

# Chunyan Li

## Contact and Personal Information

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Department of Mathematics, Eberly College of Science  
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Email: cvl6109@psu.edu  
Gender: Female  
Citizenship: China  
<https://chunyanlimath.github.io>

## Employment and Education

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05/2025- **Postdoc researcher**, Department of Mathematics, University of South Carolina, USA  
Mentor: Prof. Wang, Qi

01/2024-05/2025 **Postdoc scholar**, Department of Mathematics, Penn State University, USA  
Mentor: Prof. Hao, Wenrui

08/2018-12/2023 **Ph.D. in Mathematics**, University of South Carolina, USA  
Advisor: Prof. Wang, Qi

09/2014-06/2018 **Bachelor of Science in Mathematics in Honors Class**, Xiangtan University, China

## Research Interests

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Scientific Machine Learning, Extreme Learning Machine/Random Projection Neural Networks Operator Learning, Numerical Analysis, Numerical Methods for PDEs, Mathematical Biology, Network Neuroscience, Data Science, Artificial Intelligence in Medicine, Digital Twin.

## Publications and Preprints

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1. Wetthasinghe, Shehani T., **Chunyan Li**, Huina Lin, Tianyu Zhu, Chuanbing Tang, Vitaly Rassolov, Qi Wang, and Sophya Garashchuk. *Correlation between the Stability of Substituted Cobaltocenium and Molecular Descriptors*. The Journal of Physical Chemistry A 126, no. 1 (2022): 80-87. (Impact factor: 2.781)
2. **Li, Chunyan**, Shehani T. Wetthasinghe, Huina Lin, Tianyu Zhu, Chuanbing Tang, Vitaly Rassolov, Qi Wang, and Sophya Garashchuk. *Stability Analysis of Substituted Cobaltocenium [Bis (cyclopentadienyl) cobalt (III)] Employing Chemistry-Informed Neural Networks*. Journal of Chemical Theory and Computation 18, no. 5 (2022): 3099-3110. (Impact factor: 6.006)
3. Hou, Jianguo, Jun Deng, **Chunyan Li**, and Qi Wang. *Tracing and Forecasting Metabolic Indices of Cancer Patients Using Patient-Specific Deep Learning Models*. Journal of Personalized Medicine 12, no. 5 (2022): 742. (Impact factor: 4.453)
4. Lu Wang **Chunyan Li**, Kexun Li, Hongfei Deng, Yu Wang, Li Chang, Ping Zhou, Jun Zeng, Mingwei Sun, Hua Jiang, Qi Wang. *Prognostic Models for Sepsis Based on Limited Data*. (Submitted 2022)
5. **Chunyan Li**, Lu Wang, Kexun Li, Hongfei Deng, Yu Wang, Li Chang, Ping Zhou, Jun Zeng, Mingwei Sun, Hua Jiang, and Qi Wang. *Machine-learning-enabled Prognostic Models for Sepsis*. Intelligence-Based Medicine 10:100167 (2024) (Impact factor: 2.298)
6. **Chunyan Li**, Wenkai Yu, Qi Wang. *Energy Dissipation Rate-Based Adaptive Sampling for Physics-Informed Neural Networks: Resolving Surface-Bulk Dynamics in Allen-Cahn Systems*. (under review)

7. **Chunyan Li**, Yutong Mao, Xiao Liu, and Wenrui Hao. *Data-driven and Graph-based causal model discovery and personalized prediction of Alzheimer's Disease model*. (To be submitted)

## Presentations and Posters

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1. 2025 SIAM Conference on Computational Science and Engineering, Fort Worth, Texas, US, (presentation) Mar. 2025
2. Minisymposium on Data Science, Discrete Math, and Theoretical Computing, the 2024 SIAM New York-New Jersey-Pennsylvania Section Conference (SIAM-NNP 2024), Rochester, NY, US, (presentation) Nov. 2024
3. Minisymposium on Model-Free Long-Horizon Time Series Forecasting with Mamba and Bayesian Neural Networks, the 2024 SIAM on Conference on Mathematics of Data Science (MDS24), Atlanta, Georgia, US, (presentation & poster) Oct. 2024
4. Minisymposium on Computational Mathematics for Engineering and Sciences, State College, PA, US, (poster) Nov. 2023
5. Workshop on Mathematical and Computational Biology, ICERM, Brown University, Providence, RI, US, (poster) June 2023
6. Minisymposium on Methods, Models, and Analysis of Complex Systems, 2023 SIAM Southeastern Atlantic Section Annual Meeting (SIAM SEAS), Virginia Tech, VA, US, (presentation) March 2023
7. Artificial Intelligence for Sensing and Diagnosis Core Breakout Session AI for Medical Research and Treatment, The National Big Data Health Science Conference, Columbia, SC, US, (presentation) Feb. 2023
8. The 40th Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE), Raleigh, NC, US, (presentation) Nov. 2022
9. The 2022 Made in SC Research Fellows and Faculty Conference and Celebration, Greenville, SC, US. (poster) Oct. 2022

## Travel Awards and Grants

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1. Travel Award by the ICERMS at Brown University for for Mathematical and Computational Biology June 2023
2. Travel Award by the ICERMS at Brown University for Mathematical and Scientific Machine Learning (MSML2023) June 2023
3. Travel Award by the University of South Carolina \$500 2023
4. **SPARC Graduate Research Grant** \$5,000 May 1, 2023 - Aug. 2024  
The Office of the Vice President for Research, University of South Carolina  
*Only 49 Recipients among all graduate students are selected in the university*
5. Travel Award by the 40th SEARCDE Conference \$500 Nov. 2022

## Awards and Honors

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1. **Graduate International Student Achievement Award** 2023  
*ISAA is awarded each semester to **two** international students, one at the graduate level and one at the undergraduate level*
2. **SEC Emerging Scholars Fellowship** (UofSC) 2022-2023  
*Only **five** Recipients among all graduate and postdoctoral students are selected in the university*
3. **George W.Johnson Graduate Fellowship in Applied Mathematics** (UofSC) 2022
4. **C.C. Royal Fellowship** (UofSC) 2022  
*Only **one** student is annually awarded to full-time graduate students who exhibit excellence in graduate study, research and scholarship by the Graduate School.*
5. **George W.Johnson Graduate Fellowship in Applied Mathematics** (UofSC) 2020  
*One graduate student is awarded annually by the Department of Mathematics.*
6. **Outstanding First-Year ACM Student** (UofSC) 2019  
*Given annually by the Department of Mathematics at the University of South Carolina*
7. Xiangjiang Scholarships for excellent students (XTU) 2017

8. Scholarships for excellent students in honors class, 4-year tuition fellowship (XTU)	2014-2018
9. National Encouragement Scholarship (1/19, XTU)	2016
10. Second class scholarship (2/19, XTU)	2015

## Professional Services

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Reviewers for

- Mathematical Methods in the Applied Sciences
- *Chaos*: An interdisciplinary Journal of Nonlinear Science

Organizer of the ACM Student Seminar in UofSC

2021-2023

- Organize the applied and computational mathematics seminar with McKenzie Black, Thomas Hamori.
- Invite Professors and Graduate students especially, underrepresented groups to give talks.

Vice president at SIAM student chapter of UofSC

2020-2022

Proctor for the annual UofSC High School Math Contest

2019 & 2020

## Teaching

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### **The Pennsylvania State University – State College, PA, US**

Math/CMPSC 451 Numerical Computations (Instructor), about 45 students

Spring 2025

Math 452 Deep Learning Algorithms and Analysis (Instructor), about 46 students

Fall 2024

Math/CMPSC 451 Numerical Computations (Instructor), about 41 students

Spring 2024

### **University of South Carolina – Columbia, SC, US**

Math 141 Calculus I (TA), Recitations and laboratory work, about 32 students

Spring 2019

Math 142 Calculus II (TA), Recitations and laboratory work, about 45 students

Fall 2019

Math 115 PreCalculus (Instructor), lectures and recitation, about 28 students

Spring 2020

Math 141 Calculus I (TA and online), Recitations and laboratory work, about 58 students

Fall 2020

Math 528 Mathematical Foundation of Data Science and Machine Learning (TA)

Fall 2021

Lectures on PyTorch and scikit-learn programming for a week

## Mentor Experience

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### **University of South Carolina – Columbia, SC, US Mentor in REU Summer School**

Summer 2025

- Lectures on time series classification problem with image encoding methods such as Gramian Angular Fields, Markov Transition Field, Recurrence plots, Fuzzy Recurrence plot, Wavelet Scalograms.
- Meet with 3 students every week to update the progress and provide feedback of the applications of image encoding techniques on real medical longitudinal data.

### **Mentor in REU Summer School**

Summer 2022

- Lectures on PyTorch programming.
- Meet with students for at least 2 hours every day to update the research projects for each group (5 undergraduate students in 2 groups).
- Help 3 students in group I understand Neural Ordinary Differential Equation (NODE) and how to program using its package, and guide students to do research on “predicting biomarkers of cancer patients using NODE”.
- Help 2 students in group II understand Physics Informed Neural Network (PINN) and how to program using DeepXDE package and guide students to do research on “solving a Partial Differential Equation using PINN”.

### **Xiangtan University – Xiangtan Hunan, P.R. China**

Mentor for class 2 in Department of Mathematics

Fall 2016

Mentor for Honors class in Business School

Spring 2017

## Membership

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- Society for Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)

## Relevant Skills

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**Language:** Chinese, English

**Technical skills:** Matlab, Python, PyTorch, L<sup>A</sup>T<sub>E</sub>X, Markdown.