Jiashu Qu

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Education Background

School of Electrical Engineering , University of Cincinnati OH, US

Bachelor of Science in Electrical Engineering 09/2021-06/2026

- **GPA**: 3.94/4.00 **Rank**: 1/97
- **Core Courses**:
  Math: Calculus, Linear Algebra, Differential Equations, Engineering Probability and Statistics
  Major Course: Machine Learning, Big Data Analysis, Data Structure, Systems and Signals, Power System Analysis, Digital Circuit, Analog Circuit, C++ Programming

Internship

***Intern*, Sichuan Energy Internet Research Institute, Tsinghua University** Sichuan, China

Project 1: Optimization of Bidding Strategy for Pumped-Storage Power Stations 09/2023-11/2023

- Designed algorithms to simulate bidding behaviors of pumped-storage power stations based on various bidding methods in real markets
- Developed optimization algorithms for bidding strategies using GUROBI and MATLAB, enhancing the efficiency and profitability of operational bids
- "An Optimal Operation Strategy of Pumped Storage Plants for Maximizing the Benefits from Price Differences in Spot Market" in IEEE International Conference on Power Science and Technology (ICPST), 2024. **DOI:** [https://doi.org/10.1109/ICPST61417.2024.10601971]

Project 2: Wind Power Sequence Simulation Generation 06/2023-09/2023

- Utilized historical wind power data to simulate wind power output sequences that retain statistical characteristics, creating realistic models of wind energy production
- Applied K-means clustering based on the PSO algorithm to categorize monthly wind power output scenarios; used an enhanced Markov Chain Monte Carlo method for state sequence generation of simulation series, fitted volatility using a Gaussian Mixture Model, and added randomness to generate multi-year simulated sequences
- Compared to traditional MCMC algorithms, introduced a simulation generation method that better preserves the probabilistic density characteristics, peak-shaving features, and monthly average properties of wind power output historical sequences
- Completed a research paper, planning to submit to an EI-indexed journal

Research Experience

***Research Assistant*, Professor Suhang Wang's Laboratory, Pennsylvania State University**

Project: Benchmark for the Video Understanding Hallucination in VLMs 05/2024-Present

- Created the first benchmark addressing the hallucination problem of Vision-Language Models (VLMs) in video understanding
- Familiar with the basic architecture of multimodal large models and knowledgeable about current popular models
- Reviewed existing literature on video understanding benchmark(e.g. POPE, InternVid, HALLUSIONBENCH), summarized testing methodologies, and proposed a more comprehensive test set for addressing the hallucination problem in video understanding.
- Selected video data and annotated problems. Conducted tests on selected models
- Planning to submit to CVPR 2025

***Research Assistant*, Professor Meng Yan's Laboratory, Chongqing University**

Project 1: Anomaly Detection in Time Series Data Based on Multi-Attention Model 06/2024-08/2024

- Built a deep learning model using spatial attention and frequency domain attention mechanisms based on PyTorch for anomaly detection in time series data
- Achieve relative high point-wise F1 score on SWAT(0.787), SMAP(0.308) and PSM(0.469)
- Planning to submit to ECIR 2025

Project 2: Anomaly Detection in Time Series Data Based on Positive-Unlabeled Learning 09/2024-Present

- Developed a novel time series anomaly detection process that employs positive-unlabeled learning based on previously detected anomalies or prior knowledge
- Completed the coding and testing of an end-to-end model, and currently working on model improvements
- Planning to submit to SIGKDD 2025

***Research Assistant*, Professor Yu Juan's Laboratory, Chongqing University**

Project: Energy Consumption Pattern Mining Based on Self Supervised Learning 06/2022-09/2022

- Built a SOM using python and improved through R studio, which has been applied to the abnormal power consumption data detection project of the Xinjiang power grid
- Utilized DNN to learn the clustered data, enabling the prediction of anomalies in any new data points
- Mastered the basic knowledge of unsupervised learning, and conducted self-organizing map neural network construction, deep neural network construction, and clustering result analysis

Competition Experience

***Participant*, National College Students Mathematics Competition** 03/2023

- Applied the knowledge of calculus, ordinary differential equations, multivariable calculus to analyze, summarize and solve problems in the competition

***Leader*, Mathematical Contest in Modeling/Interdisciplinary Contest in Modeling (MCM/ICM)** 02/2023

- Independently built an AHP-EWM comprehensive evaluation model to evaluate the degree of light pollution in several regions of the world
- Responsible for algorithm construction, writing English papers, and assisting code writing
- Used software such as MATLAB and R studio for code writing, and result visualization

***Leader*, National College Student Innovation Training Program**
Design and Application of Insulating Dielectric Materials Based on Thermochromism 05/2023-07/2024

- Based on the composition research and property analysis of discolor-able insulation composites in the Laboratory of Power Transmission and Distribution Equipment of Chongqing University
- Leveraged computational modeling and experimental testing to refine thermochromic properties and insulation capabilities, ensuring optimal performance
- Awarded for **outstanding project completion**
- Finished an SCI Q2(ACS Applied Electronic Materials) paper, currently under review

Honors and Awards

Baosteel Education Fund (5/entire school)
National Scholarship (1%)
MCM/ICM **Meritorious Winner (7%)**
1st Prize in the National College Student Mathematics Competition **(8%)**
Excellent Award of APMCM Mathematical Modeling Competition
National Bronze Award of the 8th International Internet+ Innovation and Entrepreneurship Competition

Skills

Professional Software: MATLAB, Multisim, Proteus, UG NX
Programming: Python, C++, R