Edgar Jaramillo Rodriguez

Curriculum Vitae

University of California, Davis
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Education

In progress	**Ph.D., Mathematics**, *University of California, Davis*, Advisor: Dr. Jesus De Loera.
2021	**M.A., Mathematics**, *University of California, Davis*.
2018	**B.A., Applied Mathematics**, *University of California, Berkeley*.

Publications

Journal Articles

[1] J. De Loera, **E. Jaramillo Rodriguez**, D. Oliveros, and A. Torres Hernadez, "A Model for Birdwatching and other Chronological Sampling Activities," arXiv:2205.05743 (2022). Scheduled to appear in *The American Mathematical Monthly.*

[2] N. Benjamin, G. Fickes, E. Fiorini, **E. Jaramillo Rodriguez**, E. Jovinelly, and T.W.H. Wong, "Primes and Perfect Powers in the Catalan Triangle," Journal of Integer Sequences, Vol. 22 (2019), Issue 7, Paper 6

Pre-Prints

[1] **E. Jaramillo Rodriguez** "Combinatorial Methods for Barcode Analysis," arXiv:2206.05613 (2022).

Conference Papers

[1] S. D. Han, **E. Jaramillo Rodriguez** and J. Yu, "SEAR: A Polynomial- Time Multi-Robot Path Planning Algorithm with Expected Constant-Factor Optimality Guarantee," 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (2018), pp. 1-9.

Presentations

2022 — **Applied Topology in Albany Seminar**, University of Albany (remote), October 2022. *Combinatorial Methods for Barcode Analysis.*

Society for Industrial and Applied Math Conference on Discrete Mathematics 2022 **(SIAM-DM22)**, Carnegie Mellon University, June 2022. *Barcode Posets: Combinatorial Properties and Connections.*

Algebraic Statistics 2022, University of Hawai'i at Manoa, May 2022. *A Model for Birdwatching and other Chronological Sampling Activities.*

2021 — **AIM Latinx Mathematician Research Community Meeting** (virtual) December 2021. *New Methods for Mixture Model Analysis* with A. Chavez, J. De Loera, J. Simental Rodriguez, and A. Torres Hernandez.

UC Davis Graduate Student Research Seminar, University of California, Davis, April 2021. *Coupon Collecting, Bird Watching, and other Chronological Sampling Activities: A Random Interval Graph Model.*

2016 — **Young Mathematicians Conference 2016**, The Ohio State University, August 2016. *Unique Integers on the Catalan Triangle* (poster presentation) .

Professional Experience

2022 **Graduate Student Intern in the Information Systems and Modeling Group (A-1)**, *Los Alamos National Lab*, Mentor: Dr. Sara Del Valle.

2020 **NSF Mathematical Sciences Graduate Research Internship**, *Lawrence Berkeley National Lab*, Mentor: Dr. Nicole Sanderson.

2017 **Research Experience for Undergraduates**, *Center for Discrete Math and Theoretical Computer Science at Rutgers University*, Mentor: Dr. Jingjin Yu.

2016 **Research Experience for Undergraduates**, *Muhlenberg College*, Mentor: Dr. Eugene Fiorini.

Fellowships, Awards, and Other Funding

2022 Yueh-Jing Lin Fund Award Recepient, UC Davis.

2021-2022 NSF Alliances for Graduate Education and the Professoriate Graduate Research Supplement (AGEP-GRS), Project title: Two-Way Research Street: Geometric Algorithms in Optimization and Computer-Based Discrete Geometry.

2018-2020 Eugene Cota Robles Graduate Fellowship, UC Davis

Teaching Experience

Teaching Assistant **Math 108: Introduction to Abstract Math**, Fall 2022, UC Davis. Lead Instructor: Dr. Orsola Capovilla-Searle.

Math 21B: Integral Calculus, Spring 2021, UC Davis. Lead Instructor: Dr. Ben Morris.

Math 22A: Linear Algebra, Winter 2021, UC Davis. Lead Instructor: Dr. David Marsico.

Math 21A: Differential Calculus, Fall 2020, UC Davis. Lead Instructor: Dr. Daniel Martin.

Math 54: Linear Algebra, Fall 2017, UC Berkeley. Lead Instructor: Dr. Michael Hutchings.

Classroom Aid **Martin Luther King Jr Middle School**, Fall 2015, Berkeley, CA. Lead Instructor: Jay Cohen.

Mentoring Experience

2021 **Directed Reading Program Mentor**, *UC Davis*.

- **DRP Mentor**, *Led two undergraduate students in a directed reading program on mathematical optimization. I was responsible for creating the syllabus, compiling reading materials, producing exercises to guide readings, and facilitating discussions. Topics covered: Linear Regression/ Ordinary Least Squares, Ridge Regression, LASSO regression, Singular Value Decomposition/ Principle Component Analysis, and implementations of these methods in Python for real life data. In 2022 we are going to study recommender systems.*

2015-2017 **Bridging Berkeley Program Director**, *UC Berkeley Public Service Center*.

- ○ **Program Director**, *Bridging Berkeley is a math mentoring program that matches UC Berkeley work-study students and volunteers with Berkeley middle school youth, especially those who will be first-generation college students. As director, I oversaw a team of roughly 30 mentors and 100 mentees while also mentoring a number of students myself.*

Service

Reviewer   Boletin de la Sociedad Matemática Mexicana.

Workshops, Summer Schools, and Similar Activities

2021   Algorithmic Advances for Statistical Inference with Combinatorial Structure Workshop, Simons Insitute for the Theory of Computing (Virtual). October 11-15, 2021

VII Mexican Workshop in Geometric and Topological Data Analysis, Centro de Investigación en Matemáticas (Virtual). September 22-29, 2021

School on Modern Directions in Discrete Optimization, Hausdorff Center for Mathematics (Virtual). September 13-17, 2021

Geometric Methods in Optimization and Sampling Boot Camp, Simons Insitute for the Theory of Computing (Virtual). August 30-September 3, 2021

2019   Mixed Integer Programming Workshop, Massachusetts Institute of Technology. July 15-18, 2019.

Skills

Computer Skills   Expertise in Python, SQL, Git, Microsoft Office, LaTeX. Proficiency in Sage, Matlab.

Languages   Fluency: English and Spanish. Proficieny: French.