Jingmin Sun Ph.D.

(+1) 518-414-1691
jingmins@andrew.cmu.edu
http://jingminsun.github.io
GitHub: JingminSun

GOAL

Looking for a post-doctoral opportunity starting Summer to Fall 2025.

EDUCATION

Department of Mathematical Science, Carnegie Mellon University   Pittsburgh, PA
Ph.D. in Mathematical Science   2020.09 - 2025.05 *(expected)*
- Advisor: Prof. Hayden Schaeffer (now Prof. in Mathematics at UCLA)
- Research area: Operator learning, PDE-foundation Model, Optimization, Control problem

Department of Mathematical Science, Rensselaer Polytechnic Institute   Troy, NY
Ph.D. student in Mathematics   2020.01 - 2020.05
B.S. in Mathematics   2017.09 - 2019.12
- GPA: 3.98/4.00; Summa Cum Laude

PREPRINTS

1. **Jingmin Sun**, Yuxuan Liu, Zecheng Zhang, and Hayden Schaeffer. Towards a foundation model for partial differential equations: Multi-operator learning and extrapolation, arXiv preprint arXiv:2404.12355 (2024).
   Under review of *Physics Review E*

2. **Jingmin Sun**, Zecheng Zhang, and Hayden Schaeffer. LeMON: Learning to Learn Multi-Operator Networks, arXiv preprint arXiv:2408.16168 (2024).
   Under review.

3. Derek Jollie*, **Jingmin Sun***, Zecheng Zhang, and Hayden Schaeffer. Time-Series Forecasting, Knowledge Distillation, and Refinement within a Multimodal PDE Foundation Model, arXiv preprint arXiv:2409.11609 (2024). (*Equal contribution)

PUBLICATIONS

1. Yuxuan Liu, **Jingmin Sun**, Xinjie He, Griffin Pinney, Zecheng Zhang, and Hayden Schaeffer. PROSE-FD: A Multimodal PDE Foundation Model for Learning Multiple Operators for Forecasting Fluid Dynamics, arXiv preprint arXiv:2409.09811 (2024).
   To appear at *Foundation model for science workshop at NeurIPS 2024*

ON GOING PAPERS

1. **Jingmin Sun**, Zecheng Zhang, and Hayden Schaeffer. BelNet for Control Problems (in progress)

2. Xinjie He, **Jingmin Sun**, Zecheng Zhang, and Hayden Schaeffer. Efficiency and Computer Memory Enhancement of PDE-Foundation Model. (in progress)

3. Min Zhu, Kaiyuan Huang, **Jingmin Sun**, Lu Lu, Zecheng Zhang, and Hayden Schaeffer. Enhancing the Interpretability of the PDE-Foundation Model. (in progress)

4. Yanming Kang, **Jingmin Sun**, Giang Tran, Hans De Sterck, Hayden Schaeffer. Symbolic Information Analysis for PDE-foundation model. (in progress)

PROJECTS		
	Enhancing the Interpretability of the PDE-Foundation Model	2024.06 -present
	Work with Prof. Lu Lu's group, Prof. Zecheng Zhang and Prof. Hayden Schaeffer	
	Symbolic Information Analysis for PDE-Foundation Model	2024.06 -present
	Work with Prof. Giang Tran's group, Prof. Hans De Sterck and Prof. Hayden Schaeffer	
	Efficiency and Memory Enhancement of PDE-Foundation Model	2024.06 -present
	Work with Prof. Zecheng Zhang and Prof. Hayden Schaeffer's group	
	BelNet on Dynamical System	2023.05 - present
	Work with Prof. Zecheng Zhang and Prof. Hayden Schaeffer	
	Kernel Analog Forecasting with Controls	2022.05 - 2023.05
	Work with Prof. Rachel Ward and Prof. Hayden Schaeffer	
	On Sticky Brownian Motion and Numerical Solution	2020.01 - 2020.05
	Rensselaer Polytechnic Institute, work with Prof. Fengyan Li	

SELECTED TEACHING AND MENTORING		
	REU Co-Mentor | University of California, Los Angeles	Summer 2024
	TA for Numerical Methods | Carnegie Mellon University	Spring, Fall 2024
	TA for Probability (Graduate Level) | Carnegie Mellon University	Spring 2023
	TA for Numerical PDEs | Carnegie Mellon University	Fall 2022
	TA for Integration and Approximation | Carnegie Mellon University	Spring 2022
	TA for Linear Algebra | Rensselaer Polytechnic Institute	Spring 2020

AWARDS		
	• **Travel Award**, SIAM Conference on Mathematics of Data Science	2024.07
	• **The Max Hirsch Prize**, Rensselaer Polytechnic Institute	2020.05

PRESENTATIONS		
	Towards a foundation model for partial differential equations: Multi-operator learning and extrapolation	2024.10
	Poster at SIAM Conference on Mathematics of Data Science	
	LeMON: Learning to Learn Multi-Operator Networks	2024.10
	Prof. Lu Lu's Seminar at Yale University	
	PDE Foundation Model: Generalization, Meta-learning and more	2024.09
	Applied and Computational Math Seminar at Florida State University	
	Predicting Operators and Symbolic Expressions using Multimodal Transformers - PDE	2024.03
	Prof. Hayden Schaeffer's Seminar at University of California, Los Angeles	

SKILLS	
	Languages: English, Chinese (Native).
	Programming: Foundation model engineering and programming; Python; Pytorch; MATLAB; R; LaTeX; Markdown; Git/ GitHub; HTML/ CSS