Jennifer Paige

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jennifernpaige.github.io/

Education

- **University of California, Davis**, 2022-current
  - PhD Student in Graduate Group in Applied Mathematics, advised by Alan Hastings
  - MS in Applied Mathematics, UC Davis, June 2024
  - DOE Computational Sciences Graduate Fellow 2023
  - NSF National Research Traineeship: Sustainable Oceans Trainee, Cohort 5
- **Swarthmore College**, Pennsylvania, 2018 -2022
  - Bachelors of Arts in Mathematics & Educational Studies
  - Sigma Xi, AWM, and MAA member

Skills & Relevant Coursework

- Coursework in dynamical systems, asymptotics, numerics, linear algebra, analysis, and biology
- Coding experience in Python, Matlab, Julia, R, and SageMath; proficient in LaTeX

Employment

- 2024-current: **Graduate Research Student at Lawrence Livermore National Lab**
  - Analyzing how to adapt spatial scale to improve accuracy and efficiency in computational results in the Energy Exascale Earth System Model (E3SM)
- 2023: **Graduate Research Student at Cawthron Institute, New Zealand**
  - Developed mathematical models related to optimizing spatial marine management and risk assessment, through application of particle tracking software Oceantracker
  - Assisted in fieldwork focused on seagrass transplanting and meadow restoration
- 2021: **Yale SUMRY Research Experience for Undergraduates student** - Diffusion Geometry & Topology group
  - Worked to harness geometric information, specifically curvature, about point clouds to inform data analysis methods such as topological data analysis
  - Gained background in topological data analysis, geometry, and computer science, as well as further developed technical writing and research skills (independently and in a team)
- 2021-22: **Biology Student Research Assistant at Swarthmore College**
  - Studying aging and genetic diversity in asexually reproducing planaria worms through the analysis of reproductive data
  - Monitored and imaged a population of *Schmidtea Mediterranea*
- 2020-22: **Student employment in the Mathematics Department at Swarthmore College**
  - Math “Clinician” Peer Assistant - assisting all levels of courses by hosting help sessions
  - Math “Pi-rate” Peer assistant - assisting introductory calculus classes through in-class assistance and help sessions

- Mathematics Grader - graded for Differential Equations course
- 2020: **Gerrymandering Research Experience for Undergraduates student**
  - Used random walks and polygon maps to study the level of gerrymandering present in states
  - Gained mathematical and coding skills through developed programs that apply Markov chain Monte Carlo algorithms
- 2019-20: **Educational Psychology Research Assistant at Swarthmore College**
  - Studied how to improve Bootstrap program (teacher training program for the integration of math and computer science into classrooms) across the country through survey data analysis
- 2016-20: **High School and Undergraduate Research Student at Los Alamos National Laboratory Theoretical Physics (XTD-PRI) (2018-20)**
  - Analytically solving of hydrodynamic mechanics and symmetry analysis problems

  Computational Earth and Environmental Sciences (EES-16) (2016-18)
  - Developed soil heat transfer model in Python and Fortran and visualizations in Paraview
  - Analyzed moisture sensitivity of fire simulator (FIRETEC)
  - Assisted in the development of advanced turbulence equations for small scale perturbations

Papers

- Bhaskar, D., MacDonald, K., Thomas, D., Zhao, S., You, K., **Paige, J.,** Aizenbud, Y., Adelstien, I., & Krishnaswamy, S. (2022). *Diffusion-based methods for estimating curvature in data.* ICLR 2022 Workshop on Geometrical and Topological Representation Learning. openreview.net/pdf
- **Paige, Jennifer Nicole.** (2020). *Using Differential Forms to Find Symmetries in the Noh Problem for an Ideal Gas in a Spherical System* [White paper]. Los Alamos National Laboratory. LA-UR-20-20859.
- Davis, Diana et al. (2020). *Assessing Congressional Districting in Maine and New Hampshire.* arXiv e-print. arXiv:2011.06555v1.
- Renninger, K. A., Elias, Ruth. C., Kamiya, M. J., **Paige, J. N.,** & Youngblood, R. A. (2024). *PD supporting CS and math integration: implications of teacher interest and confidence for workshop design.* Computer Science Education, 35(1), 93–122. doi.org/10.1080/08993408.2024.2433334.

Conferences, Workshops, & Presentations

- *Upcoming:* Simons Laufer Mathematical Institute: Mathematics of Sea Ice and Polar Ecosystems summer school student, Fairbanks, Alaska, June 2025.
- Invited speaker at Paige, J., Hastings, A. "A spatial understanding of coral dynamics under multiple stressors." Joint Mathematics Meeting, Seattle Convention Center, 8 Jan. 2025.
- Santa Fe Institute: Complexity Summer School student, Sete, France, Oct. 2024.
- Paige, J. "A spatial understanding of coral dynamics under multiple stressors." Sustainable Oceans Annual Symposium, UC Davis, 4 Oct. 2024.
- Lead co-organizer for The Future of California Fisheries: Range Shifts and a Changing Ocean

Conference, UC Davis, 7 June 2024.

- Invited participant at Geometric and Topological Methods in Data Science Conference, ICERM, Dec. 2021.
- Paige, J., MacDonald, K.,Thomas, D.,. Zhao, S. “Towards Robust Curvature Computation in Point Clouds.” University of Connecticut’s REU Vir(tu)al Conference. Aug. 2021.
- Paige, J., MacDonald, K.,Thomas, D.,. Zhao, S. “Towards Robust Curvature Computation in Point Clouds.” Yale’s SUMRY 2021 Weekly Program Symposiums. July-Aug. 2021.
- Holland, Troy et al. “A Case Study of Wildfire/Atmosphere Coupling on Complex Topography.” Los Alamos National Laboratory. 11 May 2018. LA-UR-18-24156.

Leadership & Community Engagement

- 2024-current Volunteer for SACNAS
  - Graduate application mentor, elementary school science volunteer, Virtual Dinner with a Scientist panelist
- 2023-2024 Co-leader of Gender Minority in Mathematics Community Picnics
- 2023 Graduate Program Collective Applied Math Graduate Group student representative
- 2022 Heinrich W. Brinkmann Mathematics Prize recipient - for outstanding performance in the field and exemplary services to the Department
- 2020-21, 2021-22 Board member of Swarthmore Gender Minorities in Math & Statistics
- 2021-22 Math and Statistics Student Advisory Council member
- Mathematics tutor for Chester Dare 2 Soar program

Acquired Funding

- Graduate Student Association Spring Travel Grant - $500
- Math Department Spring travel grant - $500