NINGKANG ZHAO

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📖 Nuclear Energy and Nuclear Technology Engineering
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Education

● Shanghai Jiao Tong University	2022.09 - 2025.03
Energy and Power Engineering	Master
● Changsha University of Science & Technology	2017.09 - 2021.06
Electrical Engineering and Automation	Bachelor

Publication

[1] **N. Zhao**, M. Song, X. Zhang, W. Xu, X. Liu, Nanodiamond Coating in Energy and Engineering Fields: Synthesis Methods, Characteristics, and Applications. Small, 2401292.

[2] W. Xu, L. Tang, **N. Zhao**, K. Ouyang, H. He, X. Liu, Corrosive Effect on Saturated Pool Boiling Heat Transfer Characteristics of Metallic Surfaces with Hierarchical Micro/Nano Structures. Heliyon 2024, 10 (8).

Award & Honor

- Aug. 2024. 2024 Joint Summer School on Nuclear Science and Technology. Silver Medal
- Jul. 2024. Shanghai Jiao Tong University Outstanding Teaching Assistant. Nomination
- Mar. 2024. Innovative Nuclear System Laboratory (INSL). Project Contribution Award
- Dec. 2023. Shanghai Jiao Tong University. Second-Class Scholarship
- Sept. 2023. 'Huawei Cup' China Graduate Mathematical Modeling Competition. Second Prize
- May 2021. Changsha University of Science & Technology. Second-Class Scholarship
- May 2020. Selection for 'Internet +' Innovation and Entrepreneurship Competition. Second Prize
- Dec. 2019. Changsha University of Science & Technology. Third-Class Scholarship
- Dec. 2019. 'Volunteer activities for the country people'. Practice Exemplary Individual
- May 2019. 'Dianyuan Cup' Campus Electronic Design Competition. Best Creative Award

Additional Experience

Design and Evaluation of Reactor under the Natural Circulation with Lead-Bismuth
Joint summer school

- **Core design:** Designing and draw the core structure, natural circulation mode, heat exchange system layout, pressure parameters, core power parameters, etc.

Clinical Intelligent Diagnosis and Treatment Modeling of Hemorrhagic Stroke
Leader of mathematical modeling team

- **Model builder:** Through the construction of BP neural network model and random forest network

model, the clinical data of hemorrhagic stroke were learned, and the interaction between multiple parameters was coupled by multi-input method to predict the situation of edema and hematoma of hemorrhagic stroke, and suggestions were made for intraoperative treatment and postoperative repair according to different conditions of different patients.

- **Algorithm Engineer:** By studying and analyzing the multi-parameter coupling relationship of hemorrhagic stroke, based on Spearman correlation coefficient, the random forest network model and BP neural network model were constructed, and the relevant factors of hemorrhagic stroke were screened by random forest algorithm and Spearman correlation coefficient, and then the evaluation indicators were predicted by BP neural network.

Research on Security Situation Awareness of Main Grid Graduation project

- **Mapping of elastic network topology model:** Based on the elastic network topology model, the main network of power system is mapped to the elastic topology network model, and the presentation form of the main network parameters of power system is optimized to provide a new situational awareness method.
- **Power system main network scheduling optimization:** Through research and analysis of the above elastic network topology model, the active power evaluation network of power system is constructed based on the IEEE39 calculation example of Matpower in MATLAB, and the optimal scheduling mode in different power system faults is verified according to the above model.

Household Electricity Portrait Monitoring System 'Internet +' project

- **Electrical equipment type detection:** The harmonic power signals of different electrical equipment are learned by random forest algorithm, and different types of electrical equipment are identified and recorded in the client of different users for monitoring and use.
- **Client monitoring function design:** By studying and analyzing the consumption habits of different electrical equipment, based on the SQL database, different household consumption habits models were constructed and electricity consumption and cost were predicted according to real-time electricity prices, and electricity consumption suggestions were proposed to users mainly for 'empty nest' elderly people and unreasonable consumption habits.

Smart Blinds Leader of 'Dianyuan Cup' project

- **Code writing and electronic assembly:** Through electronic components such as machine language and related photosensitive modules, a smart home device that can automatically adjust the tilt angle of the shutter according to the light intensity received by the light sensing module is developed.

Language & Skills

- **Professional Skills:** Computer (National Computer Rank Examination Level 2); LaTeX; Adobe series (Photoshop, Illustrator, Audition, etc).
- **Language Skills:** IELTS(6.5); CET-6; Mandarin Level II, Leval A.
- **Program Skills:** MATLAB; C; SQL (Understanding).