

Yu-Jie Zhang
The University of Tokyo

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EDUCATION

The University of Tokyo , Japan	October 2021 - September 2024
Ph.D., Complexity Science and Engineering	Supervisor: Prof. Masashi Sugiyama
Nanjing University , China	June 16, 2021
M.Sc., Computer Science and Technology	Supervisor: Prof. Zhi-Hua Zhou
Tongji University , China	July 01, 2018
B.Sc., Electronic Science and Technology	GPA: 4.91/5.00, ranking 1/32

WORK EXPERIENCE & ACTIVITIES

RIKEN Center for Advanced Intelligence Project , Japan	Expected January 2025
Postdoctoral Researcher	Supervisor: Prof. Masashi Sugiyama
The Institute for AI and Beyond , Japan	April 2022- September 2024
Research Assistant	

RESEARCH INTEREST

I am generally interested in exploring the theoretical foundations of machine learning and developing methods with sound theoretical guarantees. Currently, I focus on developing provably adaptive and reliable methods for *non-stationary and open-world environments*. My research topics include:

- **Sequential Decision-making in Non-stationary Environments:** We develop online learning methods that adapt promptly to non-stationary environment with regret guarantees
- Key Words: *online optimization, bandits, reinforcement learning, dynamic regret bound.*
- **Supervised Learning in Open-world Environments:** We develop reliable methods to learn with weak supervision and handle unknown classes with excess risk guarantees.
- Key Words: *distribution shift, weakly supervised learning, unknown classes, excess risk bound.*

PUBLICATIONS

Conference Publications

- [1] Long-Fei Li, **Yu-Jie Zhang**, Peng Zhao, and Zhi-Hua Zhou. Provably Efficient Reinforcement Learning with Multinomial Logit Function Approximation. In Advances in Neural Information Processing Systems 37 (**NeurIPS**), 2024.
- [2] Yu-Yang Qian, Peng Zhao, **Yu-Jie Zhang**, Masashi Sugiyama, Zhi-Hua Zhou. Efficient Non-stationary Online Learning by Wavelets with Applications to Online Distribution Shift Adaptation. In: Proceedings of the 41st International Conference on Machine Learning (**ICML**), 2024.
- [3] Wei Wang, Takashi Ishida, **Yu-Jie Zhang**, Gang Niu, and Masashi Sugiyama. Learning with Complementary Labels Revisited: A Consistent Approach via Negative-Unlabeled Learning. In: Proceedings of the 41st International Conference on Machine Learning (**ICML**), 2024.
- [4] **Yu-Jie Zhang** and Masashi Sugiyama. Online (Multinomial) Logistic Bandit: Improved Regret and Constant Computation Cost. In Advances in Neural Information Processing Systems 36 (**NeurIPS**), 2023. **[Spotlight]**

- [5] **Yu-Jie Zhang**, Zhen-Yu Zhang, Peng Zhao, and Masashi Sugiyama. Adapting to Continuous Covariate Shift via Online Density Ratio Estimation. In *Advances in Neural Information Processing Systems 36 (NeurIPS)*, 2023.
- [6] Xin-Qiang Cai, **Yu-Jie Zhang**, Chao-Kai Chiang and Masashi Sugiyama. Imitation Learning from Vague Feedback. In *Advances in Neural Information Processing Systems 36 (NeurIPS)*, 2023.
- [7] Yong Bai*, **Yu-Jie Zhang***, Peng Zhao, Masashi Sugiyama, and Zhi-Hua Zhou. Adapting to Online Label Shift with Provable Guarantees. In *Advances in Neural Information Processing Systems 35 (NeurIPS)*, 2022. (* equal contribution)
- [8] Zhen-Yu Zhang, Yu-Yang Qian, **Yu-Jie Zhang**, Yuan Jiang, Zhi-Hua Zhou. Adaptive Learning for Weakly Labeled Streams. In *Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2022.
- [9] **Yu-Jie Zhang**, Yu-Hu Yan, Peng Zhao and Zhi-Hua Zhou. Towards Enabling Learnware to Handle Unseen Jobs. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
- [10] Peng Zhao, **Yu-Jie Zhang** and Zhi-Hua Zhou. Exploratory Machine Learning with Unknown Unknowns. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
- [11] **Yu-Jie Zhang**, Peng Zhao, Lanjihong Ma and Zhi-Hua Zhou. An Unbiased Risk Estimator for Learning with Augmented Classes. In *Advances in Neural Information Processing Systems 33 (NeurIPS)*, 2020.
- [12] Peng Zhao, **Yu-Jie Zhang**, Lijun Zhang and Zhi-Hua Zhou. Dynamic Regret of Convex and Smooth Functions. In *Advances in Neural Information Processing Systems 33 (NeurIPS)*, 2020.
- [13] **Yu-Jie Zhang**, Peng Zhao, and Zhi-Hua Zhou. A Simple Online Algorithm for Competing with Dynamic Comparators. In *Proceedings of the 36th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2020.

Journal Publications

- [14] Sijia Chen, **Yu-Jie Zhang**, Wei-Wei Tu, Peng Zhao, and Lijun Zhang. Optimistic Online Mirror Descent for Bridging Stochastic and Adversarial Online Convex Optimization. *Journal of Machine Learning Research (JMLR)*, to appear, 2024.
- [15] Peng Zhao, **Yu-Jie Zhang**, Lijun Zhang, and Zhi-Hua Zhou. Adaptivity and Non-stationarity: Problem-dependent Dynamic Regret for Online Convex Optimization. *Journal of Machine Learning Research (JMLR)*, 25(98):1–52, 2024.
- [16] Peng Zhao, Jia-Wei Shan, **Yu-Jie Zhang** and Zhi-Hua Zhou. Exploratory Machine Learning with Unknown Unknowns. *Artificial Intelligence (AIJ)*, 327:104059, 2024.

AWARDS & HONORS

- Top Reviewer for NeurIPS, 2023
- Top Reviewer for UAI, 2023
- Top Reviewer for NeurIPS, 2022
- The University of Tokyo Fellowship, Tokyo, 2021
- Outstanding Master Dissertation Award by Jiangsu Computer Society, Nanjing, 2021
- Excellent Graduate of Nanjing University, Nanjing, 2021
- National Graduate Scholarship for Master Student, MOE of PRC, 2020

ACADEMIC SERVICE

- **Reviewer for Conference:** NeurIPS (2021-2024), ICML (2022-2024), ICLR (2022-2024), AISTATS (2021-2024), UAI (2022-2024), AAAI (2021, 2024), IJCAI (2020-2023), ECAI (2020).
- **Reviewer for Journal:** Journal of Machine Learning Research (JMLR), IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Frontiers of Computer Science.