Amber Thrall

amber.thrall@wsu.edu • https://amber.thrall.me/

EDUCATION

Washington State University, Pullman, WA

- Ph.D. in Mathematics — Aug 2023 – Current
  - Focus: Topological Data Analysis
  - Advisor: Bala Krishnamoorthy

University of Arizona, Tuscon, AZ

- Masters in Mathematics — Aug 2018 – Dec 2020
  - Focus: Dynamical Systems
  - Advisors: Kevin Lin and Shankar Venkataramani
  - Incomplete. Reason for leaving: medical

University of Washington Bothell, Bothell, WA

- B.S. in Mathematics — Sep 2016 – Jun 2018
  - Cum Laude

Everett Community College, Everett, WA

- Associates in Arts and Science (Direct Transfer Agreement) — Sep 2014 – Aug 2016

PUBLICATIONS

- P. Paparella and A. Thrall. Realizing Suleĭmanova spectra via permutative matrices, II, in press, *Linear Algebra Appl.*, 2019. 10.1016/j.laa.2018.12.030
- S. Hoover, D. McCormick, P. Paparella and A. Thrall. On the realizability of the critical points of a realizable list, in press, *Linear Algebra Appl.*, 2018. 10.1016/j.laa.2018.06.024

TEACHING EXPERIENCE

Washington State University, Pullman, WA

- Graduate Teaching Assistant — 2023 – Current
  - Math 202: Calculus for Business and Economics — Summer 2024
  - Math 100: Basic Mathematics — Fall 2023

University of Arizona, Tucson, AZ

- Graduate Teaching Assistant — 2018 – 2020
  - Math 122B: First Semester Calculus — Fall 2020
  - Math 120R: Calculus Preparation — Spring 2020
  - Math 120R: Calculus Preparation — Fall 2019
  - In-class teaching assistant for various classes — Fall 2018 – Spr 2019

University of Washington Bothell, Bothell, WA

- Undergraduate Teaching Assistant, First Year and Pre-Major Program — Sep 2017 – Jun 2018

AWARDS & SCHOLARSHIPS

- Mary Gates Research Scholarship — Mar 2017 – Dec 2017
  Competitive scholarship awarded to approximately 160 students annually across all University of Washington campuses for engaging in research with a faculty mentor.
- Dean's List, University of Washington Bothell — 2016 – 2018
  For attaining a quarterly GPA of at least 3.50 in 12 or more numerically graded credits each quarter for three quarters of the academic year.
- Tau Sigma Honors Society, University of Washington Bothell — 2016 – 2018
  For attaining a GPA of at least 3.50 in 12 or more numerically graded credits in the first quarter as a transfer student.

RESEARCH EXPERIENCE

University of Arizona

- Master's Thesis — Jan 2019 – Dec 2020
  - Project: $x_{n+1} = 2x_n \bmod 1$
  - Advisors: Kevin Lin and Shankar Venkataramani
  - Focus: Dynamical systems, chaos theory, Monte Carlo approximations, and probability.

University of Washington Bothell

- Undergraduate Research — Jan 2017 – Jun 2018
  - Project: Real Nonnegative Inverse Eigenvalue Problem

- Advisor: Pietro Paparella
- Focus: Nonnegative matrices, permutative matrices, and real eigenvalues.

- Research Experience for Undergraduates   Jun 2017 – Aug 2017
  - Project: Perron Similarities and the Nonnegative Inverse Eigenvalue Problem
  - Advisor: Pietro Paparella
  - Focus: Nonnegative matrices, eigenvalues, and critical points.

PRESENTATIONS

- A. Thrall. *Systems with Intermittent Chaos*. University of Arizona Research Tutorial Group, Tucson, AZ. 12 Dec 2019.

- S. Hoover, D. McCormick, and A. Thrall. *On the realizability of the critical points of a realizable list.* MAA Undergraduate Poster Session at the Joint Mathematics Meetings, San Diego, CA. 12 Jan 2018.

- S. Hoover, D. McCormick, and A. Thrall. *On the realizability of the critical points of a realizable multiset*. University of Washington Bothell 2017 Research Symposium, Bothell, WA. 10 Aug 2017.

- A. Thrall. *Permutative Matrices and the Real Nonnegative Inverse Eigenvalue Problem*. University of Washington Undergraduate Research Symposium, Seattle, WA. 18 May 2017.

SOFTWARE PROJECTS

- **scomplex**, Simplicial complex construction library written in Rust
  https://github.com/AmberThrall/scomplex
  - Construction of Vietoris-Rips filtration
  - Construction of Alpha filtration for 2D point clouds
  - Computation of Betti numbers
  - Algorithm for orienting orientable complexes
- **Linear**, a C++14 linear algebra all-header library
  https://github.com/AmberThrall/Linear
  - Multiple matrix decomposition methods, including: LUP, QR, Cholesky, Eigen, SVD and Schur
  - Eigenvalue and eigenvector methods
  - Equation solving of the form $Ax = b$
- **amber.thrall.me**, personal blog and portfolio powered by React
  https://github.com/AmberThrall/amberthrall.github.io
  - Custom filterable blog using remarkable to render markdown content
  - Single page website using React's *BrowserRouter* to distribute content
  - Lists more select projects I have worked on

BLOG WRITINGS

- Markov chains and chaos   28 Nov 2023
  https://amber.thrall.me/article?id=7
- A simple example of chaos in 1D   03 Oct 2023
  https://amber.thrall.me/article?id=6
- How LR parsing works   7 Jul 2022
  https://amber.thrall.me/article?id=4

COMPUTER SKILLS

- Languages: C, C++, Python, Rust
- Software: LaTeX, Mathematica, Matlab
- Operating Systems: Linux (Arch Linux), Windows

[*Compiled on 2024-08-20*]