Shen-Huan LYU | Ph.D.

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Education

2017 - 2022: **Nanjing University (NJU)**

Ph.D. in Computer Science

Department of Computer Science & Technology

Supervisor: Prof. Zhi-Hua Zhou

2013 - 2017: **University of Science and Technology of China (USTC)**

B.Sc. in Statistics

Department of Statistics

Research Interests

My research interests include artificial intelligence, machine learning, and optimization. I mainly focus on building the theoretical foundation of **ensemble learning** and its application to solve complex optimization problems in science and engineering. I have published 20+ papers in AI-related journals (INS, NN, TKDD) and conferences (ICML, NeurIPS, ICLR). I am a recipient of the **Hong Kong Scholars Award** (2024) and have hosted the **National Natural Science Foundation of China for Young Scholars** (2024) and the **China Postdoctoral Science Foundation Special Fund** (2023).

Publications

Conference Papers

[**ECAI 2024**]: **Shen-Huan Lyu**, Jin-Hui Wu, Qin-Cheng Zheng, Baoliu Ye. The Role of Depth, Width, and Tree Size in Expressiveness of Deep Forest. **In: Proceedings of the 27th European Conference on Artificial Intelligence (ECAI'24)**, pp. 2042-2049, Santiago de Compostela, Spain, 2024. **(CCF B)**

[NeurIPS 2022]: **Shen-Huan Lyu**, Yi-Xiao He, and Zhi-Hua Zhou. Depth is More Powerful than Width in Deep Forest. In: **Advances in Neural Information Processing Systems 35 (NeurIPS'22)**, pp. 29719-29732, New Orleans, US, 2022. **(CCF A, Oral, Top 4.3%)**

[NeurIPS 2019]: **Shen-Huan Lyu**, Liang Yang, and Zhi-Hua Zhou. A Refined Margin Distribution Analysis for Forest Representation Learning. In: **Advances in Neural Information Processing Systems 32 (NeurIPS'19)**, pp. 5531-5541, Vancouver, CA, 2019. **(CCF A)**

Journal Papers

[PR 2025]: Ning Chen, **Shen-Huan Lyu***, Tian-Shuang Wu, Yanyan Wang, and Bin Tang. Improving Multi-Label Contrastive Learning by Leveraging Label Distribution. **Pattern Recognition**, 113011, 2025. **(CAS Q1 & CCF B)**

[INS 2025]: **Shen-Huan Lyu**, Yi-Xiao He, Yanyan Wang, Zhihao Qu, Bin Tang, and Baoliu Ye. Enhance Learning Efficiency of Oblique Decision Tree via Feature Concatenation. **Information Sciences**, 721:112613, 2025. **(CAS Q1 & CCF B)**

[JOS 2024]: **Shen-Huan Lyu**, Yi-He Chen, and Zhi-Hua Zhou. Interaction Representations Based Deep Forest Method in Multi-Label Learning. **Journal of Software**, 35(4):1934-1944, 2024. **(T1 in Chinese Journals)**

[NNJ 2022]: **Shen-Huan Lyu**, Lu Wang, and Zhi-Hua Zhou. Improving Generalization of Neural Networks by Leveraging Margin Distribution. **Neural Networks**, 151:48-60, 2022. **(CAS Q1 & CCF B)**

[CJE 2022]: **Shen-Huan Lyu**, Yi-He Chen, and Zhi-Hua Zhou. A Region-based Analysis for Feature Concatenation in Deep Forests. **Chinese Journal of Electronics**, 31(6):1072-1080, 2022. **(T1 in Chinese Journals)**

Academic Service

Program Committee Member of Conferences:

- ICML: 2021 - 2026
- NeurIPS: 2020 - 2025
- AAAI: 2019, 2022, 2023-2025
- IJCAI: 2020 - 2026
- ICLR: 2021, 2023, 2025

Reviewer of Journal:

- Journal of Machine Learning Research (JMLR)
- Artificial Intelligence (AIJ)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- Machine Learning (MLJ)

Honors and Awards

[1]: The Hong Kong Scholars Program, China, 2024.

[2]: Jiangsu Youth Science and Technology Talent Sponsorship Program, Jiangsu, 2024.

[3]: Excellent Doctoral Dissertation of Jiangsu Artificial Intelligence Society, Jiangsu, 2023.

[4]: Artificial Intelligence Scholarship in Nanjing University, Nanjing, 2019.

[5]: Presidential Special Scholarship for first-year Ph.D. Student in Nanjing University, Nanjing, 2017.

Teaching Assistant

[1]: C++ Programming. (With Prof. Hao Hu; For Undergraduate Students, Spring, 2019)

[2]: LAMDA Machine Learning Summer Seminar. (For New Students in LAMDA, Summer, 2018)

[3]: Introduction to Machine Learning. (With Prof. Zhi-Hua Zhou; For Undergraduate Students, Spring, 2018)

[4]: LAMDA-1 Theory Seminar. (Topics: Forest Theory, Neural Network Theory, Generalization Theory, and Diversity; For Students in LAMDA-1, Spring, 2022)