Yuxuan Zeng

@ florian@whu.edu.cn | GitHub | Portfolio | Wuhan, China

Education

Wuhan University — Wuhan, China
M.Sc. in Electronic Science & Technology — *Sep 2023 – Jun 2026*

Wuhan University of Technology — Wuhan, China
B.Sc. in Telecommunication Engineering — *Sep 2019 – Jun 2023*

Skills

Programming: Python, MATLAB, C, LaTeX, Shell scripting

Tools: PyTorch, scikit-learn, PyTorch Geometric, Pandas, Optuna

Research interests: AI for Science/Medicine, Statistical Physics, Neural Quantum States, Tensor Networks.

Publications

Published

[1] **Zeng, Y.**; Cao, W.; Peng, T.; Hou, Y.; Miao, L.; Wang, Z.; Shi, J. *A machine learning-based framework for predicting the power factor of thermoelectric materials.* Appl. Mater. Today 2025, **43**, 102627.

[2] **Zeng, Y.**; Ling, G.; Zhang, H.; Cao, W.; Zheng, X.; Deng, X.; Lan, L.; Sun, R.; Liu, X.; Tian, L.; Xu, H.; Wang, Z.; Zhang, G. *Artificial intelligence-driven multivariate integration for pulmonary arterial pressure prediction in pulmonary hypertension.* npj Digit. Med. 2025. (in Press)

[3] **Zeng, Y.**; Cao, W.; Zuo, Y.; Peng, T.; Hou, Y.; Miao, L.; Wang, Z.; Shi, J. *Accelerating the discovery of materials with expected thermal conductivity via a synergistic strategy of DFT and interpretable deep learning.* Mater. Futures 2025, **4** (4), 045602.

[4] Zhu, Z.; Yan, X.; Hou, Y.; **Zeng, Y.**; Li, Z.; Sun, X.; Li, C.; Liang, X.; Ding, Q.; Lei, C. *Breath, Pulse, and Speech: A Multi-Parameter Wearable System using Airflow-Thermoelectric Fusion Technology.* Adv. Sci. 2025, e14277.

Preprints

[5] **Zeng, Y.**; Cao, W.; Zuo, Y.; Lyu, F.; Xie, W.; Peng, T.; Hou, Y.; Miao, L.; Wang, Z.; Shi, J. *Learning Thermoelectric Transport from Crystal Structures via Multiscale Graph Neural Network.* arXiv preprint arXiv:2512.06697, 2025.

[6] **Zeng, Y.**; Xie, W.; Cao, W.; Peng, T.; Hou, Y.; Wang, Z.; Shi, J. *Accelerating Multi-Objective Collaborative Optimization of Doped Thermoelectric Materials via Artificial Intelligence.* arXiv preprint arXiv:2504.08258, 2025.

Awards & Achievements

Outstanding Student Award (University Level): Awarded to students with excellent academic performance at Wuhan University of Technology during the 2020–2021 academic year. (Jul 2021)

Outstanding Student Award (School Level): Awarded by the School of Wuhan University of Technology for outstanding academic performance during the 2019–2020 and 2021–2022 academic years. (Jul 2020; Jul 2022)

Second-Class Academic Scholarship: Awarded by Wuhan University of Technology for excellent academic achievement during the 2019–2020 and 2020–2021 academic years. (Dec 2019; Dec 2020)

Third-Class Academic Scholarship: Awarded by Wuhan University of Technology for academic excellence during the 2021–2022 academic year. (Dec 2021)

MathorCup National Undergraduate Mathematical Modeling Challenge (Third Prize): Awarded in the 11th MathorCup Mathematical Modeling Competition for Undergraduates. (2021)

Outstanding Bachelor's Graduation Thesis: Awarded to distinguished Bachelor's thesis of Wuhan University of Technology, Class of 2023. (Jun 2023)

Projects

TECSA-GNN: Multiscale Graph Neural Network for Thermoelectric Transport | *GitHub*

- A multiscale graph neural network framework for learning thermoelectric transport properties directly from crystal structures, integrating local atomic environments and global structural descriptors to predict electronic transport coefficients.

mPAP-Pred: Non-invasive Pulmonary Arterial Pressure Prediction | *GitHub*

- A machine learning pipeline for non-invasive prediction of mean pulmonary arterial pressure (mPAP) using multimodal clinical and imaging-derived features, incorporating SISSO symbolic regression, XGBoost, and TabNet models with cross-validation and interpretability analysis.

TE-PF-Prediction: Power Factor Modeling for Thermoelectric Materials | *GitHub*

- A data-driven framework for predicting thermoelectric power factor based on materials descriptors, supporting the study "A Machine Learning-Based Framework for Predicting the Power Factor of Thermoelectric Materials" with reproducible preprocessing, training, and evaluation workflows.

LTC-modeling: Lattice Thermal Conductivity Modeling with KAN | *GitHub*

- A data-driven modeling project for lattice thermal conductivity prediction using Kolmogorov - Arnold Networks (KAN), exploring interpretable nonlinear representations to capture structure–property relationships in crystalline materials.

OFDR Deskew Filter Simulation and GUI | *GitHub*

- A MATLAB-based simulation and graphical user interface for deskew filtering in Optical Frequency Domain Reflectometry (OFDR) systems, developed as part of an undergraduate thesis on signal processing and optical sensing.

Relevant Coursework

Mathematics & Theoretical Foundations:
Probability Theory and Mathematical Statistics (93), Complex Functions and Integral Transforms (96), Numerical Methods (94), Advanced Mathematics I (80), Advanced Mathematics II (89), Information Theory and Coding (78), Electromagnetic Field Theory (96)

Signals, Systems & Communications:
Signals and Systems (96), Digital Signal Processing (91), Communication Principles (92), Mobile Communications (80), Image Processing and Communications (64)

Electronics & Hardware Systems:
Digital Electronics (90), Analog Electronics (89), Circuit Analysis II (92), Circuit Analysis I (86), FPGA Principles and Applications (93), Embedded Systems and Applications (85)

Machine Learning & Data-Driven Methods:
Machine Learning (A), Machine Learning in Vision (A+), Machine Learning Theory and Practice (A), Renewable Energy Big Data and Machine Learning (A),

Optoelectronics & Energy Systems:
Electromagnetic Theory in Microwave and Optoelectronics (A-), Optoelectronic Information Detection and Processing (B+), Semiconductor Optoelectronics and Laser Devices (B+)

Computer Science & Software Engineering:
C Programming (99), Advanced Programming (82), Data Structures and Algorithms (95), Software Engineering (87)

Organizations

Chinese Society of Optimization, Overall Planning & Economic Mathematics *Oct 2024 – Present*
Student Member

Others

English Proficiency: CET-4 (515), CET-6 (463).

Self-Assessment: Highly self-motivated and proactive; actively support group members in machine learning implementation, data processing, and technical problem-solving; conducted independent research in artificial intelligence and materials/physics interdisciplinary topics during the master's program, demonstrating strong independent research capability; maintain broad and sustained interest in cutting-edge developments across computational materials science, condensed matter physics, and artificial intelligence; detail-oriented, responsible, and reliable in research tasks.

Last Updated: December 25, 2025