Ian Jorquera

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Department of Mathematics
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[Website](#)

Academic Interests

Frame Theory, Structure of frames over finite fields, Category Theory and applications, Algorithm Design, Functional Programming, Complexity Theory

Education

Colorado State University

- Ph.D., Mathematics, Gem Fellow, (expected graduation: 2027).

- Advisor: Emily J. King

Colorado State University

- Masters, Mathematics, Gem Fellow, (expected graduation: 2025).

- Advisor: Emily J. King

University of Colorado Boulder

- B.A., Computer Science, *Summa Cum Laude* (2022).

- B.A., Mathematics, *with Honors* (2022).

- Minor, Applied Mathematics (2022)

Positions

Current

Colorado State University

- GEM Fellow, Graduate Teaching Assistant. 8/2022 - present

Previous

Oak Ridge National Laboratory

- GEM Fellow, Research Intern, Programming Systems Group. 6/2022-8/2022

- Advisor: Pedro Valero-Lara

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[1]Updated January 11, 2025

Publications and Preprints

2. **Evaluating performance and portability of high-level programming models: Julia, Python/Numba, and Kokkos on exascale nodes (2023)** (joint with William F. Godoy and Pedro Valero-Lara and T. Elise Dettling and Christian Trefftz and Thomas Sheehy and Ross G. Miller and Marc González Tallada and Jeffrey S. Vetter and Valentin Churavy). accepted. (https://doi.org/10.1109/IPDPSW59300.2023.00068)

1. **Mixed-Precision S/DGEMM Using the TF32 and TF64 Frameworks on Low-Precision AI Tensor Cores(2023)** (joint with Pedro Valero-Lara and Frank Liu and Jeffrey S. Vetter). accepted. (https://doi.org/10.1145/3624062.3624084)

Attended Conference

2. Recent Progress on Optimal Point Distributions and Related Fields, ICERM, Brown University, June 2024. Funded by Conference.

1. Groups, Nilpotence, and Tensors, Colorado State University, April 2023.

Seminar Talks

7. *What is Algebra? Why should you care? And what make it so abstract anyways?.* Colorado State University, Greenslopes Mathematics and Statistics Seminar, October 2024.

6. *Composition, Categories, and Databases.* Colorado State University, Applied Category Theory Seminar, September 2024.

5. *Suboject Classifiers and Defining a Topos.* Colorado State University, Applied Category Theory Seminar, April 2024.

4. *F-Algebras and Catamorphisms in Scala.* Colorado State University, Applied Category Theory Seminar, November 2023.

3. *Simple Types.* Colorado State University, Applied Category Theory Seminar, January 2023.

2. *The DisCoCat (Distributional Compositional Categorical) model of meaning.* Colorado State University, Applied Category Theory Seminar, October 2022.

1. *Examples of Functors and Natural Transformations.* Colorado State University, Applied Category Theory Seminar, September 2022.

Seminars Organized

1. *Greenslopes Graduate Seminar.* Co-Organizer, Colorado State University, August 2024 - Decmber 2024.

Teaching Experience

Colorado State University

- Instructor, Math 160 (Spring 2025).
- Assistant Coordinator, Math 160 (Fall 2024).
- Assistant Coordinator, Math 160 (Spring 2024).
- Instructor, Math 160 (Fall 2023).
- Teaching Assistant, Math 369 (Summer 2023).

- Teaching Assistant, Math 155 (Spring 2023).

- Instructor, Math 160 (Fall 2022).

University of Colorado Boulder

- Undergraduate Course Assistant, CSCI 3104

Outreach

- Volunteer, CSU Math Day (November 2024).

- Volunteer, CSU Math Day (November 2023).

Awards

- GEM PhD Fellow, Sponsored by Oak Ridge National Laboratory and Colorado State University (2022).