

# EMILY LOPEZ

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## EDUCATION

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**University of Minnesota-Twin Cities** September 2024 - Present  
PhD in Applied Mathematics

**Cornell University** August 2022 - August 2024  
PhD in Applied Mathematics (2 years completed)  
Relevant Coursework: Mathematical Statistics, Statistical Principles, Measure Theory, Inverse Problems, Stochastic Processes, Dynamical Systems.

**University of California, Santa Barbara** September 2018 - June 2022  
College of Creative Studies  
B.S. in Mathematics with honors  
Overall GPA: 3.73

**College of the Canyons Community College** June 2018  
A.S. in Mathematics  
Summa cum laude; Overall GPA: 4.0

## RESEARCH EXPERIENCE

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**Cornell University** March 2024 - August 2024  
*Graduate Research Assistant for Dr. Christina Lee Yu* Ithaca, NY

- Investigating data aggregation methods that efficiently estimate the total treatment effect when network interference is present.
- Mentoring two undergraduate on coding simulations and creating public experimental repository for the causal inference community.

**Cornell University** March 2023 - January 2024  
*Graduate Research Assistant for Dr. Jamol Pender* Ithaca, NY

- Studied the dynamics of  $M/M/c$  queueing system with priority discipline to gain insight in ways to control contact exposure in waiting systems.

**UCSB Mathematics Department** August 2020 - June 2022  
*Research Assistant for Dr. Katy Craig* Goleta, CA

- Completed independent reading course on *Computational Optimal Transport* by Peyré and Cuturi.
- Study the relationship between the linearized optimal transport (LOT) distance and 2-Wasserstein distance by investigating inequalities relating the metrics and numerically classifying their sharpness using Python.

**Williams College SMALL Math REU** June 2020 - August 2020  
*Research Assistant for Dr. Joshua Carlson* Williamstown, MA

- Worked in group of five students to extend the throttling parameter to directed graphs; one paper published.

- Discovered the fullness of the orientation throttling interval of a simple graph, provided a characterization of throttling numbers of directed graphs, and explored bounds for throttling number of paths with arcs alternately directed.

**UCSB EUREKA Scholar**

June 2019 - August 2019

*Undergraduate Researcher in Dr. Francesco Bullo's Lab*

*Goleta, CA*

- Studied algebraic graph theory and discrete-time averaging systems.
- Examined the behavior of human's opinions by simulating the Affine Boomerang Model on various network structures using MATLAB.
- Participated in weekly training on scientific communication; semi-finalist in Summer Undergraduate Research Slam.

**UCSB Math Directed Reading Program Participant**

January 2019 - June 2019

*Studied under Marcos Reyes*

*Goleta, CA*

- Self-studied knot invariants (e.g., tri-colorability, Reidemeister moves, Jones polynomial) to characterize knots.
- Met weekly with mentor to discuss reading and problem sets, which would be composed into a final poster presentation.

**Summer Institute in Math and Science (SIMS) Scholar**

August 2018

*Center for Science and Engineering Partnerships*

*Goleta, CA*

- Participated in a 2-week program geared toward preparing first-year underrepresented STEM students for research opportunities at UCSB.
- Used magnetometer to determine conditions in which the superconductor yttrium barium copper oxide is diamagnetic using the coolant, liquid nitrogen.
- Attended courses in linear algebra, physics, and writing in preparation for coursework at UCSB.

EMPLOYMENT

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**SIMS Student Coordinator**

December 2020 - September 2021

*Center for Science and Engineering Partnerships*

*Goleta, CA*

Coordinated the SIMS team to create a 3-week intensive summer program that prepares underrepresented UCSB students entering directly from high school for STEM research. Worked 8-15 hours a week before the program and full time (40 hours per week) for the three weeks of SIMS. Some duties included:

- Recruiting and reviewing applications for Peer Mentors and SIMS scholars' selection
- Leading weekly meetings with the CSEP staff, graduate students, and instructors to create programming and voice students' needs
- Managing and updating the SIMS website and recruitment fliers
- Collaborating with UCSB campus resources and industry personnel for training and workshops
- Hosting office hours for one-on-one mentoring with students
- Moderating student networking events with graduate students, faculty, and industry
- Notifying SIMS interns of research opportunities and scholarships through weekly mailers
- Writing executive summary and exit survey report

## PUBLICATIONS

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1. E. Cairncross, J. Carlson, P. Hollander, B. Kitchen, E. Lopez, and A. Zhuang, Throttling for standard zero forcing on directed graphs, 2020. Australasian Journal of Combinatorics.

## WORKSHOPS AND SUMMER SCHOOLS ATTENDED

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### **AMIGA's Program**

*Institute for Pure and Applied Mathematics, UCLA*

July 2023

*Los Angeles, CA*

- AMIGAs is a week-long summer program for incoming second or third year students in graduate programs in the USA, designed to support and train a new generation of mathematical scientists in applied and computational mathematics, with a special emphasis on increasing the number of women, particularly those from historically excluded racial groups, in both academia and industry.

### **EDGE for Women Program**

*Oxford University*

July 2022

*Oxford, UK*

- The EDGE for Women Summer Program is an intensive 4-week summer program at Oxford University which provides first-year PhD students graduate-level math preparation and a support network of women at various stages in their careers.

## AWARDS AND FELLOWSHIPS

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2022 Thomas More Storke Award for Excellence

- UCSB's highest student honor in recognition of outstanding scholarship and extraordinary service to the university, its students, and the community.

2022 Jo Little Memorial Scholarship

2022 NSF Graduate Research Fellowship

2022 & 2027 Cornell Colman Fellowship

Cornell University Deans Scholar

2022, 2021, & 2020 Edison Scholarship

2021 & 2020 UCSB Mathematics Department Ostrow Bruckner Scholarship

Ronald E. McNair Research Scholar

2021 Joint Mathematics Meeting (JMM) Outstanding Poster Award

Qualcomm MESA University Program Scholarship

CCS Traveling Undergraduate Research Fund

## TALKS AND POSTER PRESENTATIONS

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### **A comparison of the LOT and the 2-Wasserstein distance**

- 2022 Phi Sigma Rho Women in STEM Sorority General Body Meeting (talk)
- 2021 McNair Scholars Conference and Symposium (talk)

### **Throttling for standard zero forcing on directed graphs**

- 2021 Joint Mathematics Meeting (poster)

- 2021 Nebraska Conference for Undergraduate Women in Mathematics (talk)
- 2020 McNair Summer Research Symposium (talk)
- 2020 Northeastern Mathematics REU Virtual Conference (talk)

### **Modeling opinion dynamics using the Affine Boomerang Model**

- 2019 SACNAS National Diversity Conference (poster)
- 2019 UCSB Undergraduate Research Colloquium (poster)
- 2019 Center for Science and Engineering Partnerships Research Program Symposium (talk)

### SERVICE TO THE FIELD

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<b>EDGE for Women Webinar Series Co-organizer</b> <i>EDGE Foundation</i>	September 2023 - Present <i>Online</i>
<b>EDGE for Women Reunion Panel</b> <i>Brown University</i>	June 2023 <i>Providence, RI</i>
<b>“After Undergrad” Senior Panelist</b> <i>Association for Women in Mathematics</i>	May 2022 <i>Goleta, CA</i>
<b>Founding Member of Pacific Math Alliance Chapter</b> <i>UCSB</i>	August 2020 - June 2022 <i>Goleta, CA</i>
<b>Mentor for AWM Mentoring Program</b> <i>Association for Women in Mathematics</i>	March 2020 - June 2020 <i>Goleta, CA</i>

### SERVICE TO THE INSTITUTION

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<b>DPE Graduate Student Panel</b> <i>Cornell University</i>	June 2023 <i>Goleta, CA</i>
<b>UCSB McNair Scholars Program “Year 1 of Grad School” Panel</b> <i>UCSB</i>	May 2023 <i>Goleta, CA</i>
<b>American Association of University Women Leadership Conference</b> <i>University of Maryland, College Park</i>	June 2023 <i>College Park, MD</i>
<b>Expanding Your Horizons Workshop Volunteer</b> <i>Cornell University</i>	April 2023 <i>Ithaca, NY</i>
<b>Undergraduate Representative for the CCS Lounge Event (Webinar)</b> <i>College of Creative Studies, UCSB</i>	October 2020 <i>Goleta, CA</i>
<b>Member of the Student Diversity, Equity, and Inclusion Committee</b> <i>College of Creative Studies, UCSB</i>	July 2020 - June 2021 <i>Goleta, CA</i>
<b>Mentor for Freshman Mentorship Program</b> <i>College of Creative Studies, UCSB</i>	September 2020 - June 2022 <i>Goleta, CA</i>
<b>Undergraduate Chapter Vice President</b> <i>UCSB SACNAS</i>	July 2019 - June 2020 <i>Goleta, CA</i>
<b>Undergraduate Research Panelist</b> <i>MESA Science and Technology Day</i>	April 2020 <i>Goleta, CA</i>

PROFESSIONAL AFFILIATIONS

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EDGE for Women in Math

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)

American Mathematical Society (AMS)

Association for Women in Mathematics (AWM)

Society for Industrial and Applied Mathematics (SIAM)