
Research Interests

AI for Science

Deep learning methods for solving PDEs

Generative Learning

Diffusion Models, LLM-based Agents

Learning Theory

Mathematical foundations of deep learning methods

Experience

- 09/2025 - present **Postdoctoral Fellow**, *Hong Kong Polytechnic University*, Hong Kong S.A.R
Supervisor: Prof. Buyang Li
- 09/2020 - 06/2025 **Ph.D. in Computational Mathematics**, *Wuhan University*, Wuhan
Supervisor: Prof. Jerry Zhijian Yang
- 09/2016 - 06/2020 **B.S. in Mathematics and Applied Mathematics**, *Wuhan University*, Wuhan

Journal Publications

- [J1] **Zhao Ding**, Chenguang Duan, Yuling Jiao and Jerry Zhijian Yang. "Semi-Supervised Deep Sobolev Regression: Estimation and Variable Selection by ReQU Neural Network." *IEEE Transactions on Information Theory*, vol. 71, no. 4, 2025, pp. 2955-2981. [doi:10.1109/TIT.2025.3537594](https://doi.org/10.1109/TIT.2025.3537594).
- [J2] **Zhao Ding**, Yuling Jiao, Xiliang Lu, Peiying Wu and Jerry Zhijian Yang. "Convergence Analysis of Deep Ritz Method with Over-Parameterization." *Neural Networks*, vol. 184, 2025, 107110. [doi:10.1016/j.neunet.2024.107110](https://doi.org/10.1016/j.neunet.2024.107110).
- [J3] **Zhao Ding**, Junjun Huang, Yuling Jiao, Xiliang Lu and Jerry Zhijian Yang. "Robust Decoding From Binary Measurements with Cardinality Constraint Least Squares." *Communications in Computational Physics*, vol. 38, no. 5, 2025, pp. 1389-1416. [doi:10.4208/cicp.OA-2023-0285](https://doi.org/10.4208/cicp.OA-2023-0285).
- [J4] Mo Chen, **Zhao Ding**, Yuling Jiao, Xiliang Lu, Peiying Wu and Jerry Zhijian Yang. "Convergence analysis of PINNs with Over-Parametrization." *Communications in Computational Physics*, vol. 37, no. 4, 2025, pp. 942-974. [doi:10.4208/cicp.OA-2023-0101](https://doi.org/10.4208/cicp.OA-2023-0101).

Submitted Manuscripts

- [S1] **Zhao Ding**, Chenguang Duan, Yuling Jiao, Jerry Zhijian Yang, Cheng Yuan and Pingwen Zhang. Nonlinear Assimilation with Score-based Sequential Langevin Sampling. <https://arxiv.org/abs/2411.13443>. Under Review. *IEEE Transactions on Information Theory*.
- [S2] **Zhao Ding**, Chenguang Duan, Yuling Jiao, Ruoxuan Li, Jerry Zhijian Yang and Pingwen Zhang. Characteristic Learning for Provable One Step Generation. <https://arxiv.org/abs/2405.05512>. Under Review. *IEEE Transactions on Information Theory*.

- [S3] Jinyuan Chang, **Zhao Ding**, Yuling Jiao, Ruoxuan Li and Jerry Zhijian Yang. Deep Conditional Distribution Learning via Conditional Föllmer Flow. <https://arxiv.org/abs/2402.01460>. Under Review. Journal of the American Statistical Association.
- [S4] **Zhao Ding**, Yuling Jiao, Xiliang Lu, Jerry Zhijian Yang and Cheng Yuan. Sampling via Föllmer flow. <https://arxiv.org/abs/2311.03660>.

Invited Talks

- 2025 “**One Step Characteristic Generator by Distillation Techniques**”, *the 18th East Asia Section for Industrial and Applied Mathematics (EASIAM)*, Manila
- 2025 “**Distillation-Based One Step Generative Models**”, *Annual Conference of Chinese Statistical Association of Young Scholars*, Jinan
- 2024 “**Score-Based Sequential Langevin Sampling for Data Assimilation**”, *Peking University Seminar for Outstanding Doctoral Students in Computational and Applied Mathematics*, Beijing
- 2024 “**ODE-based Sampling and Generative Models**”, *the 17th East Asia Section for Industrial and Applied Mathematics (EASIAM)*, Macau
- 2023 “**Sampling via Föllmer Flow**”, *the 21st China Society for Industrial and Applied Mathematics (CSIAM) conference*, Kunming