Christian Camaño

California Institute of Technology (Caltech)

[Link to My Personal Website]

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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

Research Experience

Research Positions

- **PhD Student | Caltech** **June 2024 – Current**
  - *Randomized Linear Algebra, Tensor Networks, Efficient Low-Rank Approximation*
  - Second-year graduate student in **Dr. Joel A. Tropp**'s research group. Working on topics in randomized numerical linear algebra (rNLA) and tensor decomposition.
- **Researcher | Caltech Summer Research Fellow** **Summer 2023**
  - *Randomized Linear Algebra, Tensor Networks, Hamiltonian Simulation*
  - Collaboration with **Dr. Ethan N. Epperly** and **Dr. Joel A. Tropp** on novel algorithms for randomized tensor network contraction. Funded by the California State University Pre-Doctoral award.
- **Researcher | San Francisco State University / CAHSI NSF 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 | Lawrence Berkeley National Laboratory (LBNL)** **Summer 2022**
  - *Randomized Linear Algebra, Tensor Networks, Hamiltonian Simulation*
  - Research under the guidance of **Dr. Roel Van Beeumen** and **Dr. Xiaoye Sherry Li** on adapting the Sketched Rayleigh–Ritz Algorithm to tensor networks.

Research Workshops & Summer Schools

- **Workshop Participant | Simon's Institute Berkeley** **October 2025**
  - *Linear Systems, Eigenvalue Problems, Tensor Decomposition*
  - Participated in the **Simons Institute workshop on Linear Systems and Eigenvalue Problems**, contributing to tensor section of the open problems collection (To be released soon).
- **Summer School Participant | Institute of Pure and Applied Mathematics (IPAM)** **August 2025**
  - *Randomized Orthogonalization, Inverse Problems, Advanced Krylov Solvers*
  - Collaboration with **Dr. Julianne Chung** and **Dr. Silvia Gazzola** on integrating randomized orthogonalization into Krylov solvers (GMRES/LSQR) for ill-posed inverse problems. Hosted as part of **the IPAM 2025 RNLA workshop**.
- **Summer School Participant | Mathematical Sciences Research Institute (MSRI/SLMath)** **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`**.

Publications

- **Debiasing Polynomial and Fourier Regression** *(SOSA 2025)*
  Chris Camaño, Raphael Meyer, Kevin Shu

- **Successive randomized compression: A randomized algorithm for the compressed MPO-MPS product** *(Quantum 2025)*
  Chris Camaño, Ethan N. Epperly, Joel A. Tropp
- **High-Dimensional Gaussian Process Regression with Soft Kernel Interpolation** *(TMLR 2025)*
  Chris Camaño, Daniel Huang

Preprints

- **Faster Linear Algebra Algorithms with Structured Random Matrices** *(2025)*
  Chris Camaño, Ethan N. Epperly, Raphael A. Meyer, Joel A. Tropp
- **Push: Concurrent Probabilistic Programming for Bayesian Deep Learning** *(2023)*
  Daniel Huang, Chris Camaño, Jonathan Tsegaye, Jonathan Austin Gale

Reviewing

- SIAM Journal on Matrix Analysis and Applications (SIMAX) (2025)

Scholastic Achievement

- NSF Early Career Travel Award (SOSA2026), *National Science Foundation* **2025**
- NSF Graduate Research Fellowship (GRFP), *National Science Foundation* **2024**
- Caltech Kortschak Graduate Fellowship, *Caltech University* **2024**
- CSU Pre-Doctoral Summer Research Grant, *California State University System* **2023**
- Latinos in Technology Scholar 2023–2024, *Silicon Valley Community Foundation* **2023**
- LSAMP Proud Award, *National Science Foundation (NSF)* **2023**
- BMC Scholarship in Computer Science, *San Francisco State University* **2023**
- Classes of the 1960's Endowed Scholarship, *San Francisco State University* **2023**
- Lilly M. Berry Scholarship, *San Francisco State University* **2023**
- Pamela Fong Scholarship in Mathematics, *San Francisco State University* **2023**
- SFSU Alumni Senior Scholarship, *San Francisco State University* **2023**
- Weinstein Family Scholarship, *San Francisco State University* **2023**
- Google Explore CSR Scholarship Recipient, *Google* **2022**
- CSU Pre-Doctoral Sally Cassanova Scholarship, *California State University System* **2022**
- Science Undergraduate Laboratory Internships (SULI) Scholar, *Lawrence Berkeley National Laboratory / U.S. DOE* **2022**
- SIAM Student Chapter Certificate of Recognition 2021–2022, *SIAM* **2022**
- CAHSI REU Scholarship Recipient, *National Science Foundation (NSF)* **2022**
- Jack R. and Marjorie J. Fraenkel Scholarship in Computer Science, *San Francisco State University* **2022**
- Jules H. Strauss Scholarship in Computer Science, *San Francisco State University* **2022**
- Latinos in Technology Scholarship 2022–2023, *Silicon Valley Community Foundation* **2022**

Conference Participation & Presentations

Invited Talks

- **Mini Symposium Speaker | SOSA26** **April 2025**
  - Invited to present at the Symposium on Simplicity in algorithms to discuss random matrix theory for debiased polynomial regression.

- **Mini Symposium Speaker | SOCAMS25** **April 2025**
  - Invited to present at the Southern California Applied Math Symposium on *randomized tensor networks*.
- **Colloquium Speaker | University of California San Diego** **April 2025**
  - Invited to speak at the UCSD Mathematics of Information, Data, and Signals Seminar on *randomized tensor networks*.
- **Invited Speaker | Argonne National Laboratory** **February 2025**
  - Invited to present at the Argonne National Laboratory *Toward Next-Generation Ecosystems for Scientific Computing* workshop on *randomized tensor networks*.
- **Research Presentation | Caltech** **August 2023**
  - Delivered a research presentation at Caltech on randomized tensor network algorithms.
- **Conference Panelist | SIAM Conference on Parallel Processing for Scientific Computing (PP22)** **February 2022**
  - Invited panelist discussing diversity, equity, and inclusion in applied mathematics, representing the undergraduate community.

Poster Presentations

- **Poster Presenter | Simons Institute** **October 2025**
  - Invited to present a poster on oblivious subspace injections at the Simons Institute workshop on Linear Systems and Eigenvalue Problems.
- **Poster Presenter | Joint Math Meetings (JMM) 2024** **January 2024**
  - Presented research on randomized algorithms for efficient tensor network contraction at the Joint Math Meetings in San Francisco, 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.
- **Poster Presenter | Joint Math Meetings (JMM) 2023** **January 2023**
  - Presented research conducted at Lawrence Berkeley National Laboratory during a poster session at the Joint Math Meetings in Boston.
- **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.

Other Activities & Awards

- **Workshop Panelist | Sustainable Horizons Institute 2024** **October 2024**
  - Participated as a panelist on a seminar on graduate funding support and graduate school preparation for underrepresented communities.
- **Data Analytics Challenge Winner | Great Minds in STEM Conference 2023** **October 2023**
  - Received first place in a data analytics challenge during the Great Minds in STEM 2023 Conference in Pasadena, California.
- **University Representative | SIAM Computational Science & Engineering, Amsterdam 2023** **March 2023**
  - Selected as the representative for the San Francisco State University SIAM chapter to attend the SIAM Conference on Computational Science & Engineering in Amsterdam.

- **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.

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

- **Student Mentor, Caltech Connection** **October 2025-**
  - Engaged in a six-month student mentorship program for promising undergraduate students at community colleges.
- **President, SIAM Chapter at Caltech** **July 2025 -**
  - Acting President of the Caltech SIAM Chapter.
- **President, SIAM Chapter at San Francisco State University** **February 2022 - May 2024**
  - Former president of the San Francisco State University SIAM 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.