Christian Camaño

California Institute of Technology (Caltech)

Personal Website

ccamano@caltech.edu

Degree	College/University	Year
PhD Applied & Computational Mathematics	California Institute of Technology	2024 -
B.A Mathematics	San Francisco State University	2021-2023
B.S Computer science	San Francisco State University	2021-2024
A.S Mathematics	College of the Redwoods	2018-2021

Research Experience

- **PhD Student | Caltech** **June 2024 - Current**
  - *Randomized Linear Algebra, Tensor Networks, Efficient low rank approximation*
  - I am a first year graduate student in **Dr. Joel Tropp**'s research group. We are currently working on two papers related to randomized numerical linear algebra (rNLA).
- **Researcher | San Francisco State University Research/ CAHSI NSF Fellow Fellow** **February 2022 - May 2024**
  - *Gaussian Process theory, Bayesian Deep learning, Dimensionality Reduction*
  - Collaboration with **Dr. Daniel Huang** focusing on concurrent programming techniques for Bayesian deep learning. Work explores Stein Variational Gradient Descent, variational inference, and particle methods for neural networks.
- **Researcher | Caltech Summer Research Fellow** **June 2023 - August 2023**
  - *Randomized Linear Algebra, Tensor Networks, Hamiltonian Simulation*
  - Collaboration with **Dr. Ethan Epperly** and **Dr. Joel Tropp** on novel algorithms for randomized tensor network contraction. Funded by the California State University Pre-Doctoral award.
- **Summer School Participant | Mathematical Sciences Research Institute (MSRI)** **June 2023**
  - *Dependent Type Theory, Formal Proof Verification*
  - Invited to attend a graduate seminar on theorem proving in `Lean4` representing San Francisco State University. Formalized a proof in functional analysis regarding the nonlinear Hahn Banach theorem now available in **`mathlib`**.
- **Researcher | Lawrence Berkeley National Laboratory (LBNL) REU** **June 2022 - August 2022**
  - *Randomized Linear Algebra, Tensor Networks, Hamiltonian Simulation*
  - Research under the guidance of **Dr. Roel Van Beeumen** and **Xioye Sherry Li** on adapting the Sketched Rayleigh Ritz Algorithm to tensor networks.

Publications

- Chris Camaño, Ethan N Epperly, Joel A Tropp **Successive randomized compression: A randomized algorithm for the compressed MPO-MPS product** *(2025)*
- Chris Camaño, Daniel Huang **High-Dimensional Gaussian Process Regression with Soft Kernel Interpolation** *(2025)*
- Daniel Huang, Chris Camaño, Jonathan Tsegaye, Jonathan Austin Gale**Push: Concurrent Probabilistic Programming for Bayesian Deep Learning** *(2023)*

Scholastic Achievements

2024

- NSF Graduate Research Fellowship (GRFP), *National Science Foundation*
- Caltech Kortschak Graduate Fellowship, *Caltech University*

2023

- CSU Pre-Doctoral Summer Research Grant, *California State University System*
- Latinos in Technology Scholar 2023–2024, *Silicon Valley Community Foundation*
- LSAMP Proud Award, *National Science Foundation (NSF)*

- BMC Scholarship in Computer Science, *San Francisco State University*
- Classes of the 1960's Endowed Scholarship, *San Francisco State University*
- Lilly M. Berry Scholarship, *San Francisco State University*
- Pamela Fong Scholarship in Mathematics, *San Francisco State University*
- SFSU Alumni Senior Scholarship, *San Francisco State University*
- Weinstein Family Scholarship, *San Francisco State University*

2022

- Google Explore CSR Scholarship Recipient, *Google*
- CSU Pre-Doctoral Sally Cassanova Scholarship, *California State University System*
- Science Undergraduate Laboratory Internships (SULI) Scholar, *Lawrence Berkeley National Laboratory / U.S. DOE*
- SIAM Student Chapter Certificate of Recognition 2021–2022, *SIAM*
- CAHSI REU Scholarship Recipient, *National Science Foundation (NSF)*
- Jack R. and Marjorie J. Fraenkel Scholarship in Computer Science, *San Francisco State University*
- Jules H. Strauss Scholarship in Computer Science, *San Francisco State University*
- Latinos in Technology Scholarship 2022–2023, *Silicon Valley Community Foundation*

Conference Participation & Presentations

- **Speaker | SOCAMS** **April 2025**
  - Invited to present at Southern California Applied Math Symposium on *randomized tensor networks*.
- **Colloquium Speaker | University Of California San Diego** **April 2025**
  - Invited to speak at UCSD Mathematics of Information, Data, and Signals Seminar on *randomized tensor networks.*
- **Speaker | Argonne National Laboratory** **Feb 2025**
  - Invited to present at the Argonne National Laboratory *Toward Next-Generation Ecosystems for Scientific Computing* workshop a seminar on *randomized tensor networks.*
- **Workshop Panelist | Sustainable Horizons Institute 2024** **October 2024**
  - Participated as a panelist on a seminar on Graduate funding support, and Graduate school preparation for under represented communities.
- **Poster Presenter | Joint Math Meeting (JMM) 2024** **January 2024**
  - Presented research research on randomized algorithms for efficient tensor network contraction this January in San Francisco, California
- **Data Analytics Challenge Winner | Great Minds in STEM Conference 2023** **October 2023**
  - Recieved 1st place in a data analytics challenge during the Great Minds in STEM 2023 Conference in Pasadena, California.
- **Poster Presenter | Great Minds in STEM Conference 2023** **October 2023**
  - Presented research findings on UMAP and manifold embedding algorithms at the undergraduate research competition during the Great Minds in STEM Conference in Pasadena, California. Received Third place in the research poster competition
- **Poster Presenter | 51st Annual Whiskeytown Lake Mathematics Conference** **October 2023**
  - Presented research findings on UMAP and manifold embedding algorithms and participated in a discussion on projective geometry.
- **Research Presentation | Caltech** **August 2023**
  - Conducted a research presentation at Caltech during the summer of 2023, focusing on randomized tensor network algorithms.
- **University Representative | SIAM Computational Science & Engineering Amsterdam 2023** **March 2023**
  - Selected as the representative for the San Francisco State University chapter to attend the SIAM Conference on Computational Science & Engineering in Amsterdam.
- **Poster Presenter | Joint Math Meeting (JMM) 2023** **January 2023**

- Invited to present research conducted at Lawrence Berkeley National Laboratory during a poster session at the Joint Math Meeting 2023 in Boston.

- **Award Recipient | California Forum for Diversity in Graduate Education** **November 2022**
  - Honored with the Sally Casanova Pre-Doctoral Scholarship and invited to attend the California Forum for Diversity in Graduate Education.

- **Poster Presenter | Lawrence Berkeley National Laboratory (LBNL)** **August 2022**
  - Presented research on tensor networks and eigensolvers at Lawrence Berkeley National Laboratory to staff and fellow undergraduate researchers.

- **Conference Panelist | SIAM Conference on Parallel Processing for Scientific Computing (PP22)** **February 2022**
  - Invited to serve as a panelist discussing diversity, equity, and inclusion in applied mathematics, representing the undergraduate community in the field.

Teaching

- **Teachers Assistant | Point Set Topology** **2024**
  - San Francisco State University

- **Teachers Assistant | Graduate Functional Analysis** **2024**
  - San Francisco State University

- **Teachers Assistant | Complex Analysis** **2024**
  - San Francisco State University

- **Teachers Assistant | Functional Programming** **2023**
  - San Francisco State University

- **Teachers Assistant | Java Programming** **2023**
  - San Francisco State University

Community Engagement

- **President, SIAM Chapter at San Francisco State University** **February 2022 - May 2024**
  - Former president of the San Francisco State UniversitySIAM Chapter. Coordinated guest lectures from professionals in academia, industry, and national laboratories.

- **Mathematics Tutor & Project Lead, San Francisco State University** **February 2022 - May 2024**
  - Provided tutoring services in a range of subjects, from introductory calculus to advanced linear algebra and analysis.

- **Embedded Mathematics Tutor & Project Lead** **August 2023 - May 2024**
  - Initiated involvement in an embedded tutoring program starting in Fall 2023, offering in-class academic support to early mathematics students at San Francisco State University.