Xinying Cai

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Education

Zhejiang University **Sep.2020-present**
Chu Ko-Chen Honors College **GPA:3.82/4**
Bachelor of Engineering in Energy & Environment System Engineering *Hangzhou, China*

Honors and Awards

- National Ten Best Team of 2021"Youth Summit +" Volkswagen Group(China) Youth Education Public Welfare Project
- Provincial First Prize of 2022 China Undergraduate Mathematical Contest in Modeling
- Honorable Mention of 2022 Interdisciplinary Contest In Modeling

Core Modules

- Python Program Designing (89/100)
- Chemicophysics(92/100)
- Probability Theory & Mathematical Statistics(93/100)
- Engineering Mechanics(90/100)
- Engineering Fluid Mechanics (94/100)
- Engineering Thermodynamics (90/100)
- Heat Transfer (93/100)
- Theory and Practice of Big Data Analysis of Energy System(87/100)
- Computer Simulation (96/100)
- Design Thinking and Innovative Design (A)

Research Experience

Policy recommendation system **Feb.2022-Apr.2022**
Precise pushing of policy information relevant to business users *A group team*

- The system will recommend the relevant policy based on the basic information of enterprise users such as the location, the sector, business scope, revenue, and past search records so that enterprises can obtain useful information timely and accurately.
- Inspired by the patent titled Federal Bayesian Personalized Ranking Recommendation Method and System based on Multi-Krum

Simulated a microgrid of hybrid PV-wind power system **Sep.2022-Dec.2022**
Established and simulated hybrid PV-wind power system with the battery storage system. *The leader of a four-person group*

- Using three levels of control, the microgrid can let the grid or battery obtain the power that the PV-wind power system produced but more than the local load, and vice versa.
- Learned math models of PV array,wind turbine and battery.
- Learned systematical control methods, such as PID control, mppts, adaptive control, etc.

Hangzhou Olympic Sports Center Smart Energy Platform **Dec. 2022**
Data analysis of multi-energy flows for integrated energy systems *Guided by Dr. Xiaojie Lin*

- Investigated and learned the IoT construction of smart energy systems in the field: external system, data integration, database, platform back-end, and platform front-end.
- Processed the load data of cooling, heating, and electricity, conducted work condition and correlation analysis, load prediction, etc.

Spam recognition **May.2021-Oct.2021**
Mining information from data to keep people safe from spam *Online group learning*

- Using Python-based libraries such as Pandas, Numpy, Sklearn, etc. for text feature processing, establishing logistic regression, decision tree and Bayesian classifier models as classifiers and analyzing their effects.
- The recognition accuracy reached 96%

Data Self-Expansion and DoppelGANger-Based Time-Series Modeling **Jan.2023-Mar.2023**
Steam Data Generation for industry heat users *Guided by Dr.Wei Zhong, Dr. Xiaojie Lin*

- Using improved generative adversarial networks(GAN) to generate realistic new steam data as a supplement for further modeling. It can generate pressure, flow and temperature of steam simultaneously with high accuracy. The data will be useful to both heat suppliers and industrial users.
- **An Accepted paper titled "Data Self-Expansion and DoppelGANger-Based Time-Series Modeling for Realistic Steam Data Generation" on ICPRE**

Technical Skills

Languages: English(intermediate), Mandarin(native)

Technical skills:
Data analysis: Proficient in using Python for data analysis and modeling with the deep learning framework, like PyTorch.
Modeling and system control: Using MATLAB, Simulink to complete the modeling and regulation of wind and solar power stations with an energy storage system
Engineering Simulation: Using COMSOL to simulate the thermoelectric structure of systems
Office collaboration ability: Proficient in the use of Office, Visio, and other daily office software