

Shen-Huan LYU | Ph.D. Candidate

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Education

2017 - 2022: Nanjing University (NJU)

Ph.D. in Machine Learning & Data Mining

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 current research interests mainly include Machine Learning and Data Mining. More specifically, I am interested in the following topics:

- Deep Forest
- Deep Neural Network
- Open Environment Machine Learning

Publications

*: Equal Contribution

Conference Papers

[1]: **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)**

[2]: Yi-He Chen*, **Shen-Huan Lyu***, and Yuan Jiang. Improving Deep Forest by Exploiting High-order Interactions. In: **Proceedings of the 21th IEEE International Conference on Data Mining (ICDM'21)**, pp. 1030-1035, Auckland, NZ, 2021. **(CCF-B)**

[3]: **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)**, 2022. **(CCF-A)**

Journal Papers

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

[5]: **Shen-Huan Lyu**, Yi-He Chen, and Zhi-Hua Zhou. A Region-based Analysis for Feature Concatenation in Deep Forests. **Chinese Journal of Electronics**, 2022. **(SCI)**

Preprints

[6]: **Shen-Huan Lyu**, Yi-He Chen, and Zhi-Hua Zhou. Interaction Representations Based Deep Forest Method in Multi-Label Learning. **Journal of Software (in Chinese)**, under review, 2022. **(CCF-A)**

[7]: Yi-Xiao He, Dan-Xuan Liu, **Shen-Huan Lyu**, Chao Qian, and Zhi-Hua Zhou. Multi-Class Imbalance Problem: A Multi-Objective Solution. **IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)**, under review. **(CCF-A)**

[8]: Yi-Xiao He, **Shen-Huan Lyu**, and Yuan Jiang. Interpreting Deep Forest through Feature Contribution and MDI Feature Importance. *ACM Transactions on Knowledge Discovery from Data (ACM TKDD)*, under review. **(CCF-B)**

[9]: Qin-Cheng Zheng, **Shen-Huan Lyu**, Shao-Qun Zhang, Yuan Jiang, and Zhi-Hua Zhou. GridCART: A CART with Convergence Guarantee. In: *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS'22)*, under review. **(CCF-C)**

Academic Service

Program Committee Member of Conferences:

- o ICML: 2021, 2022
- o NeurIPS: 2020, 2021, 2022
- o AAAI: 2019
- o IJCAI: 2020, 2021, 2022
- o ICLR: 2021
- o AISTATS: 2019

Reviewer of Journal:

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

Honors and Awards

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

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

[3]: The Second Class Academic Scholarship in Nanjing University, Nanjing, 2020.

[4]: The University Silver Prize Scholarship for Excellent Student in University of Science and Technology of China , Hefei, 2014-2016.

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)