BOJIAN HOU

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EDUCATION

Nanjing University (NJU) **Ph.D.**
Department of Computer Science and Technology *Sep.2014-Jun.2020*
Supervisor: Prof. Zhi-Hua Zhou and Prof. Yuan Jiang

Nanjing University (NJU) **Bachelor of Science**
Department of Computer Science and Technology *Sep.2010-Jul.2014*

RESEARCH INTEREST

I have broad interest in **machine learning**, **data mining** and their potential applications to biomedical data. During my doctoral studies, my main research direction is feature evolvable learning which is a novel learning scenario where data features would evolve in open and dynamic environment. I developed a series of algorithms that can effectively deal with this scenario with theoretical guarantees.

In summary, my research interests include:

· **Interpretability**: studying the interpretability of the black-box machine learning models;
· **Feature Evolvable Learning**: studying learning scenarios where data features evolve;
· **Semi-Supervised Learning**: learning both from labeled and unlabeled data;
· **Online Learning**: learning models continuously from online streaming data;
· **Natural Language Processing**: leveraging pre-trained model to understand natural language;
· **Deep Learning**: leveraging deep neural networks to handle complex spatial and temporal data.

WORKING EXPERIENCES

University of Pennsylvania **Postdoctoral Researcher**
Center for Biomedical Image Computing and Analytics *Jan.2022-Present*

Weill Cornell Medical College **Postdoctoral Associate**
Department of Population Health Sciences *May.2021-Jan.2022*

4th Paradigm Co. **Researcher**
Department of Science and Technology *Aug.2020-Apr.2021*

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.

2. **Bo-Jian Hou**, Yu-Hu Yan, Peng Zhao and Zhi-Hua Zhou. *Storage Fit Learning with Feature Evolvable Streams.* **In: Proceedings of the AAAI Conference on Artificial Intelligence (AAAI'21), Virtual Conference**, 2021, 35(9), 7729-7736.

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.

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, in press.

5. **Bo-Jian Hou** and Yuan Jiang. *Learning Interpretability from RNN with Feature Evolving*. **In: CCF Conference on Artificial Intelligence (CCFAI'19), Xuzhou, China, 2019**. (This paper won the CCFAI Outstanding Student Paper Award.)

Journal

6. **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.

7. **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.

8. **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.

9. Jie Ren, **Bojian Hou**, and Yuan Jiang. *Deep Forest for Multiple Instance Learning*. **Journal of Computer Research and Development**, 2019, 56(8): 1670-1676.

Manuscript

10. **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*. Submitted to **the annual ACM Conference on Intelligent User Interfaces (ACM IUI'22) .**

11. **Bo-Jian Hou**, Yu-Cheng He, Mengshuo Wang, Wei-Wei Tu, Isabelle Guyon, and Qiang Yang. *Environment Learning for Decision Optimization: A Survey*. Submitted to **IEEE Transactions on Knowledge and Data Engineering (TKDE).**

12. Mingquan Lin, **Bojian Hou**, Lei Liu, Mae Gordon, Michael Kass, Fei Wang, Sarah H. Van Tassel, Yifan Peng. *GlaucomaNet: A Deep-Learning Algorithm for the Diagnosis of Primary Open-Angle Glaucoma from Fundus Photographs*. Submitted to **the Lancet Digital Health.**

13. **Bojian Hou**, Hao Zhang, Fei Wang. *Can We Trust Shapley Values based Interpretations for Medical Machine Learning Models?*. Submitted to **Journal of the American Medical Informatics Association (JAMIA).**

14. 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. Submitted to **the 31st International Joint Conference on Artificial Intelligence (IJCAI'22).**

AWARDS & HONORS

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

PC (Program Committee) Member or Reviewer of Conferences

· 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 the top 25% PC members in AAAI'21.**)
· 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 onArtificial 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 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

Computational Thinking (for undergraduate students). Fall, 2016

Introduction to Java (for undergraduate students). Fall, 2014

TECHNICAL STRENGTHS

Computer Languages	Python, MATLAB, Java, C/C++, HTML, CSS
Efficient Tools	LaTeX, Pytorch, Office, Origin, Mendeley
Leadership	Chief of the Whole Grade (180 Students) in Nanjing University;
	President of Graduate English Club of Nanjing University