Apply for PhD

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Research Interests: *AI & Machine Learning Theory and Applications, Unsupervised Learning, Deep Learning for Graph and Structured Data, AI for Sciences, Data Mining*

Education

09.2021 – 06.2024 **Beihang University & Ecole Centrale de Pékin** **Master**

- **Specialty**: *Systems Engineering* in *Sino-French Engineer School* & *School of Computer Science and Engineering*. French *General Engineer* (Interdisciplinary).
- **Grades**: French Engineer and Beihang Master courses credits 66, GPA 3.7
- **Research**: Data Mining, Graph Representation Learning, GNN, Self-Supervised Contrastive Learning, Knowledge Graph, Recommendation Algorithms, Causal and OOD Methods in Machine Learning.

09.2017 – 06.2021 **Beihang University & Ecole Centrale de Pékin** **Bachelor**

- **Specialty**: *Pure & Applied Mathematics* in *Sino-French Engineer School* (*Ecole Centrale de Pékin*).
- **Grades**: multidisciplinary, credits 217, GPA 3.7, Top 10%, weighted average 88.95/100, Mathematics domain average 95+/100.

Professional Experiences

02.2023 – 10.2023 **Institute of Software Chinese Academy of Sciences** **Algorithm Engineer Intern**

- Participate in University of Chinese Academy of Sciences research group, Wenwen Qiang's academic seminar.
- Drawing upon research achievements from various fields such as machine learning, causal inference, control theory, optimization, and fundamental mathematics, to investigate their application in artificial intelligence tasks.
- Discuss ideas and revise papers for conference submission from members within the seminar.
- Paper review for conferences such as ECAI 2023 and NeurIPS '23.
- Project proposal, feasibility analysis, and documentation writing for National Natural Science Foundation Project of wargame deduction based on deep reinforcement learning and game theory.
- Leverage graph representation learning to improve environment modeling in reinforcement learning.
- Wargame situation representation and visualization based on graph contrastive learning.

09.2021 – 01.2022 **Beihang University** **Teaching Assistant**

- Teaching Assistant for Python Programming: responsible for designing programming assignments, providing comprehensive support in addressing students' queries, and marking examination papers.

Project Experiences

10.2022 – now **Recommendation Method based on Adaptive Graph Contrastive Learning**

- Improve the collaborative filtering algorithm based on graph contrastive learning to solve the problems of noise, data sparsity and popularity bias in recommendation scenarios.
- Design adaptive loss functions based on global structure information for dataset denoising and model debiasing.
- Design a data augmentation method through OOD generalization and deconfounding in causal theory to mitigate model bias.
- Supported by the National Natural Science Foundation of China (No. 61977002)

10.2020 – now **Smart Education Topic Research**

- Research & Survey on educational recommendation, knowledge tracing, academic prediction and student modeling by leveraging various deep learning methods like Transformers, GNN, Knowledge Graph, etc.
- Supported by the National Natural Science Foundation of China (No. 61977002 and No. 61977003)

10.2021 – 05.2022 **Algorithm Module Research of Schneider Intelligent Switch Aging Rate**

- Work based on more than 20,000 lines of source code of Schneider Electric intelligent switch module.
- C# code reading, program function analysis, switch aging business logic understanding.
- Create Class Diagram using Unified Modeling Language (UML) and create algorithm logic diagram for Schneider Electric developers.
- Lead the team to drive project progress and supervise the quality of team work.

10.2020 – 09.2021 **Educational Data Mining – Tutor Recommendation Algorithm**

- Collect educational data using web crawlers.
- Educational data analysis, visualization and preprocessing.
- Design recommendation algorithm based on machine learning.
- Design a prototype system for tutor recommendation.
- Supported by the National Natural Science Foundation of China (No. 61977003) and the New Liberal Arts Research and Reform Practice Projects of the Ministry of Education of China (No. 2021180002).

Publications

- **G. Chen**, C. Yin, Y. Ouyang, W. Rong, Z. Xiong and J. Cai, "*A Recommendation Algorithm for University Master Tutors Based on Machine Learning*", *2022 IEEE Global Engineering Education Conference (EDUCON)*, Tunis, Tunisia, 2022, pp. 989-997, doi: 10.1109/EDUCON52537.2022.9766761
- Zhuang Liu, Haoxuan Li, **Guanming Chen**, Yuanxin Ouyang, Wenge Rong, and Zhang Xiong. 2023. *PopDCL: Popularity-aware Debiased Contrastive Loss for Collaborative Filtering*. In Proceedings of the 32nd ACM International Conference on Information and Knowledge Management (CIKM '23). Association for Computing Machinery, New York, NY, USA, 1482–1492. https://doi.org/10.1145/3583780.3615009
- **Guanming Chen**, Wenwen Qiang, Zeen Song, Ziyi Chen, Xingzhe Su and Zhang Xiong. *Is Encoded Popularity Always Harmful? Explicit Debiasing with Augmentation for Contrastive Collaborative Filtering*. (**Under submission**)
- Zeen Song, **Guanming Chen**, Jingyao Wang, Wenwen Qiang. *Beyond Space: Unveiling Temporal Dynamics in Video Self-Supervised Learning*. (working)
- Ziyi Chen, **Guanming Chen**, Wenwen Qiang, Hui Mou. *Structure Inference for Financial Multivariate Time Series Prediction using Generative Flow Networks*. (**Co-first author**, working)
- Haoxuan Li, Zhuang Liu, **Guanming Chen**, Yuanxin Ouyang, Zhang Xiong, et al. *A Survey on Personalized Education*.(working)

Skills

- **English**: IELTS band score 8.0
- **French**: 6 years of learning experience in a French environment (the main courses are taught in French).
- **Chinese**: Native.
- **Programming**: Python (& PyTorch), C, C++, MATLAB.

Awards

- First Prize of Beihang University Master Academic Scholarship (2 times).
- First Prize of Beihang University Master New Student Scholarship.
- Outstanding Graduate of Beihang University.
- First Prize of Beihang University Bachelor Academic Scholarship (3 times).
- Second Prize of Beihang University Bachelor Academic Scholarship.
- Third Prize of Beihang University Mathematical Modeling Contest.