

My research focuses on AI4physics and Physics4AI. I strive to develop new methods through the fusion of physical models, data-driven algorithms to understand nature and solve problems in science and engineering. Specifically, my research lies in the span of the following topics:

- Graph Neural Networks for Partial Differential Equations
- Scientific Machine Learning for Physical Systems (fluid mechanics, Nanoscale Heat Transfer)
- Data-driven Discovery of Governing Laws, Physics Informed Neural Networks
- Finite Element Method, Molecular Dynamics, Density Functional Theory

Education

- **ETH Zürich** **Zürich, Switzerland**
M.S. Candidate *2022 – present*
 Department of Mathematics
M.S. Major in Computational Science and Engineering
Advisor: undetermined
- **Nanjing University of Aeronautics and Astronautics** **Nanjing, China**
Undergraduate, GPA: 92/100 (Top 1% in 248 Students) *2014 – 2020*
 Major in Aircraft Power Engineering, School of Energy and Power Engineering
Advisor: Xianglei Liu

Visiting Position

- **Renmin University of China** **Online**
Gaoling school of artificial intelligence *2022.4-present*
Host: Hao Sun,
 Working on graph neural networks and partial differential equations.
- **Nanjing University of Aeronautics and Astronautics** **Nanjing, China**
Institute of Nano Science *2020.10-2022.4*
Host: Wanlin Guo,
 Working on the underlying mechanism of ultra-low energy loss in biomolecular motor.
- **Duke University** **Durham, NC, U.S.**
Aeroelasticity Group *2019.7-2019.10*
Host: Earl Dowell,
 Working on the fusion of machine learning and nonlinear fluid flows.

Publication

(* denotes the corresponding author)

1. **Shizheng Wen**, Chunzhuo Dang, Xianglei Liu*. **A Machine Learning Strategy for Modeling and Optimal design of Near-Field Radiative Heat Transfer**, *Appl. Phys. Lett.* 121 (2022), 111111.
2. **Shizheng Wen***, Michael W. Lee, Kai M. Kruger Bastos, Earl H. Dowell. **Application of Convolutional Neural Networks for Feature Identification in Complex Fluid Flows**, *Preprint* (2021)

3. Chunzhuo Dang, Xianglei Liu*, Haifeng Xia, **Shizheng Wen**, Qiao Xu. **High-performance three-body near-field thermophotovoltaic energy conversion**, *J. Quant. Spectrosc. Radiat. Transf.* 259 (2020), 107411.
4. **Shizheng Wen**, Xianglei liu*, Sheng Cheng, Zhoubing Wang, Shenghao Zhang, Chunzhuo Dang. **Ultra-high thermal rectification based on near-field thermal radiation between dissimilar nanoparticles**, *J. Quant. Spectrosc. Radiat. Transfer* 234 (2019), pp. 1-9.

HONORS AND AWARDS

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| Best Undergraduate Thesis award (top 1%) | 2020 |
| University Achievements Award (nominee), NUAA (the highest honor for graduates) | 2020 |
| Chancellor's Honorary Scholarships, NUAA (the highest honor for undergraduate student) | 2019 |
| National Scholarship, Ministry of Education of P.R. China (top 1%) | 2019 |
| Boeing Scholarship, Boeing Aerospace company (16 among the whole university) | 2018 |
| Nanjing University of Aeronautics and Astronautics Scholarship - First Prize (top 3%) | 2017-2019 |

SKILLS AND OTHERS

Programming: Expertise in Python, Matlab, C++, R language, SPSS, LINGO and various machine learning algorithms (tensorflow, Pytorch), finite element programming

Molecular Dynamics Simulations: VMD, NAMD, tcl/tk language

Modeling: ANSYS, Abaqus (finite element analysis), Multisim, ProE and AutoCAD

Hobbies: Violin, Guitar, Tennis, Soccer, Billiards, Swimming, Music, Rubik's Cube