Jiaqi Luo

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ABOUT

I am a researcher in computational mathematics and machine learning. My research focuses on utilizing nonlinear optimization techniques and machine learning methods to develop simple, user-friendly, and computationally efficient models and algorithms with applications in industry, healthcare, and science.

1. Nonlinear Optimization, Scientific Computing
2. Machine Learning, Deep Learning, Multimodal Learning
3. Applications: AI for Science, Healthcare, Industry

EDUCATION

- Ph.D in Computational Mathematics, Advisor: Zhouwang Yang
  Soochow University, 2015-2020
- B.S. in Mathematics,
  Soochow University, 2011-2015

POSITIONS

- 2025.2 - present, Assistant Professor
  School of Mathematical Sciences, Soochow University
- 2023.11 - 2024.11, Postdoctoral Fellowship, Advisor: Huaxiong Huang, Arvind Gupta
  The Fields Institute for Research in Mathematical Sciences
- 2020.7-2023.10, Research Scientist, Advisor: Shixin Xu
  Data Science Research Center, Duke Kunshan University

PREPRINTS

1. **Jiaqi Luo**, Yuan Yuan, and Shixin Xu. TIME: TabPFN-Integrated Multimodal Engine for Robust Tabular-Image Learning. arXiv:2506.00813.
2. **Jiaqi Luo**, Shixin Xu, and Zhouwang Yang. Efficient Global-Local Fusion Sampling for Physics-Informed Neural Networks. arXiv:2510.24026.

PUBLICATIONS

1. **Jiaqi Luo**, Yuedong Quan, and Shixin Xu. Robust-GBDT: leveraging robust loss for noisy and imbalanced classification with GBDT. *Knowledge and Information Systems* 67(12) (2025): 12361-12381. [DOI]

2. **Jiaqi Luo**, Yahong Yang, Yuan Yuan, Shixin Xu, and Wenrui Hao. An Imbalanced Learning-based Sampling Method for Physics-informed Neural Networks. *Journal of Computational Physics* 534 (2025): 114010. [DOI]

3. **Jiaqi Luo**, Yuan Yuan, and Shixin Xu. Improving GBDT Performance on Imbalanced Datasets: An Empirical Study of Class-Balanced Loss Functions. *Neurocomputing* 634 (2025) : 129896. [DOI]

4. **Jiaqi Luo** and Shixin Xu. NCART: Neural Classification and Regression Tree for Tabular Data. *Pattern Recognition* 154 (2024): 110578. [DOI]

5. Zepeng Wen*, **Jiaqi Luo***, and Hongmei Kang. The deep neural network solver for B-spline approximation. *Computer-Aided Design* 169 (2024): 103668. (*: Equal Contribution) [DOI]

6. **Jiaqi Luo**, Zihao Wei, Junkai Man, and Shixin Xu. TRBoost: A Generic Gradient Boosting Machine based on Trust-region Method. *Applied Intelligence* 53 (2023): 27876-27891. [DOI]

7. **Jiaqi Luo**, Hongmei Kang, and Zhouwang Yang. Knot placement for B-spline curve approximation via $l_{\infty,1}$-norm and differential evolution algorithm. *Journal of Computational Mathematics* 40(4) (2022): 592-609. [DOI]

8. **Jiaqi Luo**, Hongmei Kang, and Zhouwang Yang. Knot calculation for spline fitting based on the unimodality property. *Computer Aided Geometric Design* 73 (2019): 54-69. [DOI]

TEACHING

1. 2023.9-2023.10, Linear Algebra, Recitation Lecturer, Duke Kunshan University.

2. 2023.11-2023.12, Calculus, Teaching Assistant, Duke Kunshan University.

3. 2025.9-2026.1, Python Programming, Soochow University.

4. 2025.9-2026.1, Unstructured Data Analysis, Soochow University.

5. 2026.3-2026.6, Statistical Machine Learning, Soochow University.