

# 吕沈欢

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## 教育背景

2017 - 2022 南京大学，直博，计算机科学与技术系

导师：周志华 教授

2013 - 2017 中国科学技术大学，学士，统计系

保研免试进入南京大学计算机系攻读直博

## 研究兴趣

我目前的研究兴趣主要包括机器学习和数据挖掘。更具体地说，我对以下研究方向感兴趣：

- **深度森林**：主要关注深度森林所涉及的一些结构和部件的理论分析，并通过这些分析启发新型深度森林算法设计
- **深度神经网络**：主要关注深度神经网络的过参数化现象，试图从理论上解释过参数化和过拟合风险之间的关系
- **开放环境机器学习**：关注动态变化的现实场景下，数据分布变化为机器学习带来的挑战，例如类别不平衡、分布外样本检测和泛化等问题

## 发表论文

- [1] **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)**, in press, 2022. (CCF-A类)
- [2] **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)**, Vancouver, CA, 2019. (CCF-A类)
- [3] **Shen-Huan Lyu**, Lu Wang, and Zhi-Hua Zhou. Improving Generalization of Deep Neural Networks by Leveraging Margin Distribution. **Neural Networks**, 151:48-60, 2022.
- [4] **Shen-Huan Lyu**, Yi-He Chen, and Zhi-Hua Zhou. A Region-based Analysis for Feature Concatenation in Deep Forests. **Chinese Journal of Electronics**, in press, 2022.

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

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## 投稿论文

- [6] 吕沈欢,陈一赫,姜远. 基于交互特征的多标记深度森林. 《软件学报》投稿中.
- [9] 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 (TKDE)**, under review.
- [7] 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 (TKDD)**, under review.
- [8] Qin-Cheng Zheng, **Shen-Huan Lyu**, Shao-Qun Zhang, Yuan Jiang, and Zhi-Hua Zhou. GridCART: A CART with Convergence Guarantee. **Preprinted**.

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## 学术服务

国际学术会议程序委员会成员(Program Committee Member):

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

国际学术期刊审稿人(Reviewer):

- 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)

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## 奖学金

- [1] 南京人工智能产业人才兴智计划奖学金, 南京, 2019
- [2] 南京大学研究生学业奖学金 一等奖, 2017-2019
- [3] 南京大学博士新生校长奖学金, 南京, 2017
- [4] 南京大学研究生英才奖学金 二等奖, 南京, 2022
- [5] 中国科学技术大学优秀学生奖学金 银奖, 合肥, 2014-2016

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## 助教课程

- [1] C++ 编程 (协助胡昊教授, 本科生课程, 2019学年, 春季)
- [2] LAMDA 机器学习暑期研讨班 (LAMDA 新生, 2018学年, 夏季)
- [3] 机器学习导论 (协助周志华教授, 研究生课程, 2018学年, 春季)
- [4] LAMDA-1 学习理论研讨班 (主题: 深度学习理论, 泛化理论, 集成学习理论, LAMDA-1 学生, 2022学年, 春季)