

Lizhan Hong

lzhong2048@sjtu.edu.cn | apollohong.github.io | (+86) 18860376438

SUMMARY

Passionate Machine Learning and Data Assimilation engineer with a strong background in AI for Science, Kolmogorov-Arnold Representation Theory and Model Order Reduction. Skilled in Python, PyTorch, and various Machine Learning libraries. Excellent problem-solving, research, and collaboration abilities. Seeking a challenging role to develop cutting-edge AI solutions and to devote myself to its applications.

EDUCATION

Shanghai Jiao Tong University

B.S. in Information Engineering & French (Double Degree) (GPA: 3.9)

Minhang Shanghai

Aug 2022 – June 2026

Zhengzhou Foreign language School

H.S. in STEM

Zhengzhou Henan

Aug 2019 – June 2022

PUBLICATION

[1] **Lizhan Hong**, Helin Gong, Hongjun Ji, Jialiang Lu, Han Li, Qing Li. Optimizing Near-Carbon-Free Nuclear Energy Systems: Advances in Reactor Operation Digital Twin through Hybrid Machine Learning Algorithms for Parameter Identification and State Estimation. Nuclear Science and Techniques. 2024.

[2] Helin Gong, **Lizhan Hong**, Wenbo Zhao, Jiangyu Wang, Hongkuan Liao, Tianya Li, Minxiao Zhong, Qing Li, Chang Chen. Solutioning Inverse Problem for Nuclear Reactor Operational Digital Twin Based on Global-Local Search. Atomic Energy Science and Technology. 2024.(in Chinese)

[3] Haicheng Huang, **Lizhan Hong**, Hongjun Ji, Jialiang Lu, Qing Li, Helin Gong, Advances in Reactor Operation Digital Twin through Decision Tree based Algorithms for Parameter Identification and State Estimation.2024.

SKILLS

Programming Languages: Python, HTML, SQL, MATLAB

Deep Learning Frameworks: Tensorflow, PyTorch, Keras

Libraries & Tools: NumPy, Pandas, pyMOR, Scikit-learn, Git

Language Skills: English (Fluent), French (Fluent), Mandarin (Native)

PROJECTS

AI-Informed Operational Digital Twin

Machine Learning Project

Jan 2023 – Feb 2024

Python, Torch

- Developed a Nuclear Operational Digital Twin and constructed a Model Order Reduction structure and published the findings on the paper^[1].
- Utilized Global Local Search, Singular Value Decomposition AutoEncoder, and hybrid Metaheuristic algorithms to optimize the inverse problem

Immersive Memory Storage and Experience System Based on Unity and Motion Capture Technology

Human motion capture and modeling

Feb 2023 – Aug 2023

Unity, C Sharp, Chatgpt

- Collected the gym trainer's movements and developed appropriate virtual models based on Character Creator

AI for Industry Starting-up Project

Application Development and Web Building

Feb 2024 – Present

Python, HTML, Flask, View

- Acted as the leader of the team, pitched the business plan and cooperated with social resources
- Implemented Operational Digital Twin models and deployed the corresponding application and website

Manifold Learning in Nuclear Core Management

Applied Mathematics

Aug 2022 – Feb 2023

Matlab, Simulink

- Applied manifold learning techniques including Proper Orthogonal Decomposition Principal Component Analysis and Locally Linear Embedding to simplify nuclear core data for enhanced predictive modeling.

Elastic Modulus Determination

Aug 2022 – Dec 2022

Mechanical Properties

Matlab, MVTB

• Investigated beam theory, derived deflection formulas, and used Matlab for image processing and regression analysis to determine the elastic modulus of steel rulers.

Grain Size Measurement using XRD

Aug 2022 – Oct 2022

Material Science

XRD analysis, Origin

• Employed XRD analysis following Bragg's Law and utilized Origin software for precise measurement, visualization and thus analysis of perovskite oxide grain sizes.

EXPERIENCE

Research Intern in AI for Science and Engineering

Jan 2023 – Feb 2024

AISEA Lab

Shanghai, China

- Developed and deployed machine learning models for various industries.
- Collaborated with cross-functional teams to deliver AI solutions.

Leader of the Mathematical Modeling Team

Sep 2023 – Sep 2023

SJTU math modeling association

Shanghai, China

- Developed and deployed math models for the heliostat field optimization strategy.

CERTIFICATIONS

- National Second Prize winner of the China Undergraduate Mathematical Contest in Modeling
- Shanghai Undergraduate Bodybuilding Champion
- Silver Award winner of the Sheng Xuanhuai Innovation and Entrepreneurship Competition at Shanghai Jiao Tong University
- C-class Excellence Scholarship recipient at Shanghai Jiao Tong University