

Julia Costacurta

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ACADEMIC POSITIONS

Haverford College

Fall 2025-Present

Visiting Assistant Professor, Statistics (in Dept. of Mathematics & Statistics)

Consortium for Faculty Diversity Postdoctoral Fellow

EDUCATION

Ph.D. in Electrical Engineering, Stanford University

06/2025

Thesis: Statistical and Network Models of Flexible Behavior

Advisor: Scott Linderman

M.S. in Electrical Engineering, Stanford University

06/2022

B.S. in Biomedical Engineering, Johns Hopkins University

05/2020

Additional Majors: Mathematics, Applied Mathematics & Statistics

Departmental Honors in Biomedical Engineering and Applied Mathematics & Statistics

PUBLICATIONS

Refereed Conference & Journal Publications

- **JC Costacurta***, S Bhandarkar*, D Zoltowski, SW Linderman. Structured flexibility in recurrent neural networks via neuromodulation. 38th Conference on Advances in Neural Information Processing Systems (NeurIPS). Vancouver, 2024.
- **JC Costacurta**, L Duncker, B Sheffer, AH Williams, W Gillis, C Weinreb, JE Markowitz, SR Datta, SW Linderman. Distinguishing discrete and continuous behavioral variability using warped autoregressive hidden Markov models. 36th Conference on Advances in Neural Information Processing Systems (NeurIPS). New Orleans, 2022.
- C Martin, H Zhang, **JC Costacurta**, M Nica, A Stinchcombe. Solving Elliptic Equations with Brownian Motion: Bias reduction and Temporal Difference Learning. Methodology and Computing in Applied Probability. 2021.
- **JC Costacurta**, L Osborn, NV Thakor, SV Sarma. Designing Feedback Controls for Human-Prosthetic Systems Using H-Infinity Model Matching. 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). Honolulu, 2018.

* Denotes co-first author

Under Review

- SA Xiao, A Yoshimoto, CC Chen, P Horvath, **JC Costacurta**, JK Baruni, V Tsai, VM Cardenas, D Biderman, F Deng, Y Li, SW Linderman, C Dulac, L Luo. Concerted actions of distinct serotonin neurons orchestrate flexibility in female pup care behavior. *Revise and Resubmit at Nature*, 2026.

GRANTS, HONORS, AND AWARDS

Funding Awards

Consortium for Faculty Diversity Postdoctoral Fellowship 2025-2026
One-year fellowship awarded to visiting faculty at liberal arts colleges, with course release

Stanford Diversifying Academia, Recruiting Excellence Fellowship 2023-2025
Two-year highly selective fellowship awarded to advanced graduate students interested in academic careers, who will diversify the professoriate

National Science Foundation Graduate Research Fellowship 2020-2023
National fellowship awarded in support of graduate studies at Stanford

Sang Samuel Wang Stanford Graduate Fellowship 2020-2025
Internal fellowship awarded in support of graduate studies at Stanford

Enhancing Diversity in Graduate Education Fellowship 2020-2025
Internal fellowship awarded to graduate students from underrepresented backgrounds

NeurIPS Scholar award 2022
Awarded complimentary registration to NeurIPS conference

Goldwater Scholarship 2019
National award for excellence in undergraduate research

Graduation Awards

- Exceptional Graduate Student Award, Stanford Engineering
- Richard J. Johns Award for Outstanding Academic Achievement, JHU Biomedical Engineering
- Prof. Joel Dean Excellence in Teaching Award for Undergraduates, JHU Mathematics
- David T. Yue Memorial Teaching award, JHU Biomedical Engineering

TEACHING EXPERIENCE

Instructor of Record

Applied Multivariate Statistical Analysis (STAT 361) at Haverford College Fall 2025, 2026
Upper-level undergraduate course in applied statistical modeling, using R (20 students)

Introduction to Probability and Statistics (STAT 103) at Haverford College Spring 2026
Introductory undergraduate course in probability and statistics (20 students)

Introduction to Matrix Methods (ENGR 108) at Stanford University Summer 2024
Upper-level undergraduate course in computational linear algebra, using Python (12 students)

Linear Algebra at Stanford Summer Engineering Academy Summer 2023
Four-week program for first-generation/low-income incoming freshmen (20 students)

Teaching Assistant

Teaching Assistant at Stanford University 2023-2024

- Introduction to Matrix Methods: undergraduate computational linear algebra course (F23)
- Introduction to Data Science: gateway undergraduate data science course in Python (W24)

Teaching Assistant at Johns Hopkins University 2018-2020

- Differential Equations: undergraduate ordinary differential equations course (F18, S19, S20)
- Systems and Controls: undergraduate biomedical control theory course (S19, S20)
- Calculus III: undergraduate multivariable calculus course (F19)

Workshop Development and Instruction

Graduate Teaching Consultant at Stanford Center for Teaching and Learning 2024-2025
Conducted small-group feedback sessions for graduate teaching assistants, provided teaching consultations, and delivered workshops on effective teaching strategies

Co-Instructor at Stanford Jail & Prison Education Project 2024-2025
Designed and taught interactive lessons at San Francisco County Jail #3

Data Science Instructor at The Carpentries 2023-2025
Certified to teach data science workshops (Python and R) via The Carpentries global network

Engineering Learning Consultant at Stanford Center for Teaching and Learning 2022-2024
Developed and delivered STEM academic skills workshops, e.g. LaTeX and data visualization

Coding for Engineers Instructor at Stanford Equity and Inclusion Office 2022-2024
Designed and co-taught 6-week scientific Python course for students in Equity and Inclusion Office summer programs

Workshop Leader at Women in Data Science June 2022
Prepared and delivered tutorial on Hidden Markov Models (10k+ Youtube views)

PRESENTATIONS

Invited Talks

Structured flexibility in recurrent neural networks via neuromodulation
Janelia Junior Scientist Workshop on Theoretical Neuroscience planned October 2026

Reimagining the Statistics Classroom for the AI Era (Panelist)
Joint Statistical Meetings August 2026

Modeling serotonergic modulation of switching behavior
International Conference on Mathematical Neuroscience June 2026

Teaching Introductory Statistics with Real Data
EAPOST Scholars Webinar May 2026

Statistical Sequence Models for Behavioral Neuroscience

West Chester University Mathematics Colloquium

April 2026

Statistical Sequence Models for Behavioral Neuroscience

Villanova-Puerto Rico Research Retreat

July 2025

Structured flexibility in recurrent neural networks via neuromodulation

Stanford Mind, Brain, Computation, and Technology (MBCT) Seminar

November 2024

Conference Abstracts

- **JC Costacurta**, Y Duan, K Rajan, SW Linderman. Modeling rapid neuromodulation in the cortex-basal ganglia-thalamus loop. Computational and Systems Neuroscience (COSYNE). Montreal, 2025.
- **JC Costacurta**, S Bhandarkar, D Zoltowski, SW Linderman. Neuromodulated recurrent neural networks. Junior Scientists Workshop on Recent Advances in Theoretical Neuroscience. Trieste, 2024.
- **JC Costacurta**, S Bhandarkar, D Zoltowski, SW Linderman. Neuromodulated recurrent neural networks on a timing task. Computational and Systems Neuroscience (COSYNE). Lisbon, 2024.
- **JC Costacurta**, AH Williams, B Sheffer, C Weinreb, W Gillis, JE Markowitz, SR Datta, SW Linderman. Time-warped state space models for distinguishing movement type and vigor. Computational and Systems Neuroscience (COSYNE). Lisbon, 2022. (waitlisted for talk)
- **JC Costacurta**, JM Lee, R Sczerba, SV Sarma. An Interactive Applet for Teaching Biomedical Applications of Feedback Control Theory. Biomedical Engineering Society (BMES). Philadelphia, 2019.
- S Aggarwal, P Chansky, **JC Costacurta**, N Garza, T James, M McDonald, N Mohan, S Rahmeh, E Logsdon, S Harvey. Deskillling Breast Cancer Biopsy Using Novel Device for Coordination. Biomedical Engineering Society (BMES). Philadelphia, 2019.
- MC Rosenberg, M Eyre, **JC Costacurta**, KM Peters, KM Steele. Kinematic and myoelectrical response to ankle exoskeletons during non-steady state locomotion in healthy adults. Congress of the International Society of Biomechanics. Calgary, 2019.
- **JC Costacurta**, L Osborn, NV Thakor, SV Sarma. Sensitivity Analysis of Feedback Controllers for Human-Prosthetic Systems Using H-Infinity Model Matching. Biomedical Engineering Society (BMES). Atlanta, 2018.

UNDERGRADUATE RESEARCH & SENIOR THESIS MENTORING

- **Jude Chelico** (2025-2026): Haverford Statistics senior thesis
 - Thesis title: Financial applications of hidden Markov models
 - Received departmental thesis award
- **Paige Copenhaver** (2025-2026): Haverford Statistics senior thesis
 - Thesis title: Unity, justice, and freedom for all? An analysis of German social census data using logistic, multi-level logistic, and regression modeling techniques
- **Shaunak Bhandarkar** (2023-2024): Stanford Math undergraduate honors thesis, now Neuroscience PhD student at Princeton

- Thesis title: Relating Neuromodulated RNNs to LSTMs in Theory and Experiment
- Received departmental thesis award
- Co-first author on NeurIPS paper
- **Evelyn Song** (Summer 2024): Stanford Biomedical Computation undergraduate
 - Project: Applying S5 Model to Neural Data

PROFESSIONAL ACTIVITIES

Professional Development

Janelia Junior Scientists Workshop in Theoretical Neuroscience planned October 2026
 Selected to attend fully funded workshop supporting the research development of early-career theoretical neuroscientists, held at HHMI Janelia Research Campus

EAPOST Scholars Program Spring 2026
 NSF-funded teaching mentorship program focused on bringing real data and hands-on examples into the introductory statistics classroom

ASA Section on Statistics and Data Science Education Mentoring Program 2024-2026
 Matched with a senior statistics educator, received mentorship on statistics pedagogy and life as a liberal arts faculty member

TAR: Teaching as Research Mini-Course, Stanford University Summer 2024
 Week-long intensive course focused on developing a “teaching as research” pedagogical project plan

Stanford Preparing Future Teaching Professors Program 2023
 Shadowed a faculty member at SF State and participated in career development seminar, with focus on careers at non-R1 institutions

Stanford Mind, Brain, Computation, and Technology Member 2021-2025
 Seminars and funding focused on computational neuroscience

Center for the Integration of Research, Teaching, and Learning Certificate 2022-2025
 Coursework and seminars focused around evidence-based teaching practices

Methods in Computational Neuroscience Summer Course August 2022
 Selected to attend month-long summer course focused on learning techniques and history of the field of computational neuroscience, held at Marine Biological Laboratory

Service to Community

Conference Organization

- Host of “Data in the Classroom” breakout session at Joint Statistical Meetings, 2026
- Co-organizer of Philadelphia-area satellite of Math for All Conference, 2026
- Co-organizer of Bryn Mawr/Haverford Meet a Mathematician Day, 2026

Peer Review

- Undergraduate Statistics Project Competition: judge, 2026
- Journal of Statistics and Data Science Education: reviewer, 2025
- International Conference on Learning Representations (ICLR) Tiny Papers: reviewer, 2024

Seminar Hosting

- Haverford Mathematics & Statistics Colloquium, 2025-Present
- Stanford Wu Tsai Neurosciences Seminar, Fall 2023
- Stanford Mind, Brain, Computation, and Technology Seminar, 2022-2023

Stanford Women in Electrical Engineering Social Chair

2020-2025

Planned community-building events for women in the department