Xiaowei Qian

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Education

University of Electronic Science and Technology of China (UESTC) Chengdu, China
B.Eng in Software Engineering, School of Information and Software Engineering Sep. 2020 - Jul. 2024
GPA: 3.85/4.0 **Outstanding Graduate (Top**10%**)**

Publications

*** Equal Contribution**

Conference Papers

- **A Probabilistic Generative Method for Safe Physical System Control Problems**
  Peiyan Hu, Xiaowei Qian*, Wenhao Deng, Rui Wang, Haodong Feng, Ruiqi Feng, Tao Zhang, Long Wei, Yue Wang, Zhi-Ming Ma, Tailin Wu.*
  NeurIPS 2024 Workshop on Safe Generative AI [paper]
- **Addressing Shortcomings in Fair Graph Learning Datasets: Towards a New Benchmark**
  Xiaowei Qian, Zhimeng Guo*, Jialiang Li, Haitao Mao, Bingheng Li, Suhang Wang, Yao Ma.*
  Conference on Knowledge Discovery and Data Mining (**KDD 2024**) [paper] [code]
- **Upper Bounding Barlow Twins: A Novel Filter for Multi-Relational Clustering**
  Xiaowei Qian, Bingheng Li*, Zhao Kang.*
  Annual AAAI Conference on Artificial Intelligence (**AAAI 2024**) [paper] [code]

Experience

AI for Scientific Simulation and Discovery Lab, Westlake University Jul. 2024 - present
Research Intern Supervisor: Prof. Tailin Wu
Topic: **Safe Generative Models**, **AI for PDE Control**
♢ Project: Conformal Diffusion Control (NeurIPS'24 Workshop)

- Introduce safe constraint into the deep learning-based control of complex physical systems and develop two datasets
- Provide a certifiable upper bound of the safety score inspired by conformal prediction and design an iterative safety improvement process to promote the output distribution becoming more optimal and safer
- Contribution: Develop part of the idea, conduct half of the experiments, write half of the paper

Data Analytics and Machine Intelligence Lab, Rensselaer Polytechnic Institute Sep. 2023 - Feb. 2024
Research Intern Supervisor: Prof. Yao Ma
Topic: **Trustworthy Machine Learning**, **Graph Learning**
♢ Project: Benchmarking Fair Graph Learning (KDD'24 ADS)

- Revealed the lack of meaningful information provided by the graph structure in existing fair graph learning datasets
- To address these shortcomings, we proposed synthetic and semi-synthetic datasets with customizable bias and constructed two more meaningful real-world datasets from Twitter
- Unified model selection strategy and experiment settings to evaluate models across all datasets
- Contribution: Develop part of the idea, conduct all the experiments, write most of the paper

Cognitive Computing and Intelligent Decision Lab, UESTC Sep. 2022 - Sep 2023
Research Intern Supervisor: Prof. Zhao Kang
Topic: **Unsupervised Learning**, **Graph Learning**
♢ Project: Filter-based Multi-view Clustering (AAAI'24)

- Aimed to alleviate representation collapse in unsupervised learning
- Designed a filter that upper bounding Barlow Twins to facilitate the optimization of the loss function
- Developed a simple yet effective clustering architecture (1-layer MLP only)—benefiting from the filter
- Contribution: Develop most of the idea, conduct all the experiments, write most of the paper

Selected Awards

- Outstanding Graduate of UESTC (10% school-wide) *2024*
- UESTC pacesetter student scholarship (20% school-wide) *2021,2022,2023*
- Service Outsourcing Innovation and Entrepreneurship Competition for Chinese College Students, Nation First Price (18 teams nationwide) *2022*

Standard Test

TOEFL: Overall 87 (R:25 L:20 S:22 W:20)
Duolingo: Overall 140 (Literacy:150 Comprehension:150 Conversation:110 Production:105)