Zhenghao Zhou

PERSONAL INFORMATION

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EDUCATION EXPERIENCES

M.E. Electrical Engineering 2024-present

Shanghai University, Shanghai, China

College of Smart Energy

GPA: 3.89/4.0

Advisor: Yiyan Li, Assistant Professor

B.E. Electrical Engineering 2020-2024

Hunan University, Changsha, China

GPA: 3.83/4.0 (Ranking: 3/289)

RESEARCH INTEREST

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

- **Data Synthesis**: 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.
- **Asset Verification**: using watermark technology to verify the ownership for dataset or neural network. For example, using backdoor watermark to protect the well-trained neural network.
- **LLM Applications**: 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. (Available at: arXiv: https://arxiv.org/abs/2407.13691, Submitted to IEEE Transactions on Industrial Informatics, minor revision)

[3] **Zhenghao Zhou**, Yiyan Li*, Xinjie Yu, Jian Ping, Xiaoyuan Xu, Zheng Yan, Mohammad Shahidehpour, Mo-Yuen Chow. Deep-Learning Neural Network-based Frequency-Domain Watermarking for Power System Time Series Data Asset Protection (Submitted to IEEE Transactions on Industrial Informatics)

[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 IEEE Transactions on Power System)

[5] **Zhenghao Zhou**, Yiyan Li*, Jian Ping, Xiaoyuan Xu, Zheng Yan, , Mo-Yuen Chow. DNN-Defender: A Black-box Backdoor Watermarking for Power System Deep Neural Network Ownership Verification (Revising)

[6] **Zhenghao Zhou**, Yiyan Li*, Xinjie Yu, Runlong Liu, Jian Ping, Xiaoyuan Xu, Zheng Yan, Mo-Yuen Chow. ChronoGrid: A Unified Causal Supervised Framework for Power System Time-Series Data Analysis Based on Large Language Model (Revising)

RESEARCH EXPERIENCE

- Summer 2023 - Now: Research Assistant and Master's candidate

Shanghai Jiao Tong University

Topic: AI applications in power system

Duties included: Coding and academic writing

Supervisor: Asst.Prof.Yiyan Li

- Summer 2022: 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

Excellent Undergraduate Student Award 2024

Hunan Provincial Department of Education

Excellent Undergraduate Student Award 2024

Hunan University

Hugo Shong Scholarship (The highest social donation scholarship of Hunan University) 2024
Hunan University

China National Scholarship 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; machine assembling