Zhenghao Zhou

PERSONAL INFORMATION

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EDUCATION EXPERIENCES

M.S. Electrical Engineering 2024-present

Shanghai Jiao Tong University, Shanghai, China

College of Smart Energy

GPA: 3.89/4.0 (Ranking: 2/44, **National Scholarship**)

Advisor: Yiyan Li, Associate Professor

B.S. Electrical Engineering 2020-2024

Hunan University, Changsha, China

GPA: 3.83/4.0 (Ranking: 3/289, **National Scholarship**)

RESEARCH INTEREST

My research focuses on the application of **machine learning** and **big data analytics** in **power distribution systems**, including:

- **Synthetic Data Generation**: using deep-learning based methods to synthesize useful data for power system analysis. For example, using infoGAN model to extract interpretable physical features and enabling controlled data generation
- **Physics-Informed Modeling**: using machine-learning based methods to model power systems with interpretability. For example, using Kolmogorov-Arnold Network to implement white-box modeling of electrical energy systems.
- **Energy Data Asset Protection**: using watermarking technology to verify the ownership for dataset or neural network. For example, using backdoor watermark to protect the well-trained neural network.
- **LLM-based data analytics**: using fine-tuned LLM to time series analysis in power system. For example, proposing a unified causal supervised LLM-based framework to different tasks.

PUBLICATIONS

[1] **Zhenghao Zhou**, Yiyan Li*, Runlong Liu, Zheng Yan, Mo-Yuen Chow. Unsupervised and

controllable synthesizing for imbalanced energy dataset based on AC-InfoGAN[J]. Applied Energy, 2025, 393: 126107.

[2] **Zhenghao Zhou**, Yiyan Li*, Zelin Guo, Zheng Yan, Mo-Yuen Chow. A White-Box Deep-Learning Method for Electrical Energy System Modeling Based on Kolmogorov-Arnold Network. (IEEE Transactions on Industrial Informatics, Accepted)

[3] **Zhenghao Zhou**, Yiyan Li*, Xinjie Yu, Jian Ping, Xiaoyuan Xu, Zheng Yan, Mohammad Shahidehpour. Deep-Learning Neural Network-based Frequency-Domain Watermarking for Power System Time Series Data Asset Ownership Verification. (Submitted to Applied Energy)

[4] Yiyan Li, **Zhenghao Zhou**, Jian Ping, Xiaoyuan Xu, Zheng Yan*, Jianzhong Wu. A Two-Stage AI-Powered Motif Mining Method for Efficient Power System Topological Analysis. (Submitted to Applied Energy)

[5] **Zhenghao Zhou**, Yiyan Li*, Runlong Liu, Zheng Yan, Mo-Yuen Chow. DNN-Defender: A Black-box Backdoor Watermarking for Power System Deep Neural Network Ownership Verification. (Submitted to IEEE Transactions on Smart Grid)

[6] **Zhenghao Zhou**, Yiyan Li*, Xinjie Yu, Runlong Liu, Zelin Guo, Zheng Yan, Mo-Yuen Chow. ChronoGrid: A Unified Causal Supervised Framework for Power System Time-Series Data Analysis Based on Large Language Model. (Submitted to IEEE Transactions on Smart Grid)

RESEARCH EXPERIENCE

- **2023.08 - present: Research Assistant and Master's candidate**

  Shanghai Jiao Tong University

  Topic: AI-based power data asset operations and maintenance

  Duties included: Coding and academic writing

  Supervisor: Assoc. Prof. Yiyan Li

- **2022.06-2023.07: Research Assistant**

  Hunan University

  Topic: Wireless power transmission

  Duties included: Designing the PCB and writing the control code

  Supervisor: Prof. Zhixing He

GRANDS AND SELECTED AWARDS

National Scholarship - (top 2%) 2025

Ministry of Education of China

Excellent Undergraduate Student Award – Provincial level - (top 3%) 2024
Hunan Provincial Department of Education

University Excellent Undergraduate Student Award – University level - (top 5%) 2024
Hunan University

Hugo Shong Scholarship 2024
Hunan University

National Scholarship - (top 1%) 2023
Ministry of Education of China

National Second prize of China University Intelligent Robot Creativity Competition 2023
Chinese Association for Artificial Intelligence

National First prize of China Robotics and Artificial Intelligence Competition 2023
Chinese Association for Artificial Intelligence

National First prize of China Robot Competition 2022
Chinese Association of Automation

TBEA Scholarship 2022
Hunan University

INTERNSHIP

Shenzhen InnoX Academy 2024
Electronics and Algorithms engineer

SKILLS

Software: PyCharm; Altium Designer; SolidWorks; LaTeX; Keil and so on.

Hardware: PCB welding; mechanical structure designing