Kangrui Zhou

zhoukangrui19@nudt.edu.cn — Github page

EDUCATION

National University of Defense Technology, Changsha, China — Sep 2023 — Expected Dec 2025
Master in Aerospace Science and Technology — Cumulative GPA: 3.54/4.00
Selected Courses: *Principles and Practice of Artificial Intelligence (A), Meteorological and Oceanographic Information Processing Experiment (A), Computational Fluid Dynamics (A)*
Thesis Title: Deep Symbolic Regression-Driven Discovery and Mapping Learning of Thermo-Mechanical Coupling Models for Aerospace Vehicles

National University of Defense Technology, Changsha, China — Sep 2019 — July 2023
B.S. in Aerospace Engineering — Cumulative GPA: 3.67/4.00
Selected Courses: *Advanced Mathematics (A), College Physics (A), Aerodynamics (A), Methods of Mathematical Physics (A)*

PUBLICATIONS

Rapid Prediction of Thermal Stress via Domain Decomposition-based Hybrid Fourier Neural Operator
Kangrui Zhou, Wei Peng, Xiaoya Zhang, Xu Liu, Wen Yao
Engineering Applications of Artificial Intelligence, IF:7.5, 2025. (Published)

Event-based Depth Estimation with Dense Occlusion
Kangrui Zhou, Taihang Lei, Banglei Guan, and Qifeng Yu
Optics Letters, IF:3.1, 2024. (Published)

A Two-Stage Deep Symbolic Regression Approach for Physics Model Discovery
Kangrui Zhou, Wei Peng, Xiaoya Zhang, Jiahui Li, Weien Zhou, Wen Yao
The 9th China Systems Science Conference, 2025. (Oral)

PROJECTS

Discovery and Mapping Learning of High-Efficiency Thermo-Mechanical Predictive Models on Cross-Domain Variable-Configuration Vehicles — July 2024 — Dec 2027

I am in charge of developing algorithms for model discovery and mapping learning.

- Model Discovery: generate mathematical symbols one by one through recurrent neural network and add them to the expression. The rotational invariance constraints and dimensional constraints is used to reduce the searching space.
- Mapping Learning: decompose domain based on the frequency of data information. Use interpolation process low frequency subdomains and geometry deformation process high frequency subdomains improve the prediction precision.

SELECTED AWARDS AND HONORS

Outstanding Student (Top 10%), National University of Defense Technology — July 2020

Second Prize Scholarship of Academic Excellence, National University of Defense Technology — Jan 2025

National First Prize of China College Students' Advanced Graphics Technology and Product Information Modeling Innovation Competition — Aug 2022
I am in charge of 3D modeling and 3D printing, using SolidWorks and UP Studio 3, separately.

National Second Prize of China Graduate Future Flight Vehiele Innovation Competition — Nov 2024
I am in charge of parametric modeling method of variable curved airfoil and participate in fabrication of variable-bend wings.

National Third Prize of China College Students' Energy Conservation and Emission Reduction Social Practice and Science and Technology Competition — Aug 2022
I am in charge of 3D modeling of a barbecue and participate in the experiments to test the energy-saving rate.

SKILLS

- **Programming:** Python, Matlab
- **Software:** SolidWorks, AutoCAD, Pointwise