Erik Wendt

erik.wendt@uconn.edu   —   (609) 532-0780   —   erikwendtmath.github.io

Applied mathematician skilled in modeling complex dynamical systems, reinforcement learning, developing efficient algorithms, and analyzing large data sets. Experienced in cross-disciplinary research and clear communication of technical results.

Education

Ph.D., Applied Mathematics, University of Connecticut, Storrs, CT   July 2025
Dissertation: Rigorous Dimension Estimates on Conformal Fractals

B.A., Mathematics, Gettysburg College, Gettysburg, PA   May 2019

Technical Skills

Programming: MATLAB, Python, Java, R, C++, SQL, Bash, Lean

Technologies: Git, Docker, SLURM

Frameworks/Tools: PyTorch, TensorFlow, Scikit-Learn, NumPy/SciPy, Pandas, Matplotlib

Experience

Graduate Research Assistant
University of Connecticut, Storrs, CT   Aug 2019 - Present

- Developed the theory for dimension estimates on conformal fractals, yielding the first general estimates for higher dimensional systems.
- Created adaptive dynamical algorithms to improve fractal meshing, establishing efficient computational schemes to analyze complicated geometric data.
- Applied high performance computing to implement finite element methods for computational dimension estimates.

REU Participant
Lamar University, Beaumont, TX   Summer 2018

- Adapted unsupervised clustering algorithms to functional data analysis and applied them to fMRI data.

Summer Researcher
Gettysburg College, Gettysburg, PA   Summer 2017

- Proved the existence of chaotic solutions to state-dependent differential delay equations.
- Showed the implications of chaotic solutions to time series analysis through modeling in R.

MIRTHE REU Student
Princeton University, Princeton, NJ   Summer 2016

- Developed a PID controller on a FPGA using Verilog to stabilize laser voltage.

Leadership and Mentoring

SIAM Graduate Chapter President (2021-2024)
Organized workshops, reading groups, and academic seminars covering topics such as quantum computing, computational optimal transport, and dynamical systems.

Pi Mu Epsilon Vice President (2017-2019)
Vice President of undergraduate mathematics honors society.

Eagle Scout (2014)

Publications

The Dimension Spectrum of the Infinitely Generated Apollonian Gasket (2025)
Established that the dimension spectrum of the Apollonian gasket is full using computer assisted proof techniques.
Link: arXiv:2504.17835

Rigorous Numerical Hausdorff Dimension Estimates for Conformal Fractals (2024)
Established theoretical and numerical methods for Hausdorff dimension estimates.
Applied high-performance computing to provide the first rigorous dimension estimates for higher dimensional conformal fractals.
Link: arXiv:2408.06330

A State-Dependent Delay Equation with Chaotic Solutions (2019)
Proved the existence of chaotic solutions to state-dependent differential delay equations and demonstrated them in R.
Link: DOI:10.14232/ejqtde.2019.1.22

Selected Invited Talks

Joint Mathematics Meetings, Seattle, WA (Jan 2025)
Rigorous Numerical Dimension Estimates for Higher Dimensional Continued Fractions

George Mason University, Fairfax, VA (Oct 2024)
Rigorous Dimension Estimates for Fractals and How to Find Them

Brown University, Providence, RI (Apr 2022)
On Rigorous Numerical Bounds on Hausdorff Dimension