

BOJIAN HOU

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EDUCATION

Nanjing University (NJU)

Department of Computer Science and Technology

Supervisor: Prof. Zhi-Hua Zhou

Ph.D.

Sep.2014-Jun.2020

Nanjing University (NJU)

Department of Computer Science and Technology

Bachelor of Science

Sep.2010-Jun.2014

WORK EXPERIENCE

University of Pennsylvania *Jan.2022-Present*

Postdoctoral Researcher

Cornell University *May.2021-Jan.2022*

Postdoctoral Associate

4th Paradigm Co. *Aug.2020-Apr.2021*

Research Scientist

RESEARCH INTEREST

My research interests mainly focus on trustworthy AI, optimization for AI and AI for science. Specifically, they include:

- **Fairness Learning**: developing fair and unbiased machine learning algorithms.
- **Interpretability**: studying the interpretability of black-box machine learning models.
- **Feature Evolvable Learning**: studying learning scenarios where data features evolve.
- **Semi-Supervised Learning**: learning models from both labeled and unlabeled data.
- **Online Learning**: learning models from a continuous stream of data.
- **Natural Language Processing**: studying and applying large language models.
- **Biomedical Data Mining**: applying machine learning to analyze biomedical data.

PUBLICATIONS

Conference

1. **Bo-Jian Hou**, Lijun Zhang, and Zhi-Hua Zhou. *Learning with Feature Evolvable Streams*. In: **Advances in Neural Information Processing Systems 30 (NIPS'17)**, Long Beach, CA, 2017, 30: 1417-1427. (Ranked #2 in Artificial Intelligence by Google Scholar)
2. **Bo-Jian Hou**, Yu-Hu Yan, Peng Zhao and Zhi-Hua Zhou. *Storage Fit Learning with Feature Evolvable Streams*. In: **Proceedings of the AAI Conference on Artificial Intelligence (AAAI'21)**, Virtual Conference, 2021, 35(9), 7729-7736. (Ranked #4 in Artificial Intelligence by Google Scholar)
3. **Bo-Jian Hou**, Lijun Zhang, and Zhi-Hua Zhou. *Storage Fit Learning with Unlabeled Data*. In: **Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI'17)**, Melbourne, Australia, 2017, 1844-1850. (Ranked #9 in Artificial Intelligence by Google Scholar)
4. Yi He, Jiaxian Dong, **Bo-Jian Hou**, Yu Wang, and Fei Wang. *Online Learning in Variable Feature Spaces with Mixed Data*. In: **Proceedings of the 21st IEEE International Conference on Data Mining (ICDM'21)**, Auckland, New Zealand, 2021, 181-190. (Ranked #6 in Data Mining & Analysis by Google Scholar)

5. Heng Lian, John S. Atwood, **Bo-Jian Hou**, Jian Wu, Yi He. *Online Deep Learning from Doubly-Streaming Data*. In: **Proceedings of the 30th ACM International Conference on Multimedia (ACMMM'22)**, Lisbon, Portugal, 2022, 3185-3194. (Ranked #4 in Multimedia by Google Scholar)
6. **Bo-Jian Hou** and Yuan Jiang. *Learning Interpretability from RNN with Feature Evolving*. In: **CCF Conference on Artificial Intelligence (CCFAI'19)**, Xuzhou, China, 2019. (Recipient of the CCFAI Outstanding Student Paper Award)
7. Mingquan Lin, Yuyun Xiao, **Bojian Hou**, Tingyi Wanyan, Mohit Manoj Sharma, Zhangyang Wang, Fei Wang, Sarah Van Tassel, Yifan Peng. *Evaluate Underdiagnosis and Overdiagnosis Bias of Deep Learning Model on Primary Open-Angle Glaucoma Diagnosis in Under-Served Populations*. In: **Proceedings of the AMIA 2023 Informatics Summit**, Seattle, WA, 2023, 370.
8. **Bojian Hou**, Hongming Li, Zhicheng Jiao, Zhen Zhou, Hao Zhang, Yong Fan. *Deep Clustering Survival Machines with Interpretable Expert Distributions*. In: **Proceedings of the IEEE International Symposium on Biomedical Imaging (ISBI'23)**, Cartagena de Indias, Colombia, 2023, in press.
9. Davoud Ataee Tarzanagh*, **Bojian Hou***, Boning Tong, Qi Long, Li Shen. *Fairness-Aware Class Imbalanced Learning on Multiple Subgroups*. In: **Proceedings of the 39th Conference on Uncertainty in Artificial Intelligence (UAI'23)**, Pittsburgh, PA, 2023, in press. (* means equal contribution or co-first authors)
10. Boning Tong, Zhuoping Zhou, Davoud Ataee Tarzanagh, **Bojian Hou**, Andrew J. Saykin, Jason Moore, Marylyn Ritchie, Li Shen. *Class-Balanced Deep Learning with Adaptive Vector Scaling Loss for Dementia Stage Detection*. In: **Proceedings of the 14th International Workshop on Machine Learning in Medical Imaging (MLMI'23)**, Vancouver, Canada, 2023, in press.
11. Zhuoping Zhou, Boning Tong, Davoud Ataee Tarzanagh, **Bojian Hou**, Andrew J. Saykin, Qi Long, Li Shen. *Multi-Group Tensor Canonical Correlation Analysis*. In: **Proceedings of the 14th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB, 2023)**, Houston, TX, 2023, in press.
12. Zhuoping Zhou*, Davoud Ataee Tarzanagh*, **Bojian Hou***, Boning Tong, Jia Xu, Yanbo Feng, Qi Long, Li Shen. *Fair Canonical Correlation Analysis*. In: **Proceedings of the 37th Annual Conference on Neural Information Processing Systems (NeurIPS'23)**, New Orleans, LA, 2023, in press. (* means equal contribution or co-first authors)

Journal

10. **Bo-Jian Hou**, Lijun Zhang, and Zhi-Hua Zhou. *Prediction with Unpredictable Feature Evolution*. **IEEE Transactions on Neural Networks and Learning Systems (TNNLS)**, 2021, in press. (Impact factor: 14.255, Ranked #7 in Artificial Intelligence by Google Scholar)
11. **Bo-Jian Hou** and Zhi-Hua Zhou. *Learning with Interpretable Structure from Gated RNN*. **IEEE Transactions on Neural Networks and Learning Systems (TNNLS)**, 2020, 31(7): 2267-2279. (Impact factor: 14.255, Ranked #7 in Artificial Intelligence by Google Scholar)
12. **Bo-Jian Hou**, Lijun Zhang, Zhi-Hua Zhou. *Learning with Feature Evolvable Streams*. **IEEE Transactions on Knowledge and Data Engineering (TKDE)**, 2019, 33(6): 2602-2615. (Impact factor: 9.235, Ranked #2 in Data Mining & Analysis by Google Scholar)
13. Jie Ren, **Bojian Hou**, and Yuan Jiang. *Deep Forest for Multiple Instance Learning*. **Journal of Computer Research and Development**, 2019, 56(8): 1670-1676. (Impact factor: 1.043)

14. Mingquan Lin, **Bojian Hou**, Lei Liu, Mae Gordon, Michael Kass, Fei Wang, Sarah H. Van Tassel, Yifan Peng. *Automated diagnosing primary open-angle glaucoma from fundus image by simulating human's grading with deep learning*. **Scientific Reports**, 2022, 12(1): 14080. (Impact factor: 4.379)
15. Mingquan Lin, **Bojian Hou**, Swati Mishra, Tianyuan Yao, Yuankai Huo, Qian Yang, Fei Wang, George Shih, Yifan Peng. *Enhancing thoracic disease detection using chest X-rays from PubMed Central Open Access*. **Computers in Biology and Medicine**, 2023: 106962. (Impact factor: 6.698)
16. Heng Lian, Di Wu, **Bo-Jian Hou**, Jian Wu, Yi He. *Online Learning from Evolving Feature Spaces with Deep Variational Models*. **IEEE Transactions on Knowledge and Data Engineering**, 2023, in press.

Manuscript

16. **Bojian Hou**, Hao Zhang, Gur Ladizhinsky, Ali Kayyal, Stephen Yang, Volodymyr Kuleshov, Fei Wang and Qian Yang. *Clinical Evidence Engine: Proof-of-Concept For a Clinical-Domain-Agnostic Decision Support Infrastructure*. **arXiv preprint** arXiv:2111.00621, 2021.
17. Jing-Xiao Liao, **Bo-Jian Hou**, Hang-Cheng Dong, Hao Zhang, Jianwei Ma, Jinwei Sun, Shiping Zhang, Feng-Lei Fan. *Heterogeneous Autoencoder Empowered by Quadratic Neurons*. **arXiv preprint** arXiv:2204.01707, 2022.
18. Dayang Wang, Feng-Lei Fan, **Bo-Jian Hou**, Hao Zhang, Rongjie Lai, Hengyong Yu, Fei Wang. *Manifoldron: Direct Space Partition via Manifold Discovery*. **arXiv preprint** arXiv:2201.05279, 2022.
19. Zhen Zhou, Hongming Li, Chau B. Tran, Rongyao Hu, Guray Erus, Elizabeth Mamourian, Ahmed Abdulkadir, Junhao Wen, Ilya Nasrallah, Dhivya Srinivasan, **Bojian Hou**, Nick R. Bryan, David A. Wolk, Lori Beason-Held, Susan M. Resnick, Haochang Shou, Christos avatzikos, Yong Fan and the ISTAGING Consortium. *Cross-Scale Functional Connectivity Patterns of The Aging Brain Learned From The Multi-Cohort Istaging Study*. **In preparation**.
20. **Bojian Hou***, Zixuan Wen*, Jingxuan Bao, Richard Zhang, Boning Tong, Shu Yang, Junhao Wen, Yuhan Cui, Jason H Moore, Andrew J. Saykin, Heng Huang, Paul M. Thompson, Marylyn D. Ritchie, Christos Davatzikos, Li Shen. *Interpretable Deep Clustering Survival Machines for Alzheimer's Disease Subtypes Discovery*. Submitted to **Medical Image Analysis**, 2023. (* means equal contribution or co-first authors)
21. Yan Ma, Weicong Liang, Yiduo Hao, **Bojian Hou**, Xiangyu Yue, Chao Zhang, Yuhui Yuan. *Revisiting DETR Pre-training for Object Detection*. Submitted to **IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)**, 2023.
22. Weiqing He*, **Bojian Hou***, George Demiris, Li Shen. *Interpretability Study for Long Interview Transcripts from Behavior Intervention Sessions for Family Caregivers of Dementia Patients*. Submitted to **AMIA Informatics Summit 2024, Boston, MA**, 2023. (* means equal contribution or co-first authors)
23. Ruiming Wu, Bing He, **Bojian Hou**, Andrew J Saykin, Jingwen Yan, Li Shen. *Cluster Analysis of Cortical Amyloid Burden for Identifying Imaging-driven Subtypes in Mild Cognitive Impairment*. Submitted to **AMIA Informatics Summit 2024, Boston, MA**, 2023.
24. **Bojian Hou**, Andrés Mondragón, Davoud Ataei Tarzanagh, Zhuoping Zhou, Andrew J Saykin, Jason H Moore, Marylyn D Ritchie, Qi Long, Li Shen. *PFERM: A Fair Empirical Risk Minimization Approach with Prior Knowledge*. Submitted to **AMIA Informatics Summit 2024, Boston, MA**, 2023.

AWARDS & HONORS

Best Paper Award in the 14th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics	2023
Excellent Doctoral Dissertation Award of Jiangsu Province	2021
Excellent Doctoral Dissertation Award of Nanjing University	2021
JSAI Excellent Doctoral Dissertation Award	2020
CS Excellent Doctoral Dissertation Award of Nanjing University	2020
Outstanding Graduate Student Award of Nanjing University	2020
CCFAI Outstanding Student Paper Award.	2019
The Program A for Outstanding PhD Candidate of Nanjing University	2019
National Scholarship for Ph.D.	2017
NeurIPS Volunteer Award	2017
IJCAI Travel Award	2017
Outstanding Undergraduate Student Award of Nanjing University	2014
National Endeavor Scholarship	2012

PROFESSIONAL ACTIVITIES

Program Committee (PC) Member or Reviewer of Conferences

- PC Member of NeurIPS'23 (The 37th Annual Conference on Neural Information Processing Systems)
- PC Member of NeurIPS'22 (The 36th Annual Conference on Neural Information Processing Systems)
- PC Member of ICML'22 (The 39th International Conference of Machine Learning)
- PC Member of NeurIPS'21 (The 35th Annual Conference on Neural Information Processing Systems)
- SPC Member of IJCAI'21 (The 30th International Joint Conference on Artificial Intelligence)
- PC Member of ICML'21 (The 38th International Conference of Machine Learning)
- PC Member of AAAI'21 (The 35th AAAI Conference on Artificial Intelligence) (**I was selected as one of the top 25% PC members at this conference.**)
- Reviewer of KDD'20 (The 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining)
- PC Member of NeurIPS'20 (The 34th Annual Conference on Neural Information Processing Systems)
- PC Member of AISTATS'20 (The 23rd International Conference on Artificial Intelligence and Statistics)
- PC Member of ICLR'20 (The 8th International Conference on Learning Representations)
- PC Member of AAAI'20 (The 34th AAAI Conference on Artificial Intelligence)
- PC Member of DFM'19 (The 1st ICDM Workshop on Dynamic Feature Mining)
- Reviewer of PRICAI'19 (The 16th Pacific Rim International Conference on Artificial Intelligence)
- PC Member of CCML'19 (The 17th China Conference on Machine Learning)
- PC Member of NeurIPS'19 (The 33rd Annual Conference on Neural Information Processing Systems)
- PC Member of ICML'19 (The 36th International Conference of Machine Learning)
- PC Member of AISTATS'19 (The 22nd International Conference on Artificial Intelligence and Statistics)
- PC Member of ICLR'19 (The 7th International Conference on Learning Representations)
- PC Member of AAAI'19 (The 33rd AAAI Conference on Artificial Intelligence)
- PC Member of NeurIPS'18 (The 32nd Annual Conference on Neural Information Processing Systems)

Reviewer of Journals

- Reviewer of TPAMI (IEEE Transactions on Pattern Analysis and Machine Intelligence)
- Reviewer of TNNLS (IEEE Transactions on Neural Networks and Learning Systems)
- Reviewer of MIA (Medical Image Analysis)
- Reviewer of TII (IEEE Transactions on Industrial Informatics)
- Reviewer of Nature Methods
- Reviewer of Machine Learning
- Reviewer of TKDD (ACM Transactions on Knowledge Discovery from Data)
- Reviewer of Scientific Reports.
- Reviewer of KIS (Knowledge and Information Systems)
- Reviewer of FCS (Frontiers of Computer Science)

Other Services

- Web Chair of MLA'16 (The 14th Chinese Workshop on Machine Learning and Applications)
- Web Chair of MLA'15 (The 13rd Chinese Workshop on Machine Learning and Applications)
- Web Chair of LAMDA Group from Sept. 2014 to Sept. 2017 (Including updating each page of LAMDA website, maintaining mail server, maintaining course FTP etc.)

TEACHING ASSISTANTS

Advanced Methods and Health Applications in Machine Learning (for graduate students)
Spring, 2023

Computational Thinking (for undergraduate students) Fall, 2016

Introduction to Java (for undergraduate students) Fall, 2014

TECHNICAL STRENGTHS

Programming: Python, Java, C/C++, MATLAB, Bash, LaTeX, HTML, CSS

Machine Learning Platforms: PyTorch, TensorFlow, Keras, Pandas, Scikit-Learn, SciPy

Other Tools: Word, Powerpoint, Excel, Origin, Mendeley

LEADERSHIP

2014 Class Representative of Department of Computer Science and Technology at Nanjing University Sep. 2010 - Jun. 2014

President of Graduate English Club of Nanjing University Sep. 2014 - Jun. 2016