE Engineering in Medicine & Biology Society (EMBC), 2022.
- [14] Cautious Actor-Critic, *Lingwei Zhu, T. Kitamura, T. Matsubara*, Asian Conference on Machine Learning (ACML), 2021.
- [15] Geometric Value Iteration: Dynamic Error-Aware KL Regularization for Reinforcement Learning, *T. Kitamura, Lingwei Zhu, T. Matsubara*, Asian Conference on Machine Learning (ACML), 2021.
- [16] Scalable reinforcement learning for plant-wide control of vinyl acetate monomer process, *Lingwei Zhu, G. Takami, H. Kanokogi, T. Matsubara*, Control Engineering Practice, 2020.
- [17] Dynamic actor-advisor programming for scalable safe reinforcement learning (IEEE chapter award), *Lingwei Zhu, Y. Cui, T. Matsubara*, IEEE International Conference on Robotics and Automation (ICRA), 2020.
- [18] Factorial Kernel Dynamic Policy Programming for Vinyl Acetate Monomer Plant Model Control, *Y. Cui[†], Lingwei Zhu[†], M. Fujisaki, H. Kanokogi, T. Matsubara*, IEEE International Conference on Automation Science and Engineering (CASE), 2018.

International Patents

Inventor of apparatus, method, program and recording medium

- **United States patent Patent Number US20200057416A1**, *T. Matsubara, Y. Cui, Lingwei Zhu, et al.*,
- **European patent; Patent Number EP3620868A1**, *T. Matsubara, Y. Cui, Lingwei Zhu, et al.*,
- **Chinese patent; Patent Number CN110837893A**, *T. Matsubara, Y. Cui, Lingwei Zhu, et al.*,
- **Japanese patent; Patent Number JP2020027556A**, *T. Matsubara, Y. Cui, Lingwei Zhu, et al.*,

AWARDS AND HONORS

Prime Minister's Prize of Japan Industrial Technology Awards,	2023
Best Ph.D. student honor, Nara Institute of Science and Technology,	2022
National Scholarships:	
• Japanese Society for Promotion of Science - DC2, (83/416, ~ 19.8%),	2021-2022
• Japanese Government Scholarship (MEXT),	2020-2021
IEEE Kansai Chapter Paper Award,	2020
Awarded to <i>Dynamic actor-advisor programming for scalable safe reinforcement learning</i>	

ACADEMIC SERVICES

Program Committee Member (Reviewer)	2021-present
JMLR, AAAI, IJCAI, RAL, ICRA, IROS	

PERSONAL INFORMATION

Languages: fluent English, semi-fluent Japanese, native Chinese
Citizenship: Chinese